

# **Minutes**

## **43<sup>rd</sup> Meeting of the Academic Council**

### **held on 5<sup>th</sup>, 6<sup>th</sup> & 7<sup>th</sup> April 2023**



**Directorate of Academics  
Bahria University Islamabad**

## **REFERENCE DESIGNATORS & TERMS USED IN THIS DOCUMENT**

These designators/terms are meant to introduce clarity, standardization and ease of reference while consulting or referring to this document.

Example: Item 2213 means item No 13 taken up by the 22<sup>nd</sup> ACM

## Decision on      oon

**New Item** Example: Decision 2213 means Decision on Item 2213.

Example: Decision 2213.b means Decision 2213, clause 'b'.

Example: Decision 2213.b.3 means Decision 2213, clause 'b', sub-clause '3'

## Decision on o2o2(oonn)

**Previous Item** Example: Decision 22(1930) means Decision taken by the 22<sup>nd</sup> ACM on the previous/review Item 1930.

Example: Decision 22(1930).b means Decision 22(1930), clause 'b'.

Example: Decision 22(1930).b.3 means Decision 22(1930), clause 'b', sub-clause '3'.

**Action** Authority, Entity, Official, Person, Unit, Dept, Office, etc required to implement the decision

**Responsibility** The supra single Authority, Entity, Official, Person, etc required to:

- a. Coordinate the actions taken by the Authorities, Entities, Officials, Persons, Units, Depts, Offices, etc listed against “Action”.
  - b. Report to the Council on the progress on the matter, through periodic progress reports and at the meeting of the Council.
  - c. Be responsible to the Competent Authority, and the Council, for the case/issue overall /point/item he or she has been made responsible for.

**Statutory Documents affected** Most decisions of the Academic Council imply amendments to the relevant statutory documents. These amendments shall be processed and incorporated into the said documents forthwith and certainly before the next meeting of the Academic Council. The responsibility of processing the amendments and incorporating them into the statutory documents shall be as per the Registrar Notification 23/2015 dated 25<sup>th</sup> May 2015.

**Deadlines** Any time period deadlines shall count from the date of issue of the minutes. Time period in days shall imply working days.

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## **ACRONYMS AND ABBREVIATIONS USED IN THIS DOCUMENT**

BBS	Bahria Business School
BH3S	Bahria Humanities and Social Sciences School
BSEAS	Bahria School of Engineering and Applied Sciences
BUAR	Bahria University Academic Rules
BUCAH	Bahria University College of Allied Health Sciences
BUCPT	Bahria University College of Physical Therapy
BUDC	Bahria University Dental College
BUHSC	Bahria University Health Sciences Campus
BUHS-PGI	Bahria University Health Sciences Post Graduate Institute
BUIC	Bahria University Islamabad Campus
BUKC	Bahria University Karachi Campus
BULC	Bahria University Lahore Campus
BULS	Bahria University Law School
BUMDC	Bahria University Medical & Dental College
BUMC	Bahria University Medical College
CCH	Course Codes Handbook
CE	Computer Engineering
CH	Credit Hour(s)
CS	Computer Sciences
DA	Director Admissions
DAcad	Director Academics
DLC	Director Lahore Campus
DMktg	Director Marketing
DS	Dental Section BUMDC
EDC	Estimated Date of Completion
EE	Electrical Engineering
EES	Earth & Environmental Sciences
EP	Examination Policy
ES	Engineering Sciences
FHB	Faculty Handbook
FYP	Final Year Project
HS	Health Sciences
H&SS/ HSS	Humanities & Social Sciences
IPP	Institute of professional Psychology
IR	International Relations
MS	Management Sciences
NBEAC	National Business Education Accreditation Council
NCEAC	National Computing Education Accreditation Council
PFM	Permanent Faculty Member
PH	Public Health
PMC/PMDC	Pakistan Medical Council/ Pakistan Medical and Dental Council
PNC	Pakistan Nursing Council
NNNC	Pakistan Navy Nursing College
PP	Professional Psychology
SCM	Supply Chain Management
SE	Software Engineering
SHB	Students Handbook
SRD	Students Record Database
UG	Undergraduate
URD	User Requirements Document
VFM	Visiting Faculty Member

## ATTENDANCE

### BUHO

#### Present

1. Vice Admiral Asif Khaliq HI(M) (Retd)	Rector	in Chair
2. Surg R/Admiral Najm Us Saqib Khan HI(M), T.Bt (Retd)	Pro-Rector (HS)	Member
3. Rear Admiral Ahmed Fauzan HI(M) (Retd)	Pro-Rector (RIC)	Member
4. Rear Admiral Muhammad Arshid Javed SI(M) (Retd)	Pro-Rector (Acad)	Member
5. Cdre Muhammad Jalaluddin Qureshi SI (M), S.Bt (Retd)	Registrar	Member
6. Dr Atif Raza Jafri	Dean ES/ Principal BSEAS-IC	Member
7. Dr Muhammad Naveed	Dean MS/ Principal BBS-IC	Member
8. Dr Adam Saud	Dean H&SS/ Principal BH3S-IC	Member
9. Dr Muhammad Fayyaz	Dean Law/ Principal BULS	Member
10. Cdre Asim Raza SI(M) (Retd)	Dir Academics	Member & Secy
11. Cdre Nasrullah SI(M) (Retd)	Controller of Exams	Member
12. Cdre M Masud Akram SI(M), S.Bt	Dir Admissions	Member
13. Brig Asif Ali Asif (Retd)	Dir Health Sciences	Member
14. Dr Asad Waqar	Dir PGP	Member
15. Mr Fazal Wahab	Dir DQA	Member
16. Dr Saleem Aslam	Dir ORIC	Member
17. Dr M Awais Mehmood	Director IO	Member

#### In Attendance

18. Cdre Sajjad Akber SI(M) (Retd)	Dir HR
19. Ms Sundal Mufti	Dir Student Affairs
20. Mr Rizwan Aamir	Dir IT
21. Mr Zufiqar Ahmed Janjua	Dir LDC
22. Capt Khalid Hameed PN (Retd)	Dy Registrar (Academics)
23. Cdr Zulfiqar Haider Malik PN (Retd)	Dy Registrar (Regulations & Statutes)
24. Cdr Adnan Umer PN	Dy Director (Academics)

### BUIC

#### Present

25. Rear Admiral Zaka Ur Rehman HI(M) (Retd)	DG IC	Member
26. Dr Junaid Imtiaz	HOD (EES) BSEAS-IC	Member
27. Dr Shahzad Hassan	HOD (CE) BSEAS-IC	Member
28. Dr Awais Majeed	HOD (SE) BSEAS-IC	Member
29. Dr Said Akbar Khan	HOD (E&ES) BSEAS-IC	Member
30. Dr Arif Ur Rehman	HOD (CS) BSEAS-IC	Member
31. Dr Shahzad Hussain	HOD (CE) BSEAS-IC	Member
32. Dr Shahid Iqbal	HOD (MS Programme) BBS-IC	Member
33. Dr Khalid Ahmed	HOD (BS Programme) BBS-IC	Member
34. Dr Farrukh Shahzad	HOD (Media Studies) BH3S-IC	Member
35. Dr Rizwana Amin	HOD (PP) BH3S-IC	Member
36. Dr Shahzia Yousuf	HOD (PP) H-11-Campus	Member
37. Dr Irfan Hasnain Qaisrani	HOD (BH3S-IC)	Member

#### In Attendance

38. Dr Muhammad Anees	Associate Professor (BBS-IC)
39. Dr Samreen Babur	Senior Associate Professor (BBS-IC)

40. Dr Hina Samdani	Senior Associate Professor (BBS-IC)
41. Dr Muhammad Kasheer	Assistant Professor (BBS-IC)
42. Dr Amjid Masood	Senior Assistant Professor (BBS-IC)
43. Dr Asim Muneeb Khan	Assistant Professor (BH3S-IC)
44. Dr Latafat Aziz	Assistant Professor (BH3S-IC)

### **BUKC**

#### **Present**

45. Vice Adm K. G. Hussain HI(M) (Retd)	DG KC	Member
46. Cdre Muzammil Hussain SI(M), SE (Retd)	Director Admin	Member
47. Dr Mustaghis ur Rehman	Principal BBS-KC	Member
48. Dr Sohaib Ahmed	Principal BSEAS-KC	Member
49. Dr Oyoon A Razzaq	Principal BH3S-KC	Member
50. Dr Salma Hamza	HOD (E&ES) BSEAS-KC	Member
51. Dr Syed Safdar Ali	HOD (CS) BSEAS-KC	Member
52. Dr Liaqat Ali	HOD (MS) KC	Member
53. Dr Shoaib Mughal	HOD (CE) KC	Member
54. Dr Asif Inam	HOD (Maritime Sci)	Member
55. Dr Talat Sharafat Rehmani	HOD (H&SS) BH3S-KC	Member
56. Dr Abdul Qadir	HOD (IS) BH3S-KC	Member
57. Dr Osama Rehman	HOD (SE) KC	Member
58. Dr Mukesh Kumar	HOD (EE) KC	Member
59. Dr Muhammad Ashfaq	HOD (Media Studies) BH3S-KC	Member
60. Dr Amir Feroz Shamsi	HOD (BBS) KC	Member

#### **In Attendance**

61. Capt Zaheer Ahmed PN (Retd)	Director Academics KC
62. Dr Waqar ud Din	DD ORIC
63. Engr Erum Shafiq	Asstt Director QA

### **BULC**

#### **Present**

64. Cdre Jawad Ahmed Qureshi SI(M)	Director BULC	Member
65. Dr Adnan Hushmat	HOD (MS)	Member
66. Dr Khawaja Qasim Maqbool	HOD (CS & IT)	Member
67. Dr Urooj Sadiq	HOD (PP)	Member

#### **In Attendance**

68. Muhammad Umair Saeed	Manager QA
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### **BUHSC**

#### **Present**

69. Vice Admiral Ather Mukhtar HI(M) (Retd)	DG BUHSC	Member
70. Dr Ambreen Usmani	Dean HS/ Principal BUMC	Member
71. Dr Wahab Bukh Kadri	Principal BUDC	Member
72. Dr Khalid Aziz	Principal DPT	Member
73. Dr Nasim Karim	Principal BUHSC-PGI	Member
74. Dr Mahreen Lateef	Principal BUCAHS	Member
75. Cdr Syeda Afshan	Principal PNNC	Member
76. Dr Khalid Mustafar	Vice Principal BUMC	Member

77. Prof Abida Razzaq	Vice Principal PNNC	Member
78. Dr Talea Hoor	Joint Director DME	Member
79. Dr Shakeel Ahmed	HOD (Paediatrics)	Member
80. Dr Naheed Sultan	HOD (Surgery)	Member
81. Prof Khalida Nasreen Abdullah T(M)	HOD (Obst and Gynae)	Member
82. Dr Shazia Shakoor	HOD (Physiology)	Member
83. Dr Hasan Ali	HOD (Biochemistry)	Member
84. Dr M Sajid Abbas Jaffri	HOD (Medicine)	Member
85. Dr Tabassum A Qadeer	HOD (Orthodontists)	Member
86. Dr Shama Asghar	HOD (Operative Dentistry)	Member
87. Dr Saman Hakeem	HOD (Prosthodontics)	Member
88. Dr Beenish Fatima	HOD (Oral Biology)	Member
89. Dr Iqbal Hussain Udaipurwala	HOD (ENT)	Member
90. Dr Sameer Shahid Ameen	HOD (Eye)	Member
91. Dr Yasmeen Maher	HOD (Anatomy)	Member
92. Dr Farzeen Tanvir	HOD (Periodontology)	Member

#### In Attendance

93. Dr M. Najamuddin Shabbir	Professor of Surgery
94. Dr Summaya Shawana	Professor of Pathology
95. Dr Bibi Kulsoom	Professor of Biochemistry
96. Dr Iram Sadiqa	Professor of Physiology
97. Dr Shaikh Abdul Saeed	Professor of Physiology
98. Dr Aisha Qamar	Professor of Anatomy
99. Dr Razia Korejo	Professor of (Obst and Gynae)
100. Dr Naveed Faraz	Professor of Pathology
101. Dr Syed Ijaz Hussain Zaidi	Professor of Pharmacology

#### IPP

#### Present

102. Dr Zainab Hussain Bhutto	Dean PP/ Principal IPP	Member
103. Dr Kiran Bashir Ahmed	HOD (PP)	Member

#### PNSL

#### In Attendance

104. Muhammad Asmat Ullah	HOD BS(SCM)
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## **PRELIMINARIES**

1. With the quorum of the Academic Council completed, the Secretary requested the Chair to commence the ACM with his opening remarks. The Chair welcomed all the participants and asked to focus on whatever comes on the table while pursuing the best possible decisions.

### **Confirmation of the Minutes of 42<sup>nd</sup> ACM**

2. The Secretary apprised the Council that draft minutes of 42<sup>nd</sup> ACM were communicated to all Members/ non-member participants on 31 October 2022. Comments thus received were incorporated accordingly, followed by processing (on file) for approval of the Rector. Approved Minutes were disseminated to all concerned for implementation on 7 November 2022 through OAS. The Chair was then requested to confirm the Minutes of 42<sup>nd</sup> ACM, which was accordingly granted to proceed with the agenda of 43<sup>rd</sup> ACM.

## **REVIEW ITEMS**

### **Item 3652: Approval of Case Writing Centers in Bahria Business School Islamabad and Karachi**

Responsibility: Dean MS

#### **Decision 42(3652)**

3. The nomenclature and working mechanism of CWC at BUIC and BUKC are to be processed on file, preferably within next 15 days (wef 6<sup>th</sup> October 2022), with full ownership of BBS-IC. Progress is to be reported.

#### **Progress**

4. Comprehensive working mechanism of Case Writing Centers has been approved by Rector through case file in November 2022. Manager CWC has been appointed at BUIC as per approved mechanism, who is actively engaged with Industrial Knowledge Partners through Special Interest Groups (SIGs). Structure/ coordination mechanism is in place at BUKC as well, while the proposal for capacity building of the faculty for case writing is in process of approval.

#### **Discussion**

5. Principal BBS-IC presented the progress, highlighting the change of nomenclature of the CWC to **Case Research Centre** or **Case Centre** instead of earlier approved **Case Writing Center** for the efficacy of research publications, attracting industries and related market. The Chair enquired about the necessity of changing the approved scope. Principal BBS-IC explained that the same was required to induce the interest of the faculty members to undertake the desired case writing as a research activity. The requirement was supported by the Principal BBS-KC as well. DAcad apprised that the proposed nomenclature was earlier discussed in the 40<sup>th</sup> ACM but not approved at that time. The Chair directed to process the proposal again, through respective DGs, and present the progress in the next ACM.

#### **Decision 43(3652)**

6. The proposal to change the nomenclature of **Case Writing Center** is to be processed separately, through respective DGs. Progress is to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BBS-IC	Dean MS
<b>Statutory Documents Affected</b>		Nil

**Item 3910: Launch of New Programme *Bachelor of Science in Coastal & Marine Sciences* at the Department of Maritime Sciences, BUKC**

Responsibility: DG-BUKC

**Decision 42(3910)**

7. The following was approved by the Council:
  - a. Launch proposal for *Bachelor of Science in Coastal & Marine Sciences* at BSMAS-KC, as given at **Appendage 42(3910)**, from Spring 2023 semester.
  - b. Workshops/ seminars by Principal BSMAS-KC for successful launch of the new Programme.
  - c. Progress to be reported.

**Progress**

8. BS (Coastal & Marine Sciences) Programme has been launched at BSMAS in Spring 2023 Semester. Webinars and lectures were conducted with relevant stakeholders and shared on electronic media for wider publicity and raising general awareness about the Programme being launched. However, the Programme did not attract the attention of applicants, and would be advertised again for Fall 2023 semester, as generally more students are available in Fall rather than Spring semester.

**Discussion**

9. Principal BSMAS-KC apprised the key factors of unsuccessful launch of the Programme. During detailed discussion, DAcad proposed to shift the Programme under Dean ES due being more relevant. DG BUIC advised to delay such a shifting until the Programme was matured. After further discussion, the Chair consented to pursue enhanced marketing of the Programme and review the progress of related admissions in Fall 2023 semester.

**Decision 43(3910)**

10. The improved admissions status of the Programme is to be pursued in Fall 2023 semester through enhanced marketing. Progress is to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BUMAS-KC, D Mktg	DG BUKC
<b>Statutory Documents Affected</b>	Nil	

**Item 4016: Launch of New Programme *Master of Science in Government and Public Policy* at BH3S-IC**

Responsibility: Dean H&SS

**Decision 42(4016)**

11. Curriculum of ***Master of Science in Government and Public Policy*** will be revised by concerned Dept in light of related discussion in the last BOG Meeting, and its outcome reported in the next ACM, along with the progress of Programme launch in Spring 2023 semester.

**Progress**

12. The curriculum of ***Master of Science in Government and Public Policy*** has been designed according to the needs of the job market. The observations/ suggestions of the BoG have been incorporated, and the Programme launched in Spring 2023 semester, with a total of 10 students taking admission. The point has been dropped in the last BOG Meeting, held on 3 March 2023.

### **Discussion**

13. Based on the satisfactory progress, the Secy proposed to drop the point, which was approved by the Chair.

### **Decision 43(4016)**

14. Point Dropped.

### **Item 4017: Launch of New Programme *Bachelor of Science in Mathematics* at BH3S-KC**

Responsibility: Dean H&SS

### **Decision 42(4017)**

15. Principal BH3S-KC is to pursue better admission prospects in the subject Programme during the next semester. Progress is to be reported in the next ACM.

### **Progress**

16. BS (Mathematics) Programme has been launched at BH3S-KC in Spring 2023 semester. Webinars and lectures were conducted with relevant stakeholders and shared on electronic media for wider publicity and raising general awareness about the Programme being launched. However, the Programme did not attract the attention of applicants, and would be advertised again for Fall 2023 semester, as generally more students are available in Fall rather than Spring semester.

### **Discussion**

17. Detailed reasons were discussed/ evaluated for the inadequate applicants' response towards the Programme admissions. Dean H&SS proposed to shift the Programme from the Dept of Social Sciences to the Dept Computer Sciences, similar to the BUIC, due being Engineering Sciences/ technical specific. DG BUKC suggested to give the new Programme one more semester for successful launch, while retaining it with the current Dept. After further discussion, the Chair agreed with the proposal to evaluate the Programme success after Fall 2023 semester, while directing the separate processing of the proposal for shifting of the Programme to the Dept of Computer Sciences.

### **Decision 43(4017)**

18. Successful launch of the Programme is to be pursued for one more semester (Fall 2023). Proposal for shifting of the Programme to the Dept of Computer Sciences is to be processed separately by Dean H&SS. Progress is to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BH3S-KC, Dean H&SS	DG BUKC
Statutory Documents Affected	Nil	

### **Item 4027: Approval to Launch *Doctor of Philosophy (PhD)* Programme under the Faculty of Health Sciences at BUMDC (BUHSC)**

Responsibility: Dean HS

### **Decision 42(4027)**

19. Progress of NOC from HEC followed by Programme launch in Fall 2023 semester is to be reported in next ACM.

### **Progress**

20. Launch of *PhD in Health Sciences* at BUHSC was approved by the HEC in December 2022. The Programme was subsequently launched in Spring 2023 semester after seeking one-time waiver from the Rector, against standard PhD admissions process for Fall semesters only. The approval may be ratified by the Council for record purposes.

### **Discussion**

21. After brief discussion, the approval was ratified by the Council. The Secy proposed to drop the point, which was approved by the Chair.

### **Decision 43(4027)**

22. Point Dropped.

### **Item 4028: Formal Approval for Induction of Civilian Students in BS (Nursing) Programme at PNNC**

Responsibility: DG BUHSC

### **Decision 42(4028)**

23. DHS is to pursue the NHQ decision on induction of male students through DNE, while processing the proposed fee structure for non-uniformed students on case file (if required) and pursuing the BOG decision for construction of PNNC building. Progress is to be reported.

### **Progress**

24. The following has been reported by Dean HS:

- a. NHQ has approved the induction of male civilian students in BS (Nursing) Programme at PNNC from Spring 2023 semester.
- b. Revision of fee structure for PNNC civilian students is not required.
- c. The case for inclusion of PNNC building construction in Pakistan Navy ACWP 2023-24 has been forwarded to NHQ along with the URDs in the 1<sup>st</sup> week of February 2023.

### **Discussion**

25. Based on the satisfactory progress, the Secy proposed to drop the point, which was approved by the Chair.

### **Decision 43(4028)**

26. Point Dropped.

### **Item 4109: Launch of New Programme Bachelor of Science in Remote Sensing & GIS at BSEAS-KC**

Responsibility: Dean ES

### **Decision 42(4109)**

27. Launch proposal of *Bachelor of Remote Sensing & Geographical Information System* is approved for BSEAS-IC from Spring 2023 semester. Progress is to be reported.

### **Progress**

28. The Programme *BS in Remote Sensing & GIS* has been launched at BSAES-IC in Spring 2023 semester, based on the launch proposal presented in 42<sup>nd</sup> ACM. Only 14 students submitted the fee, and special approval was accorded by the Rector to start the Programme with low intake.

### **Discussion**

29. Principal BSAES-IC apprised the Council of the insufficient market interest causing the low intake. DQA indicated the prospects of higher intake in Fall semesters with expected more number of applicants. BUKC also confirmed the futuristic potential of the Programme and likelihood of better intakes. It was accordingly agreed to continue the monitoring of the success of the Programme.

### **Decision 43(4109)**

30. Progress of the Programme success is to be reviewed, both at BUIC and BUKC.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BSEAS-IC, Principal BSEAS-KC	Dean ES
<b>Statutory Documents Affected</b>		Nil

### **Item 4121: Launch of New Programme *Bachelor of Science in Biotechnology* in BU College of Allied Health Sciences, BUHSC**

Responsibility: Dean HS

### **Decision 42(4121)**

31. As the Programme will be launched in Spring 2023 semester, its progress will be reviewed in the next ACM.

### **Progress**

32. The Programme has been advertised, resulting in registration of 91 applicants. Meanwhile, some changes in course outline for *BS in Biotechnology* recommended by FBOS have been approved by the Rector for adoption from Spring 2023 semester through a case file, which will be presented by concerned Principal for ratification by the Academic Council.

### **Discussion**

33. Principal BUAHS apprised that only 24 students were admitted through CBT, due to provisional elections at Karachi. Notwithstanding this initial less turnover, the Programme has been launched satisfactorily. She informed that changes in course outline will be presented as a separate/ new agenda item (4329). The Chair was satisfied with overall progress and consented to drop the point.

### **Decision 43(4121)**

34. Point Dropped.

### **Item 4122: Adoption of Methodology for Improvement of Academically Weak Students**

Responsibility: DAcad

### **Decision 42(4122)**

35. Progress of the standardized methodology for semester based academically weak students is to be reported in the next ACM.

### **Progress**

36. Proposed methodology for improvement of academically weak students was discussed in detail in the Deans' Committee Meeting held on 21 December 2022, and the following decided:

- a. The proposed methodology for academically weak students is to be finalized and presented in the ACM, keeping in view the views/ comments of Deans, delinking Peer Tutoring from the proposal while linking it with *Student Mentoring Framework*.
- b. Peer Tutoring proposal is to be separately processed through case file, with the emphasis that teaching responsibility would primarily remain with respective teachers.
- c. Status of students on Probation/ Chance is to be provided to respective Principals through CMS after each semester exams final results, for subsequent actions pertaining to their academic improvement.
- d. Grading system of the results is to be reviewed by the Exams Dte for a different grade other than 'F' in case of those students who are ineligible due to less attendance and may not need academic improvement.

37. The methodology is being finalized for consensus approval in the next DCM (scheduled in June 2023), while separately processing the proposal for Peer Tutoring, provision of Probation/ Chance status of students to respective principals, and review of exams results grading system.

#### **Discussion**

38. DAcad explained that each faculty was already following its own methodology for identification and improvement of academically weak students, while the standardized methodology was being prepared for the semester-based Programmes. DQA indicated that the methodologies currently being followed were not formally approved nor covered in a statutory document. The Chair conveyed concern on the pace of the progress attained for indicated activities. He directed accelerating the process for finalization of the suitable methodology through a special DCM, if required. He also advised reviewing the option of separate methodology for any/ each faculty, if suitable.

#### **Decision 43(4122)**

39. The process of finalizing the standardized methodology for improvement of academically weak students is to be accelerated for early completion. Progress is to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	DAcad, All Deans	Pro-Rector (Acad)
<b>Statutory Documents Affected</b>		Nil

#### **Item 4130: Implementation of HEC Undergraduate Education Policy 2020**

Responsibility: DQA

#### **Decision 42(4130)**

40. HEC response is to be pursued for BU queries on subject Policy. Progress is to be reported.

#### **Progress**

41. The subject policy is currently under review at the HEC level and shall be approved in the meeting of the Commission. After approval, the amended UGE Policy will be forwarded to the HEIs for implementation.

#### **Discussion**

42. DQA confirmed all BU queries pertaining to subject Policy have been conveyed to the HEC. The same is likely to be addressed in the revised Policy awaited from the HEC.

### **Decision 43(4130)**

43. Progress of the review of HEC UGE Policy 2020 is to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	DQA, DAcad	DQA
<b>Statutory Documents Affected</b>		Nil

### **Item 4201: Approval of BS (4-Yrs) Degree Programme in *Islamic Studies***

Sponsor: HOD Islamic Studies, BH3S-IC & KC

Referral Authority: FBOS-HSS

#### **Decision 4201**

44. Launch of *BS in Islamic Studies* at BH3S-IC and KC in Spring 2023 semester is approved, as given at **Appendage 4201**. Progress is to be reported.

#### **Progress**

45. Admissions were offered in *Bachelor of Science in Islamic Studies* for Spring 2023 semester. However, as admission was offered in the 2<sup>nd</sup> Phase and only one month was available for marketing, the Programme could not be started as planned due to very low intake.

#### **Discussion**

46. Dean H&SS attributed the low response for the Programme to the lesser number of applicants in the Spring semester. After further discussion, the Chair agreed to review the Programme success after the next (Fall 2023) semester.

### **Decision 43(4201)**

47. The progress of the Programme launch is to be reviewed in the next ACM.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BH3S-IC, Principal BH3S-KC	Dean HS&S
<b>Statutory Documents Affected</b>		Nil

### **Item 4209: Certificate in *Health Profession Education***

Sponsor: Dean HS

Referral Authority: FBOS-HS

#### **Decision 4209**

48. The following was approved by the Council:

- Launching of Certificate course in *Health Professions Education* at BUHSC is approved, as per updated outline at **Appendage 4209**.
- The format of the certificate is to be processed on case file.
- Manager LDC is to be replaced with DME in BUHSC organogram, while all DME activities pertaining to external/ industrial linkages are to be pursued at BUHO level through LDC.
- Progress is to be reported.

#### **Progress**

49. Phase-I of the subject course, comprising the 1<sup>st</sup> face-to-face session of the participants, was conducted from 14 to 18 November 2022. As planned, it focused on the initial part of the curriculum development, comprising formulating the goals and objectives of a 6-weeks course, and

specifying the domain of each objective. In Phase-II, conducted from 16 to 27 January 2023, the participants formulated the teaching and learning strategies for the module initiated in Phase-I. This was followed by Phase-III, conducted 15-22 March 2023, which comprised of the Assessment part. Currently, the participants are preparing the 1<sup>st</sup> draft of the written assignment, which is to be submitted by 15 April 2023, followed by submission of the final assignment by 15 May 2023.

50. Following faculty members are facilitating the sessions:

Name	Designation
Prof Dr. Ambreen Usmani	Dean Health Sciences/ Principal BUMC
Prof Dr Talea Hoor	Prof of Pharma/ Joint Director DME
Dr Fatima Zehra	Assistant Professor, DME
Dr Ambreen Surti	Assistant Professor, Anatomy
Dr Khadija Farrukh	Lecturer, DME
Surg. Capt. Atiya Rehman	Professor of Dermatology, PNS SHIFA
Surg. Cdr. Shafaqat Ali	Assistant Professor, Dept. of Surgery PNS SHIFA

### **Discussion**

51. Confirming the overall progress as described above, Dean HS requested to review the last ACM decision pertaining to the processing of DME working through LPDC (para 47. c. above). Dir LPDC reiterated the need for non-HS related training for the non-academic staff at BUHSC. DAcad explained that LPDC had been replaced at BUHSC with DME (as decided in the last ACM) but a Dte had to act as the focal point for the DME activities. While the HR development and external/ industrial linkages at CUs level were facilitated at BUHO by the LPDC, for BUHSC this role may be undertaken by the HS Dte. However, DHS suggested maintaining the status quo as the more suitable option. After further discussion, the Chair directed to process the proposal pertaining to delinking the DME from the LPDC as a separate case. It was agreed to drop the subject point based on the satisfactory progress attained by BUHSC.

### **Decision 43(4209)**

52. BUHSC is to process the proposal to delink the DME from the LPDC as a separate case. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BUMC	Dean HS
<b>Statutory Documents Affected</b>	Nil	

### **Item 4218: Amendment in BU Academic Rules for Inter Campus Transfer of Engineering Students**

Sponsor: Dean ES

Referral Authority: FBOS-ES

### **Decision 4218**

53. The following was decided by the Council:

- Implications of PEC Regulation on BU students availing transfer from one BU Campus to another (50% credit transfer limit) is to be officially taken up with PEC on priority.
- The PEC Regulation is to be followed through jointly formulated solution by the Registrar, Dean ES, CE and DQA that meets PEC requirement as well as safeguards the interest of BU students.
- Progress is to be reported.

### **Progress**

54. PEC was approached through a letter from the Registrar office in November 2022, to allow the engineering student of BU to avail inter-campus transfer facility without the restriction of 50% credit transfer limit. However, the same was not acceded to by the PEC through its response in December 2022. Dean ES and DQA visited the Add 'I Registrar PEC multiple times for a review of its stance, without success.

55. Meanwhile, TOC cases pertaining to ES started piling up, while any violation of the PEC Regulations could place restrictions on related Programmes offered at BUIC/ BUKC. Further, it was noted that among the 17 students transferred between BUKC-BUIC, only 4 could be affected by subject PEC restriction. Keeping in view of the low intensity of such cases, adoption of PEC requirement was processed through OAS case file, which was approved by the Rector and promulgated through Registrar Notification 006/2023 dated 31 January 2023.

56. In order to incorporate the PEC requirement into BU statutory documents, following amendment/ addition in BU Academic Rules may be approved by the Council, for subsequent ratification by the Executive Committee:

2.3.5 In addition to above, following rules are applicable to Under Graduate Engineering Programme students:

2.3.5.1 As per PEC Regulations, only 50% of the Programme total credits can be transferred for students seeking inter-campus transfer for the same Programme and specialization.

2.3.5.2 The host department shall constitute a credit equivalence committee and evaluate the courses and number of credits to be transferred, ensuring PEC Regulations are met. The host department will forward the case for inter-campus transfer and Transfer of Credits to PEC for issuance of NOC before the student joins the semester.

2.3.5.3 Upon receiving the above stated NOC from PEC, the host department shall recommend the transfer of the student (along with the recommended courses and credit hours) to Director Academics, BUHO for approval and updating of the student's record.

### **Discussion**

57. Dean ES and DQA explained the efforts made to convince the PEC for acceptance of BU stance on the subject, without success. After detailed discussion on related constraints, the Chair directed to raise the level for pursuing the BU stance. Meanwhile, the proposed amendment in BU Academic Rules was approved by the Council as proposed, for ratification by the Executive Committee, and the point dropped.

### **Decision 43(4218)**

58. Dean ES is to pursue the acceptance of BU stance by the PEC through raising of the level approached. However, the agenda point is dropped due to completion of related activity, i.e. ACM approval for amendment in BU Academic Rules.

Action Required	Action	Responsibility
Implementation of the Decision	Dean ES, DQA, DA	Dean ES
<b>Statutory Documents Affected</b>	BU Academic Rules, Students Handbook	

## NEW ITEMS

### **Item 4301: Printing of PLO Attainments on BU Transcript**

Sponsor: Dean ES

Referral Authority: FBOS-ES

#### **Summary of the Case**

59. Attainment of Programme Learning Outcome (PLO) may be printed on Final Transcripts of engineering students, to ascertain abidance of Outcome Based Education necessitated by DQA. An alternative approach may be to generate a separate certificate for this purpose. The proposal may be approved by the Academic Council for adoption and implementation by the Exams Dte.

#### **Discussion**

60. Dean ES apprised the mechanism of PLOs in light of the Washington Accord. DAcad explained the significance of the PLOs in facilitating the international academia for the mapping/ equivalency of PLOs and associated Grades of BU graduates. After detailed discussion, the Council approved the introduction of proposed certificates at the school's level, as and when applied by a student.

#### **Decision 4301**

61. Certification of PLOs attainment at the school level is approved by the Council for adoption with immediate effect. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BSEAS-IC, Principal BSEAS-KC	Dean ES
<b>Statutory Documents Affected</b>	Nil	

### **Item 4302: Revision of Electrical Engineering Programme Educational Objectives (PEOs)**

Sponsor: Dean ES

Referral Authority: FBOS-ES

#### **Summary of the Case**

62. Programme Educational Objectives (PEOs) of the Dept of EE at BSEAS-IC and BSEAS-KC have been revised by the FBOS-ES for appropriate wording. Revised PEOs will be presented for approval by the Council.

#### **Discussion**

63. HOD EE BSEAS-IC presented the revised PEOs of the Programmes of the Dept of EE. After brief discussion, the Council approved the revised PEOs for adoption from Fall 2023 semester.

#### **Decision 4302**

64. PEOs for the Programmes of the Dept of EE are approved by the Council as given at **Appendage 4302**, for adoption from Fall 2023 semester. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BSEAS-IC, Principal BSEAS-KC, DIT	Dean ES
<b>Statutory Documents Affected</b>	Updating of BU website	

**Item 4303: Addition of IDEE/ Elective Courses in BEE Roadmap**

Sponsor: Dean ES

Referral Authority: FBOS-ES

**Summary of the Case**

65. Roadmap of BEE Programme has been revised by the FBOS-ES for addition of some Inter-Disciplinary Engineering Elective (IDEE) courses, i.e. *System Engineering, Introduction to Sports Engineering, Computer Vision, and Introduction to Quantum Computing Reorganization*. Revised Roadmap will be presented for approval by the Academic Council.

**Discussion**

66. Dean ES presented the contents of proposed elective. He confirmed that no additional FMs would be required for revised Roadmap/ addition of electives. DORIC proposed to review a course pre-requisite, while DAcad proposed to change a course title. Both the proposals were conceded by Dean ES.

67. DQA opined that the lab hours allocated for revised Roadmap were not sufficient. During extensive discussion on the lab hrs, DAcad apprised that inclusion of Lab was not included in the agenda and that the roadmap being presented comprised of approved courses only. After further discussion, the Council approved the addition of electives in BEE Roadmap, including the additions/ changes proposed by DORIC and DAcad.

**Decision 4303**

68. Revised Roadmap of BEE Programme is approved by the Council along with amended course titles and course pre-requisite as given at **Appendage 4303**, for adoption from Fall 2023 semester. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BSEAS-IC, Principal BSEAS-KC, DA, CE, DIT	Dean ES
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

**Item 4304: Revision of Roadmap of BSE Programme**

Sponsor: Dean ES

Referral Authority: FBOS-ES

**Summary of the Case**

69. Roadmap of BSE Programme has been revised by the FBOS-ES for reorganization of core courses in the semester distribution, updating of course codes and addition of some elective courses. Revised Roadmap will be presented for approval by the Academic Council.

**Discussion**

70. HOD SE BSEAS-IC presented the revised Roadmap of BSE Programme. Dean H&SS indicated some changes required in the common course titles (covered in item 4318). After brief discussion, the Council approved the revised Roadmap for adoption from Fall 2023 semester, including updated course titles as proposed by Dean H&SS.

**Decision 4304**

71. Revised Roadmap of BSE Programme is approved by the Council as given at **Appendage 4304**, for adoption from Fall 2023 semester. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BSEAS-IC, Principal BSEAS-KC, DA, CE, DIT	Dean ES
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

#### **Item 4305: Review of Eligibility for Internship Criteria**

Sponsor: Dean ES

Referral Authority: FBOS-ES

##### **Summary of the Case**

72. Usually, students are eligible to participate in Internships after the completion of their 6<sup>th</sup> semester. FBOS-ES has proposed to change the criteria to the 4<sup>th</sup> semester limit, so that the students can benefit from the experience in selecting their academic stream. The proposal needs to be approved by the Academic Council.

##### **Discussion**

73. Dean ES explained the benefit of early Internship by the students, which would provide them with more time to complete the mandatory degree requirement within the regular duration. Dean Law conveyed concern on allowing the Internship after the 4<sup>th</sup> semester in the LLB Programme, which comprises of 10 semesters. DAcad proposed to adopt the early Internship option for all 4-years UG Programmes, while retaining the current timeline for the 5-years UG Programmes (LLB and DPT). The proposal was supported by all the Deans as well as all the Directors of CUs and approved by the Council for adoption from Fall 2023 semester.

##### **Decision 4305**

74. The students of 4-years UG Programmes of all the faculties (ES, MS, H&SS, Law, HS) are allowed to undertake the mandatory (0 x CH) Internship after the 4<sup>th</sup> semester, with immediate effect. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	All CUs, DA, CE, DIT	All Deans
<b>Statutory Documents Affected</b>	Updating of Students Handbook, BU website and SRD	

#### **Item 4306: Teacher and Course Feedback Restrictions for Students with Short Attendance**

Sponsor: Dean ES

Referral Authority: FBOS-ES

##### **Summary of the Case**

75. Typically, students who have dropped a course or have a short attendance record are still allowed to participate in providing feedback for the course and respective teacher. FBOS-ES has proposed that they should not be allowed to participate in providing such feedback, to prevent any negative influence on the course and teacher; subject to approval by the Academic Council.

##### **Discussion**

76. Dean ES explained the proposal to the Council. Various options were discussed for the evaluation of teachers and related feedback through students. The Chair concluded that such feedback was essential to determine the factual standard of teaching. He advised that suitable weightage may be given to the feedback of students with low attendance, but the same should not

be ceased altogether. DG BUKC proposed to review the prevailing feedback mechanism. The Chair consented and directed to undertake the same through a committee.

#### **Decision 4306**

77. The following was decided by the Council:

- a. Prevailing students feedback mechanism is to be continued with suitable weightage to the feedback of students with low attendance. Instructions to this effect are to be conveyed by the Registrar Office.
- b. Students feedback mechanism is to be reviewed for suitable improvements through a committee formulated by the Registrar Office.
- c. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	All CUs, Registrar	Registrar
Statutory Documents Affected	Nil	

#### **Item 4307: Roadmap 2023 for Undergraduate Computing Programmes**

Sponsor: Dean ES

Referral Authority: FBOS-ES

#### **Summary of the Case**

78. The National Computing Education Accreditation Council (NCEAC) has published the new curriculum for all Computing Programmes on 16 February 2023. The new curriculum, recommended by FBOS-ES, needs to be approved by the Academic Council for implementation wef Fall 2023 semester.

#### **Discussion**

79. Respective HODs presented the revised Roadmaps, as listed below:

- a. HOD CS BSEAS-KC. BS (CS).
- b. HOD IT BULC. BS (IT).
- c. HOD AI BSEAS-IC. BS (AI).

80. After brief discussion on each Roadmap, the same were approved as presented.

#### **Decision 4307**

81. Revised Roadmaps of BS (CS), BS (IT) and BS (AI) were approved as given at **Appendage 4307A**, **Appendage 4307B** and **Appendage 4307C** respectively, for adoption from Fall 2023 semester. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	Dir BULC, Principal BSEAS-IC, Principal BSEAS-KC, DA, CE, DIT	Dean ES
Statutory Documents Affected	Updating of Prospectus, BU website and SRD	

#### **Item 4308: Addition of New Sections in BS(CS) Programme at BULC**

Sponsor: Dean ES

Referral Authority: FBOS-ES

#### **Summary of the Case**

82. The current infrastructure of BULC was deemed insufficient to increase the BS(CS) intake. With the likely availability of an adjacent building for rent, it may be possible to accommodate

additional sections for this Programme at BULC, subject to the NCEAC approval. The proposal needs to be approved by the Academic Council, followed by initiating an application to NCEAC for the change of scope i.e. increase of 1 x section in BS (CS) Programme.

### **Discussion**

83. HOD CS BULC presented the proposal for consideration by the Council. DQA highlighted the implications of approaching the NCEAC for subject proposal (accreditation body for CS Programmes) without adequate overall improvement of BULC infrastructure. As per previous experience, if NCEAC considers the available BULC setup as inadequate, it could even slash the current intake authorization for regular Programmes already being offered. DAcad proposed to instead pursue the enhancement of students' intake in a non-accredited Programme. After detailed discussion, the BULC proposal was considered unsuitable due to prevailing physical limitations of the Campus. The Chair directed the CU to instead prepare a workable option to enhance the students' intake, in next 2 weeks.

### **Decision 4308**

84. BULC is to prepare a better, workable proposal to enhance the students' intake. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	Dir BULC	Dir BULC
<b>Statutory Documents Affected</b>	Nil	

### **Item 4309: Correction of Pre-requisite Course Code for Programming for Artificial Intelligence Lab**

Sponsor: Dean ES

Referral Authority: FBOS-ES

#### **Summary of the Case**

85. Launch proposal for *BS in Artificial Intelligence* was approved in 36<sup>th</sup> ACM held on 1-3 December 2020, vide Agenda Item 3628. The roadmap approved for this Programme contains a typo error at page 207 of Appendage 3628, whereby the pre-requisite course for ***Programming for Artificial Intelligence Lab*** (AIL 202) has been erroneously mentioned as **AIL 202** instead of the correct pre-requisite **AIC 201**.

86. The matter has been deliberated by the FBOS-ES, which has recommended the amendment in said Roadmap by replacing the pre-requisite course for ***Programming for Artificial Intelligence Lab*** as **AIC 201**; subject to approval by the Academic Council.

#### **Discussion & Decision 4309**

87. After brief discussion, the Council approved the proposed amendment in BS (AI) Roadmap effective from Fall 2023 semester. Point Dropped.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BSEAS-IC, Principal BSEAS-KC, DA, CE, DIT	Dean ES
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

**Item 4310: Revision of BCE Curriculum for Swapping Electives and replacing the Pre-requisite**

Sponsor: Dean ES

Referral Authority: FBOS-ES

**Summary of the Case**

88. FBOS-ES has proposed the addition of several Elective courses, including ***Hardware Verification, Compiler Construction, and Theory of Automata*** in BCE curriculum. Additionally, it is proposed that MPI may be offered in the 4<sup>th</sup> semester and CAO in the 5<sup>th</sup> semester to meet the industry requirements. Also, review of the pre-requisite of Digital Image Processing and Operating System has also been proposed. The new proposed pre-requisite of the Digital Image Processing is; SNS (EEN-313) instead of OS (CSC-320) and the new pre-requisite of operating System is Data Structure and Algorithm (CSC 221) instead of CAO (CEN 221). The proposal needs to be approved by the Academic Council.

**Discussion**

89. HOD CE BSEAS-IC presented the proposals as given at **Appendage 4310**. After brief discussion, the same was approved for adoption from Fall 2023 semester.

**Decision 4310**

90. Changes in BCE Roadmap are approved as given at **Appendage 4310**, effective from Fall 2023 semester. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BSEAS-IC, Principal BSEAS-KC, DA, CE, DIT	Dean ES
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

**Item 4311: Inclusion of New Course in the Roadmap of MS and PhD in Mathematics**

Sponsor: Dean ES

Referral Authority: FBOS-ES

**Summary of the Case**

91. FBOS-ES has proposed to include a new course, ***Lie Group Methods for Differential Equations***, for inclusion in the Roadmap of MS and PhD in Mathematics. The proposal needs to be approved by the Academic Council.

**Discussion**

92. Dr Jaffer (Maths FM at BUIC) presented the proposal, explaining the proposed course to be a new domain relevant in related research. The proposal was also supported by Principal BH3S-KC in capacity of subject matter expert. After brief discussion, the proposal was approved by the Council with the details given at **Appendage 4311**.

**Decision 4311**

93. Proposed course was approved by the Council for inclusion in the Roadmaps of MS and PhD in Mathematics, as per the details given at **Appendage 4311**. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	BSEAS-IC, DA, CE, DIT	Dean ES
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

**Item 4312: Changes in Course Titles and Course Codes for FYP/ UG and PG Thesis and Common Courses**

Sponsor: Dean ES

Referral Authority: FBOS-ES

**Summary of the Case**

94. FBOS-ES has proposed changes in Course Titles and Course Codes of different ES Programmes. The proposal needs to be approved by the Academic Council.

**Discussion**

95. Dean ES presented the amended course titles and course codes for Final Year Project (FYP) in Undergraduate and Postgraduate Programmes of ES, for commonality and conformance with BU Course Codes Policy. After brief discussion, the Council approved the amended course codes and course titles as given at **Appendage 4312**.

**Decision 4312**

96. Amended course codes and course titles are approved as given at **Appendage 4312** for changes in respective Roadmaps. Point Dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	All CUs, DA, CE, DIT	Dean ES
<b>Statutory Documents Affected</b>	Updating of Prospectus, CCH, SRD and BU website	

**Item 4313: Launching the Optional Research Stream *Capstone Research Projects* in UG Programmes**

Sponsor: Dean MS

Referral Authority: FBOS-MS

**Summary of the Case**

97. In line with the significance of the relevance and impact of research, BBS-IC has identified the need to offer Capstone Research Projects within the existing curriculum of the Faculty of MS UG Programmes, as the 3<sup>rd</sup>/ optional stream). The proposal, recommended by FBOS-MS, needs to be approved by the Academic Council.

**Discussion**

98. The proposal was presented by HOD MS BBS-IC, as given at **Appendage 4313**. Dean MS highlighted the inherent enhanced interaction with industrial expertise through paid co-supervision. Pro-Rector (RIC) noted that the concept of Capstone Project was adopted in the U.S. since long for the UG Programmes. DAcad endorsed the comments and indicated that Capstone Project was already included in BS (SCM) Roadmap offered by BU. He further highlighted that 4 x UG and 3 x PG Programmes offered by BU included the Project option in the last year, and suggested to adopt the Capstone concept in these, instead of a separate stream, without employment of co-supervisors from the industry. DQA supported the introduction of Capstone as a separate stream for desired industrial linkages, on the grounds that the already offered projects were conceived by the students (in-house) while the Capstone Projects would be based on prevailing industrial requirements. DPGP questioned the efficacy of projects in PG Programmes since that level required research related activities, which were more suitably pursued through Theses. DORIC indicated that BU rules already catered for payment to co-supervisors while remaining within the amount approved for related supervision.

99. After extensive discussion on all related aspects, the Council approved the inclusion of Capstone Project in all UG Programmes of the Faculty of Management Sciences with effect from

Fall 2023 semester, while conforming to the prevailing rules for payment to co-supervisors. The option may be adopted for PG Programmes after HEC consent, as the NOCs obtained for these programmes do not include this option.

### **Decision 4313**

100. Inclusion of Capstone Project in all UG Programmes of the Faculty of MS is approved for adoption from Fall 2023 semester. For PG Programmes, HEC consent is to be pursued through QA Dte. Progress is to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	Dir BULC, Principal BBS-IC, Principal BBS-KC, DA, CE, DQA, DIT	Dean MS
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

### **Item 4314: Launch of New Programme *Master of Science in Business Analytics***

Sponsor: Dean MS

Referral Authority: FBOS-MS

#### **Summary of the Case**

101. In line with scope, significance and market analysis, BBS-IC has proposed to launch a new postgraduate Programme, *Master of Science in Business Analytics*. The proposal, recommended by FBOS-MS, needs to be approved by the Academic Council.

#### **Discussion**

102. HOD MS BBS-IC presented the proposal as given at **Appendage 4314**. Modalities and financial viability of the Programme were discussed threadbare. BULC highlighted that proposed Roadmap appeared to be overlapping with the Roadmap of BS (CS), and that Business Studies students may be constrained in studying the proposed Data Sciences course comprising of high-level language like Python. DQA indicated that offering of dual timelines (1.5 years fast-track and 2 years' regular stream) would not be acceptable to HEC. DAcad asked for the clarity on which new courses were included in the proposal, along with course codes of all existing courses. After further discussion, the Chair principally approved the proposal, to be followed by a separate presentation resolving the highlighted queries, for the Programme launch in fall 2023 semester.

### **Decision 4314**

103. The proposal for *MS in Business Analytics* is approved for launch in Fall 2023 semester subject to issuance of the NOC by the HEC. Progress is to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BBS-IC, DQA	Dean MS
<b>Statutory Documents Affected</b>	Nil	

### **Item 4315: Revised Strategic Plan for Bahria Business School Islamabad**

Sponsor: Dean MS

Referral Authority: FBOS-MS

#### **Summary of the Case**

104. BBS-IC has developed a Revised Strategic Plan in order to comply with the requirements of national and international accreditation bodies. This Revised Strategic Plan of BBS-IC has been mainly extracted from BU Strategic Plan in line with the related Strategic Areas, Targets, and KPI. The proposed Plan, recommended by FBOS-MS, needs to be approved by the Academic Council.

### Discussion

105. The proposal was presented by HOD MS BBS-IC as given at **Appendage 4315**. DIO (also acting as DSMP) explained the key points of proposed Plan and its similarities with BU Revised Strategic Plan. After brief discussion, the Council approved the Plan as presented.

### Decision 4315

106. Revised Strategic Plan of BBS-IC is approved for adoption as given at **Appendage 4315**. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BBS-IC, DIT	Dean MS
<b>Statutory Documents Affected</b>	BU website to be updated	

### **Item 4316: Change of Course in BS (SCM) Roadmap**

Sponsor: Dean MS

Referral Authority: FBOS-MS

### Summary of the Case

107. Course *Statistical Inference & Quantitative Research* (QTM 205) is offered in 5<sup>th</sup> Semester of BS (SCM) Programme, whereas about half the similar course contents are contained in another course *Research Methods and Techniques* (RMT 240) offered in 6<sup>th</sup> Semester of the same Programme. In order to reduce the duplication of course contents, FBOS-MS has proposed to change the said course with *Statistical Inference* (QTM 204) which is already offered in other BS Programmes of the Faculty of MS.

### Discussion & Decision 4316

108. After brief discussion, the Council approved to replace the course *Statistical Inference & Quantitative Research* (QTM 205) in BS (SCM) Roadmap 5<sup>th</sup> semester with the course *Statistical Inference* (QTM 204), effective from Fall 2023 semester. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BBS-IC, Principal BBS-KC, DA, CE, DIT	Dean MS
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

### **Item 4317: Change of Course *Introduction to Blue Economy and Green Supply Chain* with *Introduction to Blue Economy and Green Supply* in BS UG Programmes**

Sponsor: Dean MS

Referral Authority: FBOS-MS

### Summary of the Case

109. As an initiative of introducing the Maritime related courses in BU academic Programmes, the course **Introduction to Blue Economy and Green Supply Chain** (SCM 361) was introduced in all the Roadmaps of BBS Programmes and approved in 36<sup>th</sup> ACM. However, the nature of this course requires a background knowledge of sustainability, environmental challenges, and supply chain management. The course is not only aligned with the maritime domain but also with the UN SDGs.

110. The challenge of teaching this course is that it has diverse content covering two different domains i.e. **Blue Economy** and **Green Supply Chain** in a single course. Moreover, teaching this course without background knowledge of sustainability has the difficulty to capture the true essence of the course contents.

111. FBOS-MS has, therefore, recommended that another course having a wider scope and greater background information may be taught to the students for intended objectives. Titled ***Blue and Green Economy*** (ECO 261), the proposed course will have a vast scope and capture the whole essence of blue and green economy. The proposal, recommended by FBOS-MS, needs to be approved by the Academic Council.

#### **Discussion**

112. HOD MS BUIC presented the proposal along with the details of the suggested new course. Extensive discussion was undertaken on the difference between Blue Economy and Green Economy and the need to adopt the proposed change. DAcad read the UN definition of both, indicating them to be separate domains, and proposed to review the proposed course title as ***Blue Economy and Green Economy***. Pro-Rector (RIC) suggested retaining the Blue Economy domain while separating the Green Economy aspect. After further discussion, the Chair directed to review the proposal for retention of Blue Economy aspect and process the proposal on file for finalization in early timeframe.

#### **Decision 4317**

113. The proposal is to be reviewed for retention of Blue Economy aspect and processed on file for early approval. Progress is to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BBS-IC	Dean MS
<b>Statutory Documents Affected</b>	Nil	

#### **Item 4318: Approval of Revised Course Titles of Common Essential Courses**

Sponsor: Dean H&SS

Referral Authority: FBOS-HSS

#### **Summary of the Case**

114. The Faculty of Humanities and Social Sciences has rectified the major issues in course titles and course codes of common essential courses for all faculties (sponsored by the Faculty of HSS), to attain standardized related curriculum. However, some anomalies were recently noted for a few courses which have been resolved with the consent of other faculties, for subsequent approval by the Academic Council to amend the related course titles.

115. The proposal, recommended by FBOS-HSS as given at **Appendage 4318**, needs to be approved by the Academic Council.

#### **Discussion**

116. Dean H&SS presented the revised course titles of common essential as given at **Appendage 4318**, which were approved by the Council as proposed.

#### **Decision 4318**

117. Revised course titles of common essential courses are approved by the Council, as given at **Appendage 4318**, for adoption and updating of related documents/ BU website. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BH3S, DA, CE, DIT	Dean H&SS
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

**Item 4319: Changes in the Roadmaps of *BSS, BS in Media Studies, BS in TVB & DM, BS in Public Health and BS in English***

Sponsor: Dean H&amp;SS

Referral Authority: FBOS-HSS

**Summary of the Case**

118. Adoption of revised course titles proposed vide the last agenda item required amendments in related Roadmaps, as recommended by FBOS-HSS. The proposal needs to be approved by the Academic Council.

**Discussion**

119. Dean H&SS presented the proposal as given at **Appendage-4319**. DAcad proposed for approval of amendments in related Roadmaps of other faculties as well. The proposal was supported by DG BUKC and DQA and approved by the Council.

**Decision 4319**

120. Course titles listed at **Appendage-4319** are approved for amendment in Roadmaps of *BSS, BS in Media Studies, BS in TVB & DM, BS in Public Health, BS in English* and related Roadmaps of other faculties, for adoption from Fall 2023 semester. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	All Deans, DA, CE, DIT	Dean H&SS
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

**Item 4320: Addition of Elective Courses in *BS Media Studies* Roadmap as per Industry Recommendations**

Sponsor: Dean H&amp;SS

Referral Authority: FBOS-HSS

**Summary of the Case**

121. Keeping in view the need of practical learning, rapidly changing landscape of media and based on valuable feedback of industry experts as well as graduating students of Bahria University, the Dept of Media Studies, BH3S-IC has proposed the expansion of courses in *BS in Media Studies* as per industry as well as the BU academic audit requirements. The proposal has been deliberated by concerned DBOS and FBOS, and recommended for consideration by the Academic Council.

122. The proposal to add the following new courses in Elective's list of *BS in Media Studies*, with outlines of proposed courses, needs to be approved by the Academic Council:

- a. Film Analysis (MTB 318).
- b. Introduction to Theater (MTB 319).
- c. Media Entrepreneurship (MTB 420).

**Discussion**

123. HOD Media Studies BH3S-IC presented the proposal as given at **Appendage-4320**. DQA emphasized that mapping of current courses with the new will have to be formulated by the Dept to facilitate the students following the current Roadmap (to be amended) in the next few semesters. HOD Media Studies assured that the same was being undertaken at the school level. After further discussion, the Council approved the addition of new elective courses in related Roadmap.

### **Decision 4320**

124. The Council approved the inclusion of following electives in BS in Media Studies Roadmap as per industry recommendations, while dropping the point from ACM agenda:

- a. Film Analysis (MTB 318).
- b. Introduction to Theater (MTB 319).
- c. Media Entrepreneurship (MTB 420).

Action Required	Action	Responsibility
Implementation of the Decision	Principal BH3S-IC, Principal BH3S-IC, DA, CE, DIT	Dean H&SS
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

### **Item 4321: Addition of Elective Courses in BS in TV Broadcasting & Digital Media Roadmap as per Industry Recommendations**

Sponsor: Dean H&SS

Referral Authority: FBOS-HSS

#### **Summary of the Case**

125. Based on the valuable feedback of industry experts and the 1<sup>st</sup> graduating batch of *BS in TV Broadcasting & Digital Media*, the Dept of Media Studies, BH3S-IC has proposed the expansion of courses in *BS in Media Studies* as per industry requirements. The proposal was deliberated by concerned DBOS and FBOS, and recommended for consideration by the Academic Council.

126. The proposal to add the following new courses in Elective's list of *BS in TV Broadcasting & Digital Media*, needs to be approved by the Academic Council:

- a. Photography (MED 110).
- b. Video Editing (MED 308).
- c. Sound Design (MED 315).
- d. Media Entrepreneurship (MTB 420).
- e. Film Analysis (MTB 318).

#### **Discussion**

127. HOD Media Studies BH3S-IC presented the proposal with outlines of proposed courses as given at **Appendage-4321**. After brief discussion, the Council approved the proposed courses, along with related outlines.

### **Decision 4321**

128. Addition of the following new courses in Elective's list of *BS in TV Broadcasting & Digital Media* is approved by the Council with outlines of proposed courses as given at **Appendage-4321**, for adoption from Fall 2023 semester, while the point is dropped from the ACM agenda:

- a. Photography (MED 110).
- b. Video Editing (MED 308).
- c. Sound Design (MED 315).
- d. Media Entrepreneurship (MTB 420).
- e. Film Analysis (MTB 318).

Action Required	Action	Responsibility
Implementation of the Decision	Principal BH3S-IC, Principal BH3S-KC, DA, CE, DIT	Dean HS&S
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

**Item 4322: Replacement of Major Core Courses with Newly Proposed Major Core Courses in *BS in TV Broadcasting & Digital Media***

Sponsor: Dean H&SS

Referral Authority: FBOS-HSS

**Summary of the Case**

129. Based on the valuable feedback of industry experts and the 1<sup>st</sup> graduating batch of *BS in TV Broadcasting & Digital Media*, the Dept of Media Studies, BH3S-IC has proposed the replacement of some core courses from related Roadmap. The proposal has been supported by concerned DBOS and FBOS.

130. The proposal to replace some core courses in the Roadmap for *BS in TV Broadcasting & Digital Media*, as listed below and with the outlines of proposed new courses given at **Appendage-4322**, needs to be approved by the Academic Council:

Currently Offered Courses		Proposed New Courses	
Course Title	Course Code	Course Title	Course Code
Introduction to Digital Gaming	MTB 213	Introduction to Film Studies	MED 113
Television Lighting System	MTB 304	World Cinema	MED 309
Postproduction	MTB 417	Screenplay Writing	MTB 320
TV Studio & Floor Management	MTB 401	Mass Communication Theories	MED 303
Television, Digital Media & Society	MTB 315	Podcast Development and Production	MTB 421
TV Script Writing	MTB 301	Introduction to Theater	MTB 319
Theories of Mass Communication – I	MTB 202	Digital Media Literacy (From Electives)	MTB 419
Theories of Mass Communication – II	MTB 212	Drama Production (From Electives)	MTB 403

**Discussion**

131. HOD Media Studies BH3S-IC presented the proposal with outlines of proposed courses as given at **Appendage-4322**. After brief discussion, the Council approved the replacement of courses as presented, along with related outlines.

**Decision 4322**

132. Replacement of following courses in the Roadmap of *BS in TV Broadcasting & Digital Media* is approved by the Council, with outlines of proposed courses as given at **Appendage 4322**, for adoption from Fall 2023 semester, while the point is dropped from the ACM agenda:

Currently Offered Courses		Proposed New Courses	
Course Title	Course Code	Course Title	Course Code
Introduction to Digital Gaming	MTB 213	Introduction to Film Studies	MED 113
Television Lighting System	MTB 304	World Cinema	MED 309
Postproduction	MTB 417	Screenplay Writing	MTB 320
TV Studio & Floor Management	MTB 401	Mass Communication Theories	MED 303

Television, Digital Media & Society	MTB 315	Podcast Development and Production Introduction to Theater	MTB 421
TV Script Writing	MTB 301		MTB 319
Theories of Mass Communication – I	MTB 202	Digital Media Literacy (From Electives)	MTB 419
Theories of Mass Communication – II	MTB 212	Drama Production (From Electives)	MTB 403

Action Required	Action	Responsibility
Implementation of the Decision	Principal BH3S-IC, Principal BH3S-KC, DA, CE, DIT	Dean H&SS
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

#### **Item 4323: Launch of New Programme *Master of Science in Criminology* at BH3S-IC**

Sponsor: Dean H&SS

Referral Authority: FBOS-HSS

##### **Summary of the Case**

133. Criminology is one of the most pivotal branches of Sociology and its higher education is having a great demand within the contemporary Pakistani society. BH3S currently offers three independent MS Programmes, namely ***International Relations, Government and Public Policy*** and ***Applied Anthropology***. The Dept of HSS, BH3S-IC has proposed to launch a full-fledged separate degree Programme, ***MS in Criminology*** from Fall 2023 semester. The proposal needs to be approved by the Academic Council.

##### **Discussion**

134. Dr. Asim Muneeb Khan (Asstt Prof) Dept of HSS BH3S-IC presented the proposal as given at **Appendage 4323**. The Chair advised to include the course/ contents pertaining to unethical practices in the police and recommended remedies. DQA proposed to rephrase the course title ***Pakistan Penal Code (PPC), Criminal Procedure Code (CRPC) and Crime*** for removal of abbreviations and the fact that the course outline will not comprise of studying the complete ***Pakistan Penal Code or Criminal Procedure Code***. DAad suggested to include the prefix ***Introduction to*** or some other suitable phrase for said course. After further discussion, the launch proposal was principally approved for pursuing the HEC NOC; subject to changes in proposed courses/ course outlines.

##### **Decision 4323**

135. Launch of ***MS in Criminology*** is principally approved as given at **Appendage 4323** to pursue the HEC NOC; subject to inclusion of course/ contents pertaining to unethical practices in the police and recommended remedies. Progress is to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BH3S-IC, DQA	Dean HS&S
<b>Statutory Documents Affected</b>	Nil	

#### **Item 4324: Establishment of the Department of Professional Psychology at BUIC H-11 Campus**

Sponsor: Dean PP

Referral Authority: FBOS-PP

##### **Summary of the Case**

136. In order to improve the financial viability of BUIC H-11 Campus, it has been decided at BUHO to launch additional sections of high intake Programmes normally offered at E-8 Campus.

The proposal to establish the Dept of PP at BUIC H-11 Campus, as recommended by FBOS-PP and principally approved by the Rector through related case file, needs to be approved by the Academic Council.

#### **Discussion & Decision 4324**

137. Establishment of the Dept of Professional psychology at H-11 Campus of Bahria University is approved by the Council with effect from Spring 2023 semester, as presented by Principal BSPP BH3S-IC. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BSPP, DA, DIT	Dean PP
<b>Statutory Documents Affected</b>	Updating of Prospectus and BU website	

#### **Item 4325: Launch Proposal of *MS in Medical Lab Sciences (MS-MLS)* at BUCAHHS, BUHSC-I**

Sponsor: Principal BUCAHHS

Referral Authority: FBOS-HS

#### **Summary of the Case**

138. As per proposed sequential plan for the establishment of BU College of Allied Health Sciences (BUCAHHS) in 40<sup>th</sup> ACM, it is suggested that *MS in Medical Lab Sciences* Programme may be launched in line with the BUHSC-PGI vision and to strengthen BUCAHHS, commencing from Fall 2023 semester subject to the completion of BUDC building. The proposal, recommended by FBOS-HS, needs to be approved by the Academic Council.

#### **Discussion**

139. Principal BUCAHHS BUHSC-I presented the proposal as given at **Appendage 4324**. After brief discussion, the Council approved the launch proposal in principle, for pursuing the NOC from the HEC.

#### **Decision 4325**

140. Launch proposal for *MS in Medical Lab Sciences* is approved by the Council with effect from Fall 2023 semester subject to issuance of NOC by the HEC. Progress is to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BUCAHHS, DQA	Dean HS
<b>Statutory Documents Affected</b>	Nil	

#### **Item 4326: Issuance of Equivalency Certificate from Percentage to GPA/CGPA for MBBS and BDS Programmes**

Sponsor: Dean HS

Referral Authority: FBOS-HS

#### **Summary of the Case**

141. Conversion of percentages attained in the final examinations results into equivalent GPA/CGPA is often required by the MBBS and BDS graduated students while applying for higher studies abroad and to claim reimbursement of tuition fee (for wards of Govt employees and in need of financial assistance). Presently there is no approved formula/ format for such conversion adopted by BU. BUHSC DME has formulated a suitable equivalency frame work, as required by BUHO Exams Dte, which is aligned with the HEC/ BU criteria for the conversion of semester-based Programmes, and is recommended by FBOS-HS for adoption in case of annual examinations results (MBBS, BDS). The proposal needs to be approved by the Academic Council.

### **Discussion**

142. HOD DME BUHSC presented the proposal as given at **Appendage 4326** (under the heading Proposed Framework). The Chair enquired about the practice of declaring the MBBS/ BDS results in credit hours format by other Colleges and was informed that the same had been adopted some other local institutions. HOD DME added that BUHSC could also adopt the same format in about 6 months' time. The Chair directed to expedite the process for completion within 3 months. DAcad proposed to amend the graduation of proposed conversion table to cover all the fractions of percentages, as practiced for credit hours based grading system (included at **Appendage 4326** under the heading Finalized Framework). The Council consented the same.

### **Decision 4326**

143. The following was approved by the Council:

- a. Equivalency framework for conversion of MBBS/ BDS final examinations results percentages into equivalent GPA/ CGPA is approved as given at **Appendage 4326**, under the heading **Finalized Framework**.
- b. BUHSC is to finalize the formulation of MBBS/ BDS final examinations results in credit hours format by the second week of July 2023 and process it for the ACM approval.
- c. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	Principal BUMC, CE, DHS	DG BUHSC
<b>Statutory Documents Affected</b>	Nil	

### **Item 4327: Issuance of Programme Related Certificates to DPT Graduates of BUCPT**

Sponsor: Principal BUCPT

Referral Authority: FBOS-HS

### **Summary of the Case**

144. DPT is an internationally recognized 5-years degree Programme offered at BUCPT, BUHSC. DPT graduates usually apply for the credential evaluation to pursue jobs or higher studies in the USA, UK, Middle East and other countries, which can be fulfilled through various types of certificates issued by the Exams Dte. Proposed certificates for DPT graduates, recommended by FBOS-HS and concurred by the BUHO Dtes after certain changes, need to be approved by the Academic Council.

### **Discussion**

145. Principal BUCPT presented the proposal for issuance of separate certificates to DPT graduates for completion of required credit hours, clinical hours training, English proficiency and Provisional Certificate to facilitate employment or higher studies abroad, as given at **Appendage 4327**. Upon query, he explained that the proposed certificates had been scrutinized by relevant BUHO Dtes (CE, DAAC, DQA) and necessary amendments incorporated through DHS. It was further indicated that the certificates will be issued at BUHSC level. After reviewing all the certificates, the Council approved their adoption with immediate effect.

### **Decision 4327**

146. Proposed DPT certificates are approved for adoption as given at **Appendage 4327**, for issuance at BUHSC level. Point dropped.

Action Required	Action by	Responsibility of
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Implementation of the Decision	Principal BUCT	DG BUHSC
<b>Statutory Documents Affected</b>		Nil

**Item 4328: Providing Outpatient Facility to Non-BU Employees/ Students against Payment at BUMC Family Medicine Clinic**

Sponsor: Dean HS

Referral Authority: Case File

**Summary of the Case**

147. BUMC Dept of Family Medicine was approved in 35<sup>th</sup> & 36<sup>th</sup> ACM with the objective to fulfill the pre-requisite of PMDC and provide learning opportunity to BUMC students under one roof. The College has now proposed to extend this service to the general public on minimum cost, to enable the diversity of cases handled by the BUMC students in order to enhance their knowledge & clinical skills, while bearing the cost of these services or related expenses to some extent. The proposal needs to be approved by the Academic Council.

**Discussion**

148. HOD Dept of Family Medicine, BUMC presented the proposal. After brief discussion, the proposal was approved with instructions by the Chair to avoid any malpractices and treating outpatients well, with mannerism in true letter and spirit.

**Decision 4328**

149. Extension of BUMC outpatient facility to the general public on minimum cost is approved by the Council, with instructions to avoid any malpractices and treating outpatients well. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	Principal BUMC	DG BUHSC
<b>Statutory Documents Affected</b>		Nil

**Item 4329: Ratification of Approved *BS in Biotechnology* Roadmap aligned with Previous Format of HEC Curriculum**

Sponsor: Principal BUAHS

Referral Authority: FBOS-HS

**Summary of the Case**

150. Proposal of *BS in Biotechnology* 4-Yrs Undergraduate degree Programme at BUAHS was approved in the 41<sup>st</sup> ACM (held on 17-19 May 2022), for launch in Spring 2023 semester. The curriculum of said Programme was presented in two formats: based on the prevailing HEC curriculum of *BS in Biotechnology*, and based on the requirements of UGE Policy 2020. The two formats differed only in the sequencing or placement of courses in each semester. The second format, complying with HEC UGE Policy 2020, was approved in said ACM because of the prevailing HEC instructions to adopt the said Policy by Fall 2022 semester. However, the HEC has reviewed its stance in October 2022 and taken the feedback of the HEIs to address their concerns on earlier promulgated UGE Policy. Meanwhile, some changes have been conveyed in earlier Policy, which obviate the need to adopt the format of *BS in Biotechnology* Roadmap approved in the 41<sup>st</sup> ACM.

151. The matter has been deliberated by FBOS-HS, which has recommended to adopt the earlier format of *BS in Biotechnology* Roadmap, given at **Appendage 4329**, as the more suitable for

BUCAHS students. The recommendation may be approved by the Council for adoption by BUCAHs from Spring 2023 semester.

### **Discussion**

152. Principal BUCAHs presented the proposal and was approved after thorough deliberation.

### **Decision 4329**

153. Adoption of Roadmap for *BS in Biotechnology* given at **Appendage 4329** by BUCAHs from Spring 2023 semester is approved by the Council. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	Principal BUCAHs, DA, CE, DIT	Dean HS
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

### **Item 4330: Review of BU HR Policy Document 2017 as HR Policy Manual 2023**

Sponsor: DHR

Referral Authority: Case File

### **Summary of the Case**

154. BU HR Policy Document 2017 has been reviewed by a committee constituted at BUHO. Revised document thus prepared with feedback from all CUs and BUHO Dtes has been retitled as HR Policy Manual 2023. The revised document needs to be approved by the Academic Council, followed by ratification by the Executive Committee.

### **Discussion**

155. DAcad presented the subject document for review by the Council, highlighting the major changes as given at **Appendage 4330 A**. During detailed discussion on all the proposed changes, the Chair directed to review some contents, which are given at **Appendage 4330 B**.

156. DG BUKC highlighted the short time given for the feedback on changes in Promotion Policy for the Academic Employees, which form a part of the subject review. The Chair directed to process that part separately for approval through a Special ACM.

157. DG BUKC further proposed to cancel all previous policies/ instructions/ notifications pertaining to the promotion of BU employees (academic/ non-academic) after the promulgation of BU HR Policy Manual 2023, to avoid any duplication or misinterpretation. The proposal was conceded by the Chair.

### **Decision 4330**

158. The following was decided by the Council:

- a. BU HR Policy Manual 2023 proposed as a replacement of BU HR Policy Document 2017 is approved for processing the ratification by the Executive Committee, with the amendments given at **Appendage 4330B**.
- b. Amendments in Promotion Policy for the Academic Employees are to be processed separately and approved through a Special ACM.
- c. All previous policies/ instructions/ notifications pertaining to the promotion of BU employees (academic/ non-academic) are to be cancelled after the promulgation of BU HR Policy Manual 2023, through Registrar Notification.
- d. Progress is to be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	DHR, Registrar	Pro-Rector (Acad)
<b>Statutory Documents Affected</b>	Replacement of BU HR Policy Document 2017 with BU HR Policy Manual 2023	

#### **Item 4331: Amendment/ Revision of BU Affiliation Committee**

Sponsor: Controller of Exams

Referral Authority: FBOS-HS

##### **Summary of the Case**

159. Composition of BU Affiliation Committee is promulgated vide BU Academic Regulations and BU Affiliation Policy. The Committee is chaired by the Rector while the Controller of Examinations acts as its secretary, along with relevant BUHO Directors/ equivalent. As advised by the HEC vide its letter dated 7 November 2022, all Degree Awarding Institutions (DAIs) are to include "An Expert to be nominated by HEC" in their Affiliation Committee. Accordingly, amendment/ revision of BU Affiliation Committee has been processed by the Exams Dte (BUHO) through a case file, which was approved by the Rector in November 2022 and promulgated vide Registrar Notification 52/2022 dated 6 December 2022, as given at **Appendage 4331**. Incorporation of this amendment is to be incorporated in BU Affiliation Policy and BU Academic Regulations. The CE will present the proposal for approval by the Academic Council.

##### **Discussion**

160. The CE explained that the composition of BU Affiliation Committee needs to be amended in BU statutory documents as mentioned below, for inclusion of "An Expert to be nominated by HEC":

- a. **BU Affiliation Policy.** Approval of the amendment by the Academic Council, followed by ratification by the Executive Committee.
- b. **BU Academic Regulations.** Approval of the amendment by the Executive Committee, followed by ratification by the Board of Governors.

161. After brief discussion, the Council approved the recommendations as presented by the CE.

##### **Decision 4331**

162. The following was approved by the Council:

- d. Amendment of the composition of BU Affiliation Committee in **BU Affiliation Policy** for inclusion of "An Expert to be nominated by HEC" and processing the ratification of said amendment by the Executive Committee (EC).
- e. Processing the EC approval of the amendment of the composition of BU Affiliation Committee in **BU Academic Regulations** for inclusion of "An Expert to be nominated by HEC" and processing the ratification of said amendment by the BOG.
- f. Progress is to be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	CE, Registrar	CE
<b>Statutory Documents Affected</b>	Incorporation of approved amendments in respective statutory documents	

**Item 4332: Ratification of Weightage Criteria/ Formula for all PG Programmes**

Sponsor: Director Admission

Referral Authority: Case file

**Summary of the Case**

163. Current weightage criteria for admissions in all BU PG Programmes includes the interview marks, which have been abolished through a decision by the Rector, with instructions to prepare the respective Merit Lists in line with the UG admission process, so as to avoid any negative impact on the CBT-based Merit Lists and bringing transparency to the admission process. The proposed changes have been processed on file and approved by the Rector subject to ratification by the Academic Council.

**Discussion**

164. Dir Admissions (BUHO) presented the subject proposal as given at **Appendage 4332A**, while indicating that the changes were being incorporated for PG Programmes only. DAcad indicated that corresponding amendments in **BU Academic Rules**, **BU Admission Policy** and **MS/ MPhil Rules** will have to be explicitly indicated, for approval by the Academic Council followed by ratification by the EC. After brief discussion, the Council ratified the proposed changes, along with approval of the amendments at **Appendage 4332B**, for their ratification by the EC.

**Decision 4332**

165. The following was decided by the Council:

- a. Ratification of the changes in weightage criteria for all PG Programmes as given at **Appendage 4331A**.
- b. Approval of the corresponding amendments in **BU Academic Rules**, **BU Admission Policy** and **MS/ MPhil Rules** as given at **Appendage 4331B**, for subsequent ratification by the EC.
- c. Progress is to be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	DA, DAcad, DPGP	DA
<b>Statutory Documents Affected</b>	BU Admission Policy, BU Academic Rules, MS/ MPhil Rules	

**Item 4333: SOP for Students' Exchange with University of Airlangga, Indonesia**

Sponsor: Director IO

Referral Authority: Case file

**Summary of the Case**

166. In line with BU Strategic Plan, the International Office has initiated the mechanism for exchange of students with University of Airlangga, Indonesia from Spring 2023 semester. The University already has similar arrangements with several other foreign Universities in Turkiye, Spain, Italy, USA & China; based on the SOPs with each HEI as given at **Appendage 4332** comprising of well-defined selection criteria, credit transfer process and grade mapping for Transfer of Credit approved by the ACM.

167. The ACM approval of the SOP is pursued because the students' exchange requires certain exemptions in eligibility criteria for Medals and Honours in case of Transfer of Credits, freezing of semester and taking affected courses in the Summer Semester. Such exemptions enable the encouragement of quality students to pursue the exchange Programme while not being barred from the race for Medals and Honours.

168. Keeping in view the practice followed for other universities, an SOP was prepared on the similar lines defining the students' selection, credit transfer and grade mapping mechanism under the exchange Programme. The same has been approved by the Rector through a case file, and needs to be ratificatied by the Academic Council.

#### **Discussion**

169. DIO presented the proposal the subject SOP as given at **Appendage 4333**, while highlighting the Grades mapping mutually agreed with the HEI. After brief discussion, the Council ratified the same for adoption with immediate effect.

#### **Decision 4333**

170. The Council ratified the SOP for exchange of students with University of Airlangga, Indonesia as given at **Appendage 4333**, for adoption with immediate effect. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	All CUs, DIO	DIO
<b>Statutory Documents Affected</b>		Nil

### **ADDITIONAL AGENDA ITEMS**

#### **Item 4334: Launch of *MS (Applied Linguistics*) at BUKC**

Sponsor: Dean HS&S

Referral Authority: Case file

#### **Summary of the Case**

171. The Dept of HSS, BUKC has planned to launch a full-fledged separate degree Programme ***MS in English***. It has been observed that many students who have completed ***BS in English*** are interested in applying for an MS degree Programme to continue their studies in the field of English Literature and Linguistics. At this point, only Karachi University, Iqra University and Hamdard University are offering such a Programme at Karachi. Hence, the demand exceeds the supply.

#### **Discussion**

172. HOD HSS, BH3S-KC presented the proposal, as given at **Appendage 4334**. DAcad indicated that the proposal was being presented for ***MS in Applied Linguistics*** whereas the approval as additional agenda item was taken by the CU for the Programme ***MS in English*** based on the reported FBOS approval with the later title. Dean H&SS assured that the procedural formality has already been processed through FBOS. Some other anomalies/ shortcomings were also noted in the proposal. After brief discussion, the Chair directed to process the required FBOS approval with changes in the launch proposal, where required. Meanwhile, the proposal may be approved by the Council with the amended title.

#### **Decision 4334**

173. Launch of ***MS in Applied Linguistics*** Programme at BH3S-KC is approved by the Council, subject to processing of the FBOS approval for the changes in earlier proposal. DQA is to pursue the NOC from the HEC to launch the Programme in fall 2023 semester. Progress is to be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	Principal BH3S-KC, DQA	Dean H&SS
<b>Statutory Documents Affected</b>		Nil

**Item 4335: Duration of PhD Programmes at BU**

Sponsor: DPGP

Referral Authority: Case file

**Summary of the Case**

174. Following amendments have been incorporated in the duration of PhD Programmes, which need to be ratified by the Academic Council for related amendments in BU Academic Rules and BU PhD Rules:

- a. The maximum duration for the PhD Programme will be 8 years, as promulgated by HEC.
- b. In order to ensure timely completion of the PhD Programmes, BU will have the regular Programmes duration of 6 years, followed by the 7<sup>th</sup> year extension by the FRC and 8<sup>th</sup> year extension by the Rector; subject to fulfillment of conditions contained in BU PhD Rules.
- c. Under extraordinary circumstances, 7<sup>th</sup> and 8<sup>th</sup> year extensions may also be granted by the Rector, on case-to-case basis.

**Discussion**

175. DPGP presented the amendments in BU Academic Rules and BU PhD Rules which were approved by the Council for adoption, while being ratified by the EC.

**Decision 4335**

176. Amendments in BU Academic Rules and BU PhD Rules are approved for adoption and ratification by the EC. Progress is to be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	DPGP, Registrar, DAcad	DPGP
Statutory Documents Affected	Amendment of BU Academic Rules and PhD Rules	

**Item 4336: Launching of Associate Degree in Computer Science**

Sponsor: Dean ES

Referral Authority: FBOS

**Summary of the Case**

177. The field of Computer Science is constantly evolving and growing, with increasing demand for skilled professionals in a variety of industries. The proposed Programme provides students with a strong foundation in computer science theory and practical skills, preparing them for success in a variety of computer science-related careers. An Associate Degree in Computer Science can be an affordable and accessible way for students to begin their education in computer science and gain the skills necessary to enter the workforce or transfer to a four-year degree Programme. The proposed Programme emphasizes critical thinking, problem-solving, and communication skills, which are essential for success in any field. Academic and financial working of the proposed Programme are attached as **Appendage 4336A** and **Appendage 4336B** respectively.

**Discussion**

178. HOD CS BULC presented the proposal as given at **Appendage 4336A** and **Appendage 4336B**. The Chair enquired about the competitiveness of the Programme, and was assured of its success by the Campus. DQA enquired about the need of accreditation from NCAEC and faculty readiness. The CU responded that NCEAC accreditation was required only for the UG Programmes, while the faculty was prepared to teach the proposed Programme. DAcad indicated that the proposal constitutes the first ever Associate Degree Programme by BU, and proposed to verify from NCEAC

that no accreditation was required for the same. The proposal was accepted by the Chair, while advising the Principal BSEAS-IC to evaluate the prospects of launching the same Programme at H-11 Campus as well.

#### **Decision 4336**

179. The following was decided by the Council:

- a. Launch of *Associate Degree in Computer Sciences* at BULC (Evening Programme) is approved as per the curriculum and academic Roadmap at **Appendage 4336B** and financial working at **Appendage 4336A** with effect from Fall 2023 semester.
- b. Prospects of launching the same Programme at BUIC H-11 Campus are also to be explored.
- c. Progress to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	DC BULC, DC H-11 Campus, DA, DQA, DIT	Dean ES
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

#### **ANY OTHER ITEM**

180. Having concluded the agenda items, the house was opened for any other point, with the consent of the Chair. Points discussed thereafter are covered in ensuing paragraphs.

#### **Item 4337: Scrutiny of Launch Proposals for New Programmes by DQA**

Proposed by: Pro-Rector (HS)

##### **Summary**

181. Pro-Rector (HS) proposed that all fresh agenda items may be evaluated by DQA prior each ACM for speedy and prompt finalization in subsequent meeting. DAcad requested to keep such an evaluation for the launch proposals of new Programmes only, so as to contain the extent of related work. The proposal was consented by the Chair.

#### **Decision 4337**

182. All launch proposals for new academic Programmes are henceforth to be scrutinized by DQA prior related ACM. Point dropped.

Action Required	Action	Responsibility
Implementation of the Decision	All Deans, DQA, DAcad	DQA
<b>Statutory Documents Affected</b>	Updating of ACM Rules of Business	

#### **Item 4338: Additional Section of BS (CS) Programme at BULC in the Evening**

Proposed by: Dir BULC

##### **Summary**

183. Dir BULC requested for the approval to launch additional section of BS (CS) in the evening. DQA indicated likelihood of accreditation issues due impending compromise on the quality of teaching. Dean ES highlighted likely space constrain for the proposal after launch of AD (CS) Programme (approved vide Agenda Item 4336 above). After further discussion, the proposal was not approved by the Chair.

### **Discussion and Decision 4338**

184. After further discussion, the proposal was not approved by the Chair. Point dropped.

#### **Item 4339: Improvement of Evening Programmes Quality at BULC**

Proposed by: DIO

##### **Summary**

185. DIO proposed that the quality of evening Programmes at BULC may be improvised to enhance the students' intake and corresponding revenue. The Chair directed DQA to review the space availability at BULC, work out the suitable improvements for enhanced students' intake and corresponding revenue; indicating the admin constrains (space/ rooms, etc) in line with related HEC Policy and propose a viable for a favorable outcome.

##### **Decision 4339**

186. DQA is to undertake a teaching quality and space availability audit of BULC, for increased intake in the evening Programmes and corresponding higher revenue. Progress is to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	DQA, DIO	DQA
<b>Statutory Documents Affected</b>		Nil

#### **Item 4340: Launch Proposals for *BS in Business Analytics***

Proposed by: Principal BBS-KC

##### **Summary**

187. Principal BBS-KC presented the launch proposal for *BS in Business Analytics* Programme at BBS-KC, as given at Appendage 4314. He explained that the proposal had been approved by FBOS-MS for consideration by the Academic Council. However, the same could not be included in the formal agenda. DAcad reported that the proposal was received quite late; only a day before the ACM against the last date for the new agenda being 5 February 2023. Hence, it was not included in the formal agenda.

188. DDAcad (BUHO) apprised the significance/ weightage of the course Consumer Behaviors inclusion of additional course ***Consumer Behavior*** in proposed Roadmap to the forum. The Chair directed Principal BBS-KC to comply the same. After further discussion, the launch proposal was approved for adoption from Fall 2023 semester.

##### **Decision 4340**

189. Launch proposal for *BS in Business Analytics* Programme at BBS-KC is approved with effect from Fall 2023 semester, as per the roadmap and curriculum given at **Appendage 4340**. Progress is to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	Principal BBS-KC, DA, CE, DIT	DG BUKC
<b>Statutory Documents Affected</b>	Updating of Prospectus, BU website and SRD	

**Item 4341: Introduction of Quran Course in all UG Programmes**

Proposed by: DAcad

**Summary**

190. DAcad intimated that HEC through a formal letter has advised all HEIs (including BU) to incorporate a course on Holy Quran with translation, *Tajveed* and *Tafseer* for Muslim students as a mandatory degree award requirement for all UG degree Programmes with effect from Fall 2023, without making it part of the examinations or provision of additional marks. The course shall be non-credited. Further, a comprehensive compliance report with detailed delivery mechanism and protocols thereof duly approved by the concerned statutory body of the university/ DAI in response to this advisory must be furnished to the HEC latest by 30 June 2023.

191. Following methodology was then proposed by DAcad for compliance of the HEC advise:

- a. Contents and modalities of the proposed course may be formulated by Dean H&SS in consultation with *Advisor on Islamic Studies* (Dr Habib ur Rehman Asim) and other Deans.
- b. Option of online course (in collaboration with VU) may also be explored.
- c. Proposed contents and modalities may be presented by Dean H&SS in a special meeting chaired by the Rector, in the 1<sup>st</sup> week of May 2023.
- d. The outcome thus concluded may be approved on file, followed by intimation to the HEC in the last week of May 2023 and ratification of the decision in the next ACM.

192. The Chair conveyed keen desire to adopt the HEC proposal in all CUs. DG BUKC and Dir BULC asked for consultation with CUs prior finalization of the course contents and modalities. DQA proposed a special ACM to finalise the launch of new course in Fall 2023 semester. The Chair consented with both the proposals.

**Decision**

193. Contents and modalities of **Quran and Seerat course** are to be formulated by Dean H&SS in consultation with Advisor for Islamic Studies and all Deans, in accordance with HEC instructions for the same. The course proposal is to be presented in special ACM on priority, for launch in Fall 2023 semester. Progress is to be reported.

Action Required	Action	Responsibility
Implementation of the Decision	All Deans, Advisor for Islamic Studies	Dean H&SS
<b>Statutory Documents Affected</b>	Nil	

### **CLOSING OF THE MEETING**

194. After covering all the discussion items, the Secy presented the following timelines for follow-up actions and the next ACM, which were approved by the Chair for adoption by all concerned:

- |   |                      |
|---|----------------------|
| a. 1 <sup>st</sup> Progress Report on Action Items of 43 <sup>rd</sup> ACM  | 12 June 2023         |
| b. 2 <sup>nd</sup> Progress Report on Action Items of 43 <sup>rd</sup> ACM  | 11 August 2023       |
| c. Agenda Items for 44 <sup>th</sup> ACM (incl points from respective FBOS) | 08 September 2023    |
| d. Scheduled dates of 44 <sup>th</sup> ACM                                  | 09 & 10 October 2023 |

195. The Chair concluded the meeting by thanking the participants for their whole hearted participation and appreciated a thorough conduct of the ACM.

196. There being no other point, the meeting was adjourned.



**ASIM RAZA SI(M)**  
Commodore (Retd)  
Director Academics  
Secy Academic Council

Dated: 16 May 2023

**PLOs ATTAINMENTS CERTIFICATE**

It is to certify that Mr/Miss \_\_\_\_\_ Enrollment No: \_\_\_\_\_ has successfully attained the following Programme Learning Outcomes (PLOs) in the degree Programme \_\_\_\_\_ of Intake Fall \_\_\_\_\_. The Programme is accredited by Pakistan Engineering Council (PEC) on Washington Accord.

1. Engineering Knowledge
2. Problem Analysis
3. Design/Development of Solutions
4. Investigation
5. Modern Tool Usage
6. The Engineer and Society
7. Environment and Sustainability
8. Ethics
9. Individual and Team Work
10. Communication
11. Project Management
12. Lifelong Learning

Signature: \_\_\_\_\_

Director (Academics) / Head of Examinations Cell  
 (Campus Name), Bahria University, Islamabad  
 Dated: \_\_\_\_\_

**Description of PLOs**

1. **Engineering Knowledge:** An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
2. **Problem Analysis:** An ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. **Design/Development of Solutions:** An ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.
4. **Investigation:** An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.
5. **Modern Tool Usage:** An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations.

6. **The Engineer and Society:** An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.
7. **Environment and Sustainability:** An ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
9. **Individual and Team Work:** An ability to work effectively, as an individual or in a team, on multifaceted and /or multidisciplinary settings.
10. **Communication:** An ability to communicate effectively, orally as well as in writing, on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project Management:** An ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment.
12. **Lifelong Learning:** An ability to recognize the need for, and have the preparation and ability to engage in, independent and life-long learning in the broadest context of technological change.

**REVISION OF ELECTRICAL ENGINEERING PROGRAMME EDUCATIONAL OBJECTIVES (PEOS)**

<b>Existing PEOs</b>	<b>Proposed PEOs</b>
<p><b>PEO 1:</b> To exhibit the expertise in the field of electrical engineering to compete with technical challenges and find the solutions of complex engineering problems.</p> <p><b>PEO 2:</b> To be skillful employable graduates in different domains of design, development, operation, and maintenance, as well as explore opportunities for entrepreneurship.</p> <p><b>PEO 3:</b> To pursue professional growth by taking up higher studies, ascertain technologies, develop proficiency in the usage of new tools.</p> <p><b>PEO 4:</b> To work in a multicultural environment and communities, providing leadership in their domain, and responsive to ethical, moral, and societal issues.</p>	<p><b>PEO 1:</b> To provide viable solutions to complex engineering problems based on systematic theoretical and technical approaches in the field of electrical engineering.</p> <p><b>PEO 2:</b> To manage and develop sustainable electrical systems to meet desired objectives and explore new entrepreneurial possibilities in a multidisciplinary environment.</p> <p><b>PEO 3:</b> To pursue academic and professional growth by taking up higher studies, discovering new technologies and developing proficiency in the usage of latest tools.</p> <p><b>PEO 4:</b> To work in a multicultural environment and be responsive to ethical, moral, and societal issues showing leadership in their domain.</p>

**Mapping with Vision and Mission**

<b>Vision &amp; Mission</b>	<b>Programme Educational Objectives (PEOs)</b>			
	<b>PEO 1</b>	<b>PEO 2</b>	<b>PEO3</b>	<b>PEO4</b>
<b>University Vision</b>  To become a knowledge and creativity driven international university that contributes towards development of society.	Provide viable solutions to complex engineering problems	Develop sustainable electrical systems within realistic environmental, health, and safety restrictions.	Professional growth	Responsive to ethical, moral, and societal issues
<b>University Mission</b>  To ensure academic excellence through deliverance of quality education and applied research in a collegiate environment having strong linkages with industry and international community to meet the societal challenges.	Solutions based on systematic technical approaches	Explore new entrepreneurial possibilities in a multidisciplinary environment.	Develop proficiency in the usage of new tools	Multi-cultural environment

Vision & Mission	Programme Educational Objectives (PEOs)			
	PEO 1	PEO 2	PEO3	PEO4
<b>Department's Vision</b>  Commitment to prepare students for professional and research activities with an ability to learn independently, within a diverse multi-cultural environment, and enabling them to become the global leaders in their respective fields.	To provide viable solutions to complex engineering problems based on systematic theoretical and technical approaches	To manage and develop sustainable electrical systems in a multidisciplinary environment.	Pursue academic and professional growth	Multi-cultural environment & Showing Leadership
<b>Programme's Mission</b>  To produce ethically sound and technically competent electrical engineers who can serve in the diverse fields of research, design and development, teaching, system installation, support and maintenance.	Provide viable solutions to complex engineering problems in the field of electrical engineering.	Manage and develop sustainable electrical systems in a multidisciplinary environment.	Discovering Technologies	Responsive to ethical, moral, and societal issues

#### Mapping of Proposed PEOs and PLOs

Programme Learning Outcomes (PLOs)	Programme Objectives (PEOs)			
	1	2	3	4
PLO 1: Engineering Knowledge	✓			
PLO 2: Problem Analysis	✓			
PLO 3: Design/Development of Solutions		✓		
PLO 4: Investigation	✓			
PLO 5: Modern Tool Usage			✓	
PLO 6: The Engineer and Society				✓
PLO 7: Environment and Sustainability				✓
PLO 8: Ethics				✓
PLO 9: Individual and Team Work				✓
PLO 10: Communication			✓	
PLO 11: Project Management		✓		
PLO 12: Lifelong Learning			✓	

**Mapping of Proposed PEOs and PLOs (Key words)**

Programme Learning Outcomes (PLOs)	Programme Educational Objectives (PEOs)			
	PEO-1	PEO-2	PEO-3	PEO-4
<b>PLO 1:</b> Engineering Knowledge	Solutions to complex engineering problems in the field of electrical engineering.			
<b>PLO 2:</b> Problem Analysis	Solutions to complex engineering problems based on systematic theoretical and technical approaches			
<b>PLO 3:</b> Design/Development of Solutions		Develop sustainable electrical systems		
<b>PLO 4:</b> Investigation	Provide viable solutions to complex engineering problems based on systematic theoretical and technical			
<b>PLO 5:</b> Modern Tool Usage			Develop proficiency in the usage of new tools.	
<b>PLO 6:</b> The Engineer and Society				Responsive to moral and societal issues
<b>PLO 7:</b> Environment and Sustainability				To work in multicultural environment
<b>PLO 8:</b> Ethics				Responsive to ethical issues
<b>PLO 9:</b> Individual and Team Work				Providing leadership in their domain
<b>PLO 10:</b> Communication			Taking up higher studies and discovering new technologies	
<b>PLO 11:</b> Project Management		Manage and explore new entrepreneurial possibilities in a multidisciplinary environment		
<b>PLO 12:</b> Lifelong Learning			Pursue professional growth by taking up higher studies	

### Performance Indicator for PEOs

	<b>Programme Educational Objectives (PEOs)</b>	<b>Key Performance Indicator (KPI's)</b>	<b>Measurement Tools</b>
<b>PEO 1</b>	To provide viable solutions to complex engineering problems based on systematic theoretical and technical approaches in the field of electrical engineering.	60% of the employers in the industry are satisfied with the technical competence of EE graduates. 5% of the graduates have presented their work at technical forums such as conference, journal, symposium, technical competitions.	Employer Survey Form Alumni Survey Form
<b>PEO 2</b>	To manage and develop sustainable electrical systems to meet desired objectives and explore new entrepreneurial possibilities in a multidisciplinary environment.	50% of the graduates are gainfully employed in the electrical engineering related industry. 5% of the graduates have started their own businesses/startups or employed in other fields.	Alumni Survey Form Employer Survey Form
<b>PEO 3</b>	To pursue academic and professional growth by taking up higher studies, discovering new technologies and developing proficiency in the usage of latest tools.	15% of graduates have secured admission in MS or PhD after graduation either within Pakistan or abroad. 20% of the graduates have attended at least one professional development course after graduation.	Alumni Survey Form
<b>PEO 4</b>	To work in a multicultural environment and be responsive to ethical, moral, and societal issues showing leadership in their domain.	15% of graduates are part of organization that supports communities working for the betterment of society. 5% of graduates have managerial positions in their industry.	Employer Survey Form Alumni Survey Form

ADDITION OF IDEE/ ELECTIVE COURSES IN BEE ROADMAP**Introduction to Systems Engineering**

<b>Course Code</b>	EEN 451
<b>Credit Hours:</b>	3
<b>Pre-requisite:</b>	None
<b>Objectives:</b>	<p>This course is aimed at introducing students to the fundamental principles of systems engineering (SE) and their application to the development of complex systems. It describes how SE viewpoint can be brought to address engineering challenges as well as the essential role of systems engineering in project management. Some of the key SE standards will be covered and the roles of organizations in enabling engineers to develop systems will be explored. Applications of SE concepts and tools in various settings will be discussed through examples and case studies. Student will get knowledge of real-world experience and case studies of working with a system through all phases of the system design process. Student will explore real-world problems to develop an understanding of systems engineering life cycle processes and analytical techniques. Students will learn to apply the SE methodologies in modern complex system development environments such as aerospace and defense, transportation, energy, communications, and modern software-intensive systems. Each student will complete a project based on a system or enterprise of their choice. Students will explore the formal system modeling and simulation methods using software-based approaches, which are replacing more traditional document-based descriptive modeling methods. Students will use standardized modeling techniques especially SysML (Systems Modeling Language) computer packages, allowing greater consistency in system model representations between technologies, across industries, and even across language barriers to represent system models in detail and provide complex system simulations with minimum effort using several different system modeling and simulation software platforms. The objective is to be able to determine when and how model-based systems engineering (MBSE) approaches are useful, which tools to use, and which data to use as input to the MBSE tools and how to use the results from the tools in decision making.</p>
<b>Course Learning Outcomes (CLOs):</b>	<p>Upon completion of this course, the student will be able to:</p> <p><b>CLO 1:</b> (C1): <b>Define</b> and <b>identify</b> the steps required to describe a proposed system concept through a Concept of Operations (CONOPS) document.</p> <p><b>CLO 2:</b> (C2): <b>Explain</b> the fundamentals of systems requirement and high level design document.</p> <p><b>CLO 3:</b> (C2): <b>Explain</b> the fundamentals of comprehensive System Engineering Management Plan (SEMP).</p> <p><b>CLO 4:</b> (C3): <b>Apply</b> the tools required for implementation of MBSE.</p>

<b>Course Outline:</b>	<ul style="list-style-type: none"> <li>● Concept of Operations (CONOPS) <ul style="list-style-type: none"> <li>➢ Purpose of CONOPS</li> <li>➢ Project Scope &amp; Overview</li> <li>➢ Existing Project details &amp; Current Operational Status</li> <li>➢ Justification for changes</li> <li>➢ Proposed System concept</li> <li>➢ Relevant Stakeholders</li> <li>➢ User Needs</li> <li>➢ System Overview &amp; Operational Environment</li> <li>➢ Support Environment</li> <li>➢ Operational Scenarios</li> <li>➢ Summary of Impacts.</li> </ul> </li> <li>● Systems requirement and high-level design document <ul style="list-style-type: none"> <li>➢ “Actors” and their roles</li> <li>➢ The “stories” used for requirements discussions</li> <li>➢ Notes from the requirements meetings with stakeholders</li> <li>➢ System Primary Objectives and Purpose</li> <li>➢ High Level Design Objectives, Constraints and Principles</li> <li>➢ Core System High Level Design</li> <li>➢ System Components Design</li> <li>➢ Decision Support System Design</li> </ul> </li> <li>● System Engineering Management Plan (SEMP) <ul style="list-style-type: none"> <li>➢ System configuration management</li> <li>➢ System verification plan</li> <li>➢ System deployment plan</li> <li>➢ Evaluation strategy</li> <li>➢ Operations and maintenance plan</li> <li>➢ System verification plan</li> <li>➢ System deployment plan</li> <li>➢ Evaluation strategy</li> <li>➢ Operations and maintenance plan</li> </ul> </li> </ul>
	<p>Model-based systems engineering (MBSE)</p> <ul style="list-style-type: none"> <li>➢ Tools for MBSE</li> <li>➢ Data as input to the MBSE</li> <li>➢ How to use the results from the tools in decision making</li> <li>➢ SysML software.</li> </ul>
<b>Resources:</b>	<p>Textbook:</p> <p>Systems Engineering Principles and Practice 2<sup>nd</sup> Edition by Alexander Kossiakoff William N. Sweet Samuel J. Seymour Steven M. Biemer</p> <p>Reference Book:</p> <ul style="list-style-type: none"> <li>● INCOSE Systems Engineering Handbook: A Guide for System Life Cycle Processes and Activities, 4th Edition</li> </ul>
<b>Tools</b>	SysML

## Mapping of CLO to PLOs

Contribution: Average: 1, Moderate: 2, Strong: 3

CLOs	MAPPED PLO	LEVEL	CONTRIBUTION
<b>CLO 1:</b> (C1): <b>Define</b> and <b>identify</b> the steps required to describe a proposed system concept through a Concept of Operations (CONOPS) document.	PLO 1	C1	3
<b>CLO 2:</b> (C2): <b>Explain</b> the fundamentals of systems requirement and high level design	PLO 3	C2	3
<b>CLO 3:</b> (C2): <b>Explain</b> the fundamentals of comprehensive System Engineering Management Plan (SEMP).	PLO 11	C2	3
<b>CLO 4:</b> (C3): <b>Apply</b> the tools required for implementation of MBSE.	PLO 5	C3	3

## Grading Rubric

Assessment Method	CLO 1	CLO 2	CLO 3	CLO 4
Final Exam (50)	10	15	15	10
Midterm Exam (20)	10	10	X	X
Assignments (20)	5	5	5	5
Quizzes (10)	2.5	2.5	2.5	2.5
Total (100)	27.5	32.5	22.5	17.5

## Sports Engineering (Theory)

Sports Engineering (Theory)	
<b>Course Code:</b>	EEN-450
<b>Credit Hours:</b>	3
<b>Pre-requisite:</b>	
<b>Objectives:</b>	This course introduces the fundamental concepts of measurement techniques in sports engineering and biomechanics. This course addresses the data analysis and manipulation using Programmatic tools. Different aspects of the biomechanics of an athlete like walking, running gait, swimming, in the context of both performance improvement and injury prevention is covered. Engineering principles and considerations around the design of specific sports equipment is discussed.
<b>Course Learning Outcomes (CLOs):</b>	<p><b>CLO 1:</b> (C2): <b>Comprehend</b> the Engineering of Sports, Biomechanics, Aerodynamics and Sports instruments.</p> <p><b>CLO 2:</b> (C3): <b>Implement</b> the mathematical modelling technique for Sports</p>

	<p>Engineering</p> <p><b>CLO 3:</b> (C5): Analyze the performance of an athlete in different sports and <b>design</b> the sports equipment for optimal performance</p>
Course Outline:	<ul style="list-style-type: none"> <li>• The Effect of Engineering on Sports</li> <li>• Projectile Aerodynamics</li> <li>• Vehicular Aerodynamics</li> <li>• Introduction to biomechanics of human body movement</li> <li>• Biomechanics of walking/running</li> <li>• Biomechanics of Throwing</li> <li>• Biomechanics of Swimming</li> <li>• Computer Simulation/Modelling in Sports</li> <li>• The physics of ice-hockey</li> <li>• The physics of Golf</li> <li>• The Science and Engineering of Golf Balls</li> <li>• Solid Mechanics and Aerodynamics of Cricket Balls</li> <li>• Biomechanics research and sport equipment development.</li> <li>• Disability in sports</li> <li>• Safety in Sports</li> </ul>
<b>Resources:</b>	<p>Text Book:</p> <ul style="list-style-type: none"> <li>• “Instant Notes in Sport and Exercise Biomechanics”, 1st Edition, Paul Grimshaw, Neil Fowler, Adrian Lees, Adrian Burden</li> </ul> <p>Reference Books:</p> <ul style="list-style-type: none"> <li>• “The Engineering of Sports: Design and Development”, Steve Haake</li> <li>• “The Engineering of Sport 7”, Vol 2, Margaret Estivalet, Pierre Brisson, Springer</li> </ul>
<b>Tools</b>	Matlab

### Mapping of CLO to PLOs

**Contribution:** Average:1, Moderate:2, Strong:3

CLOs	MAPPED PLO	LEVEL
<b>CLO 1:</b> Comprehend the Engineering of Sports, Biomechanics, Aerodynamics and Sports instruments.	PLO 1	C2
<b>CLO 2:</b> Implement the mathematical modelling technique for Sports Engineering	PLO 5	C3
<b>CLO 3:</b> Analyze the performance of an athlete in different sports and <b>design</b> the sports equipment for optimal performance.	PLO 3	C5

## Grading Rubric

Assessment Method	CLO 1	CLO 2	CLO 3
Final Exam	10	20	20
Midterm Exam	10	10	0
Assignments	10	5	5
Quizzes	4	3	3
Total (100)	34	38	28

Computer Vision	
<b>Course Code:</b>	CSC-464
<b>Credit Hours:</b>	3
<b>Pre requisite:</b>	None
<b>Objectives:</b>	<ul style="list-style-type: none"> <li>• Describe the scope of challenges and applications addressed by computer vision</li> <li>• Undertake video analysis problems</li> </ul> <p>Explain the application of neural networks and convolutional neural network to computer vision</p>
<b>Course Learning Outcomes (CLOs):</b>	<p><b>CLO 1:</b> (C2): To understand and <b>interpret</b> the basic concepts and challenges addressed by computer vision.</p> <p><b>CLO 2:</b> (C4): To <b>apply</b> a variety of computer vision algorithms to extract features and interpret the results.</p> <p><b>CLO 3:</b> (C5): To <b>analyze</b> the results of application of different classification algorithms for computer vision on real world problems.</p>
<b>Course Outline:</b>	<ul style="list-style-type: none"> <li>• Overview, computer imaging systems, lenses</li> <li>• Image formation and sensing</li> <li>• Image analysis and preprocessing</li> <li>• Binary image analysis</li> <li>• Edge detection</li> <li>• Edge detection performance, Hough transform, corner detection</li> <li>• Feature extraction, shape, histogram, color, spectral, texture</li> <li>• Feature analysis, feature vectors, distance /similarity measures, data preprocessing</li> <li>• Pattern classification</li> <li>• Image Classification, kNN, SVM, Softmax, Fully Connected Neural Network</li> <li>• Convolutional Neural Networks: Architectures, Convolution / Pooling Layers layers, spatial arrangement, layer patterns, layer sizing patterns,</li> </ul>

	AlexNet/ZFNet/VGGNet case studies, computational considerations
<b>Resources:</b>	<ul style="list-style-type: none"> <li>Digital Image Processing and Analysis: Application with MATLAB and CVIPtools, 3rd EditionTensorFlow, by Aurélien Géron (2017)</li> <li>Computer Vision: A Modern Approach Pearson Education by David A. Forsyth, Jean Ponce</li> </ul>
<b>Tools</b>	<ul style="list-style-type: none"> <li>Matlab, Anaconda/Python/google colaboratory</li> </ul>

### Mapping of CLO to PLOs

Contribution: Average:1, Moderate:2, Strong:3

CLOs	MAPPED PLO	LEVEL	CONTRIBUTION
<b>CLO 1:</b> (C2): To understand and interpret the basic concepts and challenges addressed by computer vision.	PLO 1	C2	3
<b>CLO 2:</b> (C4): To apply a variety of computer vision algorithms to extract features and interpret the results.	PLO2	C4	3
<b>CLO 3:</b> (C5): To analyze the results of application of different classification algorithms for computer vision on real world problems.	PLO4	C5	3

### Grading Rubric

Assessment Method	CLO 1	CLO 2	CLO 3
Final Exam	20	25	5
Midterm Exam	15	5	x
Assignments	x	5	15
Quizzes	2	4	4
Total (100)	37	39	24

Fundamentals of Quantum Computing	
<b>Course Code:</b>	EEN 462
<b>Credit Hours:</b>	3+1
<b>Pre-requisite:</b>	
<b>Objectives:</b>	Quantum computing is an area of computing focused on developing computer technology based on the principles of quantum theory, which explains the behavior of energy and material on the atomic and subatomic levels. The objective of this course is to develop the basis of quantum computing concepts and its applications.
<b>Course Learning Outcomes (CLOs):</b>	CLO 1: [C2] <b>Describe</b> the basic of vector algebra and spin concept.

	CLO 2: [C4] <b>Analyze</b> the working of quantum gates and circuits. CLO 3: [C3] <b>Implement</b> the quantum computing algorithms.
<b>Course Outline:</b>	<ol style="list-style-type: none"> <li>1. Spin</li> <li>2. Linear Algebra</li> <li>3. Spin and Qubit</li> <li>4. Entanglement</li> <li>5. Bell's Inequality</li> <li>6. Classical Logic</li> <li>7. Gates and Circuits</li> <li>8. Quantum Gates and Circuits</li> <li>9. Quantum Algorithms</li> <li>10. Impact of Quantum Computing</li> </ol>
<b>Resources:</b>	<p>Text Book:</p> <ul style="list-style-type: none"> <li>• “Quantum Computing for Everyone”, Chris Bernhardt ,1<sup>st</sup> edition.</li> </ul> <p>Reference Book:</p> <ul style="list-style-type: none"> <li>• “Quantum Computing for Computer Scientists”, Noson S. Yanofsky, Brooklyn College, City University of New York, Mirco A. Mannucci, HoloMathics, LLC, Virginia. 1<sup>st</sup> Edition</li> </ul>

### Mapping of CLO to PLOs

Contribution: Average:1, Moderate:2, Strong:3

CLOs	MAPPED PLO	LEVEL	CONTRIBUTION
<b>CLO1:</b> Describe the basic of vector algebra and spin concept.	PLO 1	C2	3
<b>CLO2:</b> Analyze the working of quantum gates and circuits.	PLO 5	C4	3
<b>CLO 3:</b> Implement the quantum computing algorithms.	PLO4	C3	2

### Grading Rubric

Assessment Method	CLO 1	CLO 2	CLO3
Final Exam	X	30	20
Midterm Exam	5	15	X
Assignments	5	10	5
Quizzes	2.5	5	2.5
Total (100)	12.5	70	17.5

### Mapping of CLO to PLOs

Contribution: Average: 1, Moderate: 2, Strong: 3

CLOs	MAPPED PLO	LEVEL	CONTRIBUTION
<b>CLO 1:</b> Basic knowledge of Quantum gates.	PLO 1	C1	3
<b>CLO 2:</b> Develop the ability to simulate, analyze the operations of different blocks in IBM Qiskit.	PL05	P4	3
<b>CLO 3:</b> Construct different type of applications using Qiskit library.	PLO3	P5	3

## Grading Rubric

Assessment Method	CLO 1	CLO 2	CLO 3
Final Viva (10)	x	5	5
Mid Viva (10)	4	4	2
Project (20)	5	5	10
Lab Assessment (40)	6	17	17
Lab Journal (20)	3	8	9
Total (100)	18	39	43

**Appendage 4304**

## REVISION OF ROADMAP OF BSE PROGRAMME BACHELOR OF SOFTWARE ENGINEERING

**Campuses:** Islamabad and Karachi

**Regular Programme Duration:** 4 Years, 8 Semesters

**Available Specialization:** None

**Programme Timing:** Morning

### **Eligibility Criteria:**

Passed intermediate examination or its equivalent with a minimum of 60% marks in Pre-Engineering Group, or with Mathematics, Physics and Computer Science.

### **Programme Education Objectives (PEOs):**

**PEO-1:** Graduates should demonstrate competence in applying Software Engineering principles & practices in various phases of software/system development life cycle in their respective professional career.

**PEO-2:** Graduates should demonstrate effective team member or leadership skills with strong managerial skills and a sound sense of social responsibility for the sustainable development of society.

**PEO-3:** Graduates should demonstrate sustained career development and progression through ethical engineering practices, effective communication skills and continuous learning.

### **Programme Mission:**

The mission of Bachelor of Software Engineering Programme is to prepare technically strong Software Engineers who can contribute effectively towards the nation, society and the world at large through effective problem solving skills, application of engineering knowledge, leadership and healthy lifelong learning attitude.

### **Programme Learning Outcomes (PLOs):**

**1. Engineering Knowledge:** An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.

**2. Problem Analysis:** An ability to identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

**3. Design/Development of Solutions:** An ability to design solutions for complex engineering problems and design systems, components or processes that meet specified needs with

appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

**4. Investigation:** An ability to investigate complex engineering problems in a methodical way including literature survey, design and conduct of experiments, analysis and interpretation of experimental data, and synthesis of information to derive valid conclusions.

**5. Modern Tool Usage:** An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling, to complex engineering activities, with an understanding of the limitations.

**6. The Engineer and Society:** An ability to apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solution to complex engineering problems.

**7. Environment and Sustainability:** An ability to understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.

**8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.

**9. Individual and Team Work:** An ability to work effectively, as an individual or in a team, on multifaceted and /or multidisciplinary settings.

**10. Communication:** An ability to communicate effectively, orally as well as in writing, on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**11. Project Management:** An ability to demonstrate management skills and apply engineering principles to one's own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment.

**12. Lifelong Learning:** An ability to recognize importance of, and pursue lifelong learning in the broader context of innovation and technological developments.

### **Scheme of Studies**

Duration	4 years
Number of Semesters	8
Number of weeks per semester	18 (16 for teaching and 2 for exams)
Total number of credit hours	134
Number of credit hours per semester	15-18
Non-Engineering Courses	14 Courses, 36 Cr Hrs, 26.87 % of total
Engineering Courses	31 Courses, 98 Cr Hrs, 73.13 % of total

### **Courses of Non-Engineering Domain**

Knowledge Area	Sub Area	Name of Course	Lec. Cr. Hrs	Lab Cr. Hrs	Total Cr. Hrs.	Total Courses	Total Credits	% Area	% Overall
<b>Humanities and Social Sciences</b>	English	Functional English	3	0	3	3	8	22.22 %	5.97%
		Effective Communication Skills	2	0	2				

		Technical Writing & Presentation Skills	3	0	3				
Culture	Islamic Studies/Ethics	2	0	2	2	4	11.11 %	2.99%	
	Pakistan Studies and Global Perspective	2	0	2					
Social Sciences	Social Sciences Elective 1	2	0	2	2	4	11.11 %	2.99%	
	Social Sciences Elective 2	2	0	2					
Management Sciences	Management Sciences Elective 1	3	0	3	2	5	13.89 %	3.73%	
	Management Sciences Elective 2	2	0	2					
Natural Sciences	Math	Applied Calculus & Analytical Geometry	3	0	3	4	12	33.33 %	8.96%
		Linear Algebra	3	0	3				
		Probability & Statistics	3	0	3				
		Numerical Analysis	2	1	3				
	Physics	Applied Physics	2	1	3	1	3	8.33%	2.24%
<b>Total</b>			34	2	36	14	36	100%	26.87%

#### Courses of Engineering Domain

Knowledge Area	Course Title	Lec	Lab	Total	Total Courses	Total Cr. Hrs.	% Area	% Overall
Computing and Information Sciences	Computing Fundamentals	2	1	3	2	7	7.14%	5.22%
	Computer Programming	3	1	4				
Core Breadth of Engineering discipline	Introduction to Software Engineering	3	0	3	10	30	30.61%	22.39%
	Software Requirement Engineering	3	0	3				
	Design and Analysis of Algorithms	3	0	3				
	Software Design &	2	1	3				

	Architecture							
	Software Construction	2	1	3				
	Software Quality Engineering	3	0	3				
	Human Computer Interaction	3	0	3				
	Cloud Computing	2	1	3				
	Software Project Management	3	0	3				
	Information Security	3	0	3				
<b>Core Depth of Engineering discipline</b>	Engineering Elective-I*	-	-	3	6	18	18.37%	13.43%
	Engineering Elective-II*	-	-	3				
	Engineering Elective-III*	-	-	3				
	Engineering Elective-IV*	-	-	3				
	Engineering Elective-V*	-	-	3				
	Engineering Elective-VI*	-	-	3				
<b>Engineering Foundation</b>	Discrete Structures	3	0	3	8	30	30.61%	22.39%
	Object Oriented Programming	3	1	4				
	Computer Architecture and Logic Design	3	1	4				
	Operating Systems	3	1	4				
	Database Management System	3	1	4				
	Computer Communication & Networks	3	1	4				
	Formal Methods in Software Engineering	3	0	3				
	Data Structures & Algorithms	3	1	4				
<b>Multi-Disciplinary Engineering Courses</b>	Occupational Health and Safety	1	0	1	3	7	7.14%	5.22%
	MDEE-I*	-	-	3				
	MDEE-II*	-	-	3				
<b>Senior Design Project</b>	Project I	0	3	3	2	6	6.12%	4.48%
	Project II	0	3	3				
Internship (Summer)		0	0	0	0	0	0	0
<b>Total</b>					31	98	100%	73.13%

\*Course is either 2-1-3 or 3-0-3 depending on the offered elective course.

#### Semester wise Roadmap of BSE

<b>Semester 1</b>						
<b>Pre-requisite Courses</b>		<b>Course Code</b>	<b>Course Title</b>	<b>Lec</b>	<b>Lab</b>	<b>Total</b>
None	CSC 110	Computing Fundamentals	2	1	3	
None	CSC 113	Computer Programming	3	1	4	
None	ENG 101	Functional English	3	0	3	
None	GSC 110	Applied Calculus & Analytical Geometry	3	0	3	
None	GSC 114	Applied Physics	2	1	3	
None	ENV 101	Occupational Health and Safety	1	0	1	
					<b>Total</b>	<b>17</b>
<b>Semester 2</b>						
<b>Pre-requisite Courses</b>		<b>Course Code</b>	<b>Course Title</b>	<b>Lec</b>	<b>Lab</b>	<b>Total</b>
None	CSC 115	Discrete Structures	3	0	3	
Computer Programming (CSC 113)	CSC 210	Object-Oriented Programming	3	1	4	
None	SEN 120	Introduction to Software Engineering	3	0	3	
Functional English (ENG 101)	ENG 134	Effective Communication Skills	2	0	2	
None	ISL 101	Islamic Studies/Ethics	2	0	2	
None	GSC 121	Linear Algebra	3	0	3	
					<b>Total</b>	<b>17</b>

#### **Semester 3**

<b>Pre-requisite Courses</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Lec</b>	<b>Lab</b>	<b>Total</b>
Object Oriented Programming (CSC 210)	CSC 221	Data Structures & Algorithms	3	1	4
Introduction to Software Engineering (SEN 120)	SEN 211	Software Requirement Engineering	3	0	3
None	GSC 122	Probability & Statistics	3	0	3
-	-	Social Science Elective-I	2	0	2

None	CEN 220	Computer Architecture and Logic Design	3	1	4
None	PAK 103	Pakistan Studies and Global Perspective	2	0	2
					<b>Total</b> <b>18</b>
<b>Semester 4</b>					
Pre-requisite Courses	Course Code	Course Title	Lec	Lab	Total
Computer Architecture and Logic Design (CEN 220)	CSC 320	Operating Systems	3	1	4
Computer Programming (CSC 113)	CSC 220	Database Management System	3	1	4
Data Structures & Algorithms (CSC 221)	CSC 321	Design and Analysis of Algorithms	3	0	3
Software Requirement Engineering (SEN 221)	SEN 221	Software Design & Architecture	2	1	3
-	-	Management Science Elective-I	3	0	3
					<b>Total</b> <b>17</b>

#### Semester 5

Pre-requisite Courses	Course Code	Course Title	Lec	Lab	Total
None	CEN 223	Computer Communication & Networks	3	1	4
Applied Calculus & Analytical Geometry (GSC 110)	SEN 323	Formal Methods in Software Engineering	3	0	3
Software Design & Architecture (SEN 221)	SEN 311	Software Construction	2	1	3
-	-	Engineering Elective-I*	-	-	3
-	-	MDEE-I*	-	-	3
-	-	Social Science-II	2	0	2
					<b>Total</b> <b>18</b>

### Semester 6

Pre-requisite Courses	Course Code	Course Title	Lec	Lab	Total
Introduction to Software Engineering (SEN 120)	SEN 321	Software Quality Engineering	3	0	3
None	SEN 212	Human Computer Interaction	3	0	3
None	ENG 320	Technical Writing & Presentation Skills	3	0	3
-	-	Engineering Elective-II*	-	-	3
-	-	Engineering Elective-III*	-	-	3
None	SEN 401	Cloud Computing	2	1	3
				<b>Total</b>	<b>18</b>

### Semester 7

Pre-requisite Courses	Course Code	Course Title	Lec	Lab	Total
-	FYP 400	Final Year Project I	0	3	3
Introduction to Software Engineering (SEN 120)	SEN 410	Software Project Management	3	0	3
None	CSC 407	Information Security	3	0	3
Applied Calculus & Analytical Geometry (GSC 110)	GSC 321	Numerical Analysis	2	1	3
-	-	Engineering Elective-IV*	-	-	3
-	-	Management Science Elective-II	2	0	2
				<b>Total</b>	<b>17</b>

### Semester 8

Pre-requisite Courses	Course Code	Course Title	Lec	Lab	Total
-	FYP 400	Final Year Project II	0	3	3
-	-	Engineering Elective-V*	-	-	3
-	-	Engineering Elective-VI*	-	-	3
-	-	MDEE-II*	-	-	3
				<b>Total</b>	<b>12</b>
		<b>Total Programme Credit Hrs</b>			<b>134</b>

\*Course is either 2-1-3 or 3-0-3 depending on the offered elective course.

### Engineering Electives

\*At least 2 courses with lab components will be offered

Pre-Req	Course Code	Course Title Total	Credit Hours	Theory	Lab

CSC 113	CSC 313	Visual Programming	3	2	1
CSC 113	CSC 445	Principles of Programming Languages	3	3	0
CSC 210	SEN 328	Game Application Development	3	2	1
CSC-113	SEN 441	Mathematical Tools For Software Engineering	3	3	0
GSC 122	CSC 441	Natural Language Processing	3	3	0
CSC 210	CSC 456	Distributed Computing	3	2	1
CSC 220	CSC 460	Data Mining	3	2	1
CSC 220	CSC 454	Data Warehousing	3	3	0
SEN 120	CSC 458	Management Information Systems	3	3	0
CSC 220	SEN 326	Advanced Database Management Systems	3	2	1
CSC 220	SEN 327	Distributed Database Systems	3	3	0
GSC 121	CEN 445	Digital Image Processing	3	2	1
CEN 445	CSC 464	Computer Vision	3	3	0
SEN 120	SEN 335	Object Oriented Software Engineering	3	2	1
SEN 311	SEN 411	Software Re-Engineering	3	3	0
CSC 113	SEN 310	Web Engineering	3	2	1
CSC 113	SEN 461	Secure Programming	3	2	1
None	SEN 448	Software Applications For Mobile Devices	3	2	1
None	SEN 324	Software Metrics & Estimation	3	3	0
None	SEN 450	Design Pattern	3	3	0
None	SEN 452	Agile Development	3	3	0
None	CSC 411	Artificial Intelligence	3	2	1
None	SEN 443	Introduction to Soft Computing	3	2	1
None	SEN 331	Scientific Computing	3	3	0
None	SEN 330	Agent Based Computing	3	3	0
None	SEN 459	Mobile and Pervasive Computing	3	3	0
None	CEN 451	Data Encryption & Security	3	3	0
None	CSC 495	Introduction to Data Science	3	2	1
None	SEN 332	Big Data Analytics	3	3	0
None	SEN 455	Knowledge Based Management Systems	3	3	0
None	SEN 453	Information System Audit	3	3	0
None	CSC 444	Computer Graphics	3	2	1
None	SEN 329	Digital Animation	3	3	0
None	SEN 493	Multimedia Systems	3	3	0
None	SEN 424	Semantic Web	3	2	1
None	SEN 456	Usability Engineering	3	3	0
SEN 120	SEN 429	DevOps	3	3	0
CSC 113	AIC 301	Machine Learning	3	2	1

### Multi-Disciplinary Engineering Elective (MDEE) Courses

Pre-Req	Course Code	Course Title Total	Credit Hours	Theory	Lab
GSC 110	GSC 210	Differential Equations	3	3	0
GSC 110	GSC 220	Complex Variables and Transforms	3	3	0
GSC 122	GSC 445	Operations Research	3	3	0
GSC 122	CEN 450	Simulation and Modeling	3	2	1
GSC 114	GSC 446	Physics-II (Mechanics)	3	3	0
GSC 122	GSC 440	Stochastic Processes	3	3	0
CSC 320	CEN 449	System Programming	3	2	1
CSC 320	CEN 453	Real Time Systems	3	3	0
CSC 315	CSC 323	Compiler Construction	3	2	1
GSC 110	CSC 453	Information Theory	3	3	0
CSC 113	SEN 460	IoT Application Development	3	2	1
None	CEN 122	Digital Design	3	2	1
None	CSC 448	Introduction to Bio-Informatics	3	3	0
None	CEN 463	Robotics	3	2	1
None	CSC 315	Theory of Automata	3	3	0
None	CEN 439	Embedded System Design	3	2	1
None	SEN 429	Fault-Tolerant Systems	3	3	0
None	SEN 449	Business Process Automation	3	3	0
None	HSS 422	Engineering Ethics	3	3	0

### Humanities and Social Sciences Electives

Pre-Req	Course Code	Course Title Total	Credit Hours	Theory	Lab
<b><u>Humanities and Social Sciences</u></b>					
None	HSS 217	Introduction to Sociology	2	2	0
None	HSS 119	Introduction to International Relations	2	2	0
None	HSS 121	Introduction to Media Studies	2	2	0
None	HSS 218	Introduction to Anthropology	2	2	0
None	HSS 457	Organizational Behavior	2	2	0
None	PSY 102	Introduction to Psychology	2	2	0
None	HSS 413	Sociology for Engineers	2	2	0
None	SEN 442	Software Engineering Economics	2	2	0
None	ENG 121	English Literature	2	2	0
None	HSS 462	Foreign Language	2	2	0
None	HSS 463	Accounting & Finance	2	2	0

### Management Science Electives

Pre-Req	Course Code	Course Title Total	Credit Hours	Theory	Lab
None	HSS 423	Entrepreneurship	2	2	0
None	MGT 111	Principles of Management	3	3	0
None	HSS 453	Human Resource Management	3	3	0

None	MGT 423	Engineering Management	3	3	0
None	MTM 101	Introduction to Maritime Industry	3	3	0

### COURSE DESCRIPTIONS OF NEWLY ADDED COURSE

**Course Name:** DevOps

**Course Code:** SEN 429

**Credit Hours:** 3 (3+0)

**Prereq:** SEN 120 (Introduction to Software Engineering)

#### **Course Description**

This course is designed to provide students with an in-depth understanding of advanced DevOps concepts and practices. Through hands-on learning and real-world case studies, students will develop the skills and knowledge necessary to design, implement, and manage complex DevOps initiatives at scale. Topics covered in this course may include advanced automation and orchestration, continuous integration and delivery (CI/CD), containerization, infrastructure as code (IaC), microservices, monitoring and logging, security and compliance, cloud computing, and emerging trends in DevOps. Students will also explore the challenges and solutions associated with implementing DevOps in large organizations, and develop the leadership and management skills necessary to lead and manage DevOps initiatives in complex enterprise environments.

#### **Books:**

Gene Kim, Patrick Debois, John Willis, Jez Humble, John Allspaw, "*The DevOps Handbook: How to Create World-Class Agility, Reliability, and Security in Technology Organizations*", 2<sup>nd</sup> Ed, IT Revolution Press 2021

Nicole Forsgren, Jez Humble, Gene Kim, "*Accelerate: The Science of Lean Software and DevOps: Building and Scaling High Performing Technology Organizations*", IT Revolution Press, 2018.

Jennifer Davis, Ryn Daniels, *Effective DevOps: Building a Culture of Collaboration, Affinity, and Tooling at Scale* 1<sup>st</sup> Ed, 2016.

**ROADMAP 2023 FOR UNDERGRADUATE COMPUTING PROGRAMMES**

**BS IN COMPUTER SCIENCE**

**Vision and Mission of Bahria University**

***Vision:*** To become a knowledge and creativity driven international university that contributes towards development of society.

***Mission:*** To ensure academic excellence through deliverance of quality education and applied research in a collegiate environment having strong linkages with industry and international community to meet the societal challenges.

**Vision of the Computer Science Department**

To become a center of excellence in Computer Science education, research, and globalized technologies

**Mission of the BS Computer Science Programme**

To produce graduates having good problem-solving skills and knowledge to use computers creatively and effectively along with team building and professional skills.

**Programme Educational Objectives (PEOs)**

PEO 1: Apply computing knowledge and skills to design and develop effective solutions for complex real-life problems.

PEO 2: Demonstrate ethical and moral conduct in professional practices.

PEO 3: Manifest life-long learning and inter-personal skills for sustainable career development and professional growth.

**Programme Learning Outcomes (PLOs)**

**PLO1 Academic Education:** To prepare graduates as computing professionals.

**PLO2 Knowledge for Solving Computing Problems:** Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the 16 abstraction and conceptualization of computing models from defined problems and requirements.

**PLO3 Problem Analysis:** Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

**PLO4 Design/ Development of Solutions:** Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

**PLO5 Modern Tool Usage:** Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

**PLO6 Individual and Teamwork:** Function effectively as an individual and as a member or leader in diverse teams and in multi-disciplinary settings.

**PLO7 Communication:** Communicate effectively with the computing community and with society at large about complex computing activities by being able to comprehend and write effective

reports, design documentation, make effective presentations, and give and understand clear instructions.

**PLO8 Computing Professionalism and Society:** Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.

**PLO9 Ethics:** Understand and commit to professional ethics, responsibilities, and norms of professional computing practice.

**PLO10 Life-long Learning:** Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

#### **Mapping of PLOs to PEOs**

No.	Programme Learning Outcomes (PLOs)	PEOs		
		PEO-1	PEO-2	PEO-3
1	Academic Education	✓	✓	
2	Knowledge for solving Computing Problems	✓		
3	Problem Analysis	✓		
4	Design/ Development of Solutions	✓		✓
5	Modern Tool Usage	✓	✓	
6	Individual and Teamwork		✓	✓
7	Communication			✓
8	Computing Professionalism and Society		✓	✓
9	Ethics		✓	
10	Life-long Learning			✓

#### **Programme Eligibility Criteria**

Minimum 50% marks in Intermediate (HSSC) examination (Pre-Medical/Pre-Eng.) or equivalent qualification with Mathematics certified by IBCC.

For pre-medical students, two deficiency courses of mathematics will be taught during first year

#### **Curriculum Model for BS in Computer Science**

The generic structure for computing degree Programme is mapped with the BSCS Programme in the following table.

#### **Generic Structure for Computing Disciplines:**

Areas	Credit Hours	Courses
Computing Core	49	14
Domain Core	18	6
Domain Elective	21	7
Mathematics & Supporting Courses	12	4
Elective Supporting Courses	3	1
General Education Requirement	30	12
<b>Totals</b>	<b>133</b>	<b>44</b>

## BS (Computer Science) Road Map

SEMESTER 1						
Prerequisite	Course Code	Course Title	Theory	Lab	CR	CR/Sem
None	GSC 114	Applied Physics	2	0	2	16
None	GSL 114	Applied Physics Lab	0	1	1	
None	CSC 114	Introduction to Information & Communication Technology	2	0	2	
None	CSL 114	Introduction to Information & Communication Technology Lab	0	1	1	
None	ENG 101	Functional English	3	0	3	
None	CSC 113	Computer Programming	3	0	3	
None	CSL 113	Computer Programming Lab	0	1	1	
None	GSC 221	Discrete Mathematics	3	0	3	
SEMESTER 2						
Prerequisite	Course Code	Course Title	Theory	Lab	CR	CR/Sem
None	CSC 220	Database Management Systems	3	0	3	17
None	CSL 220	Database Management Systems Lab	0	1	1	
CSC 113	CSC 210	Object Oriented Programming	3	0	3	
CSC 113	CSL 210	Object Oriented Programming Lab	0	1	1	
GSC 114	CEN 122	Digital Design	2	0	2	
GSC 114	CEL 122	Digital Design Lab	0	1	1	
None	GSC 110	Applied Calculus and Analytical Geometry	3	0	3	
None	GSC 121	Linear Algebra	3	0	3	
SEMESTER 3						
Prerequisite	Course Code	Course Title	Theory	Lab	CR	CR/Sem
None	GSC 122	Probability and Statistics	3	0	3	17
GSC 110	GSC 211	Multivariable Calculus	3	0	3	
None	CEN 223	Computer Communication & Networks	3	0	3	
None	CEL 223	Computer Communication & Networks Lab	0	1	1	
CSC 113	CSC 221	Data Structure & Algorithm	3	0	3	
CSC 113	CSL 221	Data Structure & Algorithm Lab	0	1	1	
None	SEN 220	Software Engineering	3	0	3	
SEMESTER 4						
Prerequisite	Course Code	Course Title	Theory	Lab	CR	CR/Sem
None		Social Sciences Elective	3	0	3	18
CEN 122	CEN 323	Computer Organization and Assembly Language	2	0	2	

CEN 122	CEL 323	Computer Organization & Assembly Language Lab	0	1	1	
None	CSC 325	Artificial Intelligence	3	0	3	
None	CSL 325	Artificial Intelligence Lab	0	1	1	
None	CSC 315	Theory of Automata	3	0	3	
CSC 220	CSC 470	Advanced Databases	2	0	2	
CSC 220	CSL 470	Advanced Databases Lab	0	1	1	
None	ENG 134	Communication Skills	2	0	2	

#### SEMESTER 5

Prerequisite	Course Code	Course Title	Theory	Lab	CR	CR/Sem
CSC 221	CSC 320	Operating Systems	3	0	3	
CSC 221	CSL 320	Operating Systems Lab	0	1	1	
None	ENG 320	Technical writing and presentation skills	3	0	3	
None	CSC 407	Information Security	3	0	3	
CEN 323	CSC 327	Computer Architecture	2	0	2	
CEN 323	CSL 327	Computer Architecture Lab	0	1	1	
SEN 220	SEN 321	Human Computer Interaction	2	0	2	
SEN 220	SEL 321	Human Computer Interaction Lab	0	1	1	

#### SEMESTER 6

Prerequisite	Course Code	Course Title	Theory	Lab	CR	CR/Sem
CSC 315	CSC 323	Compiler Construction	2	0	2	
CSC 315	CSL 323	Compiler Construction Lab	0	1	1	
CSC 320	AIC 302	Parallel & Distributed Computing	2	0	2	
CSC 320	AIL 302	Parallel & Distributed Computing Lab	0	1	1	
		Elective 1 (2+1)	2	1	3	
		Elective 2 (3+0 or 2+1)	3/2	0/1	3	
		Elective 3 (3+0 or 2+1)	3/2	0/1	3	
None	ISL 101	Islamic Studies/Ethics	2	0	2	

#### SEMESTER 7

Prerequisite	Course code	Course Title	Theory	Lab	CR	CR/Sem
None	FYP 400	Final Year Project	0	3	3	
CSC 221	CSC 321	Design and Analysis of Algorithms	3	0	3	
		Elective Supporting Course	3	0	3	
		Elective 4 (2+1)	2	1	3	
		Elective 5 (2+1)	2	1	3	
None	HSS 423	Entrepreneurship	2	0	2	

#### SEMESTER 8

Prerequisite	Course code	Course Title	Theory	Lab	CR	CR/Sem
None	FYP 400	Final Year Project	0	3	3	
None	PAK 101	Pakistan Studies	2	0	2	

16

17

17

15

None	CSC 308	Professional Practices & Ethics	2	0	2	
None	HSS 217	Introduction to Sociology	2	0	2	
		Elective 6 (3+0 or 2+1)	3/2	0/1	3	
		Elective 7 (2+1)	2	1	3	
<b>Total Credit Hours:</b>						<b><u>133</u></b>

### List of Courses

Computing Core Courses (49 credit hours)

Pre-requisite	Course Code	Course Title	Lec	Lab	CR
None	CSC 113	Computer Programming	3	1	4
CSC 113	CSC 210	Object Oriented Programming	3	1	4
None	CSC 220	Database Management Systems	3	1	4
GSC 114	CEN 122	Digital Design	2	1	3
CSC 113	CSC 221	Data Structure & Algorithm	3	1	4
None	CSC 407	Information Security	3	0	3
CSC 210	CSC 325	Artificial Intelligence	3	1	4
None	CEN 223	Computer Communication & Networks	3	1	4
None	SEN 220	Software Engineering	3	0	3
CEN 122	CEN 323	Computer Organization and Assembly Language	2	1	3
CSC 221	CSC 320	Operating Systems	3	1	4
CSC 221	CSC 321	Design and Analysis of Algorithms	3	0	3
None	FYP 400	Final Year Project	0	6	6

Computer Science Core Courses (18 credit hours)

Prerequisite	Course Code	Course Title	Lec	Lab	CR
None	CSC 315	Theory of Automata	3	0	3
CSC 220	CSC 468	Advanced Databases	2	1	3
SEN 220	SEN 320	Human Computer Interaction	2	1	3
CEN 323	CSC 327	Computer Architecture	2	1	3
CSC 315	CSC 323	Compiler Construction	2	1	3
CSC 320	AIC 302	Parallel & Distributed Computing	2	1	3

List of Computer Science Elective Courses (21 credit hours)

Prerequisite	Course Code	Course Title	Lec	Lab	CR
CSC 321	CSC 521	Advanced Design and Analysis of Algorithm	3	0	3
CEN 223	CEN 451	Data Encryption and Security	3	0	3
CSC 220	CSC 452	Data Mining	3	0	3
CSC 220	CSC 454	Data Warehousing	3	0	3
CSC 220	CSC 490	Introduction to Cloud Computing	3	0	3
CSC 325	SEN 455	Knowledge Based Management System	3	0	3
SEN 220	CSC 458	Management Information System	3	0	3
CSC 325	CSC 441	Natural Language Processing	3	0	3
CSC 325	CSC 449	Neural Networks & Fuzzy Logic	3	0	3
<b>CSC 113</b>	SEN 422	Semantic Computing	3	0	3
SEN 220	SEN 458	Software Requirement Engineering	3	0	3
CSC 323	CSC 451	Theory of Programming Languages	3	0	3

SEN 220	SEN 456	Usability Engineering	3	0	3
CEN 223	CSC 489	Ubiquitous Computing	3	0	3
SEN 220	SEN 410	Software Project Management	3	0	3
SEN 220	SEN 420	Software Quality Assurance	3	0	3
SEN 220	SEN 447	Software Testing	3	0	3
CEN 223	ITC 411	Cyber Security	3	0	3
CSC 325	CSC 464	Computer Vision	3	0	3
CSC 221	CSC 404	Blockchain Technologies	3	0	3
CSC 325	CSC 448	Introduction to Bioinformatics	3	0	3
CEN 223	CEN 449	Internet of Things	3	0	3
CSC 220	CSC 488	Big Data Analytics	2	0	2
CSC 220	CSL 488	Big Data Analytics Lab	0	1	1
CSC 210	CSC 444	Computer Graphics	2	0	2
CSC 210	CSL 444	Computer Graphics Lab	0	1	1
None	CSC 484	Content Management	2	0	2
None	CSL 484	Content Management Lab	0	1	1
CSC 210	CEN 444	Digital Image Processing	2	0	2
CSC 210	CEL 444	Digital Image Processing Lab	0	1	1
CSC 210	CSC 319	Game Development and Design	2	0	2
CSC 210	CSL 319	Game Development and Design Lab	0	1	1
CSC 325	CSC 466	Introduction to Biometrics	2	0	2
CSC 325	CSL 466	Introduction to Biometrics Lab	0	1	1
CSC 220	CSC 487	Introduction to Data Science	2	0	2
CSC 220	CSL 487	Introduction to Data Science Lab	0	1	1
CSC 210	CSC 341	Mobile Application Development	2	0	2
CSC 210	CSL 341	Mobile Application Development Lab	1	0	1
None	SEN 493	Multimedia Systems	2	0	2
None	SEL 493	Multimedia Systems Lab	0	1	1
CSC 325	CEN 458	Robotics	2	0	2
CSC 325	CEL 458	Robotics Lab	0	1	1
CSC 210	SEN 448	Software Application for Mobile Device	2	0	2
CSC 210	SEL 448	Software Application for Mobile Device Lab	0	1	1
SEN 220	SEN 457	Software Design and Architecture	2	0	2
SEN 220	SEL 457	Software Design and Architecture Lab	0	1	1
CSC 210	CSC 313	Visual Programming	2	0	2
CSC 210	CSL 313	Visual Programming Lab	0	1	1
CSC 113	SEN 310	Web Engineering	2	0	2
CSC 113	SEL 310	Web Engineering Lab	0	1	1
CSC 325	AIC 301	Machine Learning	2	0	2
CSC 325	AIL 301	Machine Learning Lab	0	1	1
CSC 325	AIC 401	Deep Learning	2	0	2
CSC 325	AIL 401	Deep Learning Lab	0	1	1
None	CSC 400	Quantum Computing	2	0	2
None	CSL 400	Quantum Computing Lab	0	1	1

#### Mathematics & Supporting Courses (12 credit hours)

Prerequisite	Course Code	Course Title	Lec	Lab	CR
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GSC 110	GSC 211	Multivariable Calculus	3	0	3
None	GSC 121	Linear Algebra	3	0	3
None	GSC 122	Probability & Statistics	3	0	3
None	ENG 320	Technical writing and presentation skills	3	0	3

#### **Elective Supporting Courses (3 credit hours)**

Prerequisite	Course Code	Course Title	Lec	Lab	CR
None	MKT 110	Principles of Marketing	3	0	3
None	FIN 201	Fundamentals of Finance	3	0	3
None	MGT 111	Principles of Management	3	0	3
None	MGT 242	Organizational Theory and Behavior	3	0	3

#### **General Education Courses (30 credit hours)**

Prerequisite	Course Code	Course Title	Lec	Lab	CR
None	CSC 114	Introduction to Information & Communication Technology	2	1	3
None	ENG 101	Functional English	3	0	3
None	ENG 134	Communication Skills	2	0	2
None	GSC 221	Discrete Mathematics	3	0	3
None	GSC 110	Applied Calculus & Analytical Geometry	3	0	3
None	ISL 101	Islamic Studies	2	0	2
None	PAK 101	Pakistan Studies	2	0	2
None	GSC 114	Applied Physics	2	1	3
None	CSC 308	Professional Practices and Ethics	2	0	2
None	HSS 217	Introduction to Sociology	2	0	2
None	HSS 423	Entrepreneurship	2	0	2
<b>Social Sciences Electives</b>					
None	HSS 107	Introduction to Psychology	3	0	3
None	HSS 115	Introduction to Media studies	3	0	3
None	BES 103	Critical Thinking	3	0	3

**Course Name:** *Professional Practices and Ethics*

**Credit Hours:** 2 (2+0)

**Contact Hours:** 2+0

**Pre-requisites:** None

**Course Code:** CSC 308

**Contents:**

Historical, social, and economic context of Computing (software engineering, Computer Science, Information Technology); Definitions of Computing (software engineering, Computer Science, Information Technology) subject areas and professional activities; professional societies; professional ethics; professional competency and life-long learning; uses, misuses, and risks of software; information security and privacy; business practices and the economics of software; intellectual property and software law (cyber law); social responsibilities, software related contracts, Software house organization. Intellectual Property Rights, The Framework of Employee Relations Law and Changing Management Practices, Human Resource Management and IT, Health and Safety at Work, Software Liability, Liability and Practice, Computer Misuse and the Criminal

Law, Regulation and Control of Personal Information. Overview of the British Computer Society Code of Conduct, IEEE Code of Ethics, ACM Code of Ethics and Professional Conduct, ACM/IEEE Software Engineering Code of Ethics and Professional Practice. Accountability and Auditing, Social Application of Ethics.

**Reference Materials:**

1. Professional Issues in Software Engineering by Frank Bott, Allison Coleman, Jack Eaton and Diane Rowland, CRC Press; 3rd Edition (2000). ISBN-10: 0748409513
2. Computer Ethics by Deborah G. Johnson, Pearson; 4th Edition (January 3, 2009). ISBN-10: 0131112414
3. A Gift of Fire: Social, Legal, and Ethical Issues for Computing and the Internet (3rd Edition) by Sara Baase, Prentice Hall; 3rd Edition (2008). ISBN-10: 0136008488
4. Applied Professional Ethics by Gregory R. Beabout, University Press of America (1993). ISBN-10: 0819193747.

**Name: Computer Architecture**

**Credit Hours:** 3 (2+1)

**Contact Hours:** 2+3

**Pre-requisites:** Computer Organization and Assembly Language

**Course Code:** CSC 327

**Contents:**

Introduction to Computer Architecture, Evolution of microprocessors from vacuum tubes to VLSI, gate level integration complexity, Internal Architecture of x86 and ARM processors, Instruction set architecture, Implementation of Interrupt service routine (ISR) and Interrupt vector table (IVT), Microprocessor without Interlocked Pipelined stages-MIPS Processor, MIPS-ISA, MIPS Assembly Instructions, Minimization of performance and memory gap, design improvements, External memory, Magnetic Disk, Redundant array of independent disks(RAID),DMA controller, Concept of pipelining, Parallelism, Instruction level parallelism, data level parallelism, Thread level parallelism.

**Reference Materials:**

1. Patterson, David A., Hennessy, John L., (2014), *Computer Organization and Design: the Hardware /Software Interface*, (5th Edition). Morgan Kaufmann Publishers, ISBN-13: 978-0124077263, ISBN-10: 0124077269.
2. Patterson, David A., Hennessy, John L., (2014), *Computer Organization and Design: the Hardware /Software Interface*, (5th Edition). Morgan Kaufmann Publishers, ISBN-13: 978-0124077263, ISBN-10: 0124077269.

**Appendage 4307 B**

**BS INFORMATION TECHNOLOGY**

**Vision and Mission of Bahria University**

**Vision:** To become a knowledge and creativity driven international university that contributes towards development of society

**Mission:** To ensure academic excellence through deliverance of quality education and applied research in a collegiate environment having strong linkages with industry and international community to meet the societal challenges

## **Vision of the Computer Science Department**

To become a center of excellence in computer science education, research and globalized technologies

## **Mission of the BS Computer Science Programme**

To produce graduates having good problem-solving skills and knowledge to use computers creatively and effectively along with team building and professional skills

**PEO 1:** Apply principle and practices of information technology and computing knowledge to solve challenging problems in relevant profession

**PEO 2:** Demonstrate the ability to use modern tools learnt during degree Programme to design and develop effective solutions

**PEO 3:** Exhibit managerial capabilities with ethical and moral values

Programme Educational Objectives (PEOs)

**PLO1** Academic Education: To prepare graduates as computing professionals.

**PLO2** Knowledge for Solving Computing Problems: Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the 16 abstraction and conceptualization of computing models from defined problems and requirements.

**PLO3** Problem Analysis: Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

**PLO4** Design/ Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

**PLO5** Modern Tool Usage: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

**PLO6** Individual and Teamwork: Function effectively as an individual and as a member or leader in diverse teams and in multi-disciplinary settings.

**PLO7** Communication: Communicate effectively with the computing community and with society at large about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

**PLO8** Computing Professionalism and Society: Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.

**PLO9** Ethics: Understand and commit to professional ethics, responsibilities, and norms of professional computing practice.

**PLO10** Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

No.	Programme Learning Outcomes (PLOs)	PEOs		
		PEO-1	PEO-2	PEO-3
1	Academic Education	✓	✓	
2	Knowledge for solving Computing Problems	✓		

3	Problem Analysis	✓		
4	Design/ Development of Solutions	✓	✓	
5	Modern Tool Usage	✓	✓	
6	Individual and Teamwork	✓		✓
7	Communication			✓
8	Computing Professionalism and Society			✓
9	Ethics			✓
10	Life-long Learning	✓	✓	

### CURRICULUM MODEL FOR BS IN INFORMATION TECHNOLOGY

The generic structure for computing degree Programme given before is mapped with the BSIT Programme in the following tables.

#### Generic Structure for Computing Disciplines:

Areas	Credit Hours	Courses
Computing Core	48	14
Domain Core	19	6
Domain Elective	21	7
Mathematics & Supporting Courses	12	4
Elective Supporting Courses	3	1
General Education Requirement	30	12
<b>Total</b>	<b>133</b>	<b>44</b>

### BS (Information Technology) Roadmap

<b>SEMESTER 1</b>						
Prerequisite	Course Code	Course Title	Theory	Lab	CR	CR/Sem
None	GSC 114	Applied Physics	2	0	2	16
None	GSL 114	Applied Physics Lab	0	1	1	
None	CSC 114	Introduction to Information & Communication Technology	2	0	2	
None	CSL 114	Introduction to Information & Communication Technology Lab	0	1	1	
None	ENG 101	Functional English	3	0	3	
None	CSC 113	Computer Programming	3	0	3	
None	CSL 113	Computer Programming Lab	0	1	1	
None	GSC 221	Discrete Mathematics	3	0	3	
<b>SEMESTER 2</b>						
Prerequisite	Course Code	Course Title	Theory	Lab	CR	CR/Sem
None	CSC 220	Database Management Systems	3	0	3	17
None	CSL 220	Database Management Systems Lab	0	1	1	
CSC 113	CSC 210	Object Oriented Programming	3	0	3	
CSC 113	CSL 210	Object Oriented Programming Lab	0	1	1	
GSC 114	CEN 122	Digital Design	2	0	2	
GSC 114	CEL 122	Digital Design Lab	0	1	1	
None	GSC 110	Applied Calculus and Analytical	3	0	3	

		Geometry					
None	GSC 121	Linear Algebra	3	0	3		
<b>SEMESTER 3</b>							
Prerequisite	Course Code	Course Title	Theory	Lab	CR	CR/Sem	
None	GSC 122	Probability and Statistics	3	0	3		17
GSC 110	GSC 211	Multivariable Calculus	3	0	3		
None	CEN 223	Computer Communication & Networks	3	0	3		
None	CEL 223	Computer Communication & Networks Lab	0	1	1		
CSC 113	CSC 221	Data Structure & Algorithm	3	0	3		
CSC 113	CSL 221	Data Structure & Algorithm Lab	0	1	1		
None	SEN 220	Software Engineering	3	0	3		
<b>SEMESTER 4</b>							
Prerequisite	Course Code	Course Title	Theory	Lab	CR	CR/Sem	
CSC 210	ITC 226	Web Systems & Technologies	2	0	2		17
CSC 210	ITL 226	Web Systems & Technologies Lab	0	1	1		
CEN 122	CEN 323	Computer Organization and Assembly Language	2	0	2		
CEN 122	CEL 323	Computer Organization & Assembly Language Lab	0	1	1		
CSC 210	CSC 411	Artificial Intelligence	2	0	2		
CSC 210	CSL 411	Artificial Intelligence Lab	0	1	1		
CEN 223	CSC 407	Information Security	3	0	3		
CSC 220	ITC 327	Database Administration & Management	2	0	2		
CSC 220	ITL 327	Database Administration & Management Lab	0	1	1		
None	ENG 134	Communication Skills	2	0	2		
<b>SEMESTER 5</b>							
Prerequisite	Course Code	Course Title	Theory	Lab	CR	CR/Sem	
CSC 221	CSC 320	Operating Systems	3	0	3		17
CSC 221	CSL 320	Operating Systems Lab	0	1	1		
CSC 221	CSC 321	Design and Analysis of Algorithms	3	0	3		
CEN 223	ITC 411	Cyber Security	3	0	3		
CEN 223	ITC 312	System & Network Administration	3	0	3		
CEN 223	ITL 312	System & Network Administration Lab	0	1	1		
None		Social Sciences Elective	3	0	3		
<b>SEMESTER 6</b>							
Prerequisite	Course Code	Course Title	Theory	Lab	CR	CR/Sem	
ITC 312	ITC 324	Information Technology Infrastructure	3	0	3		18
ENG 134	ENG 320	Technical Writing and Presentation Skills	3	0	3		
CSC 320	AIC 302	Parallel & Distributed Computing	2	0	2		

CSC 320	AIL 302	Parallel & Distributed Computing Lab	0	1	1	
		Domain Elective 1 (2+1)	2	1	3	
		Domain Elective 2 (2+1)	2	1	3	
		Domain Elective 3 (3+0 or 2+1)	3/2	0/1	3	
<b>SEMESTER 7</b>						
Prerequisite	Course code	Course Title	Theory	Lab	CR	CR/Sem
None	FYP 400	Final Year Project	0	3	3	
		Elective Supporting Course	3	0	3	
		Domain Elective 4 (2+1)	2	1	3	
		Domain Elective 5 (2+1)	2	1	3	
		Domain Elective 6 (3+0 or 2+1)	3/2	0/1	3	
None	HSS 423	Entrepreneurship	2	0	2	
<b>SEMESTER 8</b>						
Prerequisite	Course code	Course Title	Theory	Lab	CR	CR/Sem
None	FYP 400	Final Year Project	0	3	3	
None	PAK 101	Pakistan Studies	2	0	2	
None	CSC 308	Professional Practices & Ethics	2	0	2	
None	HSS 217	Introduction to Sociology	2	0	2	
		Domain Elective 7 (3+0 or 2+1)	3/2	0/1	3	
None	ISL 101	Islamic Studies	2	0	2	
<b>Total Credit Hours:</b>						<b>133</b>

#### List of Courses

##### Computing Core Courses (48 credit hours)

Pre-requisite	Course Code	Course Title	Lec	Lab	CR
None	CSC 113	Computer Programming	3	1	4
CSC 113	CSC 210	Object Oriented Programming	3	1	4
None	CSC 220	Database Management Systems	3	1	4
GSC 114	CEN 122	Digital Design	2	1	3
CSC 113	CSC 221	Data Structure & Algorithm	3	1	4
CEN 223	CSC 407	Information Security	3	0	3
CSC 210	CSC 411	Artificial Intelligence	2	1	3
None	CEN 223	Computer Communication & Networks	3	1	4
None	SEN 220	Software Engineering	3	0	3
CEN 122	CEN 323	Computer Organization and Assembly Language	2	1	3
CSC 221	CSC 320	Operating Systems	3	1	4
CSC 221	CSC 321	Design and Analysis of Algorithms	3	0	3
None	FYP 400	Final Year Project	0	6	6

**Information Technology Domain Core Courses (19 credit hours)**

Pre-requisite	Course Code	Course Title	Lec	Lab	CR
ITC 312	ITC 324	Information Technology Infrastructure	3	0	3
CEN 223	ITC 312	System & Network Administration	3	1	4
CEN 223	ITC 411	Cyber Security	3	0	3
CSC 210	CSC 411	Artificial Intelligence	2	1	3
CSC 210	ITC 226	Web Systems & Technologies	2	1	3
CSC 320	AIC 302	Parallel & Distributed Computing	2	1	3

**List of Information Technology Domain Elective Courses (21 credit hours)**

Prerequisite	Course Code	Course Title	Lec	Lab	CR
ITC 226	ITB 471	E Commerce	3	0	3
None	ITC 425	Business Processing Re-engineering	3	0	3
None	ITC 457	Knowledge Management System & Technologies	3	0	3
CSC 220	CSC 452	Data Mining	3	0	3
CSC 220	CSC 454	Data Warehousing	3	0	3
ITC 226	SEN 421	Semantic Web	3	0	3
SEN 220	SEN 411	Software Testing	3	0	3
SEN 220	SEN 456	Usability Engineering	3	0	3
CSC 220	CSC 426	Business Intelligence and Analytic	3	0	3
None	SEN 427	Information Systems Auditing and Assurance	3	0	3
SEN 220	SEN 428	Service Oriented Architecture	3	0	3
SEN 220	SEN 420	Software Quality Assurance	3	0	3
CEN 223	EET 455	Wireless Communication	3	0	3
None	SEN 320	Human Computer Interaction	3	0	3
CSC 221	CSC 404	Blockchain Technologies	3	0	3
CSC 221	CSC 448	Introduction to Bioinformatics	3	0	3
CEN 223	CSC 450	Internet of Things	3	0	3
CEN 223	SEN 459	Software Defined Network	3	0	3
SEN 220	CSC 489	Ubiquitous Computing	3	0	3
GSC 221	GSC 445	Operation Research	3	0	3
None	CSC 458	Management Information System	3	0	3
SEN 220	SEN 410	Software Project Management	3	0	3

Prerequisite	Course Code	Course Title	Lec	Lab	CR
CSC 210	CSC 313	Visual Programming	2	0	2
CSC 210	CSL 313	Visual Programming Lab	0	1	1
CSC 220	CSC 487	Introduction to Data Science	2	0	2
CSC 220	CSL 487	Introduction to Data Science Lab	0	1	1
CSC 210	CEN 444	Digital Image Processing	2	0	2
CSC 210	CEL 444	Digital Image Processing Lab	0	1	1
CSC 210	CSC 444	Computer Graphics	2	0	2

CSC 210	CSL 444	Computer Graphics Lab	0	1	1
CSC 220	CSC 468	Advanced Databases	2	0	2
CSC 220	CSL 468	Advanced Databases Lab	0	1	1
CSC 210	CSC 341	Mobile Application Development	2	0	2
CSC 210	CSL 341	Mobile Application Development Lab	1	0	1
None	SEN 493	Multimedia Systems	2	0	2
None	SEL 493	Multimedia Systems Lab	0	1	1
SEN 220	SEN 457	Software Design and Architecture	2	0	2
SEN 220	SEL 457	Software Design and Architecture Lab	0	1	1
CSC 113	SEN 310	Web Engineering	2	0	2
CSC 113	SEL 310	Web Engineering Lab	0	1	1
CSC 220	CSC 488	Big Data Analytics	2	0	2
CSC 220	CSL 488	Big Data Analytics Lab	0	1	1
None	CSC 484	Content Management	2	0	2
None	CSL 484	Content Management Lab	0	1	1
CSC 411	CSC 413	Introduction to Machine Learning	2	0	2
CSC 411	CSC 413	Introduction to Machine Learning	0	1	1

#### **Mathematics & Supporting Courses (12 credit hours)**

Prerequisite	Course Code	Course Title	Lec	Lab	CR
GSC 110	GSC 211	Multivariable Calculus	3	0	3
None	GSC 121	Linear Algebra	3	0	3
None	GSC 122	Probability & Statistics	3	0	3
ENG 134	ENG 320	Technical Writing and Presentation Skills	3	0	3

#### **Elective Supporting Courses (3 credit hours)**

Prerequisite	Course Code	Course Title	Lec	Lab	CR
None	MKT 110	Principles of Marketing	3	0	3
None	FIN 201	Fundamentals of Finance	3	0	3
None	MGT 111	Principles of Management	3	0	3
None	MGT 242	Organizational Theory and Behavior	3	0	3

#### **General Education Courses (30 credit hours)**

Prerequisite	Course Code	Course Title	Lec	Lab	CR
None	CSC 114	Introduction to Information & Communication Technology	2	1	3
None	ENG 101	Functional English	3	0	3
ENG 105	ENG 134	Communication Skills	2	0	2
None	GSC 221	Discrete Mathematics	3	0	3
None	GSC 110	Applied Calculus & Analytical Geometry	3	0	3
None	ISL 101	Islamic Studies	2	0	2

None	PAK 101	Pakistan Studies	2	0	2
None	GSC 114	Applied Physics	2	1	3
None	CSC 308	Professional Practices and Ethics	2	0	2
None	HSS 217	Introduction to Sociology	2	0	2
None	HSS 423	Entrepreneurship	2	0	2
<b>Social Sciences Electives</b>					
None	HSS 107	Introduction to Psychology	3	0	3
None	HSS 115	Introduction to Media studies	3	0	3
None	BES 103	Critical Thinking	3	0	3

**Course Title:** **Blockchain Technologies**

Course Code: CSC 404

Credit Hours: 3

Pre-requisite (if any): CSC 221

### **Course Description**

This is a beginners-level course that focuses on the foundational technologies behind blockchain. We will cover the concepts of distributed ledger, consensus mechanisms, authentication techniques, and relevant protocols. The course will provide case studies of blockchain applications such as cryptocurrencies, supply chain management, and B2B/B2C/C2C scenarios. The course will also provide hands-on experience with building and deploying smart contracts.

### **Course Objectives**

The course aims to introduce basic blockchain concepts. You will learn about the decentralized peer-to-peer network, an immutable distributed ledger and the trust model that defines a blockchain. This course enables you to explain basic components of a blockchain (transaction, block, block header, and the chain) its operations (verification, validation, and consensus model) underlying algorithms, and essentials of trust (hard fork and soft fork). Content includes the hashing and cryptography foundations indispensable to blockchain Programming, which is the focus of two subsequent specialization courses, Smart Contracts and Decentralized Applications (Dapps). You will work on a virtual machine image, specifically created for this course, to build an Ethereum test chain and operate on the chain. This hands-on activity will help you understand the workings of a blockchain, its transactions, blocks and mining.

### **Course Learning Outcomes**

**CLO: 1.** Acquire the basic concepts and uses of blockchain with different applications/Systems [C1 Knowledge]

**CLO: 2.** Describe and apply different stages of blockchain development using different algorithms [C3 – Application]

**CLO: 3.** Identify the problems and apply blockchain solutions. [C2 – Comprehension]

**CLO: 4.** Build blockchain environment using tools. [P3 – Comprehension]

### **Recommended Text Books/Reference Books (latest edition)**

Antony Lewis The Basics of Bitcoins and Blockchains: An Introduction to Cryptocurrencies and the Technology that Powers Them (5<sup>th</sup> Edition)

### **Web Resources/Other Course Materials**

Slides, and reference material, whitepapers, online resources

Course Title: **Introduction to Bioinformatics**  
Course Code: **CSC 448**  
Credit Hours: **03**  
Pre-requisite: **CSC 221**

#### **Course Description**

This course is designed to give students both a theoretical background and a working knowledge of the techniques employed in bioinformatics. Emphasis will be placed on biological sequence (DNA, RNA, protein) analysis and its applications.

#### **Course Objectives**

A basic understanding of the biological data and biological processes  
Familiarity with the biological databases and their use  
Understanding of the biological problems that can be solved using computational techniques  
Understanding and implementation of the algorithms used to solve biological problems  
Analyses of the biological data and biological techniques

#### **Course Learning Outcomes**

Students will become familiar with different biological databases  
Students will be able to extract and analyze the data from the different biological resources  
Students will become familiar with the different biological techniques used to solve biological problems (such as structure prediction)  
Students will be able to compare and analyze sequential data (DNA, RNA, and Proteins)  
Students will be able to solve the biological problems (by applying computational techniques) using different types of information extracted from the biological data

#### **Course Contents:**

Introduction to Bioinformatics  
DNA Replication, Transcription, and Translation  
Introduction to biological databases and retrieval of information from these databases  
Sequence Alignment (Local and Global)  
Introduction to structure prediction of the proteins  
Advance problems in Bioinformatics that can be solved by computational techniques  
Use of protein sequence and structure to solve biological problems

#### **Recommended Text Books/Reference Books (latest edition)**

Introduction to Bioinformatics by Arthur M. Lesk (2019)  
An Introduction to Bioinformatics Algorithms by NC Jones, and PA Pevzner (2004)

#### **Web Resources/Other Course Materials**

Different Databases and Tools such as Uniprot, PDB, SwissProt, etc.  
Research Articles

Course Title: **Introduction to Machine Learning**  
Course Code: **CSC 413**  
Credit Hours: **3 (Theory)**  
Pre-requisite (if any): CSC 411

#### **Course Description**

Machine learning is a subset of AI. This field is incredibly pervasive, with applications spanning from business intelligence to security, from analyzing biochemical interactions to structural monitoring

of aging bridges, etc. It uses interdisciplinary techniques such as statistics, linear algebra, optimization, and computer science to create automated systems that can sift through large volumes of data at high speed to make predictions or decisions without human intervention. This course will familiarize students with a broad cross-section of models and algorithms for machine learning. Students will also implement algorithms using python machine learning libraries. Students should be familiar with basic mathematics concepts such as linear algebra, calculus, and statistics to get maximum benefit of this course.

### **Course Objectives**

- To provide the knowledge of supervised and unsupervised machine learning paradigm that how it can help to do the tasks that humans can do out of instinct.
- To provide understanding of machine learning process cycle from data acquisition to model training, and performance evaluation.
- To enable student to implement different machine learning algorithms for classification and regression problems.

### **Course Learning Outcomes**

- Understand and describe a wide variety of learning algorithms
- Apply the machine learning algorithms to a case study data/real-world problem
- Evaluate and optimize the trained models to tune up the performance

### **Course Contents:**

- Introduction: what is ML; Problems, Applications
- Categories (Supervised Learning, Un-supervised Learning, Reinforcement Learning)
- An introduction to Prominent Supervised learning (Classification and Regression Algorithms)
- Introduction to Python (Language, Tools and IDE's Tour, Scikit learn ML Libraries)
- ML Process cycle (Data Acquisition, Model Training Process, Trained Model Evaluation)
- Data Acquisition (Categorical & numerical data, Data Pre-processing and Preparation, Data Wrangling)
- Algorithms (concept, mathematical model, implementation using python)
- Linear regression
- Naïve Bayes Algorithm
- Decision Trees (ID3)
- Random Forest
- Support vector machines
- K-near neighbors
- K-mean clustering
- Logistic Regression
- Neural Network
- Reinforcement learning (Agent, reward, feedback policy, different RL Models)
- Model Training process (Train test split, hyper parameter, tuning, cross validation, best fit model selection)
- Training & Testing conventions (K-fold cross validation, Overfitting, Underfitting)
- Model Performance Evaluation
- Bias, Variance trade-off
- Loss Functions
- Optimization, Gradient Descent
- Regularization (L1 and L2)
- Reporting predictive performance by Evaluation metrics (Accuracy, Precision, Recall, F1, ROC and AUC)

Tuning model complexity, Model Design Issues  
Trained Model Deployment

#### **Recommended Text Books/Reference Books (latest edition)**

Géron, A. (2022). *Hands-on machine learning with Scikit-Learn, Keras, and TensorFlow.* " O'Reilly Media, Inc.

Burkov, A. (2019). *The hundred-page machine learning book* (Vol. 1, p. 32). Quebec City, QC, Canada: Andriy Burkov.

Sebastian Raschka (2017). *Python Machine Learning* (2<sup>nd</sup> ed.). ISBN: 978-1-78712-593

#### **Web Resources/Other Course Materials**

<http://cs229.stanford.edu/>

Wang, W., & Siau, K. (2019). Artificial intelligence, machine learning, automation, robotics, future of work and future of humanity: A review and research agenda. *Journal of Database Management (JDM)*, 30(1), 61-79.

<https://machinelearningmastery.com/a-tour-of-machine-learning-algorithms/>

Course Title: **Business Processing Re-engineering**  
Course Code: ITC 425  
Credit Hours: 3  
Pre-requisite (if any): None

#### **Course Description**

This course focuses on the application of industry 'best practice' strategies, tools and techniques in business process management to re-engineer organizations' business processes. Students will learn about key business process management concepts, and how to apply a proven five (5) phase methodology to re-engineer business processes in 'real world' organizational situations. Upon successful completion of this course, students would be equipped to carry out business process reengineering (BPR) initiatives within their own organizations, to produce better performing business processes.

#### **Appendage 4307 C**

#### **BS IN ARTIFICIAL INTELLIGENCE**

#### **Vision and Mission of Bahria University**

***Vision:*** To become a knowledge and creativity driven international university that contributes towards development of society.

***Mission:*** To ensure academic excellence through deliverance of quality education and applied research in a collegiate environment having strong linkages with industry and international community to meet the societal challenges.

#### **Vision of the Computer Science Department**

To become a center of excellence in Computer Science education, research, and globalized technologies

#### **Mission of the BS Artificial Intelligence Programme**

To prepare graduates who can analyze, design, and develop effective AI solutions and contribute effectively towards society.

#### **Programme Educational Objectives (PEOs)**

**PEO-1:** Utilize knowledge to solve real-world problems by applying theory, principles, and methods of computing in general and artificial intelligence in particular.

**PEO-2:** Demonstrate social and ethical responsibility in professional life.

**PEO-3:** Manifest lifelong learning for sustained professional and personal progression.

**PEO-4:** Practice effective communication and teamwork skills.

### **Programme Learning Outcomes (PLOs)**

**PLO1** Academic Education: To prepare graduates as computing professionals.

**PLO2** Knowledge for Solving Computing Problems: Apply knowledge of computing fundamentals, knowledge of a computing specialization, and mathematics, science, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.

**PLO3** Problem Analysis: Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

**PLO4** Design/ Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

**PLO5** Modern Tool Usage: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

**PLO6** Individual and Teamwork: Function effectively as an individual and as a member or leader in diverse teams and in multi-disciplinary settings.

**PLO7** Communication: Communicate effectively with the computing community and with society at large about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

**PLO8** Computing Professionalism and Society: Understand and assess societal, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.

**PLO9** Ethics: Understand and commit to professional ethics, responsibilities, and norms of professional computing practice.

**PLO10** Life-long Learning: Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.

### **Mapping of PLOs to PEOs**

No.	Programme Learning Outcomes (PLOs)	PEOs			
		PEO-1	PEO-2	PEO-3	PEO-4
1	Academic Education	✓		✓	
2	Knowledge for solving Computing Problems	✓		✓	
3	Problem Analysis	✓			
4	Design/ Development of Solutions	✓	✓		
5	Modern Tool Usage	✓		✓	
6	Individual and Teamwork				✓

7	Communication				✓
8	Computing Professionalism and Society		✓	✓	
9	Ethics		✓		
10	Lifelong Learning	✓		✓	

### **Programme Eligibility Criteria**

Minimum 50% marks in Intermediate (HSSC) Examination (Pre-Medical/Pre-Engg.) or equivalent qualification with Mathematics certified by IBCC.

Deficiency: For Pre-Medical students, the following two deficiency courses of mathematics will be taught during the first year.

- Fundamentals of Mathematics I GSC 103 (3 Credit Hours)
- Fundamentals of Mathematics II GSC 104 (3 Credit Hours)

Curriculum for BS in Artificial Intelligence

The generic structure for computing degree Programme is mapped with the BS(AI) Programme in the following table.

### **Generic Structure for Computing Disciplines:**

Areas	Credit Hours	Courses
Computing Core	49	14
Domain Core	18	6
Domain Elective	21	7
Mathematics & Supporting Courses	12	4
Elective Supporting Courses	3	1
General Education Requirement	30	12
<b>Total</b>	<b>133</b>	<b>44</b>

### **BS (Artificial Intelligence) Road Map**

<b>SEMESTER 1</b>						
Pre-Req	Course Code	Course Title	Theory	Lab	CR	CR/Sem
None	GSC 114	Applied Physics	2	0	2	16
None	GSL 114	Applied Physics Lab	0	1	1	
None	CSC 114	Introduction to Information & Communication Technology	2	0	2	
None	CSL 114	Introduction to Information & Communication Technology Lab	0	1	1	
None	ENG 101	Functional English	3	0	3	
None	CSC 113	Computer Programming	3	0	3	
None	CSL 113	Computer Programming Lab	0	1	1	
None	GSC 221	Discrete Mathematics	3	0	3	
<b>SEMESTER 2</b>						
Pre-Req	Course Code	Course Title	Theory	Lab	CR	CR/Sem
None	GSC 121	Linear Algebra	3	0	3	17
CSC	CSC 210	Object Oriented Programming	3	0	3	

113						
CSC 113	CSL 210	Object Oriented Programming Lab	0	1	1	
None	CSC 220	Database Management Systems	3	0	3	
None	CSL 220	Database Management Systems Lab	0	1	1	
None	GSC 110	Applied Calculus and Analytical Geometry	3	0	3	
None	CEN 122	Digital Design	2	0	2	
None	CEL 122	Digital Design Lab	0	1	1	

### SEMESTER 3

Pre-Req	Course Code	Course Title	Theory	Lab	CR	CR/Sem
GSC 110	GSC 211	Multivariable Calculus	3	0	3	
None	CEN 223	Computer Communication and Networks	3	0	3	
None	CEL 223	Computer Communication and Networks Lab	0	1	1	
CSC 113	CSC 221	Data Structures and Algorithms	3	0	3	
CSC 113	CSL 221	Data Structures and Algorithms Lab	0	1	1	
None	AIC 202	Programming for Artificial Intelligence	2	0	2	
None	AIL 202	Programming for Artificial Intelligence Lab	0	1	1	
None	GSC 122	Probability and Statistics	3	0	3	

### SEMESTER 4

Pre-Req	Course Code	Course Title	Theory	Lab	CR	CR/Sem
CSC 221	CSC 320	Operating Systems	3	0	3	
CSC 221	CSL 320	Operating Systems Lab	0	1	1	
AIC 201	AIC 203	Knowledge Representation & Reasoning	3	0	3	
None	AIC 301	Machine Learning	2	0	2	
None	AIL 301	Machine Learning Lab	0	1	1	
AIC 202	AIC 201	Artificial Intelligence	3	0	3	
AIC 202	AIL 201	Artificial Intelligence Lab	0	1	1	
None	ENG 134	Communication Skills	2	0	2	

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SEMESTER 5						
Pre-Req	Course Code	Course Title	Theory	Lab	CR	CR/Sem
CEN 122	CEN 323	Computer Organization & Assembly Language	2	0	2	
CEN 122	CEL 323	Computer Organization & Assembly Language Lab	0	1	1	
AIC 301	AIC 401	Deep learning	2	0	2	

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AIC 301	AIL 401	Deep learning Lab	0	1	1	
CSC 221	CSC 321	Design and Analysis of Algorithms	3	0	3	
None	PAK 101	Pakistan Studies	2	0	2	
		Elective 1	2	1	3	
		Elective 2	3/2	0/1	3	

#### SEMESTER 6

Pre-Req	Course Code	Course Title	Theory	Lab	CR	CR/Sem
None	SEN 220	Software Engineering	3	0	3	
None	AIC 304	Computer Vision	2	0	2	
None	AIL 304	Computer Vision Lab	0	1	1	
None	ISL 101	Islamic Studies/ Ethics	2	0	2	
		Social Science Elective(General Education)	3	0	3	
		Elective 3	2	1	3	
		Elective 4	2	1	3	

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#### SEMESTER 7

Pre-Req	Course Code	Course Title	Theory	Lab	CR	CR/Sem
None	FYP 400	Final Year Project I	0	3	3	
CSC 320	AIC 302	Parallel & Distributed Computing	2	0	2	
CSC 320	AIL 302	Parallel & Distributed Computing Lab	0	1	1	
None	ENG 320	Technical Writing & Presentation Skills	3	0	3	
None	CSC 307	Professional Practices and Ethics	2	0	2	
		Supporting Elective (Social Sciences)	3	0	3	
		Elective 5	2	1	3	

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#### SEMESTER 8

Pre-Req	Course Code	Course Title	Theory	Lab	CR	CR/Sem
None	FYP 400	Final Year Project II	0	3	3	
CEN 223	CSC 407	Information Security	3	0	3	
None	HSS 217	Introduction to Sociology	2	0	2	
None	HSS 423	Entrepreneurship	2	0	2	
		Elective 6	3/2	0/1	3	
		Elective 7	3/2	0/1	3	

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**Total:**

**133**

## List of Courses

### Computing Core Courses (49 credit hours)

Pre-requisite	Course Code	Course Title	Lec	Lab	CR
None	CSC 113	Computer Programming	3	0	3
None	CSL 113	Computer Programming Lab	0	1	1
CSC 113	CSC 210	Object Oriented Programming	3	0	3
CSC 113	CSL 210	Object Oriented Programming Lab	0	1	1
None	CSC 220	Database Management Systems	3	0	3
None	CSL 220	Database Management Systems Lab	0	1	1
None	CEN 122	Digital Design	2	0	2
	CEL 122	Digital Design Lab	0	1	1
None	CEN 223	Computer Communication and Networks	3	0	3
None	CEL 223	Computer Communication and Networks Lab	0	1	1
CSC 113	CSC 221	Data Structures and Algorithms	3	0	3
CSC 113	CSL 221	Data Structures and Algorithms Lab	0	1	1
CSC 221	CSC 320	Operating Systems	3	0	3
CSC 221	CSL 320	Operating Systems Lab	0	1	1
CEN 122	CEN 323	Computer Organization & Assembly Language	2	0	2
CEN 122	CEL 323	Computer Organization & Assembly Language Lab	0	1	1
AIC 202	AIC 201	Artificial Intelligence	3	0	3
AIC 202	AIL 201	Artificial Intelligence Lab	0	1	1
CSC 221	CSC 321	Design and Analysis of Algorithms	3	0	3
None	SEN 220	Software Engineering	3	0	3
None	FYP 400	FYP I	0	3	3
None	FYP 400	FYP II	0	3	3
CEN 223	CSC 407	Information Security	3	0	3

### Artificial Intelligence Core Courses (18 credit hours)

Prerequisite	Course Code	Course Title	Lec	Lab	CR
None	AIC 202	Programming for Artificial Intelligence	2	0	2
None	AIL 202	Programming for Artificial Intelligence Lab	0	1	1
None	AIC 301	Machine Learning	2	0	2
None	AIL 301	Machine Learning Lab	0	1	1
AIC 201	AIC 203	Knowledge Representation & Reasoning	3	0	3
AIC 301	AIC 401	Deep Learning	2	0	2

AIC 301	AIL 401	Deep Learning Lab	0	1	1
None	AIC 304	Computer Vision	2	0	2
None	AIL 304	Computer Vision Lab	0	1	1
CSC 320	AIC 302	Parallel & Distributed Computing	2	0	2
CSC 320	AIL 302	Parallel & Distributed Computing Lab	0	1	1

### List of Courses

#### **Artificial Intelligence Electives (21 Credit hours)**

Prerequisite	Course Code	Course Title	Lec	Lab	CR
GSC 122	AIC 305	Advance Statistics	3	0	3
None	CSC 315	Theory of Automata	3	0	3
None	CSC 452	Data Mining	3	0	3
None	AIC 306	Speech Processing	3	0	3
None	AIC 402	Reinforcement Learning	3	0	3
None	AIC 403	Fuzzy Systems	2	1	3
None	AIC 307	Evolutionary Computing	3	0	3
None	AIC 308	Agent-Based Modeling	3	0	3
None	CEN 459	Robotics	2	1	3
None	ITC 412	Introduction to Cyber Security	2	1	3
None	AIC 442	Natural Language Processing	2	1	3
None	AIC 410	Virtual and Augmented Reality	2	1	3
None	AIC 411	HCI & Computer Graphics	2	1	3
None	AIC 310	Swarm Intelligence	2	1	3
None	CSC 400	Quantum Computing	2	1	3
None	AIC 377	Game Artificial Intelligence	2	1	3

#### **Mathematics & Supporting Courses (12 credit hours)**

Prerequisite	Course Code	Course Title	Lec	Lab	CR
None	GSC 121	Linear Algebra	3	0	3
GSC 110	GSC 211	Multivariable Calculus	3	0	3
None	GSC 122	Probability and Statistics	3	0	3
	ENG 320	Technical Writing and Presentation Skills	3	0	3

#### **Elective Supporting Courses (3 credit hours)**

Prerequisite	Course Code	Course Title	Lec	Lab	CR
None	MKT 110	Principles of Marketing	3	0	3
None	FIN 201	Fundamentals of Finance	3	0	3
None	MGT 111	Principles of Management	3	0	3
None	MGT 242	Organizational Theory and Behavior	3	0	3

**General Education Courses (30 credit hours)**

Prerequisite	Course Code	Course Title	Lec	Lab	CR
None	GSC 114	Applied Physics	2	0	2
None	GSL 114	Applied Physics Lab	0	1	1
None	CSC 114	Introduction to Information & Communication Technology	2	0	2
None	CSL 114	Introduction to Information & Communication Technology Lab	0	1	1
None	ENG 101	Functional English	3	0	3
None	GSC 221	Discrete Mathematics	3	0	3
None	GSC 110	Applied Calculus and Analytical Geometry	3	0	3
None	ENG 134	Communication Skills	2	0	2
None	PAK 101	Pakistan Studies	2	0	2
None	ISL 101	Islamic Studies/ Ethics	2	0	2
None	CSC 307	Professional Practices and Ethics	2	0	2
None	HSS 423	Entrepreneurship	2	0	2
None	HSS 217	Introduction to Sociology	2	0	2
<b>Social Sciences Electives</b>					
None	HSS 107	Introduction to Psychology	3	0	3
None	HSS 115	Introduction to Media studies	3	0	3
None	BES 103	Critical Thinking	3	0	3

**Course Name: Quantum Computing**

Credit Hours: 3 (2+1)

Contact Hours: 2+3

Pre-requisites: None

Course Code: AIC 400

**Content:** Introduction to the principles and practice of quantum computing, with an emphasis on the perspective of computer scientists, Introduction to quantum mechanics, Basic principles of quantum mechanics: superposition, entanglement, and measurement, Quantum gates and circuits: Quantum gates and circuits: the Hadamard gate, Pauli gates, and CNOT gate, Basic quantum circuits such as the circuit for Grover's search algorithm, platforms for developing and exploring quantum computing algorithms, Quantum computing Libraries: Qiskit for mapping computer science datasets in to quantum realm.

**Course Name: Virtual and Augmented Reality**

Credit Hours: 3 (2+1)

Contact Hours: 2+3

Pre-requisites: None

Course Code: AIC 410

**Content:** Introduction to Virtual Reality and Augmented Reality, Design for AR/VR, History of AR/VR, Basics of Computer Vision and Multimodal Interaction, Business of AR/VR, Basics of Human Perception, Depth Perception and Projection, AR/VR Displays, Graphics Pipeline, Lighting, Shading, and Effects, Scene Graphs and Acceleration, 2D & 3D Tracking, Interaction, Principles and Problems, Algorithms for AR and VR, Human Robot Interaction using AR/VR systems, Eye and Displays (2D),

Head Up and Head Mounted Systems in Automotive and Aviation Domains, Virtual Reality System development in Unity

Course Name: **Game Artificial Intelligence**

Credit Hours: 3 (2+1)

Contact Hours: 2+3

Pre-requisites: None

Course Code: AIC 377

**Content:** Introduction to Game AI, Basic concepts and methods of artificial intelligence and their applications in computer games, Artificial stupidity, intelligent mistakes, models of game AI, data structures, representations, complexity, and constraints, Agent Movement Steering Behaviors, Coordinated Movement, character movement, pathfinding, decision making (behavior trees), Tactical & Strategic AI, Scripting language for game AI, navigation, planning, and learning in the game, AI for human-like characters, Decision Making: State Machines in gaming, Rule-based systems, Decision trees, Optimizing the behavior of NPCs, Procedural Content Generation, GANs, Pattern recognition and agents in the game, Learning algorithms, training agents with fine-grained control, Playing games with deep RL, General video game AI (GVGAI), GameAI platforms

Course Name: **Swarm Intelligence**

Credit Hours: 3 (2+1)

Contact Hours: 2+3

Pre-requisites: None

Course Code: AIC 310

**Content:** Agent-based modeling: Bottom-up modeling method, individual agents, System theory and complex systems, multi-agent systems, Behavioral swarm intelligence: Modeling flocking behavior, Boids model, flocking behavior applications, such as agents queuing and homing, Computational swarm intelligence (CSI): Optimization theory and multi-objective optimization, Particle swarm optimization (PSO), Ant colony optimization (ACO), Bees colony algorithm (BCO), Bats algorithm, Selected applications: Different selected applications where the students can apply the swarm intelligence algorithms to solve real problems, such as: Multi-robot path planning, Task scheduling.

## Appendage 4309

### CORRECTION OF PRE-REQUISITE COURSE CODE FOR PROGRAMMING FOR ARTIFICIAL INTELLIGENCE LAB

Pre-Requisite	Course Code	Course Title	Lec	Lab	CR
<b>Semester 4</b>					
AIC 201	AIC 202	Programming for Artificial Intelligence	2	0	2
AIC 201	AIL 202	Programming for Artificial Intelligence Lab	0	1	1
<b>Semester 5</b>					
AIC 202	AIC 301	Machine Learning	2	0	2
AIC 202	AIL 301	Machine Learning Lab	0	1	1
CSC 320	AIC 302	Parallel & Distributed Computing	2	0	2

<b>Correct: CSC 320</b>	AIL 302	Parallel & Distributed Computing Lab	0	1	1
<b>Semester 6</b>					
AIC 202	AIC 303	Artificial Neural Networks	2	0	2
AIC 202	AIL 303	Artificial Neural Networks Lab	0	1	1

## **Appendage 4310**

### **REVISION OF BCE CURRICULUM FOR SWAPPING ELECTIVES AND REPLACING THE PRE-REQUISITE OUTLINES FOR NEW ELECTIVES**

#### **Hardware Verification**

**Course Code:** CEN 462

**Credit Hours:** 3+1

**Pre-Requisite:** DSD (CEN-442)

**Course content:**

System design and verification flow, Overview of formal verification techniques, System modeling and BDDs, Combinational equivalence checking, Sequential equivalence checking, Temporal logic and properties specification, Verification with model checking, System modeling with predicate logic, Verification with theorem proving, Formal verification systems (e.g. VIS, SMV, HOL, PVS, Formal Check, Formality, Conformal), Verification case studies (e.g. pipelined processors, ATM switches)

**Text book:**

T. Kopf: Introduction to Formal Hardware Verification, Springer Verlag, 1999. (ISBN: 3540654453)

**Reference Books:**

W.K. Lam: Hardware Design Verification: Simulation and Formal Method-Based Approaches. Prentice Hall, 2005. (ISBN: 0131433474)

M.R.A Huth and M.D. Ryan: Logic in Computer Science. Modelling and Reasoning about Systems. Cambridge University Press, 2000. (ISBN: 0521652006/0521656028)

C. Baier, J.-P. Katoen: Principles of Model Checking, MIT Press, 2008 (ISBN: 0262026499)

T.F. Melham: Higher Order Logic and Hardware Verification, Cambridge Tracts in Theoretical Computer Science, No 31, Cambridge University Press, 1993. (ISBN: 052141718X)

#### **COMPILER CONSTRUCTION**

**Course Code:** CSC 323

**Credit Hours:** 2+1

**Pre-Requisite:** SE (SEN-220)

**Course Content:** Introduction to interpreter and compiler. Compiler techniques and methodology; Organization of compilers, Phases of compiler, Lexical and syntax analysis; Parsing techniques. Types of parsers; top-down parsing, Recursive decent parser, Context free grammar, left factoring, Left Recursion, Ambiguity, Backus norm form, Extended Backus norm form, Operator Associativity and Precedence Predictive parser or LL (1) parser, bottom-up parsing, Shift reduce parser, LR (0) parser, SLR parser, LALR parser. Semantic analyzer, Type checking, Scope symbol table, Syntax directed translation and definition. Intermediate code generation; Polish notation, Three address

code, Quadruple, triples and indirect triples. Translation of Array. Optimization, peephole optimization, Semantic-Preserving Transformations, Algebraic Simplification, Copy Propagation, Code Motion, Dead Code Elimination, Common Subexpression Elimination (Local), Common Subexpression Elimination (Global). Target code generation; Assembly language, detection, and recovery from errors.

#### **Text Books:**

Compilers: Principles, Techniques, and Tools, A. V. Aho, R. Sethi and J. D. Ullman, Addison-Wesley, 2nd ed., 2006

Modern Compiler Design, D. Grune, H. E. Bal, C. J. H. Jacobs, K. G. Langendoen, John Wiley, 2003.

Modern Compiler Implementation in C, A. W. Appel, M. Ginsburg, Cambridge University Press, 2004.

### **THEORY OF AUTOMATA**

**Course Code:** CSC 315

**Credit Hours:** 3+0

**Pre-Requisite:** SE (SEN-220)

**Course Content:** Finite State Models: Language definitions preliminaries, Regular expressions/Regular languages, Finite automata (FAs), Transition graphs (TGs), NFAs, Kleene's theorem, Transducers (automata with output), Pumping lemma and non-regular language Grammars, CFGs, Derivations, derivation trees and ambiguity, PDA, Simplifying CFLs, Chomsky Normal form, grammars and parsing, Turing Machines, TM encoding, Universal Turing Machine, Defining Computers by TMs, Introduction to Decidability.

#### **Text Books:**

Michael Sipser, Introduction to the Theory of Computation (2nd Edition)

Introduction to computer theory, Daniel I. A. Cohen, 2nd Edition

Introduction to Automata Theory Languages and Computation by Hopcroft, Ulman

### **REVISED COURSE OUTLINES**

#### **VLSI Design**

**Course Code:** CEN-457

**Credit Hours:** 2+1

**Pre-Requisite:** EDC (EEN 224)

**Course Content:**

- Introduction to VLSI Systems
- MOS transistor theory and VLSI design abstraction
- CMOS processing technology
- Linear delay model
- Power in VLSI integrated circuits
- Layout design rules
- Circuit characterization and performance estimation
- Combinational and sequential circuit design
- Datapath subsystems

- Design methodology and tools
- Special purpose subsystems

**Text Book:** CMOS VLSI Design, 4th Edition, Addison-Wesley, 2011., Weste and Harris

**Reference Book:** Digital Integrated Circuits - A Design Perspective, 2nd Edition, Prentice-Hall, 2003.  
J. M. Rabaey, A. Chandrakasan, and B. Nikoli

### **Embedded System Design**

**Course Code:** CEN 440

**Credit Hours:** 3+1

**Pre-Requisite:** MPI (CEN 321)

**Course Content:** Introduction to Embedded Systems, Embedded Products (i.e., Cell Phones, Robots, GPS, Cameras, Transaction Terminals, and Industrial Controllers), Analysis of The Design and Development Process for a new embedded product. Introduction to the Software Development and Debug Tool Flows. Hardware for Embedded Systems Design, Processors, Chipsets, and Memory, ARM and X86 ISA, I/O devices and bus interfaces, Example Design (i.e. basic parallel I/O port). Introduction to the Common Bus Standards (i.e., ISA, PCI, AMBA, PCI Express) and Common I/O interface Standards (i.e., Parallel, RS-232, SPI, I2C, and USB). Analysis of Analog I/O using A/D and D/A convertors, Driving high current and high voltage I/O devices (i.e., high-power LEDs, speakers, motors, and solenoids). Using PWM to efficiently control external I/O devices (i.e., dimmable lights, speakers, and motor speed control) Basic concepts of Programmed I/O, Interrupt driven I/O, Using DMA for I/O transfers, Example System Designs (i.e., small 32-bit ARM and X86-based systems). Introduction of Software for Embedded Systems Design, Role of an Embedded Operating System, Hard and Soft Real-time systems, Multitasking, Threads, and Synchronization. Operating Systems used in Embedded Devices (Windows Embedded, Linux, Android) Overview of an example RTOS, Building an OS for a new device, Application Development using OS APIs for I/O devices and GUIs, I/O device examples (i.e., A/D, RS-232, cameras, GPS, displays, wired and wireless networks, and touch input). BSPs and developing OS Device Drivers for new I/O devices, Developing Software for Safety Critical Systems. Development Tools, Firmware Architecture, Design and Debugging, Real Time Embedded Systems.

#### **Text Books:**

- Frank Vahid, HTony Givargis, "Embedded System Design: A Unified Hardware/Software Introduction", John Wiley & Sons
- Naimi, Sepehr, Sarmad Naimi, and Muhammad Ali Mazidi. "The AVR Microcontroller and Embedded Systems Using Assembly and C: Using Arduino Uno and Atmel Studio", MicroDigital latest Edition.
- M. Wolf, "Computer as Components: Principles of Embedded Computing System Design", latest Edition, Morgan Kaufman Publishers.

#### **Reference Books:**

- J. Yiu, "The Definitive Guide to the ARM Cortex-M3", latest Edition, Elsevier.
- Ganssle, Jack. "The firmware handbook". Elsevier, latest edition.
- Alan Burns and Andy Wellings, "Real-time Systems and Programming Languages", Addison-Wesley latest edition

### **MPI**

**Course Code:** CEN 321

**Credit Hours:** 3+1

**Pre-Requisite:** DLD (CEN 120)

**Course Content:** Introduction to Microprocessors, ARM Processor Architecture, Assembly Language Programming for ARM Processors, C Language, Programming for ARM Processors, Interfacing with ARM-based Processors, Advanced Assembly Language Programming for ARM Processors, Advanced C Language Programming for ARM Processors, Interrupt Handling for ARM Processors, ARM-based Embedded Systems, ARM Cortex-M Processors, ARM-based Processor Applications, Real-world Interfacing and Case Studies

**Text Book:**

- ARM System Developer's Guide: Designing and optimizing System Software" by Andrew N. Sloss, Dominic Symes, and Chris Wright

**Reference Book:**

- Embedded Systems: Introduction to Arm® Cortex™-M Microcontrollers
- The Definitive Guide to ARM® Cortex®-M3 and Cortex-M4 Processors by Joseph You
- Programming and Customizing the ARM® Microcontroller" by Predko and Myatt

## CAO

**Course Code:** CEN 221

**Credit Hours:** 3+1

**Pre-Requisite:** DLD (CEN 120)

**Course Content:**

- Introduction and motivation
- From Transistors to a Microprocessor
- Instruction Set Architecture – RISC-V Assembly Language
- Design Metrics and Performance Evaluation
- Designing Arithmetic Logic Unit (ALU)
- RISC-V Single Cycle Datapath and Control
- Pipelining and Pipelining Hazards
- RISC-V Pipelined Implementation
- Basics of Caches
- Measuring and Improving Cache Performance
- Virtual Memory
- Handling Exceptions and Multicycle Operations
- Multi Issue, Static Scheduling and Dynamic Scheduling

**Text Book:** D. Harris and S. Harris, "Digital Design and Computer Architecture (2nd Edition)."

**Reference Books:**

- D. Harris and S. Harris, "Digital Design and computer Architecture (1st Edition)."
- Y.N. Patt and S.J. Patel, "Introduction to Computing Systems."

## Updated BCE Curriculum

### Semester Wise Course Offering

S. No.	Pre-Req.	Course No.	Course Title	Theory Credits Hours	Lab Credit Hours	Total Credit Hours
<b>Semester-I</b>						
1	None	GSC 110	Applied Calculus & Analytical Geometry	3	0	3
2	None	ISL 101 /HSS 116	Islamic Studies / Ethics	2	0	2
3	None	CSC 110	Computing Fundamentals	2	1	3
4	None	GSC 113	Applied Physics	3	1	4
5	None	ENG 105	Functional English	3	0	3
6	None	EEL 112	Workshop Practices	0	1	1
<b>Total:</b>				13	3	16
<b>Semester-II</b>						
1	None	GSC 120	Linear Algebra	2	0	2
2	GSC 113	CEN 121	Circuit Analysis	3	1	4
3	None	CSC 113	Computer Programming	3	1	4
4	None	PAK 103	Pakistan Studies & Global Perspective	2	0	2
5	None	ENV 101	Occupational Health & Safety	1	0	1
6	None	CEN 120	Digital Logic Design	3	1	4
<b>Total:</b>				14	3	17
<b>Semester-III</b>						
1	None	CSC 115	Discrete Structures	3	0	3
2	GSC 113	EEN 224	Electronic Devices & Circuits	3	1	4
3	CSC 113	CSC 210	Object Oriented Programming	3	1	4
4	None	HSS 118	Communication Skills	2	0	2
5	GSC 110	GSC 220	Complex Variables & Transforms	3	0	3
6	-	-	Social Science Elective-I	2	0	2
<b>Total:</b>				16	2	18
<b>Semester-IV</b>						
1	GSC 110	GSC 210	Differential Equations	3	0	3
2	CSC 210	CSC 221	Data Structures & Algorithms	3	1	4
3	None	EEN 313	Signals & Systems	3	1	4
4	CEN 120	CEN 321	Microprocessors & Interfacing	3	1	4
5	-	-	MS-Elective-I	3	0	3
<b>Total:</b>				15	3	18
<b>Semester-V</b>						
1	CSC 221	CSC 320	Operating Systems	3	1	4
2	ENG 105	HSS 321	Technical Writing	2	0	2
3	CEN 120	CEN 221	Computer Architecture & Organization	3	1	4
4	EEN 313	EEN 325	Digital Signal Processing	3	1	4

5	None	CEN 223	Computer Communication & Networks	3	1	4
			<b>Total:</b>	<b>14</b>	<b>4</b>	<b>18</b>
<b>Semester-VI</b>						
1	-	-	CEDE-I	3	1	4
2	CSC 210	CSC 220	Database Management Systems	3	1	4
3	CSC 221	SEN 220	Software Engineering	3	0	3
4	None	GSC 122	Probability & Statistics	3	0	3
5	-	-	MDEE-I	3/2	0/1	3
			<b>Total:</b>	<b>15/14</b>	<b>3</b>	<b>17</b>
<b>Semester-VII</b>						
1	CEN 221	CEN 442	Digital System Design	3	1	4
2	None	HSS 423	MS-Elective-II	2	0	2
3	-	-	CEDE-II	3	1	4
4	-	ESC 498	Project-I	0	3	3
5	GSC 120	GSC 321	Numerical Analysis	2	1	3
			Total:	10	6	16
<b>Semester-VIII</b>						
1	-	ESC 499	Project-II	0	3	3
2	-	-	CEDE-III	3	1	4
3	-	-	CEDE-IV	3	1	4
4	-	-	MDEE-II	3/2	0/1	3
5	-	-	Social Science Elective-II	2	0	2
			<b>Total:</b>	<b>11/9</b>	<b>5/6</b>	<b>16</b>
			<b>Grand Total:</b>	<b>108</b>	<b>28</b>	<b>136</b>

Multi-Disciplinary Engineering Electives (MDEE) (6 Credit Hours)						
S. No.	Pre-Req.	Course No.	Course Title	Theory Credits Hours	Lab Credit Hours	Total Credit Hours
1	None	SEN 320	Human Computer Interaction	3	0	3
2	None	CEN 429	Introduction to Block Chain Technologies	3	0	3
3	None	CSC 449	Neural Networks & Fuzzy Logic	3	0	3
4	EEN 313	CEN 458	Robotics	2	1	3
5	None	CSC 341	Mobile Application Development	2	1	3
6	None	CEN 426	Introduction to Virtual Reality	3	0	3
7	None	SEN 420	Software Quality Assurance	3	0	3
8	EEN 224	CEN 457	VLSI Design	2	1	3
9	None	CSC 457	Data Mining & Warehousing	2	1	3
10	None	GEO 437	GIS & Remote Sensing	3	0	3
11	None	GEO 436	Health Safety & Environment	3	0	3
12	None	CEN 427	Biomedical Engineering	3	0	3
13	None	SEN 449	Business Process Automation	3	0	3
14	None	EEN 467	Control Engineering	3	0	3
15	SEN 220	CSC 323	Compiler Construction	2	1	3

16	SEN 220	CSC 315	Theory of Automata	3	0	3
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Computer Engineering Depth Electives (CEDE) (16 Credit Hours)						
S. No.	Pre-Req.	Course No.	Course Title	Theory Credits Hours	Lab Credit Hours	Total Credit Hours
1	CSC 320	CEN 411	Cloud & Distributed Computing	3	1	4
2	CEN 321	CEN 449	Internet of Things	3	1	4
3	CEN 321	CEN 440	Embedded System Design	3	1	4
4	EEN 313	CEN 409	Artificial Intelligence & Machine Learning	3	1	4
5	EEN 313	CEN 444	Digital Image processing	3	1	4
6	CSC 113	CEN 408	System & Network Security	3	1	4
7	CSC 320	CEN 454	System Programming	3	1	4
8	CSC 320	CEN 407	High Performance Computing	3	1	4
9	CSC 221	CEN 326	Algorithm Design and Analysis	3	1	4
10	EEN 325	CEN 425	Hardware Design for DSP & ML	3	1	4
11	CEN 442	CEN 462	Hardware Verification	3	1	4

Management Science Electives (MS Elective - I) (3 Credit Hours)						
S. No.	Pre-Req.	Course No.	Course Title	Theory Credits Hours	Lab Credit Hours	Total Credit Hours
1	None	EMG 201	Engineering Project Management	3	0	3
2	None	MGT 423	Engineering Management	3	0	3
3	None	MTM 101	Introduction to Maritime Industry	3	0	3

Management Science Electives (MS Elective - II) (2 Credit Hours)						
S. No.	Pre-Req.	Course No.	Course Title	Theory Credits Hours	Lab Credit Hours	Total Credit Hours
1	None	EMG 222	Principles of Management	2	0	2
2	None	HSS 423	Entrepreneurship	2	0	2

Social Science Electives (SSE) (4 Credit Hours)						
S. No.	Pre-Req.	Course No.	Course Title	Theory Credits Hours	Lab Credit Hours	Total Credit Hours
1	None	HSS 412	Engineering Economics	2	0	2
2	None	HSS 413	Sociology for Engineers	2	0	2
3	None	HSS 424	Engineering Ethics	2	0	2
4	None	HSS 541	Organizational Behavior	2	0	2

**INCLUSION OF NEW COURSE IN THE ROADMAP OF MS AND PHD IN MATHEMATICS****Math-738: Lie Group Methods for Differential Equations**

Basic concepts of groups of transformation, parameter Lie group of transformation, infinitesimal transformation, infinitesimal generators, Lie's first fundamental theorem, invariance, canonical coordinates, prolongations, multi-parameter Lie group of transformations, Lie algebra, solvable Lie algebra, Lie's second and third fundamental theorems, invariance of ordinary differential equations under Lie group of transformation and multi-parameter Lie group of transformations, mappings of solutions to other solutions from invariance of an ordinary differential equations and partial differential equations, determining equations for infinitesimal transformation of an n-th order ordinary differential equations and a system of partial differential equations, determination of n-th order ordinary differential equations in variant under a given group, reduction of order by canonical coordinates and differential invariants, invariant solutions of ordinary differential equations and partial differential equations.

**Recommended Books:**

Fritz Schwartz, Algorithmic Lie Theory for Solving Ordinary Differential Equations, Chapman and Hall, (2019)

Peter J. Olver, Applications of Lie Groups to Differential Equations, Springer Science & Business Media, 2012

Nail H. Ibragimov, A Practical Course in Differential Equations and Mathematical Modelling. World Scientific, (2010).

Meleshko, S.V., Methods for Constructing Exact Solutions of Partial Differential Equations, Springer, 2005

**CHANGES IN COURSE TITLES AND COURSE CODES FOR FYP/ UG AND PG THESIS AND COMMON COURSES****Oral Communication Course Related Changes**

<b>BS ES, GEO-PHY, GEO</b>	
Existing Title	Oral Communication
Course Code	ENG 232
Cr Hr	3
New Title	Oral Communication and Presentation Skills
New Code	ENG 213
Cr Hr	3

### UG Final Year Project and UG Thesis Related Changes

	<b>BS CS, AI, IT, EE, CE and SE</b>	<b>BS ES</b>	<b>BS GEO and GEO-PHY</b>	<b>BS GIS &amp; RS</b>
<b>Existing Title</b>	Project I , Project II	Thesis	Thesis	Thesis
<b>Course Code</b>	ESC 498 , ESC 499	ENV 435	GEO 460	RGS 490
<b>Cr Hr</b>	3, 3	6	6	6
<b>New Title</b>	Final Year Project	UG Thesis	UG Thesis	UG Thesis
<b>New Code</b>	FYP 400	THS 400	THS 400	THS 400
<b>Cr Hr</b>	6	6	6	6

### MS Thesis Related Changes

	<b>MS CS, IS, DS, EE, CE</b>	<b>MS ES, GEO-PHY, GEO</b>	<b>MS SE, EM</b>	<b>MS Math</b>	<b>MS T&amp;N</b>
<b>Existing Name</b>	Thesis I, Thesis II	Thesis, Thesis	Thesis I, Thesis II	Thesis I, Thesis II	Thesis, Thesis
<b>Course Code</b>	ESC 500	THS 701	ESC 600	MAT 500	ESC 502
<b>Cr Hr</b>	3, 3	3,3	3,3	3,3	3,3
<b>New Name</b>	MS Thesis	MS Thesis	MS Thesis	MS Thesis	MS Thesis
<b>New Code</b>	THS 600	THS 600	THS 600	THS 600	THS 600
<b>Cr Hr</b>	6	6	6	6	6

### Appendage 4313

#### MAPPING OF CAPSTONE RESEARCH PROJECT (OPTIONAL STREAM) WITH EXISTING UNDERGRADUATE & POST-GRADUATE PROGRAMMES

##### BBS-IC

<b>Faculty</b>	<b>Structure</b>		
<b>Degree Programme</b>	<b>Semester</b>	<b>Existing Streams</b>	<b>Proposed Capstone Research Project (CRP)</b>
<b>BS A&amp;F (4 yrs)</b>	8 <sup>th</sup>	Project -3CR	CRP 2 <sup>ND</sup> optional stream
<b>BS-ECO (4 yrs)</b>	8 <sup>th</sup>	Project -3CR	CRP 2 <sup>ND</sup> optional stream
<b>BS-SCM (4 yrs)</b>	8 <sup>th</sup>	Project -3CR	CRP 2 <sup>ND</sup> optional stream
<b>MS-MS (1.5 yrs)</b>	3 <sup>rd</sup> Semester	Thesis- 6CR	CRP 2 <sup>ND</sup> optional stream
<b>MS-Finance (1.5 yrs)</b>	3 <sup>rd</sup> Semester	Thesis- 6CR	CRP 2 <sup>ND</sup> optional stream
<b>MS-Marketing &amp; Sales (1.5 yrs)</b>	3 <sup>rd</sup> Semester	Thesis- 6CR	CRP 2 <sup>ND</sup> optional stream
<b>MS-PM (1.5 yrs)</b>	3 <sup>rd</sup> Semester	Thesis 6CR	CRP 2 <sup>ND</sup> optional stream
<b>MS-SCM (1.5yrs)</b>	3 <sup>rd</sup> Semester	Specialization/Thesis- 6CR	CRP 3 <sup>rd</sup> optional stream
<b>MS-ECO (2 yrs)</b>	3 <sup>rd</sup> + 4 <sup>th</sup>	Thesis -6 CR	CRP 2 <sup>ND</sup> optional stream
<b>MS-Mphil (2 yrs)</b>	4 <sup>th</sup> Semester	Thesis -6 CR	CRP 2 <sup>ND</sup> optional stream
<b>BBA (4 yrs)</b>	8th	FYP/ Specialization-3CR	CRP 3 <sup>rd</sup> optional stream
<b>MBA (1.5 yrs)</b>	2 <sup>nd</sup> + 3 <sup>rd</sup>	FYP/Specialization-6 CR	CRP 3 <sup>rd</sup> optional stream

<b>MBA (2 yrs)</b>	3 <sup>rd</sup> + 4 <sup>th</sup>	FYP /Specialization-6 CR	CRP 3 <sup>rd</sup> optional stream
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### **BBS-KC**

Faculty	Structure		
Degree Programme	Semester	Existing Streams	Proposed Capstone Research Project (CRP)
<b>BS -A&amp;F (4 yrs)</b>	8 <sup>th</sup>	Project -3CR	CRP 2 <sup>ND</sup> optional stream
<b>BS -E &amp; F (4 yrs)</b>	8 <sup>th</sup>	Project/Thesis -6CR	CRP 2 <sup>ND</sup> optional stream
BS -SCM (4 yrs)	8th	*Elective-III Capstone Project -3CR	Already exist on roadmap
<b>MS-MS (1.5 yrs)</b>	3 <sup>rd</sup> Semester	Thesis- 6CR	CRP 2 <sup>ND</sup> optional stream
<b>MS-Finance (1.5 yrs)</b>	3 <sup>rd</sup> Semester	Thesis- 6CR	CRP 2 <sup>ND</sup> optional stream
<b>MS-PM (1.5 yrs)</b>	3 <sup>rd</sup> Semester	Thesis 6CR	CRP 2 <sup>ND</sup> optional stream
<b>MS-HRM &amp; OP (2Yrs)</b>	4 <sup>th</sup> semester	Thesis 6CR	CRP 2 <sup>ND</sup> optional stream
<b>Mphil (MS) (2 yrs)</b>	4 <sup>th</sup> Semester	Thesis -6 CR	CRP 2 <sup>ND</sup> optional stream
<b>BBA (4 yrs)</b>	8th	IV-Specialization-3CR	CRP 2 <sup>nd</sup> optional stream
<b>MBA (1.5 yrs)</b>	2 <sup>nd</sup> + 3 <sup>rd</sup>	Thesis -6 CR	CRP 2 <sup>nd</sup> optional stream
<b>MBA (2 yrs)</b>	3 <sup>rd</sup> + 4 <sup>th</sup>	Thesis-6 CR	CRP 2 <sup>nd</sup> optional stream

### **BULC**

Faculty	Structure		
Degree Programme	Semester	Existing Streams	Proposed Capstone Research Project (CRP)
<b>MS-MS (1.5 yrs)</b>	3 <sup>rd</sup> Semester	Thesis- 6CR	CRP 2 <sup>ND</sup> optional stream
<b>MS-PM (1.5 yrs)</b>	3 <sup>rd</sup> Semester	Thesis 6CR	CRP 3 <sup>rd</sup> optional stream
<b>BBA (4 yrs)</b>	8th	FYP/ Specialization-3CR	CRP 3 <sup>rd</sup> optional stream
<b>MBA (1.5 yrs)</b>	2 <sup>nd</sup> + 3 <sup>rd</sup>	FYP/Specialization-6 CR	CRP 3 <sup>rd</sup> optional stream
<b>MBA (2 yrs)</b>	3 <sup>rd</sup> + 4 <sup>th</sup>	FYP /Specialization-6 CR	CRP 3 <sup>rd</sup> optional stream

### **Timeline Mechanism of Capstone Research Project**

Key Indicative Dates for Capstone Research Projects			Timelines	
Step	Academic Supervisor		3 Credit hrs (BBA/MBA)	6 Credit hrs (MS/MPhil)
Step 1	Allocation of Academic Supervisor		1 <sup>st</sup> week	1 <sup>st</sup> week
Step 2	Initial Capstone Project discussion with Industry		2 <sup>nd</sup> week	2 <sup>nd</sup> week
Step 3	Allocation of Industrial “Co-Supervisor”		2 <sup>nd</sup> week	2 <sup>nd</sup> week
Step 4	Proposal Drafting under the supervision of Academic and Industrial Co-Supervisor		3 <sup>rd</sup> week	6 <sup>th</sup> week
Step 5	Final Proposal Development		4 <sup>th</sup> week	8 <sup>th</sup> week
Step 6	Data Collection		8 <sup>th</sup> week	16 <sup>th</sup> week
Step 7	Data Analysis		12 <sup>th</sup> week	24 <sup>th</sup> week
Step 8	Submission of Capstone Final Draft		15 <sup>th</sup> week	30 <sup>th</sup> week
Step 9	Final Defense of Capstone Project		16 <sup>th</sup> week	32 <sup>nd</sup> week
Step 10	Capstone Projects Showcasing			

**LAUNCH OF NEW PROGRAMME – MS IN BUSINESS ANALYTICS**

<b>A. ACADEMIC DETAILS</b>	
1	<b>Faculty/Department:</b> Management Studies, BU1C
2	<p><b>Name of the Programme:</b> <b>MS Business Analytics</b></p> <p>MS Business Analytics has been planned to be launched in the Islamabad Campus of BU.</p> <ul style="list-style-type: none"> <li>▪ Designed to develop qualified workforce subject to data analytics/Fin-Tech in the field of Finance, HR, Marketing, Accounting, Project Management and Supply chain Management to compete for National and international job market.</li> <li>▪ Explore theoretical concepts and share regional and global best practices in different case studies and solutions to industry issues.</li> <li>▪ The professional deficiency in the Production/Services sector can consequently be covered by demonstrating the skills necessary to tackle the different problems within the complex world of business education</li> <li>▪ New launch proposal about MS Fin-Tech/ Business Analytics has been prepared in the light of Business Analytics as the most prominent field of Finance, HR, Marketing, Accounting, Project Management and Supply chain Management.</li> <li>▪ Feasibility studies at department's level find it suitable in view of the market demand and HEC s that focusing on industry academia relationship is in high demand of current technology era.</li> </ul>
3	<p><b>Mission of the Programme:</b></p> <p>MS Business Analytics Programme will promote academic excellence for the training of young talented professionals as socially responsible for Financial, HR, Marketing and accounting Analytics in collaboration with the corporate professionals and proficient entrepreneurs.</p>
4	<p><b>Objectives of the Programme:</b></p> <ul style="list-style-type: none"> <li>✓ To develop the students' understanding regarding different forms and application of business analytics tools, techniques, mathematical solutions and statistical models for analysis and prediction in different contexts.</li> <li>✓ To develop the students' analytical and managerial skills, for making strategic decisions to formulate the problems and create business opportunities in dynamic environment.</li> <li>✓ To develop understanding and capacity of responsible use of data and ethical decision making through transparent approach, team work, and societal benefits.</li> <li>✓ To boost the confidence level of the student that can communicate effectively with stakeholders at different levels of organizations.</li> <li>✓ To provide students with a thorough platform for professional learning, creativity, and career growth in business management and data analysis.</li> </ul>
5	<p><b>Outcomes of the Programme:</b></p> <p>On successful completion the scholar of MS (Business Analytics) will be able:</p> <ul style="list-style-type: none"> <li>✓ Enable all participants to recognize, understand and apply the language, theory and models of the field of business analytics</li> <li>✓ Foster an ability to critically analyses, synthesize and solve complex unstructured</li> </ul>

	<ul style="list-style-type: none"> <li>business problems</li> <li>✓ Encourage an aptitude for business improvement, innovation and entrepreneurial action</li> <li>✓ Encourage the sharing of experiences to enhance the benefits of collaborative learning</li> <li>✓ Instill a sense of ethical decision-making and a commitment to the long-run welfare of both organizations and the communities they serve</li> <li>✓ Understand and critically apply the concepts and methods of business analytics</li> <li>✓ Identify, model and solve decision problems in different settings</li> <li>✓ Interpret results/solutions and identify appropriate courses of action for a given managerial situation whether a problem or an opportunity</li> <li>✓ Create viable solutions to decision making problems</li> </ul>
6	<p><b>Rationale/Feasibility for the Programme:</b></p> <p>The Department of Management Studies at Bahria University (Islamabad) began debating the idea of starting an MS in Business Analytics Programme while keeping in mind how the national and worldwide landscapes have changed because of data analytics employed for strategic choices. A proactive strategy was used to engage academics, businesspeople, corporate sectors, practitioners, and consultants in an intellectual discussion about the Programme's requirements, possibilities, and the skill set that each stakeholder must have to its maximum.</p> <p>The MS Programme in Business Analytics is being proposed, for the said purpose, under the kind supervision of Dean and HOD, the Department of Management Studies at Bahria University Islamabad has invited external experts from business, corporate sector, practitioners, and academia to exchange ideas and proposals for sharing their opinions on the Programme's viability, structure, and technical aspects. In this regard, the first attempt towards the Programme discussion was held with Macquarie University Australia. A meeting was held at Dean Office, during the meeting the main focus between the representative of Bahria Business School and Macquarie University Australia was on Business Analytics Potential Drive. The Dean Bahria Business School Prof. Dr. Muhammad Naveed Chaired the meeting. During the meeting the representative from Macquarie University Australia Assoc. Prof Dr. Mauricio, discussed the importance of business analytics with the new business models that is indeed the future of every industry if implemented. Furthermore, the Dean Bahria Business Scholl Dr. Muhammad Naveed disused the success of Fin-tech in terms of continuous development and profitability for both the micro and macro industry factors. Assoc. Prof Dr. Mauricio expressed his gratitude to Bahria Business School for launching this market-oriented business analytics Programme, and focused that indeed the world need a shift from traditional techniques towards the novel data analytics technique in order to sum up the growth of fast-growing world economy.</p> <p>For making the viability another fruitful meeting was held before the launching proposal of Data Analytics with Dr. Sean (Vice Dean, Brunal University). He spoke in-depth on the cutting-edge business models that have emerged as a result of data science applications across a variety of industries, including healthcare, telecommunications, education, and finance. Dr. Muhammad Naveed, Dean Bahria Business School was quite optimistic about the success of the Programme, drawing on his own experience and exposure, given that corporations and other organizations are looking forward to graduates who have multi-disciplinary abilities in tackling difficult problems. Given the current advancements in artificial intelligence and human machine interaction, they had high hopes for the</p>

	<p>Programme's success.</p> <p>Similarly, the opinions of the Director IBL AWKUM Mardan (Dr. Muhammad Jehangir), Mardan, were solicited informally with a focus on the issues they experienced, the course of study, and the market need to look at the possibilities of this Programme at the MS level. Internally, discussions regarding the potential for collaboration and the advantages and disadvantages of the suggested Programme were undertaken with the senior faculty of computer science, Mathematics and social science. Regarding the academic background of potential applicants, the Programme's breadth, and the market need, the study plan for the Programme was discussed.</p> <p>Additionally, a discussion with the Manager ORIC and QEC (Dr. Fazli Subhan and Dr. Sajid) NUML, was organized for the purpose of gathering the necessary feedback, a meeting with alumni was organized with Mr. Inam Ullah Khan, CFO at Shaukat Group of Industries, Director Finance EIGHTEEN (18) Mr. Tariq, and AVP HBL Mr. Pyar, who shed the light on the importance of the Fin-tech to be the future of the industry and a big step towards the development of the students. Moreover, the importance of Fin-tech was also discussed and highlighted in Corporate Advisory Committee, where the fin-tech was regarded as a cry and need of the day, for the development of the overall industry and corporate sector, which in turn will contribute the micro and macro economy of the country.</p> <p>Also a discussion was held with FBR and Ministry of Climate Change for the consideration and essence of business analytics in almost every walk of life.</p> <p>In line with previous discussion all the sessions were insightful, intellectually stimulating, and academically valuable. They offered useful and insightful information about the potentials of the Business Analytics Programme, the necessary skill set and competencies needed in the changing business landscape, and the use of data to create opportunities and achieve and sustain competitive advantage.</p>
7	<p><b>Brief Description of the Programme:</b></p> <p>Master in business Analytics is designed to develop qualified, professional and highly skilled workforce on data analytics flow in business studies department. It will explore theoretical concepts and share regional and global best practices in Finance, HR, Marketing and Project management domain for solving the different issues related to industry and academia. The professional deficiency in the Accounting and Finance sector can consequently be covered by demonstrating the skills necessary to tackle problems within the complex world of virtual and physical market for trade and development. It is a 1.5/2 years' degree Programme for students who have the business-related management degrees / or subject to HEC and Bahria University Policies / equivalent schooling / examination under HEC rules.</p>
8	<p><b>Duration: 1.5/ 2 Years (Maximum Duration 4 Years)</b></p> <p>Master of Science in Business Analytics comprises of 30 credit hours as follows:</p> <p><b>Course Work Stream (Fast Track i.e. 1.5 Years)</b></p> <ul style="list-style-type: none"> <li>a. Eighteen (<math>6 \times 3 = 18</math>) credit hours from business analytics core domain.</li> <li>b. Twelve (<math>4 \times 3 = 12</math>) credit hours from area of specialization.</li> <li>c. The course work stream will have 1.5 years of Programme duration</li> </ul> <p><b>Research/ Capstone Project Stream (2 Years):</b></p> <ul style="list-style-type: none"> <li>a. Eighteen (<math>6 \times 3 = 18</math>) credit hours from business analytics core domain.</li> <li>b. Six (<math>2 \times 3 = 6</math>) credit hours for thesis /capstone project in Business Analytics area.</li> <li>c. Six (<math>2 \times 3 = 6</math>) credit hours from area of specialization.</li> <li>d. The thesis / capstone project stream will have 2 years of Programme duration.</li> </ul>

9	<b>Venue(s): On Site/Off Site/Both On &amp; Off Site</b> ( <i>tick one/strike-through the ones not applicable; if Off Site, give details</i> ) <i>Bahria University Islamabad Campuses under the Departments of Managements Studies.</i>
10	<b>Programme Scheduling Format:</b> <ul style="list-style-type: none"> <li>● <b>Morning/Evening/Weekend</b> (<i>tick one/strike-through the ones not applicable</i>) <b><u>WEEKEND</u></b></li> <li>● <b>Bi-Semester/Trimester/Semester Summer Session/Annual/Bi-Annual</b> (<i>tick one/strike-through the ones not applicable</i>): <i>Bi-Semester</i> <b>BISEMESTER</b></li> </ul>
11	<b>Proposed Date of Commencement:</b> Fall,2023 (Other things keep constant) for BUIC
12	<b>Mode of Study/Examination:</b> As per BU Examination Rules
13	<b>Additional Faculty Member(s) Required:</b> ( <i>Indicate if there is a requirement for additional faculty members, fulltime/visiting, along with qualifications.</i> ) No need to hire Business Analytics PhD as we will continue with the same faculty of Management Studies, however following will perform as a Visiting Professionals/mentors <ul style="list-style-type: none"> <li>a. Professor of Practice (POP)</li> <li>b. Skilled Industrial Expert</li> </ul>
14	<b>Additional Skilled-Worker(s) Required:</b> ( <i>Indicate if there is a requirement for additional Skilled Staff, fulltime/part-time, along with their qualifications/skill sets.</i> ) a. POP will be needed
15	<b>Additional Classroom(s) required:</b> ( <i>The requirement is to include the number of classrooms and their capacities.</i> ): 1 <sup>st</sup> Semester: NIL (Existing classes will be enough as we are going to introduce it as a Weekend Programme).
16	<b>Additional Requirement for Laboratories:</b> ( <i>The requirement is to include the number of laboratories, their equipment and their capacities.</i> ) Existing labs will be shared, however Dean office initiated to develop a Financial Lab that is under the discussion to be built soon.
17	<b>Additional Requirement for Books, Subscriptions, and Memberships to Online Research Sites/ Repositories:</b> One computer lab would be required; may be shared within existing labs. <ul style="list-style-type: none"> <li>• Existing stock of books partially meets the requirement. Digital library access also supplements the existing stock</li> <li>• About 50 more books would be required on contemporary thought process by different writers on Business Analytics, Fin-Tech, HR Analytics.</li> </ul>
18	<b>Minimum Entry Level:</b> <ul style="list-style-type: none"> <li>a. A bachelor's degree (16 Years of Education) in Business Related Education recognized by HEC.</li> <li>b. An overall grade-point-average (GPA) of at least 2.5/4 or 50% percent marks in last degree. As per MS Programme</li> <li>c. Valid Bahria University Test or</li> <li>d. GAT Pass results for admission.</li> </ul>
19	<b>Admission Criteria:</b> As per BU/HEC Rules
20	<b>Additional/Different Examination Requirement</b> ( <i>Indicate if there will be any examination requirement, additional to or different from the BU Academic Rules or Examination Policy in vogue</i> ). NIL

21	<b>Number of Admissions Expected for First Intake:</b> 20/ semester, this is minimum, we expect more students with awareness for the start up.
22	<b>Number of Admissions Planned/Expected for Subsequent Intakes: 30 Admission</b>
23	<b>Referred by:</b> <i>(delete which is inapplicable)</i> <b>FBOS:</b> <i>(Indicate the FBOS meeting 38<sup>th</sup> and Item No 3908)</i> <b>Competent Authority:</b> <i>(Indicate the File No &amp; date; reproduce the decision)</i>
24	<b>Complete Plan of Studies, inclusive of complete Roadmap:</b> <i>(Attach as Annex 'A' and A1).</i>
25	<b>Course Outlines, Descriptions, Pre-Requisites &amp; Readings (Compulsory &amp; Recommended)</b> <i>(Attach as Annex 'B') in Pdf</i>

#### **B. FINANCIAL DETAILS**

1	<p><b>Source of Funding:</b></p> <ul style="list-style-type: none"> <li>• BU: Fully/Partially: Fully</li> <li>• Public Sector (B1): Fully/Partially (provide complete details; attach MOU, agreement etc.)</li> <li>• NNGO (B1): Fully/Partially (provide complete details; attach MOU, agreement etc.)</li> <li>• INGO (B1): Fully/Partially (provide complete details; attach MOU, agreement etc.)</li> <li>• UN/IGO (B1): Fully/Partially (provide complete details; attach MOU, agreement etc.)</li> </ul>																
2	<p><b>Degree Duration:</b> Number of Year (1.5/2 years)</p> <p><b>Annual or Semester System:</b> Semester yes, THREE (3) Number of Semester for Subject Course wise students and yes, FOUR (4) Number of Semester for Research flow.</p> <p><b>Total Number of Credit Hours: 30</b></p>																
3	<p><b>Expected fee to be charged based on Cost &amp; Benefits Analysis:</b> (show working)</p> <ol style="list-style-type: none"> <li>Tuition Fee / Semester / Student: Rs. 76416</li> <li>Per Credit Hr fee: Rs. 6368</li> <li>Admission Fee and other Charges / Student (One Time): 25000</li> <li>Miscellaneous = 5000</li> </ol>																
4	<p><b>Expected Number of students for 1<sup>st</sup> &amp; 2<sup>nd</sup> Intakes: 20(1<sup>st</sup> Intake) and 25(2<sup>nd</sup> Intake) and 30 (3<sup>rd</sup> Intake)</b></p>																
5	<p><b>Expected Revenue from first two Intakes (B5):</b></p> <p>Tuition Fee / Semester / Student: Rs 76416 Per Credit Hour fee: Rs. 6368 Admission Fee and other Charges / Student (One Time): 25000 Miscellaneous = 5000</p> <p>Revenue from Tuition fee=      <math>20 \times 76416 =</math> Rs.15,28320 Revenue from Admission fee=    <math>20 \times 25000 =</math> 500000 Miscellaneous Expense one =    <math>20 \times 5000 =</math> <u>10000</u> Total revenue of first intakes semester 1    = <u>Rs 2,128,320</u></p>																
6	<p><b>Expected Revenue for the 1.5/ 2 Years (B6): (show working)</b></p> <table> <tbody> <tr> <td>1st Semester Revenue (1<sup>st</sup> Intake) (20 Students):</td> <td>Rs 2,128,320</td> </tr> <tr> <td>2nd Semester Revenue (2<sup>nd</sup> Intake) (20 Students):</td> <td>Rs 2,128,320</td> </tr> <tr> <td>3rd Semester Revenue (3<sup>rd</sup> Intake) (25 Students):</td> <td>Rs 2,660,440</td> </tr> <tr> <td>4<sup>th</sup> Semester Revenue (4<sup>th</sup> Intake) (25 Students):</td> <td>Rs 2,660,440</td> </tr> <tr> <td>5<sup>th</sup> Semester Revenue (5<sup>th</sup> Intake) (30 Students):</td> <td>Rs 2,128,320</td> </tr> <tr> <td>6<sup>th</sup> Semester Revenue (6<sup>th</sup> Intake) (30 Students):</td> <td>Rs 2,128,320</td> </tr> <tr> <td>Total Revenue for Year 1.....</td> <td>RS 4,256,640 (4.66 million)</td> </tr> <tr> <td>Total Revenue for Year 2.....</td> <td>RS 5,320,800 (5.32 million)</td> </tr> </tbody> </table>	1st Semester Revenue (1 <sup>st</sup> Intake) (20 Students):	Rs 2,128,320	2nd Semester Revenue (2 <sup>nd</sup> Intake) (20 Students):	Rs 2,128,320	3rd Semester Revenue (3 <sup>rd</sup> Intake) (25 Students):	Rs 2,660,440	4 <sup>th</sup> Semester Revenue (4 <sup>th</sup> Intake) (25 Students):	Rs 2,660,440	5 <sup>th</sup> Semester Revenue (5 <sup>th</sup> Intake) (30 Students):	Rs 2,128,320	6 <sup>th</sup> Semester Revenue (6 <sup>th</sup> Intake) (30 Students):	Rs 2,128,320	Total Revenue for Year 1.....	RS 4,256,640 (4.66 million)	Total Revenue for Year 2.....	RS 5,320,800 (5.32 million)
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Total Revenue for Year 2.....	RS 5,320,800 (5.32 million)																

	Total Revenue for Year 3..... RS 6,384,960 (6.38 million) <u>Total Revenue for first 3 Years.....Rs. 15,962,400</u>
7	<b>Total Estimated Salaries of all Additional Human Resources per annum (B7): (Show working)</b> Salary of two POP for 1st Year: Rs. 1,200,000 Salary of two POP for 2 <sup>nd</sup> Year: 1,200,000 Salary of two POP for 3 <sup>rd</sup> Year: 1,200,000 Total expense of POP for three Years: Rs 3,600,000 (Approximately)
8	<b>Cost of Additional Laboratory Equipment/Tools (B8):</b> Existing lab facilities shall be used <b>NIL</b>
9	<b>Cost of Additional Classrooms (B9):</b> (Include furniture, technical aids etc) <b>NIL</b>
10	<b>Cost of Additional Books, Subscription &amp; Memberships to on-line Sites/Repositories (B10):</b> (show details) : Nil (Online Library)
11	<b>Off-Site rental Expenses and Cost of other Fixtures (B11): (NIL)</b>
12	Miscellaneous Expenses (Adv,Print,Admin) required for Starting the Programme (B12): Miscellaneous Expenses (Adv,Print,Admin) required for 1st Year: Rs. 200,000 Miscellaneous Expenses (Adv,Print,Admin) required for 2 <sup>nd</sup> Year: 200,000 Miscellaneous Expenses (Adv,Print,Admin) required for 3 <sup>rd</sup> Year: 200,000 Total Miscellaneous Expenses (Adv,Print,Admin) 3 years: <u>Rs 600,000</u>
13	<b>Annual Recurring Expenditures in Subsequent Years (B13):</b> Already shown in serial no. 12
14	<b>Total Cost of the Programme (B14) for three intakes:</b> [Add B(7) to B(12)]: B7 = 3,600,000 B12 = <u>600,000</u> Total Cost for 3 years Rs. <b>4,200,000</b>
15	<b>Net Cost of the Programme (B15):</b> [Subtract B(1) from B(14): nothing from B1, hence Net Cost: Rs. 4,200,000]
16	<b>Net Earnings in First Year (B16:</b> [Subtract B(15) from B(6)]: 15,962,400-4,200,000 Rs.11,762,400
17	<b>Projected Annual REVENUE in Subsequent Years (B 17): In 1st Year earning is Rs. RS 4,256,640 (4.25 million)</b> For subsequent years, amount of earning would depend upon number of students. However, working been done with a positive incremental addition to the Programme.
18	<b>Projected Annual Net Earning in Subsequent Years:</b> In 1st Year earning is Rs 2,856,640. We would start I earning from 1 <sup>st</sup> Year onwards, the amount would depend upon number of students.

### Roadmap: MS Business Analytics - Management Studies, BUIC Course Work (1.5 Years)

The Scheme of Study is as follows:

- Six Compulsory Courses (6x3 =18 CHs) from Business Analytics Core Domain
- Four Elective Courses (4x3=12 CHs) from area of specialization)
- No Thesis

- Semester-wise breakup of workload/credit hours

### 1<sup>st</sup> Semester - (16 weeks)

Course	Course Type	Credit Hours
Business Maths and Statistics	Core	3
Advanced Research Methodology and Application	Core	3
Strategic Decision Making	Core	3
Data Mining	Core	3

### 2<sup>nd</sup> Semester - (16 weeks)

Course Model	Course Type	Credit Hours
Tools for Business Analytics	Core	3
Programming using Python/R	Core	3
Elective I (Optional for both streams)	Elective	3
Elective II (Optional for both streams)	Elective	3

### 3<sup>rd</sup> Semester - (16 weeks)

Course Model	Course Type	Credit Hours
Elective III (Optional for both streams)	Elective	3
Elective IV ( For course work stream)	Elective	3

### Research Work (2 Years)

The Scheme of Study is as follows:

- Six Compulsory Courses ( $6 \times 3 = 18$  CHs) from Business Analytics Core Domain
- Two Elective Courses ( $2 \times 3 = 6$  CHs) from area of specialization)
- Thesis/ Capstone Project (6 CHs)

### **Semester-wise breakup of workload/credit hours**

#### 1<sup>st</sup> Semester - (16 weeks)

Course	Course Type	Credit Hours
Business Maths and Statistics	Core	3
Advanced Research Methodology and Application	Core	3
Strategic Decision Making	Core	3
Data Mining	Core	3

#### 2nd Semester - (16 weeks)

Course	Course Type	Credit Hours
Tools for Business Analytics	Core	3
Programming using Python/R	Core	3
Elective I (Optional for both streams)	Elective	3
Elective II (Optional for both streams)	Elective	3

#### 3rd Semester - (16 weeks)

Course Model	Course Type	Credit Hours
Thesis-I/Capstone Project-I ( For research/capstone project stream	Elective	3

#### 4th Semester - (16 weeks)

Course Model	Course Type	Credit Hours
Thesis-II/Capstone Project-II (For research/capstone project stream	Elective	3

#### Elective Courses

Finance	Marketing	Management/HR
Fintech/Data Science for Finance	Digital Marketing and social media	Decision Support System
Applied Time Series Analysis for Forecasting	Retailing and Analytics	Management Models
Risk Management	Market Strategy and Forecasting	HR Analytics
Financial Modelling	Customer Relations Management	Performance Management

#### Course Outlines:

Tentative Course Outline has been added to the working paper from different top class international Universities, may be prepared later by concerned faculty based on AACSB Standard (CLOs, PLOs) as practiced. Later On, after approval of the Programme the course code will also be assigned accordingly.

#### Core Course

Course Code	Course Title	Credit Hours	Pre-requisite (s)
CDS xxx	<b>Tools for Business Analytics</b> The primary purpose of this module is to teach students how to structure a business data analysis from end to end, from business question to communication of options and insights. Such a skill is fundamental to all Business Analytics and will help students structure their analyses throughout the rest of the Programme. Students will learn how to apply data analysis within a general decision-making framework by practical first-hand experience, taking a business problem (and associated dataset) from start to finish, with each week teaching them how to progress through one step of the analytical process. Along the way they will learn key concepts that determine the quality of a data analysis, including how to generate a specific business question, how to generate reliable, clean data, how to differentiate signal from noise, such that they may identify useful business insights. At the end of the module, they will take their	3(3, 0)	-

	<p>analyses and learn how to communicate data insights through visualization and dashboarding.</p> <p><b>Module Content:</b></p> <p>How to structure analysis projects using analytical and decision-making processes.</p> <p><b>Analytics tools</b></p> <ul style="list-style-type: none"> <li>• Spreadsheets, coding and Business Intelligence (e.g., Excel, R and Tableau).</li> <li>• Foundational data analysis skills (e.g., manipulating, cleaning, joining and exploring data)</li> <li>• Foundational statistics and statistical concepts (e.g., uncertainty, variance, pattern identification).</li> <li>• Data dashboards.</li> <li>• Data visualization.</li> <li>• What-if scenario analysis.</li> </ul> <p><b>Recommended Books:</b></p> <p>Business Analysis Techniques, 72 Essential Tools for Success by James Cadle, Debra Paul, and Paul Turner, 2010.</p>		
CDS xxx	<p><b>Data Mining</b></p> <p>Data mining is the process of finding anomalies, patterns, and correlations within large data sets to predict outcomes. It involves searching through databases for potentially useful information such as knowledge rules, patterns, regularities, and other trends hidden in the data. Using a broad range of techniques, this information is leveraged to increase revenues, cut costs, improve customer relationships, reduce risks and more. Applications of data mining and business analytics are highly useful in today's competitive market. In this module several case studies of well-known data mining techniques are used, e.g. shopping basket analysis such as Tesco club card, credit card fraud detection, predicting stock market returns, risk analysis in banking, web analytics and social network analysis including Facebook and Twitter.</p> <p><b>Module Content:</b></p> <ul style="list-style-type: none"> <li>• An introduction to data mining process model for business and management</li> <li>• CRISP-DM using a Data Mining Package</li> <li>• Data pre-processing, visualization and exploratory analysis used in business intelligence</li> <li>• Data Modelling models and their applications</li> </ul>	3(3, 0)	-

	<ul style="list-style-type: none"> <li>• Accessing and collecting data from the Web</li> <li>• Text mining</li> <li>• Web optimization from the SEM perspective</li> <li>• Web-Analytics and data mining models in real-world applications</li> </ul> <p><b>Recommended Books:</b></p> <ul style="list-style-type: none"> <li>• Data Mining: Concepts and Techniques / Author: Jiawei Han and Micheline Kamber / Year: / Edition: null / Publisher:</li> <li>• Data Warehousing Fundamentals A Comprehensive Guide for IT Professionals / Author: Paulraj Ponniah/Year: 2016/ Edition: 1st / Publisher:</li> </ul>		
CDS xxx	<p><b>Programming Using Python</b></p> <ul style="list-style-type: none"> <li>• The module equips students with the knowledge and tools to implement financial models using Python. The course introduces students to the general principles of building financial models, as well as a number of specific financial modelling tools, including matrix calculations, optimization, regression analysis (both time-series modelling and panel data modelling), out-of-sample forecasting and simulation. These methods are applied to a range of practical problems in finance, including passive and active portfolio management, risk management and currency valuation. The emphasis of the course is on practical application of the theory, with lectures on each topic followed by in-depth practical classes, in which students work through real world problems using Python.</li> </ul> <p><b>Module Content:</b></p> <ul style="list-style-type: none"> <li>• Introduction to Python</li> <li>• Time-series modelling</li> <li>• Panel data modelling</li> <li>• Value at Risk</li> <li>• Portfolio optimization</li> </ul> <p><b>Recommended Books:</b></p> <ul style="list-style-type: none"> <li>• Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython, Wes McKinney, O'Reilly, 2017.</li> <li>• Python Data Science Essentials - Learn the fundamentals of Data Science with Python, Alberto Boschetti and Luca Massaron, Packt Publishing, 2015</li> </ul>	3(3, 0)	-
CDS xxx	<p><b>Advanced Research Methodology and Application</b></p> <p>This module will help the student to acquire key</p>	3(3, 0)	-

	<p>skills and competencies to carry out management research or prepare a business plan, suitable for the completion of a Masters level Programme. The module will address philosophical issues underlying management and business research and explain how to select research strategies and designs.</p> <p>It will offer a comprehensive view of methods of data collection and analysis to support the quality and value of research outcomes. In addition, and especially, for those opting for the business plan route, the module will provide a platform for evaluating the quality of relevant, market-oriented research designs, methods for business planning, researching the task environment and set-up of new ventures.</p> <p><b>Module Content:</b></p> <ul style="list-style-type: none"> <li>• Understand different methods of investigation under consideration of different research perspectives</li> <li>• Select appropriate research strategies and designs in quantitative, qualitative and mixed method research</li> <li>• Choose specific data collection methods for quantitative, qualitative and mixed method research</li> <li>• Identify appropriate secondary sources of information, and access several publicly available databases (especially for business data)</li> <li>• Critique the research methodology of published papers</li> <li>• Apply a variety of statistical tests and interpret the results of those tests</li> <li>• Choose a computer package (e.g. SPSS) for the statistical analysis of data</li> <li>• Perform textual analysis such as thematic analysis in qualitative research</li> <li>• Write a research proposal to successfully complete a Masters level dissertation or a business/marketing plan</li> </ul> <p><b>Recommended Books:</b></p> <ul style="list-style-type: none"> <li>• Research Methods for Postgraduates, Tony Greenfield, Wiley, 2016.</li> </ul>		
CDS xxx	<p><b>Business Maths and Statistics</b></p> <p>This module introduces methods for building, estimating, and interpreting statistical and econometric models focusing on the area of</p>	3(3, 0)	-

	<p>business analytics, and analyzing quantitative data for making better decisions. The module provides the theoretical foundation and intuitive knowledge, applied to business data by making use of econometric/statistical software.</p> <p><b>Module Content:</b></p> <ul style="list-style-type: none"> <li>• Review of concepts such as descriptive statistics and graphical representation of data; inferential statistics (e.g., estimation, hypotheses testing, etc.);</li> <li>• Analysis of variance; Linear Regression basics, and Ordinary Least Square (OLS) model;</li> <li>• Multiple regression using cross-sectional and panel data; OLS assumptions and regression diagnostics (e.g., multicollinearity, heteroskedasticity, influential observations);</li> <li>• Endogeneity and causal inference,</li> <li>• Supplementary topics such as two-stage least squares (2SLS) regression and instrumental variables.</li> </ul> <p><b>Recommended Books:</b></p> <ul style="list-style-type: none"> <li>• Computer Age Statistical Inference: Algorithms, Evidence, and Data Science, Bradley Efron, Trevor Hastie, Cambridge University Press, 2016.</li> <li>• Statistical Models: Theory and Practice, David A. Freedman, University of California, Berkeley, 2012.</li> <li>• Models for Probability and Statistical Inference: Theory and Applications, James H. Stapleton, John Wiley &amp; Sons, 2007.</li> </ul>		
CDS xxx	<p><b>Strategic Decision Making</b></p> <p>Strategic decision-making is the process of charting a course based on long-term goals and a longer-term vision. By clarifying your company's big picture aims, you'll have the opportunity to align your shorter-term plans with this deeper, broader mission – giving your operations clarity and consistency. Strategic Decision Making is a business discipline concerned with the coordinating of material and human resources within an organization in order to achieve long-term business goals. Masters in Strategic Decision-Making focuses on gaining entrepreneurship acumen and a broad understanding of modern business environments. Business decisions depend on, and involve great risk on account of, changes taking place in the economic and</p>	3(3, 0)	-

	<p>technological environment. Study of SDM coupled with 'knowledge industry' can educate the business managers to understand the inherent problems so as to make rational decisions in times of need. A course in SDM will enable students to make sense of the broader environment by making PEST and SWOT analysis and use different tools/techniques to make effective decisions.</p> <p><b>Module Content:</b></p> <ul style="list-style-type: none"> <li>• Strategic Planning</li> <li>• Ethics/Social Responsibility/Sustainability</li> <li>• Types of Strategies</li> <li>• Vision and Mission Analysis</li> <li>• The Internal Audit</li> <li>• The External Audit</li> <li>• Strategy Generation and Selection</li> <li>• Strategy Implementation</li> <li>• Strategy Monitoring</li> <li>• Strategy Evaluation</li> </ul> <p><b>Recommended Books:</b></p> <ul style="list-style-type: none"> <li>• Strategic Management: Concepts and cases by Fred David, 2015</li> </ul>		
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### MS Thesis

Course Code	Course Title	Credit Hours	Pre-requisite (s)
CDS xxx	<p><b>MS Thesis/Capstone Project/ Elective for CWS coursework</b></p> <p>The module is compulsory for all MSc students and is the final element of the Programme, providing an opportunity for a sustained period of independent study and research. It allows students to concentrate on topics that are of particular interest to them, and it draws upon a range of different aspects of the taught Programme particularly the analytical and quantitative methods they learn throughout the course. It also gives an opportunity for students to work independently with individual supervision.</p> <p>The module can take one of two different formats:</p> <p><b>a) Dissertation</b> - An academic piece of work. This form of dissertation follows the standard academic pattern of identifying a topic arising from a gap in the literature and developing a methodology to explore this area in depth.</p>	6 (6 0)	

	<p><b>b) Project</b> - A business or applied piece of work. This form of project starts with an emerging business problem, either provided from an industrial partner or with their co-operation in the process, and seeks to provide a research-based solution to or exploration of the problem. Any engagement with external party needs approval. Both formats of the written piece of work seeks to develop the same learning outcomes and follow the same assessment criteria.</p> <p><b>Module Content:</b></p> <p>Topics may be selected from a list provided by academic staff or suggested by the students themselves. This could include academic research or business consultancy project working in collaboration with industries. All topics must be quantitatively based and must be business related. Technique(s) related to business analytics must be used to demonstrate successful applications of studied Programme.</p>		
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#### Electives Courses

Course Code	Course Title	Credit Hours	Pre-requisite (s)
	<b>Finance</b>		
CDS xxx	<p><b>Fintech/Data Science for finance</b></p> <p>Financial Technology brings together highly relevant key quantitative and analytical skills, knowledge of the financial sector and provides practical experience through an immersive learning syllabus. The skills you will gain are in demand from top recruiters in fintech, and you will graduate prepared to embark on a rewarding fintech orientated career in the financial services sector.</p> <p>The course syllabus will enable you to understand, execute and possibly develop disruptive financial innovations using appropriate tools and techniques. You will be able to demonstrate analytical skills to create, manage and interrogate large data sets applicable to the finance sector and build up a critical awareness of current issues in the fintech landscape. A range of Programming tools will facilitate live implementations of financial models and allow you to analyse and</p>	3(3, 0)	-

	<p>evaluate investment decisions and data.</p> <p><b>Course Contents</b></p> <ul style="list-style-type: none"> <li>• Unleashing the Leashed Financial System</li> <li>• Technology Development <ul style="list-style-type: none"> <li>▪ Cloud services,</li> <li>▪ Open-source software,</li> <li>▪ Artificial intelligence,</li> <li>▪ Mobile devices and apps</li> </ul> </li> <li>• New Financial Dialup; <ul style="list-style-type: none"> <li>▪ Blockchain and Bitcoin</li> <li>▪ PayPal</li> <li>▪ REITs</li> <li>▪ Angel investors</li> <li>▪ Venture Capital Modeling</li> <li>▪ Crowd Funding</li> <li>▪ Financial Credit Unions and MFIs</li> <li>▪ Securitization</li> </ul> </li> <li>• Payments, Cryptocurrencies and Blockchain</li> <li>• Digital Finance and Alternative Finance</li> <li>• Fintech Regulations</li> <li>• Data Driven Finance</li> <li>• Financial Reporting in New Age</li> <li>• Financial Literacy and Financial Decisions</li> <li>• Financial Crises and Aftermath</li> <li>• Securitization and Financial Derivatives</li> <li>• Fintech and Economic Development</li> </ul> <p><b>Recommended Textbooks and Research Articles:</b></p> <ul style="list-style-type: none"> <li>• “Digital Currencies, Decentralized Ledgers, and Future of Central Banking” Raskin and Yermack, 2017</li> <li>• “Digital Cash: Why Central Banks Should Start Issuing Electronic Money,” Positive Money. Dyson and Hodgson, 2016,</li> <li>• “Central Bank Digital Currencies: A Framework Assessing Why and How,” Discussion Paper, Bank of Canada. Fung and Halaburda, 2017,</li> <li>• “Blockchain Applications: A Hands-on Approach” by Arshdeep Bahga and Vijay Madisetti</li> <li>• Bitcoin and Cryptocurrency Technologies: by Arvind Narayanan, Joseph Bonneau and Edward Felten.</li> <li>• “An Introduction to Statistical Learning: with Applications” by Gareth James</li> </ul>	
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CDS xxx	<p><b>Applied Time Series Analysis forecasting</b></p> <p>The course introduces the concepts and methods of time-series analysis. Specifically, the topics include (i) stationarity and ergodicity (ii) auto-, cross- and partial-correlation functions (iii) linear random processes - definitions (iv) auto-regressive, moving average, ARIMA and seasonal ARIMA models (v) spectral (Fourier) analysis and periodicity detection and (vi) parameter estimation concepts and methods. Practical implementations in R are illustrated at each stage of the course.</p> <p>The subject of time-series analysis is of fundamental interest to data analysts in all fields of engineering, econometrics, climatology, humanities and medicine. Only few universities across the globe include this course on this topic despite its importance. This subject is foundational to all researchers interested in modelling uncertainties, developing models from data and multivariate data analysis.</p> <p><b>Course Contents;</b></p> <ul style="list-style-type: none"> <li>• Nature and Structure of Economic Data</li> <li>• Data Diagnostic Testing and Measurement of Economy</li> <li>• Time Critical Decision Modeling and Analysis</li> <li>• Data Stationary Analysis</li> <li>• Estimation, Specification and Validation of Econometric Models</li> <li>• Modeling Financial and Economic Decisions and Forecasting</li> <li>• Customized Decision Making</li> </ul> <p><b>Recommended Books and Articles</b></p> <ol style="list-style-type: none"> <li>1. Applied Time Series Analysis: A Practical Guide to Modeling and Forecasting. Terence C. Mills. Elsevier Science, 2019.</li> <li>2. Research Articles and Working Papers</li> </ol>	3(3, 0)	-
CDS xxx	<p><b>Risk Management</b></p> <p>This course will focus on variety of risks faced by financial managers and the tools available for managing these risks. Particularly, we shall focus on credit risk, interest rate and liquidity risks, market risk, foreign exchange risk, and country risk. We shall learn about the tools and techniques available for managing these risks</p>	3(3, 0)	-

	<p>such as future contracts, option contracts, swaps, value-at-risk (VaR) and other standard risk-hedging techniques, and methods of measuring volatility. Students attending this course are expected to have studied basic courses of investment and portfolio management and have good understanding of asset pricing models</p> <p><b>Course Contents</b></p> <ul style="list-style-type: none"> <li>• Time Value of Money and Risk Management</li> <li>• Risk Management Concepts and Practices</li> <li>• Methodical Approach of Risk Management</li> <li>• Risk Management Matrix</li> <li>• Risk Management in Digital World</li> <li>• Corporate Governance and Risk Management</li> <li>• Risk Management and Earning Management</li> <li>• Risk Management and Financial Performance</li> <li>• Risk Management Skills and FATF</li> </ul> <p><b>Recommended Books and Articles</b></p> <ul style="list-style-type: none"> <li>• Risk Management for Financial Institutions. Gary M. Deutsch, LexisNexis, Edition 2018.</li> </ul>		
CDS xxx	<p><b>Financial Modeling</b></p> <p>The module equips students with the knowledge and tools to implement financial models using Python. The course introduces students to the general principles of building financial models, as well as several specific financial modelling tools, including matrix calculations, optimization, regression analysis (both time-series modelling and panel data modelling), out-of-sample forecasting and simulation. These methods are applied to a range of practical problems in finance, including passive and active portfolio management, risk management and currency valuation. The emphasis of the course is on practical application of the theory, with lectures on each topic followed by in-depth practical classes, in which students work through real world problems using Python.</p> <ul style="list-style-type: none"> <li>• Introduction to Python</li> <li>• Time-series modelling</li> <li>• Panel data modelling</li> <li>• Value at Risk</li> </ul>	3(3, 0)	-

	<ul style="list-style-type: none"> <li>• Portfolio optimization</li> </ul> <p><b>Recommended Books and Articles</b></p> <ul style="list-style-type: none"> <li>○ Principles of financial modeling. Michael Rees, 2018, John Wiley &amp; Sons, Ltd, UK.</li> </ul>		
CDS xxx	<p><b>Financial Services Marketing</b></p> <p>This course provides a foundation for building a successful career as a Financial Services professional. The concepts can be applied by individuals employed by any financial services organization, commissioned agents or independent entrepreneurs operating their own business. Students will be introduced to Services Marketing concepts the basic principles of Marketing and the difference between Marketing and Sales of Financial Services. Principles covered include: identifying target markets, market segmentation, building an effective Marketing Plan, developing an effective Value Proposition, and a practical strategy to competitively selling Financial Services.</p> <p><b>Course Contents</b></p> <ul style="list-style-type: none"> <li>• Marketing and Financial Services; An Overview</li> <li>• Financial Services Environment and Financial Services Customers</li> <li>• Segmenting and Targeting Financial Services Marketplace</li> <li>• Relationship Marketing in Financial Services</li> <li>• Building and Sustaining Financial Services Brand</li> <li>• Financial Services Marketing and Creating Value</li> <li>• Communication in the Marketing of Financial Services</li> <li>• Marketing Strategies in Financial Services</li> </ul> <p><b>Recommended Study Material</b></p> <ol style="list-style-type: none"> <li>1. Marketing Financial Services by Jillian and Arthur Meidan (2<sup>nd</sup> Edition)</li> </ol>	3(3, 0)	
CDS xxx	<p><b>Financial Reporting in Digital Age</b></p> <p>A basic prior knowledge of accounting is assumed: students learn how accounts are constructed and analyzed, then examine the impact of various issues on the reported numbers. These include the reporting of tangible and intangible assets; continued and discontinued operations, historic costs vs fair value accounting and business combinations.</p>	3(3, 0)	

	<p>The module takes a global perspective and refers largely to the regulatory regime of the International Accounting Standards Board (IASB).</p> <p><b>Module Content:</b></p> <ul style="list-style-type: none"> <li>• Introduction to Financial Reporting</li> <li>• Introduction to Financial Statements and Other Financial Reporting Topics</li> <li>• The Balance Sheet and the Shareholder Equity</li> <li>• Income Statements and Reported Income (Earnings) Quality</li> <li>• Property Plant and Equipment</li> <li>• Intangible Assets and Fair Value Accounting</li> <li>• Liquidity of Short-Term Assets Related Debt-Paying Ability</li> <li>• Financial Ratio Analysis</li> <li>• The Financial Statements of Special Industries: Banks, Utilities, Oil &amp; Gas, Transportation, Insurance and Real Estate Companies</li> <li>• Group Accounts and Business Combination</li> </ul> <p><b>Recommended Study Material</b></p> <ul style="list-style-type: none"> <li>• XBRL-based Digital Financial Reporting Principles, by American Institute of Certified Public Accountants, (2017)</li> <li>• Comprehensive Introduction to Knowledge Engineering for Professional Accountants by CFA.</li> <li>• “Digital Format for Financial Reporting” by Katarzyna Klimczak (2017)</li> <li>• “Financial Statements: A Step-by-Step Guide to Understanding and Creating Financial Reports” by Thomas, R. Ittelson.</li> </ul>		
	<b>Marketing</b>		
CDS xxx	<p><b>Digital Marketing and Social Media Analytics</b></p> <p>Global Business is increasingly confronted with the need to participate and manage in real-time digital environment. Hence business need to consider how to take advantage of digital technologies as a tool and potential imperative for competitive advantage and whether current marketing strategies are coherent with strategies for the digital market. As customer experience become increasingly digitized, practitioners have access to an array of data from digital sources. Students will focus on appreciating the digital marketing landscape</p>	3(3, 0)	-

	<p>and understand how firms can build value-enhancing strategies that leverage digital and social media channels. Through the use of digital analytic dashboards and software, students will learn to analyze marketing/customer data to make meaningful decisions.</p> <p><b>Module Content:</b></p> <ul style="list-style-type: none"> <li>• Understanding the digital marketing landscape: micro and macro environments</li> <li>• Understanding the digital environment for engaging consumers in local and global contexts.</li> <li>• Marketing theory in customer centricity and value creation</li> <li>• Relationship marketing using digital media</li> <li>• Digital media and the marketing mix</li> <li>• Evaluation and improvement of digital channel performance</li> <li>• Introduction to digital analytics and dashboard tools</li> <li>• Competitor and industry benchmarking analysis</li> <li>• Communicating value driving channel strategies for marketing decision making</li> </ul> <p><b>Recommended Books:</b></p> <p>Architecting Experience: A Marketing Science and Digital Analytics Handbook by Scot R Wheeler 2016</p> <p>Social Media Analytics Strategy: Using Data to Optimize Business Performance by Alex Gonçalves 2017</p>		
CDS xxx	<p><b>Retailing and analytics</b></p> <p>Marketing and Retail analytics is the process of measuring, managing, and analyzing marketing performance to maximize effectiveness and optimize investment return. This supports the business to improve its operations and customer experience by providing a 360-degree view of the customer's needs. The free marketing and retail analytics course will help you anticipate demand and other significant trends that generate more revenue for the business. This beginner course explains some basic terminologies used in marketing and discusses the application of analytics in retail. You will also learn RFM, a data modeling approach to analyze customer value used in</p>	3(3, 0)	-

	<p>marketing techniques to gather factors like purchase recency, frequency, and amount spent on a purchase. This basic marketing and retail analytics course can help you uncover more substantial business insights and customer needs.</p> <p>Find out recent trends in customer behavior by taking up a <a href="#"><u>free marketing analytics course</u></a> for your level.</p> <p>Great Learning offers multiple data science courses that make you proficient in Data Science to excel in your career. Enroll in the <a href="#"><u>Best Data Science course</u></a> and earn a Postgraduate degree online. The course is designed in collaboration with the University of Texas at Austin. You will also receive career mentorship services along with the Programme to help you elevate your corporate journey.</p> <p><b>Course Objectives:</b></p> <p>This course will help you to:</p> <ol style="list-style-type: none"> <li>1. Understand the basic functions involved in running a retail business, and the concepts and principles necessary for decision-making in a retail firm.</li> <li>2. Analyze historical and current trends affecting retailing sector.</li> <li>3. Understand the determinants and characteristics of consumer-level and market-level demand, and of pricing.</li> <li>4. Analyze location and franchising decisions from a strategic perspective.</li> <li>5. Develop the ability to communicate the results and findings to audience groups and stakeholder.</li> <li>6. To endow students with computing skills in statistics, machine learning, and spatial analysis required to perform each topic.</li> </ol> <p><b>Recommended Book:</b></p> <ol style="list-style-type: none"> <li>1. Retail Analytics: Integrated Forecasting and Inventory Management for Perishable Products in Retailing by Anna-Lena Sachs 2015</li> <li>2. Retailing Management by Levy, M., Weitz, B. &amp; Grewal, D., 10th edition, McGraw-Hill, 2019.</li> </ol>		
CDS xxx	<p><b>Market Strategy and Forecasting</b></p> <p>How will customers act in the future? What will demand for our products and services be? How</p>	3(3, 0)	-

	<p>much inventory should we order for the next season? Beyond simply forecasting what customers will do, marketers need to understand how their actions can shape future behavior. In Developing Forecasting Tools with Excel, learners will develop an understanding of the basic components of a forecasting model, how to build their own forecasting models, and how to evaluate the performance of forecasting models. All of this is done using Microsoft Excel, ensuring that learners can take their skills and apply them to their own business problems.</p> <p><b>Module Content:</b></p> <ul style="list-style-type: none"> <li>○ Basics of Forecasting Models</li> <li>○ This module will discuss how to identify the necessary components of a forecasting model based on patterns in the history data. You will also be able to evaluate the performance of a forecasting model using both in-sample and out-of-sample metrics.</li> <li>○ Customer Analytics: Predicting Individual Customer Behavior</li> <li>○ "Meaningful Marketing Insights," This content will be familiar for learners who completed the first course; please think of this portion of the class as a review.</li> <li>○ Managing Customer Equity: Linking Customer Analytics to Customer Value</li> <li>○ This module will discuss managing customer equity, acquisition, retention, &amp; market value, and customer valuation. You will learn how to decompose customer value into its underlying components.</li> <li>○ Marketing Mix Modeling <ul style="list-style-type: none"> <li>○ A common task in developing forecasting models is to use them to make decisions regarding the marketing mix activity. With a marketing mix model, organizations can assess the efficacy of different marketing actions. Included is a sample of data for a popular frozen food category. In addition to weekly sales and pricing, for the focal brand we have information on whether the product was featured in the store's advertising (e.g., newspaper circular) and if the product was on display in the store. We also have pricing information from competitors. In this module,</li> </ul> </li> </ul>	
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	<p>we will build a series of regression models to evaluate the impact of the brand's actions and competitors' actions.</p>		
CDS xxx	<p><b>Customer Relations Management</b></p> <p>Every business aims to win loyal customers. But it is widely known that even the most successful firms with excellent marketing Programmes face serious difficulties when it comes to customer retention. This underscores the importance of Customer Relationship Management (CRM) to any organization.</p> <p><u>CRM</u> deals with helping businesses in successfully implementing strategies, practices, and technologies that are aimed at winning and retaining customers profitably. A well-functioning CRM system is bound to reap guaranteed benefits to any given organization.</p> <p>This <u>IIMBx MOOC Customer Relationship Management</u> is designed to equip learners with a sound foundational knowledge of CRM concepts and best practices so that they can implement CRM practices successfully for long-term profitability.</p> <p>In this course, you will learn how to shift from a short-term 'customer transaction-based mode' of operation to a long-term 'relationship mode' and understand the benefits of having strong customer relations.</p> <p><b>Module Content:</b></p> <ul style="list-style-type: none"> <li>• The meaning and application of CRM</li> <li>• Benefits of CRM to companies and consumers</li> <li>• How to implement CRM best practices</li> <li>• The importance of bonding and building loyalty with customers</li> <li>• How to build long term customer relationships</li> </ul> <p><b>Recommended Books:</b></p> <ol style="list-style-type: none"> <li>1. Customer Relationship Management, Concept, Strategy, and Tools. Kumar, V., Reinartz, Werner, 2018. Spring Texts in Business and Economics.</li> <li>2. M. Godson, "Relationship Marketing". 1st edition. 2015, Oxford University Press. New York</li> </ol>	3(3, 0)	-
CDS xxx	<p><b>Customer Analytics</b></p> <p>Data about our browsing and buying patterns are everywhere. From credit card transactions</p>	3(3, 0)	

	<p>and online shopping carts, to customer loyalty Programmes and user-generated ratings/reviews, there is a staggering amount of data that can be used to describe our past buying behaviors, predict future ones, and prescribe new ways to influence future purchasing decisions. In this course, four of Wharton's top marketing professors will provide an overview of key areas of customer analytics: descriptive analytics, predictive analytics, prescriptive analytics, and their application to real-world business practices including Amazon, Google, and Starbucks to name a few. This course provides an overview of the field of analytics so that you can make informed business decisions. It is an introduction to the theory of customer analytics, and is not intended to prepare learners to perform customer analytics.</p> <p><b>Module content:</b></p> <ul style="list-style-type: none"> <li>• Describe the major methods of customer data collection used by companies and understand how this data can inform business decisions</li> <li>• Describe the main tools used to predict customer behavior and identify the appropriate uses for each tool</li> <li>• Communicate key ideas about customer analytics and how the field informs business decisions</li> <li>• Communicate the history of customer analytics and latest best practices at top firms</li> </ul> <p><b>Recommended Book:</b></p> <ul style="list-style-type: none"> <li>• Retail Analytics: Integrated Forecasting and Inventory Management for Perishable Products in Retailing by Anna-Lena Sachs 2015</li> <li>• Retailing Management by Levy, M., Weitz, B. &amp; Grewal, D., 10th edition, McGraw-Hill, 2019.</li> </ul>	
	<b>Management/HR</b>	
CDS xxx	<p><b>Decision Support System</b></p> <p>At best, a well-functioning decision-system supports decision-makers in making sense of business operations as well as the business environment. Computing resources can play multiple roles in supporting such decision-</p>	3(3, 0) -

	<p>systems. Historically, and typically, computers and calculation software have been used as advanced calculators to support decision-making.</p> <p>However, computer-based decision-support is not limited to providing advanced calculations. Computing resources may also be used in providing anonymity among a decision-team in order to minimize the effects of organizational politics and ‘group think’ on strategic decision-making.</p> <p>Similar concepts have successfully been transferred and used as pedagogical tools during business simulations to test and evaluate management ability and to illustrate fundamentals of strategic decision-making. Furthermore, knowledge-management systems may be used to transfer know-how from one unit of an organization to another by converting individual ‘silent’ knowledge to documented and stored information.</p> <p>After a historical overview of the subject area in the beginning of the course, the course on Decision Support Systems acknowledges both the social and technical perspective of decision-support. Traditional courses on Decision Support Systems typically have a ‘technology push’-approach to decision-support, meaning that technology supersedes wants and needs of the customers and the market. A user-centered approach, on the other hand, makes it a priority to describe, understand and capture the ‘market pull’ side of decision-making. Consequently, if purposeful decision-support is of concern, an understanding of what is decision-making, and what enables and restricts businesses, markets and macro-environment are all key aspects to consider for any decision-support designer. The course readings cover aspects and frameworks of decision-making in a multitude of settings – not only business settings. Together this is referred to as the social and business-driving side of decision-making.</p> <p>Given an understanding of the social business-side of decision-making, the focus is set to the technology-driven side of the decision-support. This section introduces terms and concepts like</p>	
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	<p>Data Warehousing, Business Intelligence, Group Decision Support Systems and data visualization. One of the course modules introduces the participants to commercial decision-support software that is used to build specific decision-support systems for specific decision-making roles.</p> <p><b>Course Contents:</b></p> <ul style="list-style-type: none"> <li>• Supporting Business Decision-Making Tutorial 1: Using Worksheets to Make Business Decisions</li> <li>• Gaining Competitive Advantage with DSS Tutorial 2: Creating a Worksheet</li> <li>• Analyzing Business Decision Processes Tutorial 3: Developing a Professional-Looking Worksheet</li> <li>• Analyzing Business Decision Processes Tutorial 4: Creating Charts</li> <li>• Designing and Developing DSS</li> <li>• Evaluating DSS Architecture, Networking and Security Issues Tutorial 11: Importing Data into Excel</li> <li>• Implementing Communications-Driven and Group DSS Tutorial: Using Microsoft Netmeeting for Decision Support</li> <li>• Building Knowledge-Driven DSS and Mining Data Tutorial 9: Data Tables and Scenario Management</li> </ul> <p><b>Recommended Books:</b></p> <p>Power, D. J. Decision Support Systems: Concepts and Resources for Managers. Edited by Chiang S Jao, 2010</p>		
CDS xxx	<p><b>Management Models</b></p> <p>The basis of all organized business is actually to create a value that is higher than the cost of producing this value. Value should not be understood here as mere commercial value, but as consisting of all the components built into an offering of goods or services. This is true for all types of business, whether they are religious, state-owned, or municipal organizations. There is less need of management competence at times and in situations where a business is guaranteed its survival. But the more pressure there is, the more important its management competence</p>	3(3, 0)	-

	<p>becomes.</p> <p>This introduction to the subject of management is intended to define, explain and give examples of concepts and models used in almost areas of management including finance, marketing, and human resource management. By understanding various models and the context in which they could be applied, the students will acquire the capability to make right decisions in the complex world. Moreover, models represent complex reality and so they always conceal more than they reveal. By looking at management models from various perspectives, the students will develop capacity to relate various models keeping into account the contextual factors.</p> <p><b>Course Contents:</b></p> <ul style="list-style-type: none"> <li>• Activity-based costing (ABC)</li> <li>• Balanced scorecard</li> <li>• Boston matrix (BCG matrix)</li> <li>• BPR (Business Process Re-engineering)</li> <li>• Capital rationalization 78</li> <li>• CRM</li> <li>• EVA – Economic Value Added</li> <li>• Just-In-Time, JIT (efficient production)</li> <li>• Kaizen – continuous improvement</li> <li>• McKinsey's 7s model</li> <li>• Mintzberg's strategy analysis</li> <li>• PIMS (Profit Impact of Market Strategy)</li> <li>• Porter's competitive analysis</li> <li>• Porter's generic strategies</li> <li>• Product life cycle</li> <li>• The Product/Market Matrix (PM Matrix)</li> <li>• Risk analysis</li> <li>• The S-Curve</li> <li>• Six Sigma</li> <li>• Taylorism – Scientific management</li> <li>• Time-based competition</li> <li>• Value analysis</li> <li>• Value-based management</li> <li>• Value chain</li> <li>• Vertical integration</li> <li>• Zero-base planning</li> </ul> <p><b>Recommended Books:</b></p> <ol style="list-style-type: none"> <li>1. Bengt Karlöf, Management Concepts and Models. 2005</li> </ol>		
CDS xxx	<p><b>Disaster management (GIS)</b></p> <p>All countries face a wide range of hazards that</p>	3(3, 0)	-

	<p>have the potential to result in catastrophic societal impacts.</p> <p>Despite actions taken by local emergency management professionals, international trends show that the economic and social impact of disaster is increasing around the world.</p> <p>This is especially true in lower-income contexts, where large-scale disasters can result in enormous loss of life as well as considerable economic damage.</p> <p>The MSc in International Disaster Management is aimed at students interested in critically analyzing key concepts in disaster management theory, research, policy and application, including vulnerability, governance, disaster risk reduction, and enhancing resilience to disasters through prevention, preparedness, response and recovery efforts.</p> <p>Students undertake interdisciplinary study at HCRI, focusing on the critical analysis of current trends in academic research and policies, particularly those related to international disaster risk reduction, sustainable development, and humanitarian action tools commonly used by disaster risk reduction professionals.</p> <p>Students engage with a core curriculum that brings together the spheres of disaster risk reduction, sustainable development and humanitarian action.</p> <p>HCRI's interdisciplinary team of researchers support critical exploration of disaster resilience, prevention, mitigation, preparedness, response and recovery, equipping students to work professionally in disaster risk reduction and sustainable development.</p> <p>The MSc in International Disaster Management is unique as it incorporates units and lecturers from a wide variety of disciplines, including business and management, systems thinking, geography, history, politics, development studies, the arts and medicine.</p> <p>This course is suitable for developing initial capacity in disaster risk reduction and/or supporting continuing education for disaster</p>		
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	<p>risk reduction professionals.</p> <p><b>Module Content:</b></p> <p>On completion of the course, students demonstrate a critical understanding of the following.</p> <ul style="list-style-type: none"> <li>• Key issues and debates related to the theory and application of disaster risk reduction. Students will demonstrate familiarity with different theoretical approaches, practical problems and an appreciation of the diversity of policies at international and national levels, including the Sendai Framework for Disaster Risk Reduction and the Sustainable Development Goals.</li> <li>• The range of environmental, health and social science topics which influence disaster risk reduction and management (including geographical, political, historical, anthropological understandings). Students will be familiar with the methodological underpinnings of these disciplines.</li> <li>• The analytical and policy literature concerning the related issues of disaster risk reduction including environmental studies, emergency management, the role and perspectives of the state, multilateral and bilateral agencies, international and domestic NGOs and other civil institutions.</li> <li>• An understanding of common approaches to disaster risk reduction, including an awareness of the problems and critiques associated with disaster prevention, mitigation, preparedness, response and recovery in both high- and low-income countries.</li> <li>• The development of a range of intellectual and professional skills through both independent and group-based work.</li> <li>• A detailed understanding of a specific conceptual and/or policy-related area of disaster risk reduction along with implications and limitations of research findings on this subject, and of how to produce an original piece of academic research in the form of a dissertation.</li> </ul>	
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	<p><b>Recommended Books:</b></p> <ul style="list-style-type: none"> <li>• Disaster Science and Management McGraw Hill Education by Tushar Bhattacharya (India) Pvt. Ltd, 2012.</li> </ul>		
CDS xxx	<p><b>HR Analytics</b></p> <p>HR analytics is the science of gathering, organizing and analyzing the data related to HR functions like recruitment, talent management, employee engagement, performance and retention to ensure better decision making in all these areas. The HR data analytics course can be used: In employee engagement, to measure the outcomes driven by data profiling. In identifying metrics that influence attrition, and modelling the data for lowering attrition. HR analytical tools – those that examine workplace and performance data – are simplifying the complex metrics involved with hiring processes, succession and strategic planning, and performance tracking. This course will enable students to combine concepts of HRM and modern computing technology for making effective and quick decisions.</p> <p><b>Course Contents:</b></p> <ul style="list-style-type: none"> <li>• business applications of HR predictive models</li> <li>• the ethics and limitations of HR analytics</li> <li>• how to carry out an HR analysis</li> <li>• HR Planning</li> <li>• Performance appraisal</li> <li>• predict turnover</li> <li>• performance management</li> <li>• recruiting, and selection outcome</li> <li>• monitor the impact of interventions.</li> <li>• training &amp; Development</li> <li>• discipline</li> <li>• compensation management</li> <li>• work-family balance</li> </ul> <p><b>Recommended Books:</b></p> <ul style="list-style-type: none"> <li>• Predictive HR Analytics: Mastering the HR Metric by Dr. Martin Edwards, 2016</li> <li>• HR Analytics: Understanding theories and applications by Dipak Kumar, 2017</li> </ul>	3(3, 0)	-
CDS xxx	<b>Performance Management</b>	3(3, 0)	-

	<p>This module focuses on the linkages between the pursuit of positive outcomes – making a difference - for service users, citizens and communities management and the achievement of value for money through an emphasis on performance management.</p> <p>Commencing with an exploration of the important notion of outcomes, alongside the other key management concerns of outputs, processes and inputs, the module examines in both theoretical and empirical terms the relationships between outcomes, performance and resources. In so doing, the module addresses an agenda of issues that now form part of the core of contemporary public management and with which all successful public managers must engage.</p> <p><b>Module Content:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate understanding of the key roles and relationships in financial and resource management</li> <li>• Locate public sector financial management within its public management framework and mechanisms for channeling resources</li> <li>• Be able to participate at a strategic level in debates on the policy process in developing appropriate financial and resource management systems and policies</li> <li>• Understand the relationship between outcomes, performance management and resource management and to be able to critically evaluate outcomes and performance</li> <li>• Have a clear understanding of the concepts concerned with efficiency, value for money and effectiveness</li> <li>• Understand modern approaches to resource management including devolved financial management, the use of charging and public private partnerships in project finance</li> <li>• Develop critical and analytical skills for application in a variety of contexts</li> <li>• Assimilate and synthesise information from different sources and organise them in a coherent manner to answers, reports and essays</li> </ul>	
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	<b>Recommended Books:</b> <ul style="list-style-type: none"> <li>Performance Management Systems: Design, Diagnosis and Use by Chiara Demartini 2015</li> </ul>		
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Course Code	Course Title	Credit Hours	Pre-requisite (s)
	<b>Supply Chain Management</b>		
CDS xxx	<p><b>Strategies for Managing Supply Chain</b>  This supply chain management course presents innovative strategies and best practices for improving supply chain performance. It introduces a unique MIT framework, using the concept of technology clock speed, for strategically managing and optimizing supply chains. Participants gain a deeper understanding of supply chain integration, technology sourcing, make-buy decisions, strategic partnering and outsourcing, and IT and decision-support systems.</p> <ul style="list-style-type: none"> <li><b>Module Content:</b></li> <li>The next big trend in supply chain strategy, and the key skills required to be successful</li> <li>How to better structure a company's supply chain strategy</li> <li>Guidelines for making strategic sourcing and make-buy decisions</li> <li>How to integrate e-business thinking into supply chain strategy and management</li> <li>How to blend recent developments in information systems and communication technology with sophisticated decision support systems and create a comprehensive strategy for manufacturing and logistics</li> <li>"Clock speed benchmarking" — a tool for deriving critical business insights and management lessons from industries</li> <li>Why all advantages in fast clock speed environments are temporary?</li> </ul> <p><b>Recommended Books:</b></p> <ul style="list-style-type: none"> <li>Strategic Supply Chain Management: The Development of a Diagnostic Model by Safaa Sindi, Michael Roe, 2017, Palgrave Macmillan</li> </ul>	3(3, 0)	-
CDS xxx	<p><b>Advanced Warehouse, Stores &amp; Material Management</b>  The course participants will learn the fundamentals principles of the physical</p>	3(3, 0)	-

	<p>management of stock, why companies hold stock how they acquire it and how they control and distribute it efficiently. They will gain an understanding of how warehouse and distribution operation work and they are managed efficiently. They will also gain sufficient knowledge to allow them to develop solutions to problems in their own working environment.</p> <p><b>Course Module:</b></p> <ul style="list-style-type: none"> <li>• Establish warehouse and distribution objectives</li> <li>• Analyze a stock list</li> <li>• Select appropriate work methods</li> <li>• Select the appropriate type of equipment</li> <li>• Create a warehouse layout</li> <li>• Calculate labor and equipment requirements</li> <li>• Cost proposed operation</li> <li>• Identify information for control purposes.</li> <li>• Create a transport schedule</li> <li>• Calculate labour and equipment requirements</li> <li>• Analyze and cost operations</li> <li>• Determine a budget to support operational activity</li> <li>• Identify the legal responsibility for health and safety and for transport operations</li> <li>• Create a loss prevention policy</li> </ul> <p><b>Recommended Books:</b></p> <ul style="list-style-type: none"> <li>• Introduction to Materials Management, 8<sup>th</sup> edition by Steve Chapman, Tony K. Arnold, Ann K. Gatewood, Lloyd Clive, 2016.</li> <li>• Warehouse Management. Gwynne Richard. Kogan Press, 2011.</li> </ul>	
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CDS xxx	<p><b>Green Supply Chain Management</b></p> <p>Based on your acquired initial knowledge of supply chains and operations, this module provides a deeper exposure to sustainable, ethical and responsible operations and global supply chains. It emphasizes the need for taking into account how supply chains affect the economy, society and environment in all involved countries when making decision, and equips you with the knowledge and tools to</p>	3(3, 0)	-
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	<p>work towards a more sustainable way of operating.</p> <p><b>Module Content:</b></p> <p>Introduction to sustainability in operations and supply chains</p> <ul style="list-style-type: none"> <li>• Circular Economy and supply chain management</li> <li>• Open and closed loop supply chains</li> <li>• Sustainable global value chains and their local effects on developing countries</li> <li>• Sustainable Development and corporate social responsibility</li> <li>• Renewable energy</li> <li>• Sustainable sourcing</li> <li>• Ethics and responsibility</li> <li>• Eco-design/Sustainable innovation</li> <li>• Life-Cycle Analysis</li> <li>• Sustainable operations and supply chain models</li> <li>• Sustainable business models</li> </ul> <p><b>Recommended Books:</b></p> <ul style="list-style-type: none"> <li>• A Roadmap to Green Supply Chains Using Supply Chain Archaeology and Big Data Analytics by Kevin L. Lyons, Industrial Press, Inc, 2015.</li> </ul>		
CDS xxx	<p><b>Distribution Networks</b></p> <p>In the first part of the course distribution is discussed as the phenomena that connects production and consumption. Definitions of distribution are discussed as well as current changes and trends that affect distribution. We conclude that the main consequence of current changes is that suppliers need to reconsider the perspective on their distribution strategies. Previous conceptualizations have focused on the output of the factory and advocated a "channel out" approach. Today's changing conditions call for a complementary perspective that takes point of departure in the operative context of the customer. The main mission for a supplier then should be to assist customers in solving their problems and identifying and realizing their business opportunities. The course therefore covers a network perspective on distribution, which implies that we discuss how the nature of a certain distribution solution impacts on and is impacted by the surrounding</p>	3(3, 0)	-

	<p>business network and its characteristics. Furthermore, the course also deals with managerial issues related to strategizing and organizing of and in distribution networks.</p> <p><b>Module Content:</b></p> <ul style="list-style-type: none"> <li>• Definitions of distribution</li> <li>• The role of distribution in companies</li> <li>• Current transformations and trends in distribution</li> <li>• Distribution structures and distribution strategies</li> <li>• Efficiency and value creation in distribution networks</li> <li>• An industrial network approach to distribution</li> </ul> <p><b>Recommended Book</b></p> <ul style="list-style-type: none"> <li>• Distribution and Planning Control in Era of Supply Chain Management. David Fredrick Ross, 3rd Edition, Spring Publication 2018.</li> </ul>		
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## **Appendage 4315**

### **REVISED STRATEGIC PLAN FOR BAHRIA BUSINESS SCHOOL ISLAMABAD**

#### **Introduction**

Bahria University (BU) is a Federally Chartered Public Sector University in Pakistan, which was established in 1999 and was federally chartered on 7th February 2000 through a Presidential Ordinance. It is a multi-campus institution of higher education, which is committed to attaining the highest standards in teaching, learning and research, compatible with global requirements of practicing different professions. The principal seat of Bahria University is at Islamabad and campuses are at Islamabad, Karachi, and Lahore.

Bahria is a comprehensive university having multidisciplinary Programmes that include Health Sciences, Engineering Sciences, Computer Sciences, Management Sciences, Social Sciences, Law, Earth and Environmental Sciences, Psychology and Maritime Studies. The University is widely recognized for preparing professionals, some to assume roles of future leaders and some to become good executives/managers through development of their physical, mental, moral, and professional competence.

Bahria Business School Islamabad (BBSI) is an academic unit of Bahria University, that attained its Unit of Accreditation status in August' 2020 by AACSB Initial Accreditation Committee. Currently, BBSI has over 100 permanent faculty members and a student body of about 3600, with 35% female and 65% male students. It provides equal opportunities for disabled and special provisions for the underprivileged students and prepares them to be decision makers for driving business solutions for the sustainable development of global society.

At BBSI the roadmaps of the degree Programmes offered are in compliance with the guidelines provided by HEC. However, remaining within the curriculum criteria, Head of each Department and their respective faculty have the liberty to enhance the course content and specializations

according to the local academic and industrial needs. The content includes local indigenous and international cases and articles, industry visits, role plays, guest seminars, workshops, trainings, game-based learning activities and most importantly flipped classroom pedagogies.

This document outlines the basic beliefs, commitments, and propositions about our activities and Programmes and constitutes our Strategic Plan. Much of what is included herein conveys that the BBSI must continuously improve to remain competitive, efficient, and opportunistic.

### **Strategic Planning Background and Process**

In 2016 Bahria University began the process of updating its strategic plan through a university-wide effort including the creation of a revised mission and vision for the University. The 10-year strategic plan of institution (2016-2025) was approved on 27th July 2016 in the 35th Board of Governors' Meeting of the institute, which was later superseded by the Strategic Plan 2020-2030, approved on 8th September 2020. The progress of the strategic plan is monitored on semi-annual basis. The strategic plan of Bahria University has been formulated as a roadmap for its units to offer the students a transformational educational experience, encompassing academic, co-curricular and extra-curricular activities. The Strategic plan of the Business School was developed in the year 2020 after the transformation of the Management Sciences Department into Bahria Business School Islamabad (BBSI) and is drawn from the already approved strategic plan of the University.

BBSI's planning process has likewise evolved to support the development of a formal strategic plan. In 2020, BBSI prepared a strategic plan framework, which was developed by the Dean, Department heads and stakeholders of the Department including faculty. This initial strategic plan guides all the stakeholders in terms of the key performance indicators of the school, necessary to accomplish the mission. The University updated its strategic plan for 2020-2030; the process included review and discussion among all its constituents. The resulting plan highlights a deliberate and distinct focus to become a national model for student and academic success with emphasis on first-generation and underrepresented communities. The plan states a commitment to preparing students with knowledge and marketable skills so that they are prepared for rewarding careers, global citizenship, and lifelong learning. The noted preparation activities reflect integration of academic and community by way of focus on experiential learning, community partnership and faculty engagement.

The current planning process allows for bi-annual review and update to assess accomplishments and address the needs of the annual university budget cycle. Continuous improvement activities of the planning process will include alignment at the department level to more clearly map BBSI's activities (i.e., outcomes) with the plan's goal and KPIs. BBSI's strategic plan was initially developed via a collaborative process that included its leadership and faculty. Once the initial framework was developed, feedback and comments were solicited from corporate sector stakeholders as well as alumni, administrators, and students.

The strategic plan is reviewed bi-annually by quality assurance coordinators to ensure alignment with AACSB Standards.

### **Strategic Planning Process and Timeline**

Approval of  
BU Strategic  
Plan

2016-2025

Approval of  
BU strategic  
Plan

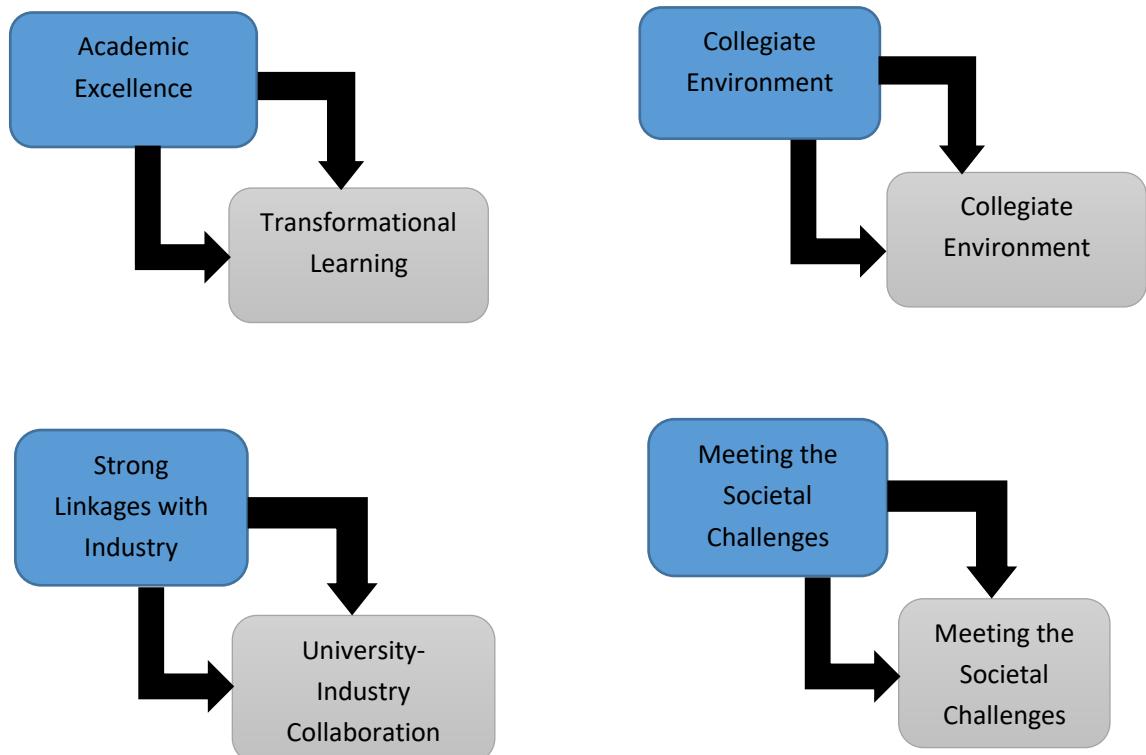
2020-2030



### **Alignment Of BBSI's Strategic Plan with BU's Strategic Plan**

The Strategic plan of the Business School was initially developed in the year 2020 after the transformation of the Management sciences department into Bahria Business School Islamabad (BBSI). As part of continuous improvement process, the Bahria Business School Islamabad (BBSI) went through a comprehensive reexamination process of its strategic position and future direction involving key stakeholders including Dean & Principal BBS, HODs of the respective departments, accreditation team, & faculty. In this process, the Bahria Business School Islamabad (BBSI) refined its vision and mission statement which is approved in the 41st Academic Council meeting (ACM) of the institute, refocused its key strategic priorities to align itself with the University's strategic goals. The BBSI mission statement aligns closely with the University's mission statement. Key to both mission statements are the concept and value of transformational learning through excellence of education and research in preparing students for a dynamic world. BBSI is also focusing on student-based experiential learning opportunities and is intended to provide students with the real-world educational opportunities needed to achieve excellence. These opportunities are intended to 'bring learning to life' and expand the classroom to encompass different business environments, including foreign countries, factories, corporate offices, small businesses, and the digital world. Most importantly, students have the opportunity to focus on areas that are of interest to them and build their experiential learning around their personal interests.

These experiences help prepare students for success in rewarding careers after graduation. The Vision, Mission of Bahria University & Bahria Business School along with core values are given below.



Legends:

- University Mission Goals
- BBSI's Mission Goals

## Our Strategic Compass

### **Bahria University Vision**

To become a knowledge and creativity driven international university that contributes towards the development of society.

### **Bahria University Mission**

To ensure academic excellence through deliverance of quality education and applied research in a collegiate environment having strong linkages with industry and international community to meet the societal challenges.

### **Bahria Business School Vision**

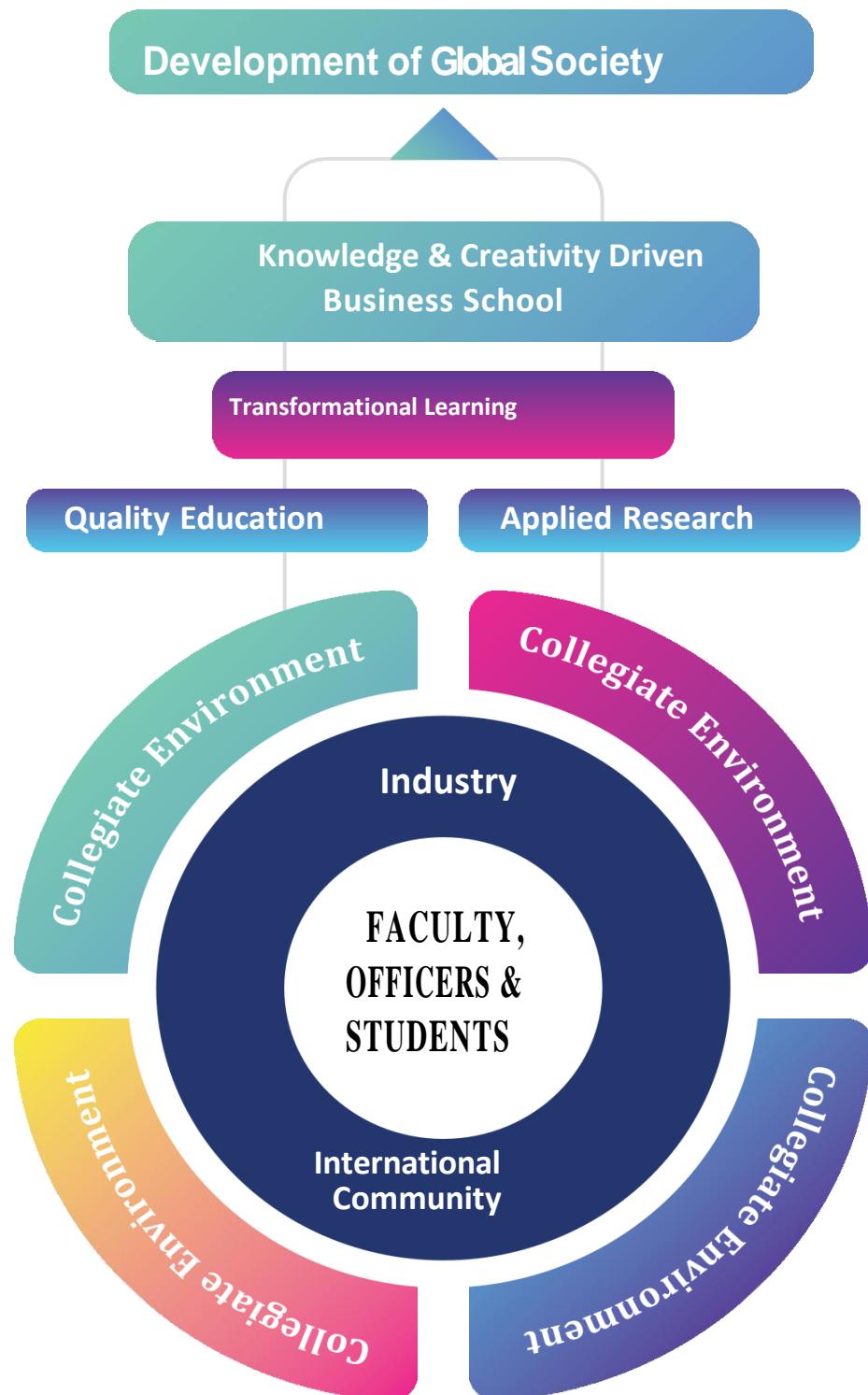
To be among leading business schools that produces knowledge and creativity driven business solutions for sustainable development.

### **Bahria Business School Mission**

We provide transformational learning experience to a diverse student body to become business professionals through effective collegiate environment comprising of research, academics, and industrial engagement to meet the societal challenges.

# VisionMission



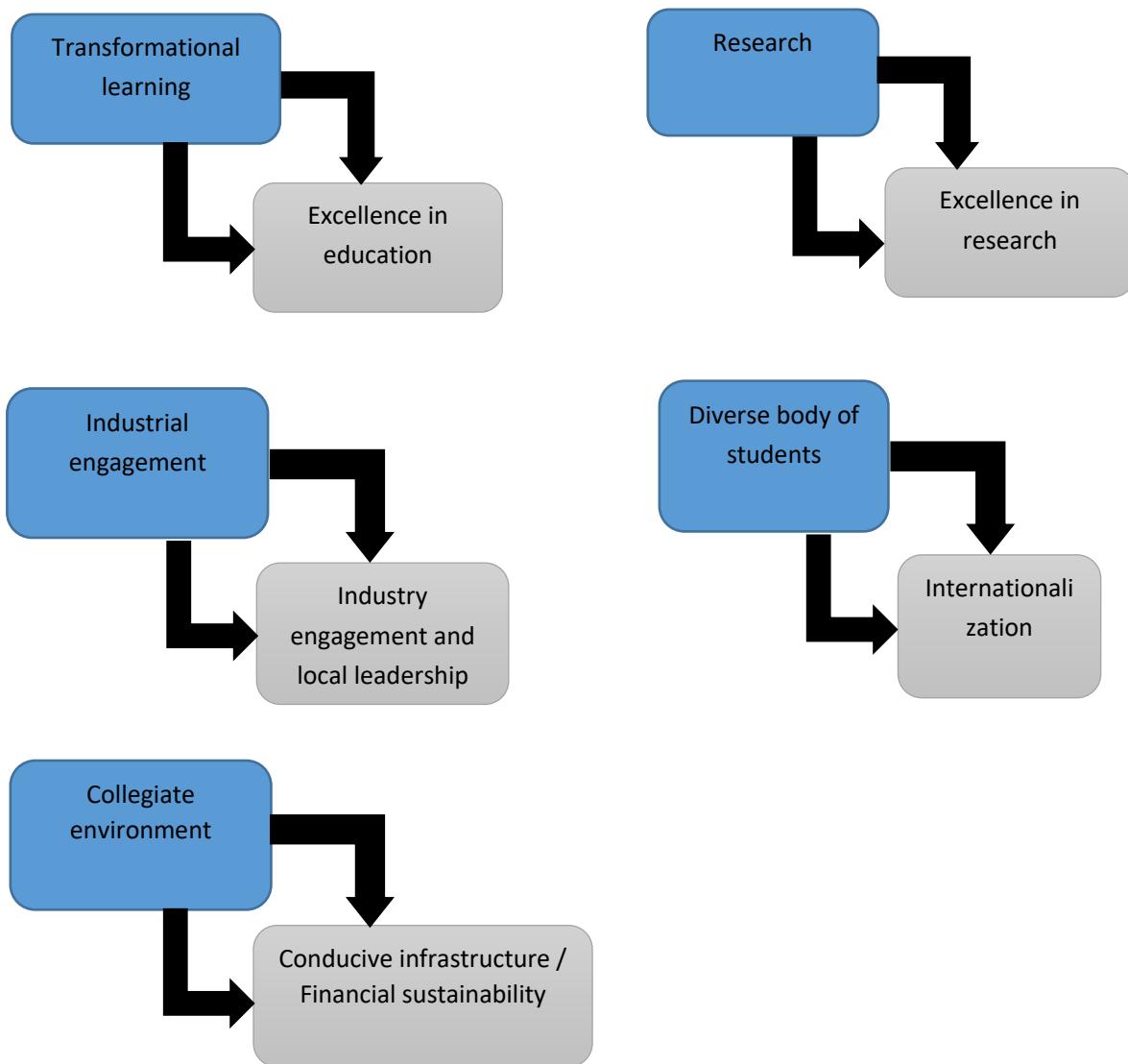


# Strategic Themes

- 1 Excellence in Education
- 2 Excellence in Research
- 3 Industry Engagement & Local Partnership
- 4 Internationalization
- 5 Conducive Infrastructure
- 6 Financial Sustainability

## Alignment of BBSI Mission Statement and Strategic Themes

Major strategic themes of the BBSI strategic plan are derived from the mission of the school. Two strategic themes ‘conducive infrastructure’ and ‘financial sustainability’ are vital to achieve the other strategic objectives, therefore, they are also included as major themes of the strategic plan.



**Legends:**

- BBSI Mission Goals
- BBSI's Strategic Themes

### Societal Impact

Bahria Business School Islamabad is committed to positively impacting society through its rigorous academic Programmes, innovative research, and commitment to social responsibility. BBSI strategic plan puts special emphasis on areas where school can contribute to the betterment of society and help address societal challenges. BBSI strategic plan focuses on various areas to create a significant impact on society.

The strategic plan focuses on providing high quality education to its students, equipping them with necessary skills and knowledge to contribute to society positively. These highly skilled business leaders drive innovation, create job opportunities, and stimulate economic growth.

BBSI strategic also emphasizes producing research that can lead to important innovations, discoveries, and advancements in the field of business. These innovations, discoveries and advancement can have profound impact on society including the development of new business models, social entrepreneurship, and sustainable business practices. Special attention is paid to applied research to provide solutions for the challenges faced by local businesses.

Another important area where BBSI strategic plan focuses on is developing partnerships with other organizations, including businesses, government agencies, and nonprofits. These partnerships can lead to collaborations that can address societal challenges, such as improving access to education or addressing environmental issues or issues related to income inequality.

The school should also engage with the local community through various initiatives, such as volunteering, service learning, and outreach Programmes. These initiatives can have a positive impact on society by addressing community needs and promoting social justice.

Overall, Bahria Business School's strategic plan places deep emphasis to create a significant impact on society by producing skilled business leaders, conducting research, developing partnerships, creating impact-driven initiatives, and engaging with the community. By focusing on these areas, Bahria Business School can contribute to the betterment of society and help address societal challenges.

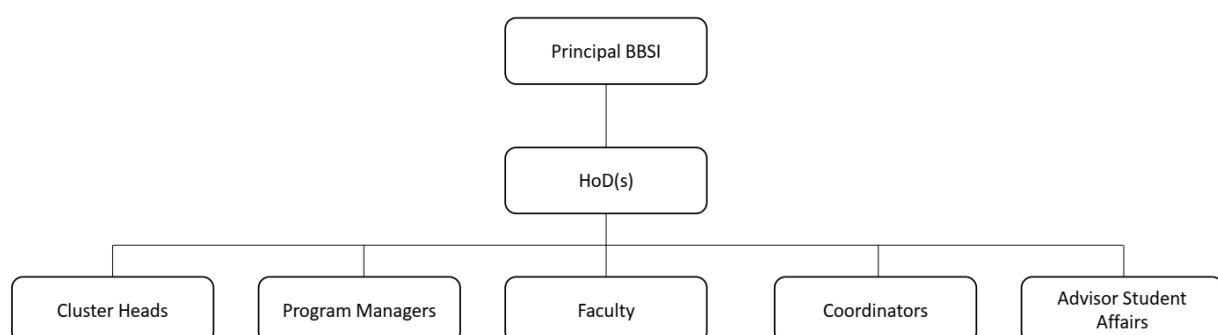
### **Governance and Internal Management**

Stakeholders' centered approach is the hallmark of institutional governance and internal management. Academic freedoms, shared governance, clear rights and responsibilities, meritocracy, accountability, appraisal of standards, collaboration with support department, and continuous monitoring and evaluation are pillars of governance and internal management of the school. These principles are implemented through Institutional Charter, Board of Governors, Academic Council, Faculty Board of Studied, Department's Board of Studies, students' bodies, financial management practices, and supporting HR and academic policies. The school is empowered to exercise academic, financial, and administrative autonomy.

### **Structure of the School**

The decentralized structure of the school provides requisite flexibility and autonomy to the Principle, HODs and cluster heads/Programme Managers. The focus of the structure is on shared decision making, accountability and transparency. The structure provides an opportunity for an open dialogue in sharing ideas and collaborative decision making. The supporting services provide requisite synergy in meeting schools objectives.

#### **Bahria Business School Islamabad**



### **Academic Autonomy**

Bahria Business School, Islamabad (BBSI) sets its own strategic targets annually in lieu of the 10-year plan for implementation. However, the Bahria Business School has full liberty to review curriculum, identify new Programmes and develop new courses through its well-placed academic bodies like thematic clusters, Curriculum Advisory Committee, Corporate Advisory Committees, and research committees. Beside the mentioned committees, other statutory bodies, such as the Departmental Board of Studies (DBOS), faculty board of studies (FBOS), Departmental Research Committee (DRC) are fully functional. The suggestions and proposals of academic nature are evaluated by these bodies for final decision in the Academic Council (ACM).

By using the laid down procedure at the school and university level, Bahria Business School adds new Programmes keeping the industry requirement in consideration. Using strategic liberty, the school introduced the concept of Students' Grooming Programme (SGP), comprising of "skill grooming" subjects in its various Programmes and has converted traditional teaching methodology into Flipped Class teaching. For the same purpose, state-of-art flipped classrooms equipped with essential technology have been set up at the Business School.

Moreover, being the part of constituent unit of Bahria University, the external affairs of Bahria Business School, such as international linkages, project funding and international exposure visits and exchange of faculty/ students etc. are managed by the university's international office and Office of Research, Innovation and Commercialization (ORIC). The nomination of faculty members for trainings, workshops and international visits is sent through the recommendation and approval of the respective Head of the Departments at the Business School.

There are several other factors influencing the autonomy of the business school such as; all new Programmes that the School wants to offer are designed and proposed by the Departments of the School. These new academic Programmes proposal should clearly identify the need and demand for the Programme as well as its relation to the strategic plan and mission of the school. These Programmes and their roadmaps are discussed at the Corporate Advisory Committee level and vetted by the Board of Studies meetings before taking to the Board of Faculty and Academic Council. The roles of these statutory bodies are mentioned below.

### **Statutory Bodies**

#### **Departmental Board of Studies (DBOS)**

The Board of Studies of Business School shall comprise Professor(s)/Associate Professor(s)/Assistant professor(s) and chaired by the HODs of the respective departments/principal of Bahria Business School. One external member may be co-opted in the composition of the Board of Studies as expert/subject specialist. Departmental Board of Studies shall:

Meet at least once in a semester or as and when required.

Review curriculum details of all Programmes of the departments/school to ensure incorporation of emerging trends of the market/industry in various courses being taught, and recommend changes, if any, to the Faculty Board of Studies/Academic Council.

#### **Faculty Board of Studies (FBOS)**

The purpose of FBOS is to scrutinize the scheme of courses and syllabi proposed by the Departmental Board of Studies (DBOS). The recommendations with the supporting materials are then transmitted to the Academic Council. The Faculty Board of Studies shall:

The Faculty Board of Studies of Bahria Business School shall be chaired by the respective Dean or, in his/her absence, by the DG/Director/Principal/Head of the respective departments of the school.

Process the changes in syllabi proposed by the Departmental Board of Studies and present them to the Academic Council.

#### **Departmental Research Committee (DRC)**

The Departmental research committee is organized by the Department of Management Studies of the Business School because most of the Programmes offered by the department are research-oriented Programmes. This committee is comprised of all the PhD faculty members of the Business School from both the departments and shall meet at least twice a year. This committee is responsible for:

Appoint Principal Supervisor(s)/Co-Supervisor(s) for MS/MPhil Programmes.

Propose Supervisor(s) to FRC for PhD students.

Conduct/manage research proposal/theses defense through PGP Coordinator.

On the recommendation of the Principal Supervisor, approve/ratify any minor changes in the topic of the MS/MPhil thesis if made without changing the main theme.

Evaluate the quarterly progress reports of MS/MPhil students submitted by the Supervisors to HOD/PGP Coordinator.

Recommend exemptions, transfer of credits of student cases to FRC.

Propose internal/external Viva voce Examiner for MS/MPhil Programmes to FRC for approval.

Undertake any other research related responsibility assigned by the Dean/Principal/HOD

The quorum for a meeting of the DRC shall be half of the total number of core members, a fraction being counted as one. DRC shall maintain minutes of its meetings and forward to the PGP Directorate Bahria University Islamabad

Decisions of the committee shall be made by consensus and, if that is not possible, by majority vote. Only core members shall be entitled to exercise vote.

#### **Financial Autonomy**

Bahria Business School is an academic unit of Bahria University, financial decisions and budget allocations are done at the institute level. The school's revenue and expenditure are classified under various heads. The expenditure heads for the Business School that are recurring or developmental in nature are allocated funds on the recommendation of Heads of the Departments in coordination with the Dean/Principal and Director General.

#### **Admissions Autonomy**

The HODs of both the respective departments of the Bahria Business school forwarded specific entry requirements and selection criteria for their respective Programmes of study for all academic courses/Programmes/degrees through respective Deans, Principals of Bahria Business School to the Admissions Directorate of BUHO. The HODs of both the departments are responsible for projection of the intake students in the Spring and Fall semesters based on the availability of resources i.e., number of classrooms, number of permanent and visiting faculty members etc.

Before the commencement of each semester the HODs/Principal of BBSI also ensure some of the major requirements for the local accreditation (NBEAC) such as the student to faculty ratio, visiting to permanent faculty ratio, Minimum requirement of PhD faculty members for a specific MS/MPhil or PhD Programme. In case of any shortfall the respective HOD raise the requirement of resources through respective Dean/Principal of BBSI to the concern directorate of BUHO.

#### **Operational Plan**

##### **Operational Plan to Achieve Strategic Themes/Objectives**

<b>Excellence Education</b>	<b>in</b>	Hiring and retaining sufficient number of qualified faculty members to maintain required student to teacher ratio.
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	<p>Increasing the number of PhD faculty as percentage of total faculty members.</p> <p>Conducting training need analysis annually and providing training to staff, faculty and officers using local and foreign resources.</p> <p>Conducting employee satisfaction surveys, reviewing teaching load periodically, providing competitive salary packages and in-service and terminal benefits to retain high quality workforce.</p> <p>Constantly improving the intake of students.</p> <p>Attracting and supporting students from diverse backgrounds.</p> <p>Incorporating modern pedagogies to improve students' learning experience.</p> <p>Continuously improving curricula in accordance with the needs of industry and society.</p> <p>Adoption of outcome-based education (OBE) in all academic Programmes of BBSI.</p> <p>Focusing on ethical grooming and social responsibility through curricula and mentoring of students.</p> <p>Implementation of effective tracking system to measure the quality of education at BBSI.</p> <p>Improving the employability of BBSI graduates.</p> <p>Implementation of academic support system for policy making and overseeing academic activities.</p>
<b>Excellence in research</b>	<p>Increasing the percentage of active research faculty by encouraging existing faculty to pursue PhD and post doc.</p> <p>Organize trainings within and outside Pakistan to enhance the faculty research capabilities.</p> <p>Creating research groups and centers in BBSI.</p> <p>Increasing the number of research students.</p> <p>Increasing the percentage allocation of budget for R&amp;D.</p> <p>Developing research links with other academic and research institutes for research collaborations.</p> <p>Providing grants and funds to present research at local and international forums.</p> <p>Implementation of research support system for policy making and overseeing research activities.</p>
<b>Industry Engagement and Local Leadership</b>	<p>Increasing the number of MoUs with industry</p> <p>Conducting regular meetings of Corporate advisory committee (CAC).</p> <p>Engaging in consultancy and commercial services projects.</p> <p>Offering training and professional short courses to industry based on Training Need Analysis of the industry.</p> <p>Including industry experts in statutory bodies.</p> <p>Organizing guest lectures and workshops by industry experts.</p> <p>Organizing industry trips each semester</p>
<b>Internationalization</b>	<p>Developing linkages with international institutes of higher learning through MoUs, networking and academic cooperation</p> <p>Getting memberships and accreditation of global academic bodies.</p> <p>Increasing number of international students by collaborating with embassies of foreign countries in Pakistan.</p>

	<p>Encouraging students to go on international internships, exchange Programmes and conferences.</p> <p>Facilitating faculty to go abroad on exchange Programmes/academic visits.</p>
<b>Conducive Infrastructure</b>	<p>Developing enough labs and classrooms equipped with necessary technologies.</p> <p>Providing auditorium, café, common rooms, day care and well-being center.</p> <p>Providing respectable office and facilitatory tech to faculty and officers.</p> <p>Building well equipped research centers</p> <p>Providing an international standard library equipped with physical and digital resources.</p> <p>Building smart classrooms and LMS.</p> <p>Providing on/off campus dorm facilities to students.</p> <p>Implementing safety protocols in line with the local regulatory bodies.</p>
<b>Financial Sustainability</b>	<p>Increasing fee-based income by attracting more students and introducing new Programmes.</p> <p>Using the available resources at optimum level to manage operational costs effectively.</p> <p>Generating finances through endowment fund.</p> <p>Diversifying the income sources to minimize the dependence on fee-based oncome.</p> <p>Maintaining and communicating the financial performance of school.</p>

### **Situation Analysis**

Provision of basic education in general is a mandate of the government in any country to uplift the lives of individuals, yet higher education is inevitable for the growth of any economy. Due to the significance of higher education at individual as well as at mass scale level, many institutes come into play both in the public as well as private sector. The market for higher education operates at a global level, even if the local level universities do not operate at international level; they somehow have to compete international universities for enrolments.

Technology advancement has brought a revolution in information exchange and knowledge creation. It is an era of major transformation in the business world and a paradigm shift towards a knowledge economy. This is the era of competencies and skill set to cope up with the latest trends and issues. So, the academia will also have to focus upon outcome-based learning with a focus upon the defined 21st century skill set as a learning outcome, whereby all will have to learn broader life skills along with other specific traits. The changing dynamics of business education in emerging environment within Pakistan offer challenges and opportunities. Academia needs to be responsive to the changing paradigm and proactively respond to these prospects and challenges with a view to achieving the desirable outcomes of education for making significant contribution for societal development.

Bahria University is one of the major players in the academia market. Having multiple campuses, it has many students enrolled in different professional degrees, and the number is increasing. This is a clear indication of the image BU carries in the market of an institute with contemporary and up to date degree Programmes having more focus towards creating a creative and entrepreneurial mindset.

PESTLE Analysis

A PESTLE analysis (political, economic, social, technological, environmental, and legal) is a framework that facilitates analysis and monitoring of the macro-environmental (external environment). The use of this framework enables BBSI to examine the dynamics of external environment that affect the external stakeholders and help the school in identifying opportunities and threats that offer prospects to proactively plan to capitalize on opportunities and transform these threats in prospects through internal competencies development.

### **Political Environment and Implications**

<b>Political Environment</b>	<b>Implications</b>
<b>Government policies for reforms for curtailing expenditures for education</b>	This poses challenges regarding the budgetary constraints. The scholarship for students and the funding for research related projects shall be affected.
<b>More allocations of funds to the HEC</b>	Additional resources of funding for budgetary shortfalls, and scholarships to students will have to be generated to meet the budgetary shortages. Alternative resources for funding for research projects will have to be explored to maintain the students' satisfaction.
<b>Introduction of scholarship schemes for the needy.</b>	This would provide opportunities to students for scholarships and research projects. The school can capitalize on attaining more funding for the projects and merit-based scholarship for students to study abroad. Similarly, more students can be attracted for enrollment.
<b>Changes in skills required for employment in Public Sector Organizations.</b>	The school would have to proactively respond to these changes and provide requisite skills set to students through improvements in the curriculum and pedagogy.

### **Economic Environment and Implications**

<b>Economic Environment</b>	<b>Implications</b>
<b>The deteriorated economic conditions resulting in inflation, additional taxes and low economic activity have affected the education sector.</b>	The prevailing and emerging economic environment will have implications on enrollment since affordability of education to children would become a problem for the parents. Moreover, due to increasing prices, the expenditure on sustaining the first-rate support facilities would be a challenge. The overall cost of running the school would escalate. The job opportunities are likely to diminish due to likely recession in the economy.
<b>The low economic activity has affected business and industry. This has resulted the job market for the graduating students.</b>	The school will have to opt for activities for additional resource generation through executive educations Programmes, seeking more funding for research and business projects. Improvement in processes for maintenance of facilities must be ensured for their efficiency to optimize the resources for effectiveness and sustainability.  The school must focus on developing entrepreneurial skills

	among students along with the provision of incubators enabling them to start up their own businesses. Moreover, proactive collaboration with alumni and other partners would have to be accelerated to provide placement for the graduates.
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### Social and Cultural Environment

Social & Cultural Environment	Implications
<p><b>The need for better education for the family members (male and female) has been well established in the society. However, the social and economic constraints forbid the family to provide education to all the children. This is more pertinent to female students because of the social psyche of the society.</b></p>	<p>The school needs to devise means to provide scholarships to needy and bright students. The present portfolio of need-based scholarship of the school needs to be strengthened and broad-based.</p> <p>The school must further strengthen its diversity Programmes and instill diversity as value among the students.</p>
<p><b>There is greater awareness among the population to avail opportunities for higher education. The students from different provinces tend to avail themselves of this opportunity thus offering diverse students' population in the educational institutions of repute.</b></p>	<p>The school needs to provide entrepreneurial skills set to students and facilitate business start-up training through business incubators enabling them to start their own business.</p> <p>Integration with community is needed to create opportunities for the students seeking employment opportunities in community related projects.</p>
<p><b>The job market with fewer jobs poses a challenge to society with a significant large number of young graduates without jobs making them vulnerable to undesirable elements.</b></p>	<p>The school needs to maintain its open-door policy and transparent policies. Faculty and staff need to be more supportive in facilitating the provision of information as required. Career development-related activities need to be pursued and maximum participation of students should be ensured.</p>
<p><b>Social networking using multiple means has made students 'community more aware to their rights and privileges and need for access to information relating to their studies, career development and other social issues.</b></p>	<p>There is a need to focus on school and societal values. The implementation of Code of Ethics and value driven behavior should be encouraged.</p> <p>Awareness session on anti-harassment, drug abuse, tolerance and moderation need to be organized. Maximum participation of student to be ensure in extracurricular activities to develop healthy and positive behavior.</p>
<p><b>The social fabric of society is changing, and the established values are being challenged. The students are becoming vulnerable to these challenges and may drift</b></p>	

<b>away from established values affecting the entire society.</b>	
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### Technological Environment

Technological Environment	Implications
<b>The role of technology has transformed the education system and offered opportunities for its use in achieving desirable learning outcomes.</b>	The school needs to identify information technology literacy as a core competence. Information technology needs to be integrated in the contents of the courses enabling students' compatibility with job market as well as possession of skills set to become entrepreneurs.
<b>The rapid pace of changes in technology necessitates investment in technological infrastructure (Labs etc.) at a fast rate affecting the provision of funding for replacement.</b>	There is a need to further explore the possibilities to integrate technology in the existing Programmes, like SAP etc., for enhancement of student's competence for employability in information and communication technology environment.
<b>The use of technology has its legal constraints regarding licensing, patents, and intellectual property rights and other related aspects of technology as prevalent in national and international laws and protocols.</b>	School needs to allocate adequate resources for the replenishment of the technology related equipment and facilities.  The students need to be familiarized and made aware of these aspects as part of courses.

### Legal Environment

Legal Environment	Implications
<b>The emerging role of regulatory agencies (HEC, NBEAC, etc.) in maintaining the quality of education has become more proactive regarding the compliance of regulatory standards specified by HEC and its related bodies.</b>	There is a need to ensure compliance of regulatory requirements and standards with a view to achieving the quality of education in the school. An institutional approach is needed to ensure continuous improvement in meeting the specified standards.  The coordination and liaison with regulatory bodies need to be maintained for free exchange of information and needed assistance.

### Environmental Implications

Environmental Aspect	Implications
<b>The Environment Protection Act of Pakistan entails an environmentally friendly campus with requisite green area, waste reduction, and conservation of energy, promote paper less environment,</b>	The Code of Ethics entails a series of environmental sustainability activities. These must be further reinforced, and students should be persuaded to comply with these instructions to protect environment.  Environmental Protection awareness seminars and

<b>encouraging recycling and generating awareness for conservation of resources.</b>	workshops need to be arranged for students.
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### **SWOT Analysis**

This analysis is a vibrant approach to discover the strengths, weaknesses, opportunities, and threats. The framework enables us to leverage the strengths to capitalize on opportunities and improve the weaknesses to thwart the threats. In the growing market of education, this approach provides an opportunity to the school to position itself for improved performance. The analysis below provides critical factors that need consideration in the formulation of strategy to meet the desirable objectives for sustainability.

### **Competitors**

The knowledge economy has transformed the education sector. During the past decade the growth of the universities have been significant and 177 universities including 103 private universities are offering education. The market share of the university is influence by multiple factors as indicated by the HEC.

<b>STRENGTHS</b>	<b>WEAKNESSES</b>
<p>Strong brand name as one of the prestigious business school in Islamabad</p> <p>High ranking by THE and QS</p> <p>Ideal location</p> <p>Diverse academic Programmes</p> <p>Highly qualified faculty with degrees from top international and local universities</p> <p>Excellent support facilities</p> <p>Accreditation with NBEAC</p> <p>Member of AACSB</p> <p>Strong linkages with international and national academic institutes.</p> <p>Effective management support system</p>	<p>Lack of hostel facilities for male students</p> <p>Availability of playgrounds is limited to indoor sports</p> <p>Unavailability of post retirement support Programme for employees</p> <p>Lack of parking facilities for students</p>
<b>OPPORTUNITIES</b>	<b>THREATS</b>
<p>Introduction of new academic Programmes based on market demands</p> <p>Implementing Objective Based Education in letter and spirit.</p> <p>Leveraging strong brand image to expand linkages with the local industry</p> <p>Providing pragmatic solutions to real business problems through applied research and consultancy</p> <p>Leveraging alumni network for internship, apprenticeship and employability of graduates</p> <p>Enhancing student and faculty exchange Programmes with national and internation universities</p>	<p>Strong competition</p> <p>Turbulent economic situations</p> <p>Shrinking job market for graduates</p> <p>Employee retention</p> <p>Increasing demands of students</p>

Bahria University, because of its, multiple campus has a unique competitors' profile based on its location in different provinces and city. In Islamabad, its competitors among public and private sector universities include NUST, NUCES, COMSATS, Air University, CUST, Iqra University and SZABIST. Bahria University, particularly BBSI, is included in the top tier institutions of Pakistan as indicated by THE, QS and HEC rankings. It aspires to acquire more market share due to its value proposition of excellence in education, faculty, research, learning culture, and smart campus with first-rate support facilities.

The school aspires to differentiate itself as stakeholders' centered institute to meet their needs. The important stakeholders' include the following:

Students and parents.

Faculty, staff, and administration.

Industry and Business

Community

National and International academic and other institutions.

Professional associations and bodies.

Regulatory Authorities (HEC, NBEAC etc.).

Media.

The competitive environment offers opportunities to BBSI to attain significant growth in its market share with strategic initiatives based on the following:

Offer diverse and market driven Programmes to meet the emerging needs of knowledge economy.

Differentiate its excellence in faculty qualification, experience, and diversity.

Growth in seeking jobs for the graduate and transforming them in entrepreneurs.

Development in infrastructure and administrative competence.

Advances in research and development for a meaningful impact on the economy and society.

Strategic collaboration with national and international partners.

### **Operationalization of The Strategic Plan**

<b>OPERATIONALIZATION OF STRATEGIC PLAN</b>					
<b>Excellence in Education</b>	<b>Excellence in Research</b>	<b>Industry Engagement and Local Partnership</b>	<b>Internationalization</b>	<b>Conducive Infrastructure</b>	<b>Financial Sustainability</b>
Strategic goal	Strategic goal	Strategic goal	Strategic goal	Strategic goal	Strategic goal
Objectives	Objectives	Objectives	Objectives	Objectives	Objectives
KPIs and Targets	KPIs and Targets	KPIs and Targets	KPIs and Targets	KPIs and Targets	KPIs and Targets

### **Strategic Themes**

#### **Strategic Theme 1: Excellence in Education**

The BBSI is committed to excellence in teaching with evidence-based, inclusive pedagogies that nurture the knowledge, skills, connections, and values required for students to thrive in a rapidly changing world. BBSI encompasses a comprehensive spirit that values the enhancement diversity brings to students' knowledge, leading to better prospects to improve the lives of all individuals. It encourages a convergent spirit, teaching students to look at challenges and answers from multiple stances, to move gracefully across disciplines, and to work contentedly in disparate teams. And it fosters an entrepreneurial spirit, empowering students to innovate and find creative approaches to

solving complex business problems. BBSI prepares students to pass through ambiguity, to employ their intellectual inquisitiveness to identify and comprehend opportunities, and to grow into idealistic leaders who seek impactful and virtuous solutions for the local, national, and global challenges of our time. BBSI expresses dedication to learning through exhibited effort in, and enthusiasm for, the teaching process while modeling and expecting respectful and suitable behavior in all professional exchanges.

BBSI intends to use the power of education and to create a sustainable, healthy, and socially just future. For this purpose, the collective commitment of staff, students, and partners is required across the breadth of our activities and initiatives. For facilitating success in the sphere of teaching as well as learning support we have aimed at an effective education framework. This includes both a vision and a roadmap to achieve it: a tool to instigate collective efforts to transform our students' education, to empower them and, in turn, to transform the world.

We work hard to develop professionalism in students through high expectations for thoughtful, moral, responsible behavior and acknowledge the power differential between professor and student, and act with veracity toward students. Fostering professional identity development through student use of discipline-specific traditions and language is a fundamental element of the education policy. BBSI works on creating learning objectives and experiences that are challenging but realistic and modelling and fostering critical, systematic, and creative thinking. We inspire student curiosity, assessment, and self-directed learning and cultivate a belief that mistakes and failed experiments further knowledge and understanding. We are determined to provide encouragement, positive reinforcement, and support the students by all means possible.

### **Goal**

To achieve excellence in providing quality education

#### **Objectives**

Hire sufficient quality employees at all Departments/CUs of Business School.

Train employees to upgrade their skills and knowledge.

Retain quality employees.

Improve the quality of students' intake.

Support students from all backgrounds for a more inclusive higher education system.

Embrace modern teaching pedagogies to enhance students' learning experience.

Continuously improve curricula to align with accreditation bodies.

Adoption of an Outcome Based Education system across all Departments.

Enhancement of soft skills through formal education and co-curricular activities.

Enhance awareness regarding community building and social responsibility for ethical grooming of students.

An effective tracking system shall be implemented across Departments to measure the quality of education.

Improve employability of graduates across all Departments.

Enhance academic capability of Business School in Maritime domain.

Enhance Academic scope of Business School through addition of new Departments and their transit towards a School based system.

Implementation of academic support system for policy making, coordinating, and overseeing all academic activities.

### **BBSI KPIs- Strategic Theme 1**

**Hire sufficient quality employees at all Depts./CUs of Business School**

Student to faculty ratio - Permanent Faculty Members (33:1)

Average faculty experience (in years) - Industry + Teaching both (9 yrs. to 15 yrs.)  
Percentage (%) of PhD faculty (45% to 70%)

**Train employees to upgrade their skills and knowledge.**

Conduct of Training Need Analysis of faculty, officers, and staff (Themes: Research methods, teaching pedagogies, leadership skills, professional skills, creativity & innovation, etc.) (Yearly)  
Percentage of faculty trained using national resource (within Pakistan) (30%)  
Percentage of faculty trained using foreign resource (within Pakistan) (10%)  
Percentage of faculty trained using foreign resource (outside Pakistan) (1% - 2%)  
No. of Non-PhD faculty of BU converted into PhD (1- 3 per annum)  
Percentage of officers trained using national resource (within Pakistan) (20%)  
Percentage of officers trained using foreign resource (within Pakistan) (5%)  
Percentage of officers trained using foreign resource (outside Pakistan) (0.5%-1%)  
Percentage of staff trained (scale 1 to 7) using national/international resource (5% - 20%)

**Retain quality employees.**

Conduct of employee satisfaction survey to assess quality of work environment (Yearly)  
(Recommended parameters: Workload, Teamwork, Access to Information, Relationship with Supervisor, Work/life balance, Fairness at work, work ownership, etc.)  
Avg. results of employee satisfaction survey (75%- 85%).  
Feasibility study to be carried out for provision of standardized in-service and terminal benefits to all employees (including: post-retirement benefits (EOBI), conversion of CP Fund into Gratuity, leave encashment, promotion, etc).  
Review teaching load/workload of all faculty as per requirements of relevant regulatory bodies vis-à-vis its financial effect.  
Provision of free mental health support to employees of Business School.  
Maternity leave policy to support female employees of the Business School  
Implementation of policies discouraging discrimination and harassment at workplace  
Conduct of analysis to review salary packages of employees in line with the practice being followed in other HEIs (Direct Competitors)  
Provision of salary packages in line with industry standard, especially in comparison to direct competitors of BU, vis-à-vis other benefits.  
Policy of non-discrimination against women.  
Policy of non-discrimination against transgender.  
Turnover rate (<5%).

**Improve the quality of students' intake.**

Design and execute formal media plan (print & digital media) for each admission cycle with view to increase the number of applicants (Yearly)  
Marketing budget as % of total Business School Budget (0.5%)  
No of outreach activities to increase no. of applicants (20)  
No of curricular/co-curricular activities organized at Bahria Business School involving students from colleges and other universities for indirect marketing (per annum) (1-2).  
Admitted to Applicant ratio (online applicants) (5:1-10:1).  
Admitted to Applicant ratio (appeared in CBT/Entry Test) (3:1- 5:1).  
Lowest merit list score of admitted students (45-60).  
Weightage of CBT score (UG only) (60% - 70%).  
Weightage of CBT score (PG only) (32% - 50%).

Average % marks of admitted students (last qualification) (70%-75%).

Percentage Increase in merit scholarships offered to attract and retain quality students through internal funding offered to Business School students (per annum) (10%)

**Support students from all backgrounds for a more inclusive higher education system.**

Percentage Of students awarded need based scholarships from internal/external funds (>10%<=15%)

Quota of admissions for the students from less developed regions of Pakistan (e.g., Interior Sindh, Baluchistan, KPK, Gilgit Baltistan) (2%)

Quota of admission for students with disabilities (2%).

Implementation of policies discouraging discrimination and harassment.

**Embrace modern teaching pedagogies to enhance students' learning experience**

Percentage of course, content taught through case studies/heuristic methods (problem-based learning) (20%-50%)

Percentage of courses run on flipped class room method (1%-10%) Revamping of LMS system to improve its effectiveness to support modern teaching methodologies (After every 3 yrs.)

Percentage of course, content covered through E-Learning platforms (MS Teams, Zoom, etc) to adopt to online mode of education (6% - 3hrs-12% - 6hrs / per semester)

Adoption of e-learning systems for launch of Distance Learning mode of education for selected degree Programmes and professional courses (Yes=1; No=0)

**Continuously improve curricula to align with accreditation bodies.**

Percentage of degree Programmes (under the umbrella of accreditation bodies) fully accredited with local regulatory bodies (100%)

Percentage of degree Programmes reviewed and revised internally through relevant statutory bodies in last 3 years (100%)

Percentage of degree Programmes reviewed and revised (by seeking input from senior level students/ graduating students (10%-100%)

**Adoption of Outcome Based Education system across all Departments.**

Each department shall have a clearly laid down Vision and Mission, approved by the relevant statutory body, in line with University's Vision & Mission

Percentage of degree Programmes with well-defined Programme Learning Outcomes, in line with the Vision & Mission of Department (100%)

Percentage of degree Programmes with Mapping of Programme Learning Outcomes (PLOs) to Course Learning Outcomes (CLOs) (100%)

Percentage of Programme with a system ensuring CLOs mapping with student assessment (100%)

**Enhancement of soft skills through formal education and co- curricular activities.**

Percentage of degree Programmes with Programme learning outcomes incorporating development of soft skills (100%) (*Preferred Skills: Communication/Presentation skills, creativity, critical & structured thinking, negotiation skills, conflict management, time management, teamwork, empathy, etiquette and good manners, courtesy, sociability, etc*)

Percentage of courses offered in a degree Programme focusing on soft skills development (10%)

Percentage of students attending lectures/workshops/seminars focusing on grooming soft skills (per annum) (15%-20%)

No. of Students' Clubs/Societies (9-14)

No. of students engaged in managing Students Clubs/Societies (45-70 per annum)

No. of activities to be organized by each Club/Society per annum (2 -4)

Percentage of students participating in co-curricular events and activities at each Dept (25%)

**Enhance awareness regarding community building and social responsibility for ethical grooming of students.**

No of MoUs with charitable organizations/NGOs (1 per annum)

No. of grooming sessions organized on campus for under privileged people while engaging student community (per annum) (1)

Budget for community development activities as percentage of total budget (0.1% - 0.5%)

Percentage of Depts that have officially appointed Mentors for each student to carry out ethical grooming based on Islamic values (100%)

No of sessions conducted on ethical grooming of students (2 per annum)

Percentage of undergraduate students engaged in community work (15%)

Percentage of postgraduate students engaged in community work (5%)

Percentage of curricula in each course containing content related to social responsibility/ethics (5%)

**Effective tracking system shall be implemented at Bahria Business School to measure the quality of education.**

No of mock audits conducted per annum of each Department (1).

Preparation of Corrective Action Plan (CAP) based on mock audits and shared with all stakeholders after approval from Rector for compliance - within 4 weeks of the audit.

Conduct of survey from graduating students regarding usefulness of their education.

Percentage of graduates who were satisfied with the usefulness of their education (70%- 90%).

Conduct of survey from the parents of graduating students assessing their satisfaction with the quality of Programme and services at BBS

Percentage of parents satisfied with education Programmes and services (70%- 90%)

Implementation of 360-degree feedback system (Students assessing Faculty, Faculty assessing the HoDs, HoDs assessing Deans/Principals, Directorate staff/officers assessing Directors, etc)

Feasibility/Implementation of Realtime monitoring system of quality of education through live lecture monitoring and status of course coverage and content delivery through LMS

Conduct of survey for assessment of course content delivery

Avg result of course content delivery survey (75%- 85%)

**Improve employability of graduates across all Departments**

Percentage of Depts that have officially appointed Mentors/Personal tutors from within the faculty for each student to guide students' academic and professional development (100%)

Percentage of Departments with dedicated Placement Officer/Career Counselor having student strength greater than 1,000 (criteria: 1000-3000 students=1; 3000 - 5000 students=2) (100%)

Percentage of students attending training sessions on employability skills (CV writings, Job interviews, etc) by engaging industry professionals. (excl. alumni) - per annum (10%).

No. of panel discussions/talks/seminars/conferences on employability skills and market requirements per annum (2-4)

No of Job Fairs organized (2 per annum)

Conduct of employability survey from Alumni (after 6 months of completion of degree Programme.

Employability/absorption rate within 1 year after completing degree (% of those seeking employment or pursuing business only) (60%-75%)

Conduct of survey from Employer to seek feedback on Business School graduates.

Avg result of Employer Survey on Business School Graduates (60%-80%)

**Enhance academic capability of Business School in Maritime Domain**

Percentage of Academic Departments offering Maritime courses, where permitted by regulatory bodies (100%)

Percentage of Academic Departments offering Maritime as Specialization (50%-100%)

Percentage of Academic Departments offering Degree Programmes in Maritime (0%- 100%)

Percentage of Academic Departments organizing Maritime related certification /short courses within their subject domain (at least 1 per annum) (0%-100%)

No. of degree Programmes in Maritime domain (incl. those with specializations) (0-3)

Percentage of students pursuing Maritime education (0%-5%)

**Enhance Academic scope of Business School through addition of new Departments and transit towards a School based system.**

Establishment of New Academic Departments at Bahria Business School (2-9)

Conversion of Departments into School/Colleges, while keeping in view the availability of dedicated space, value of Programme and future demand.

**Implementation of academic support system for policy making, coordinating and overseeing all academic activities.**

No. of Dept. Board of Studies meetings held per annum per department (2)

No. of Faculty Board of Studies Meetings held per annum per faculty (2)

**Strategic Theme 2: Excellence in Research**

Excelling in research is at the heart of BBSI strategic plan. The school focuses not only to make developments in the basic research but also emphasizes on applied research so that the solutions could be devised for the problems faced by local industry and business diaspora. The foundations of research and development framework is based on enhancing capacity of basic and applied research, developing linkages with other research institutes, developing entrepreneurial culture, diversifying sources of research funding and implementation of research support policy. Each pillar of the research framework provides synergy to achieve the overall research goal of Business school.

<b>School Research Framework</b>				
<b>Research Domains / Plex</b>	<b>BBSI Research Reward Policy</b>	<b>Research Forums</b>	<b>Research Ethics</b>	<b>Business Research Model</b>
Finance/ Economics and Accounting	Publication Fee	Thought leaders	Integrity	Research committee
Marketing and Entrepreneurship	Publication Cash Award	SIGs	Academic honesty	Research groups
Management and HR	Course waiver	Industry symposia	Accountability	
Supply Chain/ Project Management	Travel grants		Confidentiality	
Case study writing			Social responsibility	

## **Research Approach**

The school's research policy consists of three broad dimensions. First, the school focuses on recruiting and retaining high quality research faculty so that the output of basic and applied research can be increased in various domains of management sciences (i.e., finance, marketing, HR, management, supply chain, project management and entrepreneurship). Second, to develop a conducive research environment. This is achieved by making collaborations and developing linkages with other research and academic institutes. In addition, ample research funding opportunities should be available to produce and present the research output at national and international level. Third, a comprehensive research support system should be in place for coordination and overseeing the research activities with the school.

## **Goal**

To achieve excellence in basic and applied research.

## **Objectives**

Attract, develop, and retain high quality research faculty.

Enhance research output of the Business School.

Enhance applied research capacity & output of the Business School.

Develop research links with academic/research institutes.

Encourage entrepreneurial culture across all Departments.

Provide faculty with opportunities to present research at National & International Forums.

Grow and diversify external research funding.

Implementation of research support system for policy making, coordinating, and overseeing all research activities.

## **BBSI KPIs- Strategic Theme 2**

### **2.1 Attract, develop, and retain high quality research faculty.**

2.1.1 Percentage of active research faculty. (11%-35%)

2.1.2 No of faculty facilitated to pursue PhD/Postdoc (locally) (2-6 per annum)

2.1.3 No of faculty facilitated to pursue PhD/Postdoc (Internationally) (2 per annum)

2.1.4 No of faculty pursuing scholarly research on Research Leave (4-6)

2.1.5 Percentage of faculty trained in RIC domains using national resource (within Pakistan) (10% - 25%)

2.1.6 Percentage of faculty trained in RIC domains using foreign resource (within Pakistan) (5%)

2.1.7 Percentage of faculty trained in RIC domains using foreign resource (outside Pakistan) (0.5%-1%)

2.1.8 Percentage faculty on research track (with 50% teaching load per semester) (3%-15%)

2.1.9 Turnover rate of active research faculty (<5%)

### **2.2 Enhance research output of the Business School**

2.2.1 Ratio of research publications to total number of faculty members (0.7:1-1.5:1)

2.2.2 Ratio of Impact factor publications per faculty member (0.25-0.75)

2.2.3 Implementation of a system connecting research publication with 17 Sustainable Development Goals (SDGs), with target of at least 1 publication against each SDG per annum

2.2.4 Cumulative impact factor of publications (20 à 2000)

2.2.5 Having at least one HEC recognized journal.

2.2.6 Publishing at least 1 volume of research journal in a year.

2.2.7 No of filed patents/ varieties/ technologies/ formulas/ breeds/creative work by the Business School (per annum) (0-5)

- 2.2.8 No. of active registered patents/ varieties/technologies/ formulas/ breeds/creative work by Business School (accumulative) (0-4)
- 2.2.9 No of national research conferences organized (3-4 per annum)
- 2.2.10 No of international research conferences organized (1 per annum)

### **2.3 Enhance applied research capacity & output of the Business School**

- 2.3.1 Percentage of postgraduate/research students on campus (36%- 45%)
- 2.3.2 Percentage of HEC approved Supervisors from PhD faculty (30%- 75%)
- 2.3.3 No of Research Groups (2-10)
- 2.3.4 No of Research Centers (1-5)
- 2.3.5 Percentage of Research Groups involved in Maritime research (0%-20%)
- 2.3.6 Funds allocated to active research groups per annum (Rs.1M-Rs.25M)
- 2.3.7 No of industry projects being pursued by Research Groups/Centers – per annum (2-7)
- 2.3.8 Percentage of postgraduate Programmes with thesis as mandatory component (35%- 90%)
- 2.3.9 Percentage increase in R&D Budget (10%)

### **2.4 Develop research links with academic/research Institutes.**

- 2.4.1 No of valid MoUs with academic/research institutes (2- 6)
- 2.4.2 No of foreign researchers invited for research activities (2-4 per annum)
- 2.4.3 No of foreign researchers as member of research groups (3-10)
- 2.4.4 No. of applied research projects undertaken with academic/research institutes (4-20 per annum)

#### **2.5.1 Encourage entrepreneurial culture across all Departments.**

- 2.5.1 % of degree Programmes with a course on entrepreneurship in road map (100%)
- 2.5.2 No. of training/short course/workshops organized for students, focusing on entrepreneurial process (per annum) (4)
- 2.5.3 Provision of financial assistance to aid the start-up of sustainable businesses in the local community.
- 2.5.4 No of companies incubated (2-6)
- 2.5.5 No of companies graduated from incubation centers (1-3)
- 2.5.6 No of jobs created by incubated/graduated companies (10-75)
- 2.5.7 Revenue/funds generated by incubated/ graduated companies (in million) (Rs.15M- Rs.110M)

### **2.6 Provide faculty with opportunities to present research at National & International Forums.**

- 2.6.1 No. of local travel grants per annum (4-9)
- 2.6.2 No. of foreign travel grants (internally) per annum (2-4)
- 2.6.3 No. of foreign travel grants (externally) per annum (2-10)

### **2.7 Grow and diversify external research funding.**

- 2.7.1 No of research proposals submitted for external funding (10-33 per annum)
- 2.7.2 No of research projects approved for funding (2-10 per annum)
- 2.7.3 Amount of research funding from external sources (Rs.7M-Rs.30M)

### **2.8 Implementation of research support system for policy making, coordinating, and overseeing all research activities.**

- 2.8.1 No. of Departmental Research Committee meetings held per department per annum (2)

## 2.8.2 No. of Faculty Research Committee meetings held per faculty per annum (2)

### Strategic Theme 3: Industry Engagement & Local Partnership

Industry Engagement & Local Partnerships are the strategic keystones for the continuous development of knowledge and research Programmes at BBSI. The BBSI endeavors to move forward with emphasis on industry-based learning, outreach, and academic Programmes for lasting erudition and socio-economic development. The increased industry engagement will enhance the volume of applied research, embed industry knowledge into the learning experience, enrich collaborations, strengthen curriculum development, and encourage students' exposure to field knowledge.

The focus on industry engagement through research collaboration, dialogues, curriculum development and students' internships manifest the school's mission, and influences its strategic plan. The BBSI will actively engage in cultivating stronger and sustainable industry linkages and local partnerships with the business community. Faculty/staff absorptive capacity and dynamic capability will be strengthened to engage effectively with the industry/Govt. to pursue projects/consultancy and to increase volume of applied research. Industry immersion into the classroom will be progressed through case studies, seminars, workshops, industry projects, expert speakers, and field visits. The business community will be involved in the statutory bodies of BBSI for a continuous scholarly discussion, and upgradation of curriculum to align with the industry requirements. The industry linkages will enable BBSI to organize training/professional short courses and to conduct action-based research relevant to industry challenges.

#### **Goal**

To build constructive engagements with the industry on areas of mutual benefits.

#### **Objectives**

Develop linkages with business/industry to grow the volume of applied work.

Increase presence of business community on campus

Develop capacity of faculty/officers to effectively engage with industry.

Engage with industry/Govt. to pursue projects/consultancy.

Organize training/professional short courses of relevance to industry.

Involve industry/Govt. experts in statutory bodies of BU.

Engage external experts, with industry experience and/or prominent academic profile, to supplement classroom teaching.

Seek input from industry experts on curriculum revision to align with industry requirements.

Increase students' exposure to industrial/field knowledge.

#### **BBSI KPIs- Strategic Theme 3**

##### **3.1 Develop linkages with business/industry to grow the volume of applied work.**

3.1.1 No of valid MoUs with Industry (3-8)

3.1.2 No of Corporate Advisory Committee meetings held per annum per Department (4)

##### **3.2 Increase presence of business community on campus**

3.2.1 No. of businesses with dedicated space at Innovation Center or similar setup at each Campus (2-6)

##### **3.3 Develop capacity of faculty/officers to effectively engage with industry.**

3.3.1 No. of dedicated Industry Liaison Officers (or equivalent) at each Department (1)

3.3.2 No. of training organized for faculty/officers on industry engagement (3-6 per annum)

3.3.3 No. of faculty members/officers placed in industry on short attachments (10-26 per annum)

**3.4 Engage with industry/Govt. to pursue projects/ consultancy.**

3.4.1 No. of consultancy projects being pursued involving industry/Govt. by faculty/staff (5-10 per annum)

3.4.2 No. of research projects being pursued involving industry/Govt. by faculty/staff (2-4 per annum).

3.4.3 Funds generated through consultancy projects and commercial services (in million) (Rs.0.5M à Rs.25M per annum)

**3.5 Organize training/ professional short courses of relevance to industry.**

3.5.1 Conduct of formal Training Needs Analysis of Industry for designing training/short courses

3.5.2 Preparation of corporate profiles of each Department, targeting the industry by highlighting spectrum of services they can offer.

3.5.3 No. of training/professional short-courses organized for industry/Govt. per annum (4-20).

3.5.4 No. of training/short-courses organized by each Department for industry/Govt./local community per annum, focusing on social issues, especially addressing SDGs (1-5)

3.5.5 No. of faculty members/officers engaged in training/professional short-courses for industry per annum (8-10)

**3.6 Involve industry/Govt. experts in statutory bodies of Business School.**

3.6.1 No. of industry/Govt. experts as member of DBOS (1-2).

3.6.2 No. of industry/Govt. experts as member of FBOS (1-2).

**3.7 Engage external experts, with industry experience and/or prominent academic profile, to supplement classroom teaching.**

3.7.1 No. of Guest Lectures by prominent academicians per section (1 per annum).

3.7.2 No of Guest Lectures by Industry Experts per section (1 per annum).

3.7.3 Percentage of Depts. with Visiting Faculty/Adjunct Faculty ranging between 15% to 50% in accordance with requirement of their relevant regulatory bodies (100%)

3.7.4 Percentage Depts with a scheduled one hour lecture every two weeks by industry experts/prominent academicians (100%).

**3.8 Seek input from external experts on curriculum revision to align with industry requirements.**

3.8.1 Annual conduct of surveys to get feedback from the industry to identify the gap between the industry and the graduates.

3.8.2 Preparation of Corrective Action Plan (CAP) based on industrial input received through annual survey and shared with all stakeholders after approval from Rector - within 4 weeks of the survey.

3.8.3 % of Programmes reviewed and revised (if required) by relevant Industry experts in last 3 years (50%-100%)

**3.9 Increase students' exposure to industrial/field knowledge.**

3.9.1 No. of industry/field trips organized for students per section (1 per annum)

3.9.2 Percentage of degree Programmes with a compulsory industry attachment/internship (UG only) (100%)

3.9.3 Percentage of degree Programmes with a compulsory industry attachment/internship (PG only) (0-20%)

- 3.9.4 No. of students engaged in functioning of businesses at the on-campus business setups in Innovation Centers/Business Incubation Centers (5-12)
- 3.9.5 No. of Business Plan competitions/Open House organized, while inviting people from industry to allow students get industrial feedback (per annum) (2)
- 3.9.6 No. of conferences/workshops/symposiums organized involving people from industry focusing on topics pertaining to industrial challenges (per annum) (2)

#### **Strategic Theme 4: Internationalization**

Establishing BBSI as a globally recognized institute is one of its most important strategic themes. The school must ensure an assiduous run in shaping its curriculum and pedagogy to bring it at par with the international standards. Moreover, BBSI needs to develop and continuously enhance its international linkages and foreign connections. Reflecting its dedication for global academic excellence; the school will explore and develop active academic partnerships with various foreign universities, academic & research institutes, professional bodies, and global education networks around the globe. These partnerships shall focus on student's / faculty exchange Programmes; joint research projects/conferences/seminars; students/faculty/staff visits; sharing/exchange of information/skills/expertise/resources and credit hours transfers. Further, the school will offer admissions to the international students in various academic Programmes and encourage the international admissions by engaging Pakistani embassies/high commissions/consulates in targeted countries and approaching embassies/high commissions/consulates of these countries in Pakistan. Moreover, running web-based promotions and campaigns will also be considered.

#### **Goal**

Establish linkages with international educational and research institutes.

#### **Objectives**

Develop agreements and linkages with international Institutions of higher learning internationally.  
 Seek memberships and collaborate with global education networks.  
 Internationalizing the curriculum & pedagogy of the Business School.  
 Increase the number of international students.  
 Increase the number of indigenous students who gain international experience & exposure.  
 Provide international exposure to faculty/officers.  
 Pursue Joint Applied Research Projects with international universities/bodies

#### **BBSI KPIs- Strategic Theme 4**

##### **4.1 Develop agreements and linkages with international institutions of higher learning internationally.**

- 4.1.1 No. of international conferences attended by senior management for networking purpose (per annum) (1-2).
- 4.1.2 No. of visits to international institutes for exploring academic cooperation (per annum) (1).
- 4.1.3 No. of foreign delegations invited to Business School (per annum) (2).
- 4.1.4 No. of MoUs signed with international universities (accumulative) (35-45).

##### **4.2 Seek memberships and collaborate with global education networks.**

- 4.2.1 No. of valid memberships of global educational networks managed by BBS (1-2)

##### **4.3 Internationalizing the curriculum & pedagogy of the Business School**

- 4.3.1 No. learning visits/training organized for Deans/HoDs outside Pakistan on teaching methodologies, curriculum designing or learning practices/procedures (per annum) (1-2).
- 4.3.2 No. learning visits/training organized for selected faculty members outside Pakistan on teaching methodologies, curriculum designing or learning practices/procedures (per annum) (1-2)
- 4.3.3 No. of training/workshops/seminars organized in Pakistan on teaching methodologies, curriculum designing or learning practices/procedures by inviting foreign resource person (per annum) (1-2).
- 4.3.4 Percentage of degree Programmes vetted by foreign experts in last 3 years (5%-25%).
- 4.3.5 Percentage of degree Programmes accredited by international accreditation bodies (AACSB, CIPS, APICS, PMI, SQAS, etc.) (0% à 100%).

#### **4.4 Increase the number of international students.**

- 4.4.1 No. of Ambassadors/Embassy/ Consulate staff invited from countries where exist potential of having international students (per annum) (2)
- 4.4.2 No. of road shows/exhibitions organized/participated outside Pakistan to promote Business School (per annum) (1-2)
- 4.4.3 No of Pakistani Embassies/High Commission/Consulates approached for sharing information about Intl Students' Admission (per admission cycle) (10-30)
- 4.4.4 No of Foreign Embassies/High Commission/Consulates approached for sharing information about Intl Students' Admission (per admission cycle) (10-30)
- 4.4.5 No. of international applicants (per annum) (20-149)
- 4.4.6 No. of international students on campus – accumulative (20-150)

#### **4.5 Increase the number of indigenous students who gain international experience & exposure.**

- 4.5.1 No. of students sent on intl. conferences outside Pakistan per annum (10-22).
- 4.5.2 No. of students sent on summer school Programmes per annum (8 -12).
- 4.5.3 No. of summer school Programmes organized in Pakistan, in collaboration with international Universities (1-2 per annum).
- 4.5.4 No. of students sent on international Internships per annum (2-6).
- 4.5.5 No. of valid students' exchange Programmes (7-15).
- 4.5.6 No. of students sent on exchange Programmes per annum (7-18)
- 4.5.7 No. of guest lectures by foreign speakers per annum (4-16)
- 4.5.8 No. of foreign faculty invited to BU for academic activities (incl. exchange Programme) per annum (2-20)
- 4.5.9 No. of credit transfer Programmes (4-10)

#### **4.6 Provide international exposure to faculty/officers.**

- 4.6.1 No. of faculty members/officers went abroad on exchange Programme/short academic visits to foreign universities per annum (1-4).
- 4.6.2 No. of faculty members/officers went abroad on MS/PhD scholarships per annum (2-7).
- 4.6.3 No. of faculty members/officers went abroad for research work/Post Doc per annum (2-4)

#### **4.7 Pursue Joint Applied Research Projects with international universities/bodies.**

- 4.7.1 No of foreign researchers as member of research groups/centers (2-4).
- 4.7.2 No. of joint applied R&D Projects/consultancies with international universities/bodies (2-4).
- 4.7.3 Funds generated through applied R&D projects/consultancies with international universities/bodies (in millions) (Rs.0.6M-Rs.3.5M).

### **Strategic Theme 5: Conducive Infrastructure**

The Bahria Business School aims to provide a collegiate environment that fosters research, academics and industrial engagement. The school needs a conducive environment to excel in these three domains. To ensure that the school has adequate support infrastructure the strategic plan of the school includes five key areas that ensure a conducive collegiate environment.

The first is the provision of safe and comfortable academic and nonacademic environment for the students, faculty, and the staff. Availability of cafeterias, health services, wellbeing centers, & day care centers for students and faculty and have a smoking/harassment free environment is the school.

The second is to provide suitable space for its students, faculty, and staff to excel in their academic and nonacademic endeavors. Faculty need to have respectable office spaces that allow for research, student and industry engagements.

The third key area is having research groups and centers that would help the school achieve its vision of producing knowledge. Research centers that focus on applied research are important to provide solutions to real business problems.

The fourth key area is access to academic and teaching resources. Having state of the art classrooms, well equipped libraries, access to teaching resources as well as access to international databases are the corner stone of any academic institution.

The fifth area is accommodation for students. Bahria Business school aims to cater to a diverse community of students both national and international. In this regard, the available for suitable accommodating is needed. The Business School aims to have suitable accommodation for our students.

#### **Goal**

Provide a conducive infrastructure to support educational and research activities.

#### **Objectives**

Ensure availability of sufficient academic/non-academic infrastructure in accordance with requirements of regulatory bodies.

Provide respectable workspace to faculty/officers/staff.

Ensure availability of sufficient infrastructure to support applied research.

Business School shall have access to a well-equipped library at par with international standards to facilitate student learning.

Provide advanced teaching resources.

Develop/Hire infrastructure to accommodate students on campus.

Adopt advanced and secure construction/maintenance practices in line with standards required by relevant local regulatory bodies, while maintaining efficient consumption of energy & perseverance of environment.

#### **BBSI KPIs- Strategic Theme 5**

##### **5.1 Ensure availability of sufficient academic/non-academic infrastructure in accordance with requirements of regulatory bodies.**

5.1.1 Percentage compliance with requirement of dedicated labs in accordance with requirement of relevant regulatory bodies (100%).

5.1.2 Students to computer ratio (20:1-10:1).

5.1.3 Percentage capacity of common rooms w.r.t total student strength on campus (0.5-1%).

- 5.1.4 Percentage of buildings with 100% accessibility for disabled people with convenient ramps and lifts accessing all floors/levels where student and staff movement is required (100%).
- 5.1.5 Percentage of buildings with washroom facility for disabled people (100%).
- 5.1.6 No. of dedicated parking space for disabled people (2-3).
- 5.1.7 Dedicated Internet Bandwidth ratio per student (>40KBPs/student to >256KBPs/student)
- 5.1.8 No. of sports facilities including indoor & outdoor facilities, fitness center/gym) to encourage healthy lifestyle (1).
- 5.1.9 No. of Auditorium with good quality projector, display screens at appropriate positions, sound system and video conferencing equipment (1).
- 5.1.10 Implementation of smoke-free policy.
- 5.1.11 Cafeteria for students with variety of food choices to meet different dietary requirements.
- 5.1.12 Cafeteria for faculty/staff with variety of food choices to meet different dietary requirements.
- 5.1.13 Provision of free well-being services to students on campus including sickbay (physical health) & well-being center (mental health).
- 5.1.14 Provision of Day Care facility on campus for the employees/students of the Business School.
- 5.1.15 Provision of free clean water for employees, students and visitors at the Business School.

## **5.2 Provide respectable work environment to faculty/officers/staff.**

- 5.2.1 Percentage of Lecturers & Asst. Professors (less than 10 yrs. of industry/teaching experience) provided with cubicles/shared Offices with workstation and allied facilities (100%).
- 5.2.2 Percentage of Snr Asst. Professor (over 10 years industry/teaching experience), Associate Professors and Professors provided with single office space (100%).
- 5.2.3 Percentage of staff (Cadre 1 to 4) provided with common seating space (100%).
- 5.2.4 Percentage of staff (Cadre 5 to 7) provided with dedicated seating space (100%)
- 5.2.5 Percentage of officers (Cadre 8 & 9) provided with Cubicles/Shared Offices with workstation and allied facilities (100%).
- 5.2.6 Percentage of officers (Cadre 10 and above) provided with Single office space (100%).
- 5.2.7 A common space with multiple workstations and allied facilities (printer, scanner, photocopier, telephone, tea/coffee machine, etc.) to be provided for the Visiting Faculty (2%- 5%)

## **5.3 Ensure availability of sufficient infrastructure to support applied research.**

- 5.3.1 No of Research Centers with dedicated and well-equipped laboratories/infrastructure (1-3)

## **5.4 Business School shall have access to a well-equipped library at par with international standards to facilitate student learning.**

- 5.4.1 No. of books per subject (no. of copies) (50-250).
- 5.4.2 Workstation to student ratio (120:180:1)
- 5.4.3 No of relevant Journals per department (5)
- 5.4.4 No of relevant Magazines per department (10)
- 5.4.5 No. of E-Collections (23,000-50,000)

## **5.5 Provide advanced teaching resources.**

- 5.5.1 Smart Classrooms in % to total class rooms containing smart board, smart podium, audio/video recording system (2%-10%).
- 5.5.2 Percentage of classrooms with video recording facility (10%-100%).
- 5.5.3 Percentage of classrooms with multimedia and connected speakers (75%-100%)
- 5.5.4 Percentage of courses that are web enhanced through LMS (98%-100%).

**5.6 Develop/Hire infrastructure to accommodate students on campus.**

5.6.1 Male accommodation as % of total male students' strength (accommodation for international students only) (0-5%).

5.6.2 Female accommodation as % of total female students' strength (incl. international students) (5%-10%).

**5.7 Adopt advance and secure construction/maintenance practices in line with standards required by relevant local regulatory bodies, while maintaining efficient consumption of energy & perseverance of environment.**

5.7.1 Implementation of policy specifying necessary safety protocols to be followed at each campus, especially at construction/renovation site on campus.

5.7.2 Implementation of policy to ensure all renovations or new builds follow energy efficiency & sustainable standards.

5.7.3 Conduct of review to identify buildings/blocks on campus with higher energy consumption rates.

5.7.4 Percentage reduction of electricity requirement through installation of renewable energy sources (e.g. solar panels) & energy efficient systems (e.g. sensor lights) at each building/block (5%-20%).

5.7.5 Policy on the appropriate disposal of hazardous waste.

**Strategic Theme 6: Financial Sustainability**

The realization of Bahria Business School's (BBS) mission and vision requires solid financial footing and operational excellence. Our commitment to increasing revenue through multiple avenues while continuing to enhance the efficiency and effectiveness of operations will build the momentum necessary to fulfil our mission and vision for the long term. Financial sustainability and operational excellence are more imperative than ever given the current challenges our world is facing, from the ongoing economic challenges of a lingering pandemic to changing national demographics.

The time is now to build the financial strength necessary to realize our strategic ambitions. We will establish a new culture of financial excellence, undergirded by improved acumen, better tools, and common understanding of costs and revenues. Financial decisions will be guided by strategic need and financial soundness. Most of all, we will redouble our efforts to recruit students by offering most attractive job oriented undergrad and post graduate Programmes in BBSI.

**Goal**

Achieve financial sustainability by diversifying the sources of income

**Objectives**

Enhance fee-based income resources of the Business School

Operate efficiently and effectively - managing the cost of operations and delivering value for money.

Grow Endowment Fund contribution of the Business School.

Diversify sources of income.

Raise funds to support student scholarships.

Maintain annual surplus to support Development projects of the Business School.

Effectively report and communicate the Business School's financial performance.

## **BBSI KPIs- Strategic Theme 6**

### **6.1 Enhance fee-based income resources of the Business School.**

6.1.1 No. of Undergraduate Programmes (5-9)

6.1.2 No. of Postgraduate Programmes (10-12)

6.1.3 No. of degree Programmes offered through distance learning (0-2)

6.1.4 Budgeted income through students fee only (in Billions) - excl. carry fwd. (Rs.0.67B-Rs.2.53B per annum)

### **6.2 Operate efficiently and effectively - managing the cost of operations and delivering value for money.**

6.2.1 Implementation of Office Automation System

6.2.2 Percentage of electricity requirement being met through renewable energy mode (5%- 20%)

6.2.3 Percentage of utilization of available classrooms during morning session within the framework of relevant regulatory bodies (90%)

6.2.4 Percentage of utilization of available classrooms during evening session within the framework of relevant regulatory bodies (75%-90%)

6.2.5 Percentage of utilization of available classrooms during weekend within the framework of relevant regulatory bodies (10%-50%)

6.2.6 Budgeted operational expenditures (Rs.0.46B-Rs.1.87B per annum)

### **6.3 Grow Endowment Fund contribution of the Business School.**

6.3.1 Funds generated from Alumni - in million (accumulative) (Rs.0.2M-Rs.9.5M)

6.3.2 Funds generated from Donors - in million (accumulative) (Rs.1.9M-Rs.57M)

6.3.3 Funds generated from Philanthropists (Angel Investors) - in million (accumulative) (Rs.1M-Rs.19M)

6.3.4 Funds generated from Chairs (Corporate/Academic) - in million (accumulative) (Rs.0.3M-Rs.4.8M)

6.3.5 Funds generated from Other Sources in million (accumulative) (Rs.0.3M-Rs.6.7M)

### **6.4 Diversify Income Source.**

6.4.1 Funds generated through consultancy services - in million (per annum) (Rs.1.33M- Rs.13.3M)

6.4.2 Funds generated through research projects - in million (per annum) (Rs.13.3M-Rs.57M)

6.4.3 Funds generated through short courses/ certifications/diplomas -in million (per annum) (Rs.0.29M-Rs.19M)

6.4.4 Funds generated through sponsorships and/or renting of facilities - in millions (per annum) (Rs.0.95M-Rs.9.5M).

6.4.5 Funds generated through Distance Learning/E-Learning (0 -Rs.22.3M)

6.4.6 Total funds generated through sources of income other than students' fee (in billion) (Rs.15.87MàRs.121.03M)

6.4.7 Percentage of external funding in comparison to total income (2.32%-4.57%)

### **6.5 Raise funds to support student scholarships.**

6.5.1 External funding generated for student scholarships - in million (per annum) (Rs.11.17M - Rs.17.3M)

6.5.2 Number of students awarded scholarships through external funding (77-119)

### **6.6 Maintain annual surplus to support Development projects of the Business School.**

6.6.1 Amount of annual Surplus (Total Income-Opt. Expenses) per annum (Rs.224M – Rs.777M)

## **6.7 Effectively report and communicate the Business School's financial performance.**

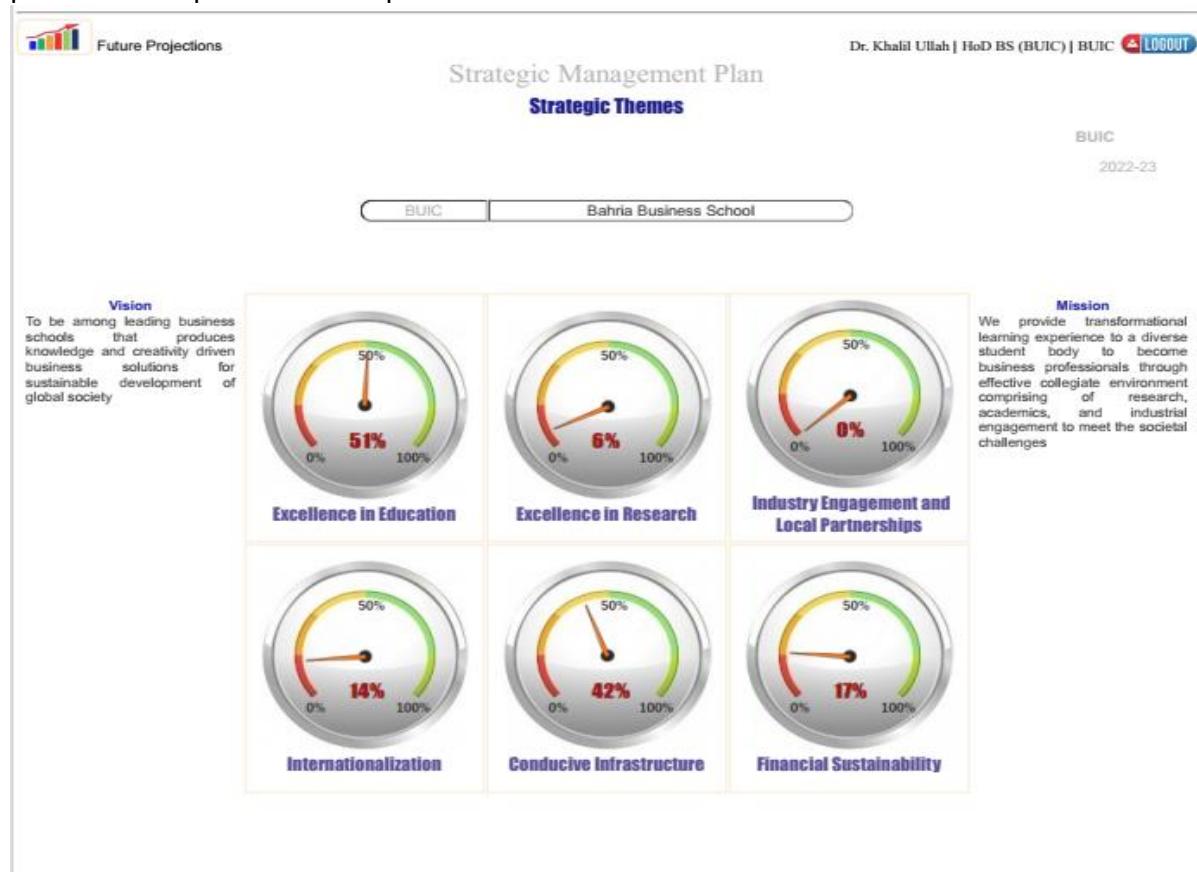
6.7.1 Ensure School/Departmental level budgeting.

6.7.2 Ensure record keeping of income & expenditures at School/Department level.

6.7.3 Development of software for real-time monitoring of financial performance of School and Departments.

### **Monitoring and Evaluation Plan**

Monitoring and evaluation process of the strategic plan has been established to gauge the progress of BBSI towards achieving its vision and mission. The monitoring process takes place biannually. Progress on each KPI is measured and compared with the targets at departmental level. Documentary evidence for the progress of each KPI is provided. The monitoring and evaluation process takes place at the department level of BBSI.



A team headed by respective HoD updates the progress at the end of every semester. The departmental progress is submitted to principal BBSI through an online strategic plan management system (SMP). The corrective actions are recommended where there is a variation between actual performance and targets. The school progress is then forwarded to BU head office.

Measurable Attributes	Set Targets (KPIs)	Monitoring	Evaluation	Corrective Action	Time Frame	Sources of Verification
Qualitative values (Objectives)	Quantitative values (targets for each KPI)	Performance measurement over time	Comparison of actual performance against targets and	Take corrective action to address negative	Bi - annually	Documentary record (proofs) of the performance

			noting of the variation	variances		
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### **Strategic Plan Formulation Committee**

A collaborative approach has been used to formulate this strategic plan. Comprehensive input has been provided by the faculty, support departments, and external partners. The details of the Planning Team include the following:

#### **Internal Members:**

Prof. Dr. Muhammad Naveed	Dean Management Sciences
Dr. M. Awais Mehmood	DIO, Advisory role
Dr. Khalilullah Muhammad	HOD Business Studies Department
Dr. Shahid Hussain	HOD Management Studies Department
Dr. Muhammad Kasheer	Assistant Professor BS Department
Sabir Ali	Senior Lecturer MS Department
Dr. Muhammad Usman	Assistant Professor BS Department
Engr. M. Ijaz Minhas	Lecturer MS Department

#### **External Members:**

Mr. Murtaza Abbas	Joint Director SECP
Ms. Saima Naurin	Director HRD, HEC Pakistan
Mr. Murad Shoaib Khan	HEC Pakistan Senior Official
Mr. Abdul Hannan	ABC Consulting

**Appendage 4318**

#### **PROPOSED STANDARDISED COMMON ESSENTIAL COURSES**

Faculty	Program me	Existing Course Code	Existing Course Title	CH	Proposed Course Code	Proposed Course Title
ES	BS (CS)	ENG 105	Functional English	3	ENG 101	Functional English
		HSS 120	Communication Skills	2	ENG 134	Communication Skills
		HSS 320	Technical Report Writing and Presentation Skills	3	ENG 320	Technical Writing and Presentation Skills
	BS (IT)	ENG 105	Functional English	3	ENG 101	Functional English
		HSS 120	Communication Skills	2	ENG 134	Communication Skills
		HSS 320	Technical Report Writing and Presentation Skills	3	ENG 320	Technical Writing and Presentation Skills
	BS (CE)	ENG 105	Functional English	3	ENG 101	Functional English
		ENG 118	Communication Skills	2	ENG 134	Communication Skills

		HSS 321	Technical Writing	2	ENG 321	Technical Writing
BSE	ENG 105	Functional English	3	ENG 101	Functional English	
		ENG 114	Communication Skills	2	ENG 134	Communication Skills
		HSS 320	Technical Report Writing & Presentation Skills	3	ENG 321	Technical Writing
	ENG 104	Functional English	2	ENG 100	English-1	
BEE	ENG 114	Communication Skills	2	ENG 134	Communication Skills	
	HSS 320	Technical Report Writing & Presentation Skills	3	ENG 320	Technical Writing & Presentation Skills	
	ENG 103	Functional English	3	ENG 101	Functional English	
BS (ES)	ENG 104	English II	3	ENG 102	English Writing Skills	
	ENG 232	Oral Communication	3	ENG 213	Oral Communication and Presentation Skills	
	ENG 105	Functional English	3	ENG 101	Functional English	
BS (AI)	ENG 114	communication Skills	2	ENG 134	Communication Skills	
	HSS 321	Technical Writing	3	ENG 320	Technical Writing and Presentation Skills	
	ENG 105	Functional English	3	ENG 101	Functional English	
MS	BBA	ENG 120	English Writing Skills	3	ENG 102	English Writing Skills
		BCM 204	Business Communication	3	ENG 214	Business Communication
		ENG 103	English I	3	ENG 101	Functional English
	BS (A&F)	ENG 104	English II	3	ENG 102	English Writing Skills
		BCM 243	Business Communication	3	ENG 214	Business Communication
		BCM 302	Presentation and Communication skills	3	ENG 213	Oral Communication and Presentation Skills
	BS(ECO)	ENG 105	Functional English	3	ENG 101	Functional English
		ENG 132	Communication Skills (Public Speaking Skills)	3	ENG 213	Oral Communication and Presentation Skills
		ENG 243	Business Communication	3	ENG 214	Business Communication
	BS (SCM)	ENG 105	Functional English	3	ENG 101	Functional English
		BCM 204	Business Communication	3	ENG 214	Business Communication
		ENG 132	Oral Communication and Public Speaking Skills	3	ENG 213	Oral Communication and Presentation Skills

MS	BS (M&MS) BS (C&MS)	ENG 105	Functional English	3	ENG 101	Functional English
		BCM 121	Business Communication	3	ENG 214	Business Communication
		ENG 243	Presentation and Communication Skills	3	ENG 213	Oral Communication and Presentation Skills
	BS (Eco & Fin)	ENG 105	Functional English	3	ENG 101	Functional English
		ENG 105	Oral Communication Public Speaking Skills	3	ENG 213	Oral Communication and Presentation Skills

		BCM 304	Business Communication Skills	3	ENG 214	Business Communication
H&SS	BS (PH)	ENG 103	English I	3	ENG 101	Functional English
		ENG 104	English II	3	ENG 102	English Writing Skills
		ENG 201	English III	3	ENG 213	Oral Communication and Presentation Skills
		ENG 204	English IV	3	ENG 207	Advance Academic Reading & Writing Skills
	BSS	ENG 103	English I	3	ENG 101	Functional English
		ENG 104	English II	3	ENG 102	English Writing Skills
		ENG 105	Oral Communication	3	ENG 213	Oral Communication and Presentation Skills
	BS (Eng)	ENG 105	English I	3	ENG 101	Functional English
		ENG 120	English II	3	ENG 102	English Writing Skills
		ENG 201	Oral Communication & Presentation Skills	3	ENG 213	Oral Communication and Presentation Skills
	BS (Media Studies)	ENG 106	Functional English	3	ENG 101	Functional English
		ENG 114	Communication Skills	3	ENG 135	Communication Skills
		ENG 104	Writing and Presentation Skills	3	ENG 133	Writing and Presentation Skills
	BS (TV&BC)	ENG 106	Functional English	3	ENG 101	Functional English
		ENG 113	Writing and Presentation Skills	3	ENG 133	Writing and Presentation Skills
		ENG 114	Communication Skills	3	ENG 135	Communication Skills
	BS (IR)	MED 105	International Relations	3	IRS 101	Introduction to International Relations
		HSS 111				
		MED 205	Political Science	3	IRS 102	Introduction to Political Science
		HSS 112	Introduction to Political Science			
	All Programmes	PAK 101	Pakistan Studies	2	PAK 105	Pakistan Studies
		PAK 102	Pakistan Studies	3	PAK 104	Pakistan Studies
	Sociology	HSS 201	Sociology	3	SCO 100	Introduction to Sociology
		HSS 202	Introduction to Sociology			
	MS (Media Studies)	MSM 608	Thesis Proposal Writing/ Literature Review	3	THS 701	Proposed code for Thesis
	MS (Media Studies)	MSM 609	Thesis Writing	3	THS 701	
PP	BS (Psy)	ENG 103	Functional English	3	ENG 101	English I
		ENG 104	English II	3	ENG 102	English Writing Skills
		ENG 232	Oral Communication	3	ENG 213	Oral Communication and Presentation Skills
PP	BS (Psy)	BES 102	Creative Writing	3	ENG 224	Creative Writing
Law	LLB	LLB 111	English I	3	ENG 101	Functional English
		LLB 121	English II	3	ENG 102	English Writing Skills
		LLB 211	English III	3	ENG 213	Oral Communication and

					Presentation Skills
	LLB 123	Principles of Political Science	3	IRS 102	Introduction to Political Science
	LLB-112	Pakistan Studies	2	PAK 105	Pakistan Studies
	LLB 117	Introduction to Sociology	3	SCO 100	Introduction to Sociology

**COURSE TITLES AND COURSE CODES OF THESIS AND PROJECTS AT FHSS**

Course Titles	Credit Hours	Course Codes
UG Final Year Project	6 CH	FYP 400
UG Thesis	6 CH	THS 400
MS Thesis	6 CH	THS 600
MPhil Thesis	6 CH	THS 700
PhD Thesis	36 CH	THS 900

**ROADMAPS OF BSS, BS IN MEDIA STUDIES, BS IN TV BROADCASTING AND DM, BS IN PUBLIC HEALTH AND BS IN ENGLISH, BUIC & KUKC**

**Current Roadmap of BS Media Studies**

S.No	Course Codes (36 <sup>th</sup> ACM)	Course Title	Credit Hrs.
<b>Semester 1</b>			
1	ENG 106	Functional English	3
2	PAK 101	Pakistan Studies	2
3	MED 105	International Relations	3
4	MED 107	Introduction to Mass Communication	3
5	MED 109	Computer Skills for Mass Communication	3
6	MED 110	Photography	3
<b>Semester 2</b>			
1	ENG 104	Writing and Presentation Skills	3
2	ISL 101	Islamic Studies	2
3	MAT 105	Mathematics	3
4	MED 108	Sociology	3
5	MED 113	Elective - Intro to Film Studies	3
6	MED 111	Elective - Media and Society	3
<b>Semester 3</b>			
1	MAT 205	Statistics	3
2	ENG 114	Communication Skills	3
3	MED 205	Political Science	3
4	MED 207	Social Psychology	3
5	MED 209	Journalistic Language	3
6	MED 211	Introduction to Broadcast Media	3

**NEW PROPOSED ROADMAP OF BS MEDIA STUDIES**

S.No	Course Codes (36 <sup>th</sup> ACM)	Course Title	Credit Hrs.
<b>Semester 1</b>			
1	ENG 101	Functional English	3
2	PAK 105	Pakistan Studies	2
3	IRS 101	Introduction to International Relations	3
4	MED 107	Introduction to Mass Communication	3
5	MED 109	Computer Skills for Mass Communication	3
6	MED 110	Photography	3
<b>Semester 2</b>			
1	ENG 133	Writing and Presentation Skills	3
2	ISL 101	Islamic Studies	2
3	MAT 105	Mathematics	3
4	SCO 100	Introduction to Sociology	3
5	MED 113	Elective	3
6	MED 111	Elective	3

Semester 3			
1	MAT 205	Statistics	3
2	ENG 135	Effective Communication Skills	3
3	IRS 102	Introduction to Political Science	3
4	MED 207	Social Psychology	3
5	MED 209	Journalistic Language	3
6	MED 211	Introduction to Broadcast Media	3

#### CURRENT ROADMAP OF (BSTVBDM)

##### Semester One

S#	Course Code	Course Title	CH
01	ENG 111	Functional English – I	03
02	MTB 101	Computer Skills for Media	03
03	MTB 109	Introduction to Television	03
04	MED 209	Journalistic Language	03
05	PAK 101	Pakistan Studies	02
06		Elective*	03

##### Semester Two

S#	Course Code	Course Title	CH
01	ENG 113	English – II (Writing & Presentation Skills)	03
02	MED 208	Introduction to Digital Media	03
03	MTB 108	News Writing & Reporting in Broadcast Journalism	03
04	MAT 205	Statistics	03
05	ISL 101	Islamic Studies / (Ethics)	02
06		Elective*	03

##### Semester Three

S#	Course Code	Course Title	CH
01	MED 403	Media Laws and Ethics	03
02	MTB 202	Theories of Mass Communications – I	03
03	MED 206	Current Affairs	03
04	MED 448	Intercultural Communication	03
05	ENG 114	Communication Skills (English – III)	03
06		Elective*	03

#### NEW PROPOSED ROADMAP OF (BSTVBDM)

##### Semester One

S#	Course Code	Course Title	CH
01	ENG 101	Functional English	03
02	MTB 101	Computer Skills for Media	03

03	MTB 109	Introduction to Television	03
04	MED 209	Journalistic Language	03
05	PAK 105	Pakistan Studies	02
06		Elective*	03

### Semester Two

S#	Course Code	Course Title	CH
01	ENG 133	Writing & Presentation Skills	03
02	MED 208	Introduction to Digital Media	03
03	MTB 108	News Writing & Reporting in Broadcast Journalism	03
04	MAT 205	Statistics	03
05	ISL 101	Islamic Studies / (Ethics)	02
06		Elective*	03

### Semester Three

S#	Course Code	Course Title	CH
01	MED 403	Media Laws and Ethics	03
02	MED 113	Introduction to Film Studies	03
03	MED 206	Current Affairs	03
04	MED 448	Intercultural Communication	03
05	ENG 135	Communication Skills	03
06		Elective*	03

### ROADMAP BACHELORS OF SOCIAL SCIENCES (BSS)

#### Semester 1

Course Code	Course Title	Credit Hours	Pre-Requisite	Proposed Course Code	Proposed Course Title
ENG 103	English I	3		ENG 101	Functional English
PAK 101	Pakistan Studies	2		PAK 105	Pakistan Studies
BES 101	Introduction to Computers	3			
One general course		3			
One general course		3			
One general course		3			

#### Semester 2

Course Code	Course Title	Credit Hours	Pre-Requisite	Proposed Course Code	Proposed Course Title
ENG 104	English II	3	Functional English ENG 101	ENG 102	English Writing Skills
ENV 105	Introduction to Environmental Sciences	3			

BES 106	Research Methodology	3			
BES 103	Critical Thinking	3			
One general course		3			
One general course		3			

### **Semester 3**

Course Code	Course Title	Credit Hours	Pre-Requisite	Proposed Course Code	Proposed Course Title
ENG 105	Oral Communication	3		ENG 213	Oral Communication and Presentation Skills
MAT 105	Mathematics	3			
ISL 101	Islamic Studies	2			
One general course		3			
One general course		3			
One general course		3			

### **ROADMAP OF BS IN ENGLISH**

**Total credit hours used: 135**

#### **1<sup>st</sup> Semester**

**CR (18)**

Course Code	Course Title	Credit Hours	Proposed Course Code	Proposed Title	Pre req
ENG 105	Functional English (English-I)	3	ENG 101	Functional English	
PAK 101	Pakistan Studies	3	PAK 104	Pakistan Studies	
ENG 103	Introduction to Literature- (Drama & Poetry)	3			
ENG 104	Introduction to Linguistics	3			
HSS 102	Introduction to Philosophy	3			
HSS 107	Introduction to Psychology	3			

#### **2<sup>nd</sup> Semester**

**CR (18)**

Course Code	Course Title	Credit Hours	Proposed Course Code	Proposed Title	Pre-req
ENG 120	English Writing Skills (English-II)	3	ENG 102	English Writing Skills	Functional English
ISL 101	Islamic Studies	3			
HSS 111	Introduction to International Relations	3			
ENG 110	History of English Literature-1 (Medieval to Romantics)	3			
MAT 105	Mathematics	3			
ENG 112	Phonetics and Phonology	3			

**3<sup>rd</sup> Semester****CR (18)**

Course Code	Course Title	Credit Hours	Proposed Course Code	Proposed Title	Pre-req
ENG 201	Oral Communication & Presentation Skills	<b>3</b>	ENG 213	Oral Communication and Presentation Skills	
ENG 202	Morphology and Syntax-1	<b>3</b>			
ENG 203	Introduction to Literature-2 (novel & prose)	<b>3</b>			Introduction to Literature-1 (Drama & Poetry)
BES 204	Introduction to Computer Application	<b>3</b>			
ECO 205	Economics	<b>3</b>			
MGT 206	Entrepreneurship	<b>3</b>			

**ROADMAP OF BS IN PUBLIC HEALTH****Semester-1**

S No	Course Code	Course Title	Credit Hours	Pre-requisite	Proposed Course Code	Proposed Title
1	ENG 103	English-I	3		ENG 101	Functional English
2	PAK 101	Pakistan Studies	2		PAK 105	Pakistan Studies
3	MAT 105	Mathematics	3			
4	LSB 110	Life Sciences Biology	3			
5	SHD 111	Sociology of Health and Disease	3			
6	BCM 109	Basic Computer Skills	3			
<b>Total Credit Hours in Semester-1</b>			<b>17</b>			

**Semester-2**

S No	Course Code	Course Title	Credit Hours	Pre-requisite	Proposed Course Code	Proposed Title
1	ENG 104	English-II	3	Functional English ENG 101	ENG 102	English Writing Skills
2	ISL 101	Ethics/Islamic Studies	2			
3	BST 108	Basic Statistics	3			
4	PPS 112	Principles of Psychology	3			
5	MAP 113	Medical Anthropology	3			
6	PHY 118	Personal Hygiene	3			
<b>Total Credit Hours in Semester-2</b>			<b>17</b>			

**Semester-3**

S No	Course Code	Course Title	Credit Hours	Proposed Course Code	Proposed Title

1	ENG 201	English-III	3	ENG 213	Oral Communication and Presentation Skills
2	ICT 217	Introduction to Information, Communication Technology	3		
3	POD 214	Population Dynamics	3		
4	PHC 215	Primary Health Care	3		
5	CHD 219	Concept of Health and Disease	3		
<b>Total Credit Hours in Semester-3</b>			15		

#### Semester-4

S No	Course Code	Course Title	Credit Hours	Pre-requisite	Proposed Code	Proposed Title
1	ENG 204	English-IV (any other subject may be offered)	3	English Writing Skills ENG 102	ENG 207	Advanced Academic Reading & Writing Skills
2	PET 216	Professional Ethics	3			
3	BEP 220	Basic Epidemiology	3			
4	BBI 221	Basic Biostatistics	3			
5	PAS 222	Health Promotion, Advocacy & Social Mobilization	3			
<b>Total Credit Hours in Semester-4</b>			15			

**COURSE OUTLINE****BS IN MEDIA STUDIES**

<b>Course Name</b>	FILM ANALYSIS	<b>Prepared On</b>	February 5, 2023
<b>Course Code</b>	MTB 318		
<b>Credit Hours</b>	3	<b>Revised On</b>	
<b>Course Prereq. Code</b>			
<b>Course Type</b>	Core Course      Elective		
<b>Programme</b>	BS Media Studies		
<b>Semester</b>			
<b>Instructor:</b>			
	<b>Course Description</b>		
	<p>Film Analysis introduces students to the vocabulary and techniques necessary for serious viewing and writing on film. This course requires that you take film more seriously and actively engage with it, being not a passive but an active viewer and reader of cinema. Through this active viewing, you will examine and analyze a series of films stretching across multiple genres, countries, and historical periods. We will primarily focus on learning how to analyze filmic form and to actively read films via these formal features. In addition though, you will also do readings in film history, style, and theory.</p> <p>The first half of the course will focus on the ‘construction’ of film. This will involve studying the various components (cinematography, sound, editing etc. etc.) of a film, looking at them through the text i.e. films and where possible, inviting relevant members of the film community for guest lectures.</p> <p>It is not a “film appreciation” course. The aim of this course is to inculcate a critical eye when watching films; being able to ‘read’ the elements but also combining them in gestalt to see the bigger picture. The second half of the course will put what has been learnt in the former into practice, taking a single film and deconstructing it week after week setting the students up for their final assignment, a video essay. Again where relevant, guest lecturers will be invited.</p>		
	<b>BS Media Studies</b>		
	<b><u>Programme Objectives (POs)</u></b>		
	PO1: To inculcate refined knowledge of Media practices supported by theoretical knowledge in specialized fields of media for successful career.		
	PO2: To develop analytical skills and abilities to investigate, analyze, monitor and assess the content as vigilant media managers.		
	PO3: To sharpen the communication and presentation skills of students using technology to meet international standards.		
	PO4: Enable students to effectively practice Media Ethics to play socially responsible role in the society.		
	PO5: To train students in soft and hard skills for competing in the media industry by finding solutions in a timely, efficient and creative manner.		
	PO6: To equip students with media research skills from brainstorming, observing and integrating new information, theorizing and research writing in a conducive research environment.		
	PO7: To sharpen entrepreneurial skills by writing, developing, producing, directing, displaying media content in a professional manner to add into socio-economic development of the country.		
	<b><u>Programme Learning Outcomes (PLOs)</u></b>		
	After completion of the degree, scholars will be		

	<p>PLO1: Able to inculcate sufficient knowledge of Media Theories and industry to equip media studies students with relevant knowledge for successful careers in their fields of specialization.</p> <p>PLO 2: Able to sharpen the critical thinking of media studies students to evaluate as well as monitor the situation through creative and innovative skills.</p> <p>PLO3: Able to develop intellectual and analytical skills for identifying and resolving the issues as media managers.</p> <p>PLO4: Enable students to effectively communicate and advocate their viewpoint.</p> <p>PLO5: Able to demonstrate the ability to communicate effectively in writing and presenting thorough various forms of media technologies.</p> <p>PLO6: Trained to develop socially responsible individuals and respect for culture and understanding ethics differences in their communicative media practices as part of corporate social responsibility.</p> <p>PLO7: Able to provide technological as well as efficient communication skills that provide problem solving abilities and instill professional personality traits in students.</p> <p>PLO 8: Able to work in the media research environment and apply statistical knowledge for producing research theses and articles as per international standards.</p> <p>PLO9: Able to understand media industry's professional and managerial knowledge while bridging the gap between academia and industry linkages for media and socio-economic development.</p> <p>PLO10: Able to equip with professional environment for enhancing entrepreneurial skills through practical projects as per the market needs and demands.</p>
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#### **Course Learning Outcomes**

Course Learning Outcomes			PLOs									
	Sr. No		PO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
	CLO1	Students will develop 'visual literacy' and analytical skills.	✓	✓	✓		✓			✓	✓	✓
	CLO2	Students will learn the relationships between various movements in film history and how they affect current film production	✓	✓	✓			✓		✓		
	CLO3	Students will be able to produce analyses of a wide range of films.		✓	✓					✓		

	CLO4	To able to analyze film information carefully and logically from multiple perspectives	✓	✓	✓		✓		✓													
	CLO5	To provide an enabling environment of working together in groups. To be innovative and creative in practicing visual communication	✓		✓		✓		✓													
	<b>Teaching &amp; Learning Methodology</b>																					
Outcome Based Education																						
<p>1. To be able to inculcate visual grammar in film making</p> <p>2. To be able to deconstruct a film based on its techniques</p> <p>3. To be able to write reviews and critiques on film</p> <p>4. To be able to understand the society through the optics of film</p>																						
Course Objectives:																						
<p>1. To Describe and analyze film using the specialized vocabulary of film studies.</p> <p>2. To be literate in the language of film and learn basic film concepts, techniques, and terminology to understand films more completely.</p> <p>3. Students will gain an awareness towards a film's means of narration grammar and form.</p> <p>4. To understand the psychological and emotional response to film.</p> <p>5. To understand the connection between film, literature, and art.</p>																						
To critically evaluate film and to communicate about cinematic experience																						
Screening of films and reviews in class will be held.																						
Guest Lectures																						
Film analysis sessions and discussions																						
<b>Suggested Readings</b>																						
<ul style="list-style-type: none"> <li>Film Analysis: A Norton Reader</li> <li>Film Analysis For Beginners: How To analyze Movies</li> <li><b>Film Art: An Introduction – David Bordwell/Kristin Thompson/Jeff Smith (12<sup>th</sup> edition)</b></li> <li><b>Film Theory: An Introduction Through the Senses – Thomas Elsaesser/Malte Hagener</b></li> </ul>																						
<b>Reference Book(s)</b>																						
<ul style="list-style-type: none"> <li>Lectures (ppt/word) provided/uploaded on LMS.</li> <li>Reference books and material will be provided then and there and will be uploaded on LMS.</li> </ul>																						
<b>Magazine Articles/ Published Material/ Research Journals /Papers</b>																						
Students will be provided with updated/latest Journal articles/working papers																						
<b>Grading Policy</b>																						
		<b>Assessment Instruments</b>			<b>Percentage</b>																	
		Quizzes			15%																	
		Assignments + project			20%																	

		Mid Term Exam	25%	
		Final Exam	40%	
Week/ Session	Contents		Activities	Course Learning Objectives Addressed
Week 1	<b>Course Introduction</b> Introduction, Narrative and Narration: Form, Content, Story		<ul style="list-style-type: none"> <li>Interactive Discussion</li> <li>Q/A Session</li> </ul>	<b>CLO1,2</b>
Week 2	<ul style="list-style-type: none"> <li>Mise-en-scene: space, art direction, acting, costume, hair and makeup (What's inside the frame?)</li> <li>Blade runner 2049</li> </ul>		<ul style="list-style-type: none"> <li>Lecture</li> <li>Interactive Discussion</li> <li>Film viewing</li> <li>Q/A Session</li> </ul>	<b>CLO1,2,3</b>
Week 3	<ul style="list-style-type: none"> <li>Deconstructing a Film (How to read films and what they're about)</li> </ul>		<ul style="list-style-type: none"> <li>Lecture</li> <li>Practical Demos</li> <li>Interactive Discussion</li> <li>Q/A Session</li> <li>Film viewing</li> <li>Assignment</li> </ul>	<b>CLO 1,2,4,6</b>
Week 4	<ul style="list-style-type: none"> <li>Analysis of Film Direction</li> <li>Different types of film analysis</li> <li>Semiotic analysis: Vertigo</li> <li>Narrative analysis: Kill Bill</li> <li>Cultural/historical analysis</li> </ul>		<ul style="list-style-type: none"> <li>Lecture</li> <li>Interactive Discussion</li> <li>Q/A Session</li> <li>Film viewing</li> </ul>	<b>CLO 1,3,5,7</b>
Week 5	<ul style="list-style-type: none"> <li>Film Aesthetics</li> <li>Case study of Ready Player One (2018)</li> </ul>		<ul style="list-style-type: none"> <li>Lecture</li> <li>Interactive Discussion</li> <li>Q/A Session</li> <li>Film viewing</li> <li>Assignment</li> </ul>	<b>CLO 1,4,6</b>
Week 6	<ul style="list-style-type: none"> <li>Analysis of Film Editing</li> <li>Whiplash, Rush, Revenant, Battleship Potemkin, Citizen Kane.</li> </ul>		<ul style="list-style-type: none"> <li>Lecture</li> <li>Interactive Discussion</li> <li>Assignment</li> <li>Film viewing</li> </ul>	<b>CLO1,2,4,5,6,7</b>
Week 7	<ul style="list-style-type: none"> <li>Analysis of Film Screenplay/Scriptwriting</li> <li>Manchester by the sea</li> <li>Nocturnal animals</li> </ul>		<ul style="list-style-type: none"> <li>Lecture,</li> <li>Interactive</li> <li>Discussion,</li> <li>Demos,</li> <li>Film viewing</li> </ul>	<b>CLO1,2,4,6,7</b>
Week 8	<ul style="list-style-type: none"> <li>Analysis of Film Sound/Score</li> </ul>		<ul style="list-style-type: none"> <li>Lecture</li> <li>Practical Demos</li> <li>Interactive Discussion</li> <li>Q/A Session</li> <li>Assignment</li> <li>Film viewing</li> </ul>	<b>CLO2,3,5</b>
Week 9	<b>MIDTERM EXAM CLO 1,2,3,5,6,7</b>			

<b>Week 10</b>	<ul style="list-style-type: none"> <li>Analysis of Film Art Direction/Production Design Blade Runner</li> </ul>	<ul style="list-style-type: none"> <li>Lecture</li> <li>Interactive</li> <li>Film viewing</li> <li>Discussion</li> </ul>	<b>CLO1,4,6</b>
<b>Week 11</b>	<ul style="list-style-type: none"> <li>Analysis of Film Acting/Performance Acting &amp; Blocking Taxi Driver (1976)</li> </ul>	<ul style="list-style-type: none"> <li>Lecture</li> <li>Interactive</li> <li>Discussion</li> <li>Film viewing</li> </ul>	<b>CLO1,2,3,6</b>
<b>Week 12</b>	<ul style="list-style-type: none"> <li>Analysis of Film Auteur Theory Authorship &amp; Auteurism The Royal Tenenbaums (2001)</li> </ul>	<ul style="list-style-type: none"> <li>Writing Sessions</li> <li>Interactive Discussion</li> <li>Q/A Session</li> <li>Film viewing</li> </ul>	<b>CLO 1,2,3</b>
<b>Week 13</b>	<ul style="list-style-type: none"> <li>Contextual Analysis/Film Theory           <ul style="list-style-type: none"> <li>Mother, the lives of others</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Lecture</li> <li>Interactive</li> <li>Discussion</li> <li>Film viewing</li> </ul>	<b>CLO 1,2,3,6,7</b>
<b>Week 14</b>	<ul style="list-style-type: none"> <li>Psychoanalysis Mother</li> </ul>	<ul style="list-style-type: none"> <li>Lecture</li> <li>Interactive</li> <li>Discussion</li> <li>Film viewing</li> </ul>	<b>CLO 1,2,3,6</b>
<b>Week 15</b>	<ul style="list-style-type: none"> <li>Analysis of Experimental Film</li> </ul>	<ul style="list-style-type: none"> <li>Lecture</li> <li>Interactive</li> <li>Film viewing</li> <li>Discussion</li> </ul>	<b>CLO 1,2,4,5</b>
<b>Week 16</b>	<p><b><i>Final Project Video Essay/Film Reviews (CLO 1,2,3,4,5,6,7)</i></b></p> <p><b>Guidelines – Final Group Projects</b></p> <p><b>Literature Review: Articles adopting media methodologies from the journals and producing along with class presentation</b></p>		
<b>Week 17</b>	<p><b><i>Final Examination Question Paper (CLO 1,2,3,4,5,6,7)</i></b></p>		

#### Mid/Final Term Exams'Questions Addressing CLOs

Subjective

Questions no1:

(CLOs 1,2,3,6)

Scenerio Based

Question no2:

(CLOs 1,2,3,4,5,7)

## COURSE OUTLINE

<b>Course Name</b>	Introduction to Theatre	<b>Prepared On</b>	
<b>Course Code</b>	MTB 319		
<b>Credit Hours</b>	3	<b>Revised On</b>	
<b>Course Prereq. Code</b>			
<b>Course Type</b>	Core Course      Elective		
<b>Programme</b>	BS Media Studies		
<b>Semester</b>			
<b>Instructor:</b>			
<b>Course Description</b>			
<p>The Introduction to Theatre course is designed to provide students with a thorough understanding and greater appreciation of the theatrical form. Readings and lectures will focus on the relationship between theatrical theory and practice, the various creative/production roles essential to theatre, as well as major artists and movements throughout theatrical history. Students will analyze major works of dramatic literature to offer context for course content, as well as perform a live theatrical performance on campus. Students will identify and define significant theatrical techniques, terms, trends and theories that are centerpieces of dramatic literature, theatrical performance and production, both today and across the theatrical timeline.</p>			
<b>BS Media Studies</b>			
<b><u>Programme Objectives (POs)</u></b>			
PO1: To inculcate refined knowledge of Media practices supported by theoretical knowledge in specialized fields of media for successful career.			
PO2: To develop analytical skills and abilities to investigate, analyze, monitor and assess the content as vigilant media managers.			
PO3: To sharpen the communication and presentation skills of students using technology to meet international standards.			
PO4: Enable students to effectively practice Media Ethics to play socially responsible role in the society.			
PO5: To train students in soft and hard skills for competing in the media industry by finding solutions in a timely, efficient and creative manner.			
PO6: To equip students with media research skills from brainstorming, observing and integrating new information, theorizing and research writing in a conducive research environment.			
PO7: To sharpen entrepreneurial skills by writing, developing, producing, directing, displaying media content in a professional manner to add into socio-economic development of the country.			
<b><u>Programme Learning Outcomes (PLOs)</u></b>			
After completion of the degree, scholars will be			
PLO1: Able to inculcate sufficient knowledge of Media Theories and industry to equip media studies students with relevant knowledge for successful careers in their fields of specialization.			
PLO 2: Able to sharpen the critical thinking of media studies students to evaluate as well as monitor the situation through creative and innovative skills.			
PLO3: Able to develop intellectual and analytical skills for identifying and resolving the issues as media managers.			
PLO4: Enable students to effectively communicate and advocate their viewpoint.			
PLO5: Able to demonstrate the ability to communicate effectively in writing and presenting thorough various forms of media technologies.			
PLO6: Trained to develop socially responsible individuals and respect for culture and understanding ethics differences in their communicative media practices as part of corporate social responsibility.			
PLO7: Able to provide technological as well as efficient communication skills that provide problem solving			

abilities and instill professional personality traits in students.

PLO 8: Able to work in the media research environment and apply statistical knowledge for producing research theses and articles as per international standards.

PLO9: Able to understand media industry's professional and managerial knowledge while bridging the gap between academia and industry linkages for media and socio-economic development.

PLO10: Able to equip with professional environment for enhancing entrepreneurial skills through practical projects as per the market needs and demands.

### **Course Learning Outcomes**

Course Learning Outcomes			P LO								
Sr. No		PO1	PLO2	PLO3	PLO4	PLO5	PLO 6	PLO7	PLO8	PLO9	PLO10
CLO1	Identify and apply the fundamental concepts, theories and roles associated with modern theatrical practice and professional theatrical production (i.e. suspension of disbelief, empathy, actor, designer, Broadway, Off-Broadway, etc.).	✓	✓	✓		✓			✓	✓	✓
CLO2	Examine and define the skills, considerations and tasks associated with the creation of theatre, both	✓	✓	✓			✓		✓	✓	✓

	<b>individually and as a collective whole.</b>										
CLO3	<b>Evaluate and articulate how theatre is a socially-responsive artform that creates meaning and fosters discussion, debate and community</b>		✓	✓					✓	✓	✓
CLO4	<b>Analyze and define the central characteristics of the theatrical artform, both generally and in relation to the history of the Pakistan and Global Cultures.</b>		✓	✓	✓	✓	✓		✓	✓	✓
CLO5	<b>Analyze and evaluate the experience and the various components of live theatrical production, and articulate its value</b>		✓	✓	✓			✓	✓	✓	✓

	<b>both verbally and in writing</b>										
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### **Teaching & Learning Methodology**

Teaching and learning goes hand in hand. Therefore, this course is taught using a combination of lectures /presentations, Videos display, creative class exercises, guest speakers , filed work , BUTV and FM 102.6 hands on experience and student participation. Classroom discussions will form an important part of the course, and students are expected to contribute to the dialogue and able to make discourse analysis. In this spirit, it is expected that students will assume the responsibility for their own learning, which includes:

Regularly attending the class (atleast 75 % attendance is compulsory to take your final exam).

- a. Respect & listen to the one who is talking.
- b. Present their ideas in a clear and articulate way.

The teaching methodology will include:

- 1) Group Discussions Of students
- 2) Self & Group Brainstorming session techniques
- 3) Practical Assignments on (Storytelling, shot compositions, creating mood through lighting, understanding various Theatre forms and structures)
- 4) Examples of theatre, videos, documentaries, Award Winning plays/theatres

Practicing/Preseting various styles of editing

### **Suggested Readings**

- **Theatre: The Lively Art**, 10th Edition By Edwin Wilson and Alvin Goldfarb
- **The Theatre Experience**, 14th Edition By Edwin Wilson and Alvin Goldfarb
- **Theatre, Brief**, 13th Edition ,By Robert Cohen, Donovan Sherman and Michelle Liu Carriger

### **Reference Book(s)**

- Lectures (ppt/word) provided/uploaded on LMS.
- Reference books and material will be provided then and there and will be uploaded on LMS.

### **Magazine Articles/ Published Material/ Research Journals /Papers**

Students will be provided with updated/latest Journal articles/working papers

### **Grading Policy**

	<b>Assessment Instruments</b>		<b>Percentage</b>	
	Quizzes		15%	
	Assignments / Activities		20%	
	Mid Term Exam		25%	
	Final Project		40%	

<b>Week/ Session</b>	<b>Contents</b>	<b>Activities</b> Case Studies, Roleplays, Theatre Clips, Assignments, Research Papers,Field work & Presentations	<b>Course Learning Objectives Addressed</b>
<b>Week 1</b>	<b>Course Introduction</b> Course Outlines Approach to the Course	<ul style="list-style-type: none"> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO1,2</b>

	Understanding Theatre & life Discussion & Question and Answer session		
<b>Week 2</b>	<b>Origins of Theatre</b> The Origins of theatre, rituals, various cultures and their forms of presentation	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO 1,2,3</b>
<b>Week 3</b>	<b>Theatre History</b> Introduction to Greek theatre and corresponding playwrights (Sophocles, Euripides, Aeschylus, Aristophanes) - Aristotle's POETICS (6 components of drama) - Roman Theatre - Medieval Theatre - Elizabethan Era & Shakespeare	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Practical Demos</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> <li>• Assignment</li> </ul>	<b>CLO 1,2,4,6</b>
<b>Week 4</b>	<b>Dramatic Literature</b> Introduction to Genre & Style. Trends of distinct historical periods.	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO 1,3,5,7</b>
<b>Week 5</b>	<b>Play Analysis/Playwriting</b> Play Structures (episodic, climactic, circular, etc.) Basic play analysis (protagonist, antagonist, rising action, climax, dénouement) – -The PLAYRIGHT and process - The CRITIC and process	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> <li>• Theatre Clips for understanding</li> <li>Assignment</li> </ul>	<b>CLO 1,4,6</b>
<b>Week 6</b>	<b>Genre</b> Introduce and provide examples of different genres of playwriting and theatre-making: tragedy, comedy, farce, melodrama, tragicomedy, etc.	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Theatre Clips</li> <li>• Assignment</li> </ul>	<b>CLO 1,2,4,5,6,7</b>
<b>Week 7</b>	<b>Theatrical Movements/Isms</b> How does genre connect and develop out of moments or events in world/theatre history? – Realism, absurdism, surrealism, post-modernism, etc. - What genre encapsulates the majority of playwriting? i.e. Psychological Realism? What subcategories are born out of realism and why?	<ul style="list-style-type: none"> <li>• Lecture,</li> <li>• Interactive</li> <li>• Discussion,</li> <li>• Demos,</li> <li>• Theatre Clips</li> </ul>	<b>CLO 1,2,4,6,7</b>
<b>Week 8</b>	<b>Current Theatre</b>	<ul style="list-style-type: none"> <li>• Lecture</li> </ul>	<b>CLO 2,3,5</b>

	<p>What is happening in Pakistan now?!" – current trends and productions</p> <ul style="list-style-type: none"> <li>- Theatrical venues and vehicles</li> <li>– Broadway, Off-Broadway, Off-Off-Broadway, Community Theatre, Repertory/Regional theatre &amp; Educational Theatre</li> <li>Commercial vs. non-profit theatre model.</li> </ul>	<ul style="list-style-type: none"> <li>• Practical Demos</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> <li>• Assignment</li> </ul>	
<b>Week 9</b>	<b>MIDTERM EXAM</b>		<b>CLO 1,2,3,5,6,7</b>
<b>Week 10</b>	<p><b>Acting/Performance</b></p> <p>The profession of an actor today.</p> <ul style="list-style-type: none"> <li>- Actor training (Stanislavsky &amp; Realistic Acting Techniques)</li> <li>- Theatre vs. film acting</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive</li> <li>• Discussion</li> <li>• Theatre Clips</li> </ul>	<b>CLO 1,4,6</b>
<b>Week 11</b>	<p><b>Spontaneity/Reacting</b></p> <ul style="list-style-type: none"> <li>- Introduction to development of character, playing actions and given circumstances.</li> <li>- Actor toolbox: headshots, resumes, agents.</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive</li> <li>• Discussion</li> <li>• Theatre Clips</li> </ul>	<b>CLO 1,2,3,6</b>
<b>Week 12</b>	<p><b>Theatre Direction</b></p> <p>The profession of a stage director today.</p> <ul style="list-style-type: none"> <li>- Director training - Theater vs. film directing</li> <li>Introduction to the role of the director (casting, working with the producer and designers, blocking rehearsals).</li> <li>- Related tasks: choreography, fight choreography, dramaturgy.</li> </ul>	<ul style="list-style-type: none"> <li>• Theatre Preview</li> <li>• Making Review</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO 1,2,3</b>
<b>Week 13</b>	<p><b>Theatrical Design &amp; Technical Theatre</b></p> <p>Introduction to the various roles within technical theatre. Designers: Scenic, Lighting, Costume, Sound.</p> <p>Additional roles: Stage Manager &amp; ASM's, House Manager/Ushers, Choreographer and Musical Director.</p>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> </ul>	<b>CLO 1,2,3,6,7</b>
<b>Week 14</b>	<p><b>Stage Configurations</b></p> <p>(Black Box, Proscenium, Thrust, Arena) - Parts of the theatre (House, stage, wings, fly system, booths, shop, dressing rooms)</p>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Theatre Clips</li> </ul>	<b>CLO 1,2,3,6</b>

<b>Week 15</b>	<b>Specialty Discipline</b> Musical Theatre, Asian Theatre Traditions, Devised Theatre, Contemporary European Theatre, London & the West End, Shakespeare, Theatre of Latin America, Applied Theatre, Theatre of the Global South, etc.	<ul style="list-style-type: none"> <li>Lecture</li> <li>Interactive Discussion</li> </ul>	<b>CLO 1,2,4,5</b>
<b>Week 16</b>	<b>Final Project Presentations (CLO 1,2,3,4,5,6,7)</b> <b>Guidelines – Final Group Projects</b> <b>Literature Review: Articles adopting media methodologies from the journals and producing along with class presentation</b>		
<b>Week 17</b>	<b>Final Examination Question Paper (CLO 1,2,3,4,5,6,7)</b>		

#### Mid/Final Term Exams' Questions Addressing CLOs

Subjective

Questions no1:

(CLOs 1,2,3,6)

Scenerio Based

Question no2:

(CLOs 1,2,3,4,5,7)

#### **COURSE OUTLINE**

<b>Course Name</b>	MEDIA ENTREPRENEURSHIP	<b>Prepared On</b>	February 5, 2023
<b>Course Code</b>	MTB 420		
<b>Credit Hours</b>	3	<b>Revised On</b>	
<b>Course Prereq. Code</b>			
<b>Course Type</b>	Core Course      Elective		
<b>Programme</b>	BS Media Studies		
<b>Semester</b>			
<b>Instructor:</b>			
<b>Course Description</b>			
This course is for future media professionals who aspire to control their careers. People in this class will make a difference by being indispensable because of their ideas, their ability to put those ideas into actions and by finding an audience. You will learn techniques to develop projects and businesses that take advantage of the evolutionary environment in digital media.			
Learn how to create internal projects in a corporate environment as an "intrapreneur.". Learn business concepts that will allow you to create a business, work for yourself or manage your career working within a media company.			
This course is designed for those who are, or those who want to be, actively starting a new venture involving digital media technologies. The course is not a technology course but is an entrepreneurial strategy course that deals extensively with the dynamics of new industries such as those characterized by media. The focus will be on developing media business models that maintain revenue streams, build value, engage with continuous research and development, and aim to grow by accessing global markets. Students will examine			

and develop the skills necessary for managing flexible teams that embrace and endorse collaboration and fast decision making in rapidly changing technology environments.

### **BS Media Studies**

#### **Programme Objectives (POs)**

PO1: To inculcate refined knowledge of Media practices supported by theoretical knowledge in specialized fields of media for successful career.

PO2: To develop analytical skills and abilities to investigate, analyze, monitor and assess the content as vigilant media managers.

PO3: To sharpen the communication and presentation skills of students using technology to meet international standards.

PO4: Enable students to effectively practice Media Ethics to play socially responsible role in the society.

PO5: To train students in soft and hard skills for competing in the media industry by finding solutions in a timely, efficient and creative manner.

PO6: To equip students with media research skills from brainstorming, observing and integrating new information, theorizing and research writing in a conducive research environment.

PO7: To sharpen entrepreneurial skills by writing, developing, producing, directing, displaying media content in a professional manner to add into socio-economic development of the country.

#### **Programme Learning Outcomes (PLOs)**

After completion of the degree, scholars will be

PLO1: Able to inculcate sufficient knowledge of Media Theories and industry to equip media studies students with relevant knowledge for successful careers in their fields of specialization.

PLO 2: Able to sharpen the critical thinking of media studies students to evaluate as well as monitor the situation through creative and innovative skills.

PLO3: Able to develop intellectual and analytical skills for identifying and resolving the issues as media managers.

PLO4: Enable students to effectively communicate and advocate their viewpoint.

PLO5: Able to demonstrate the ability to communicate effectively in writing and presenting thorough various forms of media technologies.

PLO6: Trained to develop socially responsible individuals and respect for culture and understanding ethics differences in their communicative media practices as part of corporate social responsibility.

PLO7: Able to provide technological as well as efficient communication skills that provide problem solving abilities and instill professional personality traits in students.

PLO 8: Able to work in the media research environment and apply statistical knowledge for producing research theses and articles as per international standards.

PLO9: Able to understand media industry's professional and managerial knowledge while bridging the gap between academia and industry linkages for media and socio-economic development.

PLO10: Able to equip with professional environment for enhancing entrepreneurial skills through practical projects as per the market needs and demands.

#### **Course Learning Outcomes**

<b>Course Learning Outcomes</b>	<b>P LO</b>
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Sr. No		P01	PLO2	PLO3	PL O4	PLO5	PLO6	PLO 7	PLO8	PLO9	PLO10
CLO1	To identify the risks, opportunities, and significant role of media entrepreneurship at both the individual practitioner and corporate level.	✓	✓						✓	✓	✓
CLO2	To Build the foundations of business skills, technological expertise, and media savvy required for contemporary media entrepreneurship		✓	✓			✓		✓	✓	✓
CLO3	Devise a well-informed, considered, and feasible plan for your own original and innovative strategy for media entrepreneurship		✓	✓					✓	✓	✓
CLO4	<ul style="list-style-type: none"> <li>Learn business concepts that will allow you to create a business, work for yourself or manage your career working within a media company.</li> </ul>		✓	✓			✓		✓	✓	✓
CLO5	Navigate the self-employment landscape		✓	✓				✓	✓	✓	✓

CLO6	To provide an enabling environment of working together in groups. To be innovative and creative in practicing visual communication	✓		✓		✓	✓		✓	✓	✓
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### Teaching & Learning Methodology

#### Outcome Based Education

1. To be able to create a business strategy.
2. To be able to connect with other business owners.
3. To be able to establish an online business platform.
4. To have skills and technological expertise required to run a business based on media niche.
5. To be able to lead a team and generate revenue.

#### Suggested Readings

- “The Startup of You” by Reid Hoffman and Ben Casnocha. Crown Business, 2012. ISBN:978-0307888907. Also available as an e-book.
- “The Lean Startup” by Eric Ries. Crown Business, 2011. ISBN: 978-0670921607. Also available as an e-book.
- “The Art of the Start 2.0” by Guy Kawasaki. Portfolio, 2015. trade ISBN 9781591847847. Also available as an e-book.
- “Zero to One” by Peter Thiel with Blake Masters. Crown Business, 2014. ISBN: 978- 0804139298. Also available as an e-book
- “The 7 Habits of Highly Effective People: Powerful Lessons in Personal Change” by Stephen Covey. Free Press, 2004. ISBN: 978-0743269513.
- Also available as an e-book. “Linchpin: Are You Indispensable?” by Seth Godin. Little, Brown Book Group, 2010 ISBN 1591843162.

Also available as an e-book Other readings will be assigned during the semester.

#### Reference Book(s)

- Lectures (ppt/word) provided/uploaded on LMS.
- Reference books and material will be provided then and there and will be uploaded on LMS.

#### Magazine Articles/ Published Material/ Research Journals /Papers

Students will be provided with updated/latest Journal articles/working papers

#### Grading Policy

Assessment Instruments	Percentage
Quizzes	15%
Assignments + project	20%
Mid Term Exam	25%
Final Exam	40%

Week/ Session	Contents	Activities	Course Learning Objectives Addressed
Week 1	<b>Course Introduction</b> <ul style="list-style-type: none"> <li>• What is Media entrepreneurship?</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO1,2</b>

<b>Week 2</b>	<ul style="list-style-type: none"> <li>• What does it take to be an entrepreneur in the media business in 2023?</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO1,2,3</b>
<b>Week 3</b>	<ul style="list-style-type: none"> <li>• How to infuse a startup mentality into an existing media organization (developing an idea)</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Practical Demos</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> <li>• Assignment</li> </ul>	<b>CLO 1,2,4,6</b>
<b>Week 4</b>	<ul style="list-style-type: none"> <li>• Finding opportunity (finding the audience)</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO 1,3,5,7</b>
<b>Week 5</b>	<ul style="list-style-type: none"> <li>• Conducting research into your target market (Building Contacts)</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> <li>Assignment</li> </ul>	<b>CLO 1,4,6</b>
<b>Week 6</b>	<ul style="list-style-type: none"> <li>• How to develop marketing strategies, how to make people aware of our product/service. How to position your product/Service</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Assignment</li> </ul>	<b>CLO1,2,4,5,6,7</b>
<b>Week 7</b>	<ul style="list-style-type: none"> <li>• How to wireframe an idea (wireframe: Building the prototype)</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture,</li> <li>• Interactive</li> <li>• Discussion,</li> <li>• Demos,</li> </ul>	<b>CLO1,2,4,6,7</b>
<b>Week 8</b>	<ul style="list-style-type: none"> <li>• Competition analysis (the competition and market research)</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Practical Demos</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> <li>• Assignment</li> </ul>	<b>CLO2,3,5</b>
<b>Week 9</b>	<b>MIDTERM EXAM CLO 1,2,3,5,6,7</b>		
<b>Week 10</b>	<ul style="list-style-type: none"> <li>• How social Media is revolutionizing the media business.</li> <li>• Use of Social Media for Product placement</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive</li> <li>• Discussion</li> </ul>	<b>CLO1,4,6</b>
<b>Week 11</b>	<b>Case Study</b> Failure: An important and inevitable part of entrepreneurship. Steve Jobs' story is a great example of how abject failure and spectacular success are intimate friends.	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive</li> <li>• Discussion</li> </ul>	<b>CLO1,2,3,6</b>
<b>Week 12</b>	<ul style="list-style-type: none"> <li>• How to write a business plan</li> </ul>	<ul style="list-style-type: none"> <li>• Writing Sessions</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO 1,2,3</b>
<b>Week 13</b>	<ul style="list-style-type: none"> <li>• challenges of entrepreneurship and how to overcome them</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> </ul>	<b>CLO 1,2,3,6,7</b>
<b>Week 14</b>	<ul style="list-style-type: none"> <li>• Sources of revenue</li> <li>• Income generation</li> <li>• Budgeting</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive</li> </ul>	<b>CLO 1,2,3,6</b>

		Discussion	
<b>Week 15</b>	<ul style="list-style-type: none"> <li>Macro Environment analysis for different Industries in Pakistan, Sales Pitch (activity)</li> </ul>	<ul style="list-style-type: none"> <li>Lecture</li> <li>Interactive Discussion</li> </ul>	<b>CLO 1,2,4,5</b>
<b>Week 16</b>	<p><b><i>Final Project Product Presentations(CLO 1,2,3,4,5,6,7)</i></b></p> <p><b>Guidelines – Final Group Projects</b></p> <p><b>Literature Review: Articles adopting media methodologies from the journals and producing along with class presentation</b></p>		
<b>Week 17</b>	<b><i>Final Examination Question Paper (CLO 1,2,3,4,5,6,7)</i></b>		

#### Mid/Final Term Exams'Questions Addressing CLOs

Subjective

Questions no1:

(CLOs 1,2,3,6)

Scenerio Based

Question no2:

(CLOs 1,2,3,4,5,7)

**BS TELEVISION BROADCASTING AND DIGITAL MEDIA ELECTIVE COURSES WITH ADDITION OF NEW AS HIGHLIGHTED**

S No	Course Code	Course Title	CH
1	MTB 104	Mass Media in Pakistan	03
2	MED 401	Online Journalism	03
3	MED 404	Development Support Communication	03
4	MED 207	Social Psychology	03
5	MTB 208	Comparing Media Systems	03
6	MTB 205	International Media Regulations	03
7	MTB 204	Writing for Internet	03
8	MED 306	Photojournalism	03
9	MED 437	2D/3D Animation	03
10	MTB 310	Television Commercial (TVC)	03
11	MTB 405	Television Programme Analysis (Seminar)	03
12	MTB 410	Media Semiotics	03
13	MTB 411	Introduction to Film Making and Analysis	03
14	MTB 412	Electronic News Gathering (ENG)	03
15	MTB 413	Music Video Creation (MVC)	03
17	MTB 209	Evolution of Television	03
18	MTB 302	Process & Effects of Communication	03
19	MTB 311	Media & Social Psychology	03
20	MTB 404	TV & Globalization	03
21	MTB 414	Film and Cinematography	03
22	MED 110	Photography (New)	03
23	MED 308	Video Editing (New)	03
24	MED 315	Sound Design (New)	03
25	MTB 213	Introduction to Digital Gaming (From Core to Elective)	03
26	MTB 304	Television Lighting System (From Core to Elective)	03
27	MTB 417	TV Post Production (From Core to Elective)	03
28	MTB 401	TV Studio & Floor Management (From Core to Elective)	03
29	MTB 315	Television, Digital Media & Society (From Core to Elective)	03
30	MTB 422	Film Analysis (New)	03
31	MTB 420	Media Entrepreneurship (New)	03

**REPLACEMENT OF MAJOR CORE COURSES WITH NEWLY PROPOSED MAJOR CORE COURSES IN BS  
TV BROADCASTING & DIGITAL MEDIA.**

**Current Roadmap as per 36<sup>th</sup> ACM**

**Semester 1**

S No	Course Code	Course Title	CH
01	ENG 111	Functional English – I	03
02	MTB 101	Computer Skills for Media	03
03	MTB 109	Introduction to Television	03
04	MED 209	Journalistic Language	03
05	PAK 101	Pakistan Studies	02
06		Elective*	03

**Semester 2**

S No	Course Code	Course Title	CH
01	ENG 113	English – II (Writing & Presentation Skills)	03
02	MED 208	Introduction to Digital Media	03
03	MTB 108	News Writing & Reporting in Broadcast Journalism	03
04	MAT 205	Statistics	03
05	ISL 101	Islamic Studies / (Ethics)	02
06		Elective*	03

**Semester 3**

S No	Course Code	Course Title	CH
01	MED 403	Media Laws and Ethics	03
02	MTB 202	Theories of Mass Communications – I	03
03	MED 206	Current Affairs	03
04	MED 448	Intercultural Communication	03

05	ENG 114	Communication Skills (English – III)	03
06		Elective*	03

**Semester 4**

S No	Course Code	Course Title	CH
01	MTB 215	Digital Marketing & Public Relations (PR)	03
02	MTB 212	Theories of Mass Communications – II	03
03	MTB 213	Introduction to Digital Gaming	03
04	MED 455	Media Management and Marketing	03
05	MTB 214	Cyber Psychology	03
06		Elective*	03

**Semester 5**

S No	Course Code	Course Title	CH
01	MTB 301	TV Script Writing	03
02	MTB 313	Graphic Designing & Visual Communication	03
03	MTB 317	Videography	03
04	MTB 304	Television Lighting System	03
05	MED 409	Data Journalism	03
06		Elective*	03

**Semester 6**

S No	Course Code	Course Title	CH
01	MTB 314	TV Programme Production	03
02	MTB 315	Television, Digital Media & Society	03
03	MTB 309	TV News Production & Presentation	03
04	MTB	Web Designing	03

	316		
05	MTB	Set Designing	03

	312		
06		Elective	03

### Semester 7

S No	Course Code	Course Title	CH
1	MTB 401	TV Studio & Floor Management	03
02	MTB 402	Documentary Production	03
03	MTB 415	Digital Media Analytics	03
04	MTB 416	Digital Storytelling	03
05		Elective*	03

### Semester 8

S No	Course Code	Course Title	CH
01	MTB 417	TV Post Production	03
02	MTB 418	Mass Media Research Methods	03
03	MTB 409	Research Project / Final Project	03
04	MTB 419	Elective* (Digital Media Literacy)	03

**Total Credit Hours 133 + 02 Internship =135**

### New Proposed Roadmap as per 36<sup>th</sup> ACM

#### Semester 1

S No	Course Code	Course Title	CH
01	ENG 101	Functional English	03
02	MTB 101	Computer Skills for Media	03
03	MTB 109	Introduction to Television	03
04	MED 209	Journalistic Language	03
05	PAK 105	Pakistan Studies	02
06		Elective*	03

04	MAT 205	Statistics	03
05	ISL 101	Islamic Studies / (Ethics)	02
06		Elective*	03

#### Semester 2

S No	Course Code	Course Title	CH
01	ENG 133	Writing & Presentation Skills	03
02	MED 208	Introduction to Digital Media	03
03	MTB 108	News Writing & Reporting in Broadcast Journalism	03

#### Semester 3

S No	Course Code	Course Title	CH
01	MED 403	Media Laws and Ethics	03
02	MED 113	Introduction to Film Studies (New)	03
03	MED 206	Current Affairs	03
04	MED 448	Intercultural Communication	03
05	ENG 135	Communication Skills	03
06		Elective*	03

#### Semester 4

S No	Course Code	Course Title	CH
01	MTB 215	Digital Marketing & Public Relations	03

		(PR)	
02	MED 303	Mass Communications Theories (New)	03
03	MTB 317	Videography	
04	MED 309	World Cinema (New)	03
05	MTB 214	Cyber Psychology	03
06		Elective*	03

02	MTB418	Mass Media Research Methods	03
03	MTB 402	Documentary Production	03
04	MTB 415	Digital Media Analytics	03
05		Elective*	03

#### Semester 5

S No	Course Code	Course Title	CH
01	MTB 320	Screenplay Writing (New)	03
02	MTB 313	Graphic Designing & Visual Communication	03
03	MTB 319	Introduction to Theater (New)	03
04	MED 455	Media Management and Marketing	03
05	MED 409	Data Journalism	03
06		Elective*	03

#### Semester 8

S No	Course Code	Course Title	CH
01	MTB 421	Podcast Development & Production (NEW)	03
02	MTB 416	Digital Storytelling	03
03	MTB 409	Research Project / Final Project	03
04	MTB 419	Elective*	03

#### Semester 6

S No	Course Code	Course Title	CH
01	MTB 314	TV Programme Production	03
02	MTB 419	Digital Media Literacy (from Elective to core)	
03	MTB 309	TV News Production & Presentation	03
04	MTB 316	Web Designing	03
05	MTB 312	Set Designing	03
06		Elective	03

#### Semester 7

S No	Course Code	Course Title	CH
01	MTB 403	Drama Production (from Elective to Core)	

**Total Credit Hours 133 + 02 Internship =135**

**Eligibility for Internship (02 Credit Hours)**

Internship support shall be available to the undergraduate Programme students who have earned a minimum of 90 credits. In other words, the students who have completed five semesters of their Programme shall be eligible to undertake internship.

**Practical Learning Hours (Non credited – Mandatory)**

Students will be required to complete a minimum of 80 hours of practical learning (24 hours in first 4 and 56 hours in last 4 semesters of their degree) at BU Media House (FM, BU TV and Bahria Tribune). For practical learning students will be offered various specialization streams such as audio and video editing, camera work, radio and TV anchoring & production.

**COURSE OUTLINE**

**REPLACEMENT OF MAJOR CORE COURSES WITH NEWLY PROPOSED MAJOR CORE COURSES IN BS TV  
BROADCASTING & DIGITAL MEDIA.**

**COURSE OUTLINE OF INTRODUCTION TO FILM STUDIES**

<b>Course Name</b>	Introduction to Film Studies	<b>Prepared On</b>	March 1 <sup>st</sup> ,2022
<b>Course Code</b>	MED 506		
<b>Credit Hours</b>	3		
<b>Course Prereq. Code</b>		<b>Revised On</b>	September 14 <sup>th</sup> ,2022
<b>Course Type</b>	Core Course      Elective		
<b>Programme</b>	BS Media Studies		
<b>Semester</b>	2 A & B		
<b>Instructor:</b>	Ms. Kiran Tauseef		

**Course Description**

Introduction to Film Studies is designed for aspiring students who want to learn the basics about film making – Film Structure, Narrative, Theme, Videography, Editing, Sound and Marketing etc. in the future. During the semester we explore different theoretical concepts as well as practical hands-on approaches in film production field.

This course examines film at conceptual and practical ground. Students learn about: the concepts, technology, and practical sides of cinema. Each student will be given an opportunity to polish or develop the skill and work on individual projects at the end of the semester.

**BS Media Studies**

**Programme Objectives (POs)**

PO1: To inculcate refined knowledge of Media practices supported by theoretical knowledge in specialized fields of media for successful career.

PO2: To develop analytical skills and abilities to investigate, analyze, monitor and assess the content as vigilant media managers.

PO3: To sharpen the communication and presentation skills of students using technology to meet international standards.

PO4: Enable students to effectively practice Media Ethics to play socially responsible role in the society.

PO5: To train students in soft and hard skills for competing in the media industry by finding solutions in a timely, efficient and creative manner.

PO6: To equip students with media research skills from brainstorming, observing and integrating new information, theorizing and research writing in a conducive research environment.

PO7: To sharpen entrepreneurial skills by writing, developing, producing, directing, displaying media content in a professional manner to add into socio-economic development of the country.

#### **Programme Learning Outcomes (PLOs)**

After completion of the degree, scholars will be

PLO1: Able to inculcate sufficient knowledge of Media Theories and industry to equip media studies students with relevant knowledge for successful careers in their fields of specialization.

PLO 2: Able to sharpen the critical thinking of media studies students to evaluate as well as monitor the situation through creative and innovative skills.

PLO3: Able to develop intellectual and analytical skills for identifying and resolving the issues as media managers.

PLO4: Enable students to effectively communicate and advocate their viewpoint.

PLO5: Able to demonstrate the ability to communicate effectively in writing and presenting thorough various forms of media technologies.

PLO6: Trained to develop socially responsible individuals and respect for culture and understanding ethics differences in their communicative media practices as part of corporate social responsibility.

PLO7: Able to provide technological as well as efficient communication skills that provide problem solving abilities and instill professional personality traits in students.

PLO 8: Able to work in the media research environment and apply statistical knowledge for producing research theses and articles as per international standards.

PLO9: Able to understand media industry's professional and managerial knowledge while bridging the gap between academia and industry linkages for media and socio-economic development.

PLO10: Able to equip with professional environment for enhancing entrepreneurial skills through practical projects as per the market needs and demands.

#### **Course Learning Outcomes**

Course Learning Outcomes		P LO									
Sr. No		PO1	PLO2	PLO3	PLO 4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10

CLO1	Enabling students to broaden their perspective about theories of Film making and its implementation. To equip students with hands-on knowledge in film making	✓	✓	✓		✓			✓	✓	✓	
CLO2	To be able to Distinguish between a well composed and aesthetically sound Film and to meet organizational requirements	✓	✓	✓			✓		✓	✓	✓	
CLO3	To have understanding in shot compositions and lighting techniques		✓	✓					✓	✓	✓	
CLO4	To be able to narrate a story through visuals, dialogue, light and sound. Understand		✓	✓	✓		✓		✓	✓	✓	

	the importance of film, be equipped with new filming techniques												
CLO5	Understand the concept and execution behind character development , script and storyboardin g		✓	✓	✓	✓			✓	✓	✓	✓	✓
CLO6	To provide an enabling environment of working together in groups. To be innovative and creative in practicing visual communication	✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
CLO7	To be able to apply learned skills and publish in the journals for career development in the field of research	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

## **Teaching & Learning Methodology**

Teaching and learning go hand in hand. Therefore, this course is taught using a combination of lectures /presentations, Videos display, creative class exercises, guest speakers, filed work , BUTV and FM 102.6 hands on experience and student participation. Classroom discussions will form an important part of the course, and students are expected to contribute to the dialogue and able to make discourse analysis. In this spirit, it is expected that students will assume the responsibility for their own learning, which includes:

Regularly attending the class (atleast 75 % attendance is compulsory to take your final exam).

- c. Respect & listen to the one who is talking.
- d. Present their ideas in a clear and articulate way.

The teaching methodology will include:

- 5) **Group Discussions Of students**
  - 6) **Self & Group Brainstorming session techniques**
  - 7) **Practical Assignments on (Storytelling, shot compositions, creating mood through lighting, understanding various film forms and structures)**
  - 8) **Examples of films, videos, documentaries, Award Winning Short films/films**
- Practicing/Preseting various styles of editing**

## **Suggested Readings**

- Nichlolas T. Profeares Film directing Fundamentals
- Ross Lowell Maters of Light and Depth
- Jim Piper Making of Short film
- Willaim Rothman the "I" of Camera
- Michael Rabiger Directing film Techniques and Aesthetics
- David + Kritin Thompson Film Art

## **Reference Book(s)**

- Lectures (ppt/word) provided/uploaded on LMS.
- Reference books and material will be provided then and there and will be uploaded on LMS.

## **Magazine Articles/ Published Material/ Research Journals /Papers**

Students will be provided with updated/latest Journal articles/working papers

## **Grading Policy**

<b>Assessment Instruments</b>	<b>Percentage</b>
Quizzes	15%
Assignments + project	20%
Mid Term Exam	25%
Final Exam	40%

## **Week-wise breakdown**

<b>Week/ Session</b>	<b>Contents</b>	<b>Activities</b>	<b>Course Learning Objectives Addressed</b>
		Case Studies, Roleplays, Movie Clips, Assignments, Research Papers,Field work & Presentations	

<b>Week 1</b>	<b>Course Introduction</b> Course Outlines Approach to the Course Understanding Literature & life Discussion & Question and Answer session	<ul style="list-style-type: none"> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO1,2</b>
<b>Week 2</b>	<b>History of Cinema</b> Edward Muybridge The Phi phenomenon Persistence of vision Hannibal Goodwin Thomas Edison's kinetograph Brief history of Theatre	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO 1,2,3</b>
<b>Week 3</b>	<b>Mise En Scene</b> Key Elements: Settings Costume & makeup Facial Expressions & Body Language Lighting & Colour Positioning of Character/Objects	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Practical Demos</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> <li>• Assignment</li> </ul>	<b>CLO 1,2,4,6</b>
<b>Week 4</b>	<b>Understanding Film Basics &amp; Genres</b> Themes Structure Direction Acting Basic Genres: Action, Comedy, Drama, Fantasy, Horror, Mystery, Romance, Thriller, War & Military Action etc.	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO 1,3,5,7</b>
<b>Week 5</b>	<b>Character Development</b> Characterization in films Visual sequencing	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> <li>• Film Clips for understanding</li> <li>• Assignment</li> </ul>	<b>CLO 1,4,6</b>
<b>Week 6</b>	<b>Role of Director / Writer / DOP in Film</b> Understanding the role of Film Crew	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Film Clips</li> <li>• Assignment</li> </ul>	<b>CLO 1,2,4,5,6,7</b>
<b>Week 7</b>	<b>Camera shots</b> Types of shots and their meanings	<ul style="list-style-type: none"> <li>• Lecture,</li> <li>• Interactive</li> <li>• Discussion,</li> <li>• Demos,</li> <li>• Film Clips</li> </ul>	<b>CLO 1,2,4,6,7</b>
<b>Week 8</b>	<b>Writing a film script</b>	<ul style="list-style-type: none"> <li>• Lecture</li> </ul>	<b>CLO 2,3,5</b>

	<b>Dialogue writing in films</b>	<ul style="list-style-type: none"> <li>• Practical Demos</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> <li>• Assignment</li> </ul>	
<b>Week 9</b>	<b>MIDTERM EXAM</b> <b>CLO 1,2,3,5,6,7</b>		
<b>Week 10</b>	<b>Film Narratives</b>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive</li> <li>• Discussion</li> <li>• Film Clips</li> </ul>	<b>CLO 1,4,6</b>
<b>Week 11</b>	<b>Art of Visual Communication</b> Shot Composition Lighting Editing Grammar Science of Sound	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive</li> <li>• Discussion</li> <li>• Film Clips</li> </ul>	<b>CLO 1,2,3,6</b>
<b>Week 12</b>	<b>Light is Magic</b> Light and Shade Technique Ambient Bounce Lighting Key and Fill Day light & Match Reflector Lighting for emotional impact Creating Depth	<ul style="list-style-type: none"> <li>• Film Preview</li> <li>• Making Review</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO 1,2,3</b>
<b>Week 13</b>	<b>Case Study: Understanding Art of Film</b> 'The Bird' By Alfred Hitchcock	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive</li> <li>• Discussion</li> </ul>	<b>CLO 1,2,3,6,7</b>
<b>Week 14</b>	<b>Making a Film Proposal</b> Structure Pitching Budgeting Marketing	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive</li> <li>• Discussion</li> <li>• Film Clips</li> </ul>	<b>CLO 1,2,3,6</b>
<b>Week 15</b>	<b>Post Production Stage</b> Role of Associate Director Marketing & Branding of Film Film Review Trailer/ Teaser Making	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive</li> <li>• Discussion</li> </ul>	<b>CLO 1,2,4,5</b>
<b>Week 16</b>	<b>Final Project Presentations (CLO 1,2,3,4,5,6,7)</b> <b>Guidelines – Final Group Projects</b> <b>Literature Review: Articles adopting media methodologies from the journals and producing along with class presentation</b>		
<b>Week 17</b>	<b>Final Examination Question Paper (CLO 1,2,3,4,5,6,7)</b>		

<b>Course Name</b>	<b>World Cinema</b>	<b>Prepared On</b>	8 <sup>th</sup> Feb,2021
<b>Course Code</b>			
<b>Credit Hours</b>	03		
<b>Course prereq</b>		<b>Revised On</b>	15th <sup>h</sup> September,2022
<b>Course Type</b>	Core Course		
<b>Programme</b>	BS Media Studies / BSTVDM		
<b>Semester</b>	6 A & B		
<b>Instructor:</b>	Ms Nazrana Mushtaq		
<b>Course Description</b>			
This course examines the World cinema. For long Hollywood have been dominating the field of film, it is time to view films from across the globe and analyse the cross cultural similarities, the difference in narrative structure and socioeconomic classification of people across the globe. Film is a form of expression, several cultures use this medium to voice their opinions			
<b>Programme Objectives POs:</b>			
<b>PO 1:</b> To provide students with advanced knowledge & critical awareness regarding, concepts and theoretical approaches in the study of television production & Digital Media.			
<b>PO 2:</b> To develop an understanding of the history, structures and current practices of the television industry & Digital Media, including the primary genres and the critical skills to present analysis and evaluation in written, spoken and visual forms.			
<b>PO 3:</b> To enable students to explore and reflect on the practical implications of working in television broadcasting and digital media as well as enabling them to build an understanding of appropriate methodologies for further research in television studies.			
<b>PO 4:</b> To equip students with the technical as well as methodological expertise to understand the dynamics of digital and social media technologies in the current times. In order to create and build career opportunities in digital media spectrum.			
<b>PO 5:</b> Enable students to effectively practice Electronic and Digital Media Ethics to play socially responsible role in the society.			
<b>Programme Learning Outcomes PLOs:</b>			
<b>After completion of the degree, students will be</b>			
<b>PLO 1:</b> Able to understand all types of visual and digital communication and their theoretical approaches of TV Broadcasting & Digital Media.			
<b>PLO2:</b> able to understand historic evolution and developing the required skill set to produce various genres of TV and digital media including news, documentaries, dramas, music videos, interviews, talk shows, and educational Programmes etc.			
<b>PLO 3:</b> Equipped with the requisite skills of all major aspects of TV and Digital video production such as direction, set design, cinematography and editing.			
<b>PLO 4:</b> Able to have digital media expertise such as digital media analytics, digital storytelling, Vlogging and web designing etc.			
<b>PLO 5:</b> Able to create and disseminate all kinds of digital media content.			
<b>PLO 6:</b> Skilled in their entrepreneurial abilities and become practically self-sufficient in terms of their			

career choices in TV Broadcasting & Digital Media domains.

**PLO 7:** Able to develop socially responsible behaviours with respect to social norms and culture and practice these values in their professional roles.

#### Course Learning Outcomes

Sr. No		PLO 01	PLO2	PLO3	PLO4	PLO5	PLO 6	PLO 7
CLO 1	To enable students to broaden their perspective about cinemas of the world. The difference in film themes from across the globe.	☒		☒				
CLO2	To enable students to read a film in terms of its missense. Understand the different implicit meanings rooted in films		☒	☒			☒	
CLO3	To understand the different dimensions of film varying from camera movement to music to character growth.	☒			☒	☒	☒	
CLO4	To understand the impact of film on society and its visual grammar.	☒	☒	☒	☒	☒	☒	☒

CLO5	To use films as a medium of expression.			?	?	?	?	?	
CLO6	Ethical issues and their concerns in films. Understand the work of various directors and compare it with Pakistani cinema.					?	?	?	

#### Teaching & Learning Methodology

- 1) Group Discussions
- 2) Assignment
- 3) Project
- 4) Screening of Films

#### Textbook(s)

Cook. A David. *A history of narrative film*. Fifth edition

Nowell-Smith, Geoffrey. *The Oxford History of World Cinema*. Oxford: Oxford UP, 1996.

#### Reference Book(s)

Same as above

#### Grading Policy

Assessment Instruments	Percentage	
Quiz	15%	
Assignment/Projects	20%	
Mid Term	25%	
Final Term	40%	

#### Week-wise Course Outline

		Activities (Critical Thinking) Movie Clips, Assignments, Research Papers, Presentations	Learning Objectives Addressed
<b>Week 1</b>	Introduction to World Cinema Cinema as reflection of society, Social and cultural impact of cinema	Interactive discussion Class activity on social and cultural impact of cinema	<i>CLO 1</i>
<b>Week 2</b>	Silent Cinema Sound Cinema Modern Cinema	Interactive Discussion Screening of silent era and sound era films	<i>CLO 1,2,3,4</i>

		Book: The oxford history of world cinema	
<b>Week 3</b>	Feminist Film Theory, Women representation in Cinema, stereotyping	Interactive Discussion	<i>CLO 1,2 ,3 ,4</i>
<b>Week 4</b>	Film and Propaganda through films	Interactive Discussion	<i>CLO 1,2 ,4</i>
<b>Week 5</b>	Iranian Cinema	Interactive Discussion Assignment No 1 Screening of film "Baran"	<i>CLO 1,2 ,3 ,4</i>
<b>Week 6</b>	Early French Cinema	Interactive Discussion Screening of French silent film	<i>CLO 1,2 ,3 ,4</i>
<b>Week 7</b>	History of Pakistani cinema and its future	Interactive Discussion Quiz No 1	<i>CLO 1,2 ,3 ,4</i>
<b>Week 8</b>	Guest Lecture	Interactive Discussion	<i>CLO 1,2,3,4</i>
<b>Week 9</b>	<b>Midterm Exam</b>		
<b>Week 10</b>	Project Submission and Presentations		
<b>Week 11</b>	Presentations		
<b>Week 12</b>	German Cinema	Interactive Discussion	<i>CLO 1,2,3,4</i>
<b>Week 13</b>	Italian Fascism to Neo-realism	Interactive Discussion Screening of The bicycle thieves (1948) Book World Cinemas...Pages 353-358	<i>CLO 1,2,3,4</i>
<b>Week 14</b>	American Cinema	Interactive Discussion	<i>CLO 1,2 ,3 ,4</i>
<b>Week 15</b>	South Asian Cinema	Interactive Discussion Quiz No 2	<i>CLO 1,2 ,3 ,4</i>
<b>Week 16</b>	Current issues, challenges and future of cinema	Interactive Discussion	<i>CLO 5, 6</i>
<b>Week 17</b>	Revision week		
<b>Week 18</b>	<b>Final Exam</b>		

<b>Course Name</b>	<b>Screenplay Writing</b>	<b>Prepared On</b>	03 Feb 23
<b>Course Code</b>	MTB 320		
<b>Credit Hours</b>	3		
<b>Course Prereq. Code</b>		<b>Revised On</b>	
<b>Course Type</b>	Core Course      Elective		
<b>Programme</b>	BS      Television Broadcasting and Digital Media		
<b>Semester</b>	5A		
<b>Instructor:</b>	SABAHAT AFSHEEN		
<b>Course Description</b>	TV Script Writing is a skill-based technical writing immersion into BS TVBDM. This course is designed to teach you, not only the steps and basics of writing a logline but what a story is and what it means for you		

and the audience. With an unrivaled approach to hands-on, interactive learning, students find themselves completely immersed in their course of study from day one. The purpose of the course is to learn about film and television screenplay structure, analyze dramatic strategies in film and television, learn and apply correct script form, and creatively engage in the various stages of original scriptwriting. The assignments will include the writing of scenes, a treatment and a 10 min script, with special emphasis on the steps leading toward creating a final screenplay.

### **Course Objectives**

Over the course of 18 weeks, students will learn both the technical and creative process of writing their own screenplay and all of the ins and outs of the writing process, including best practices and important conventions. This course will cover the conventions of sac genre for both film and television. Upon completion of the course each student will have finished their very own short screenplay.

### **PROGRAMME OBJECTIVES (POs)**

**PO 1:** To provide students with advanced knowledge & critical awareness regarding, concepts and theoretical approaches in the study of television production & Digital Media.

**PO 2:** To develop an understanding of the history, structures and current practices of the television industry & Digital Media, including the primary genres and the critical skills to present analysis and evaluation in written, spoken and visual forms.

**PO 3:** To enable students to explore and reflect on the practical implications of working in television broadcasting and digital media as well as enabling them to build an understanding of appropriate methodologies for further research in television studies.

**PO 4:** To equip students with the technical as well as methodological expertise to understand the dynamics of digital and social media technologies in the current times. In order to create and build career opportunities in digital media spectrum.

**PO 5:** Enable students to effectively practice Electronic and Digital Media Ethics to play socially responsible role in the society.

### **Programme Learning Outcomes (PLOs)**

After completion of the degree, students will be

**PLO 1:** Able to understand all types of visual and digital communication and their theoretical approaches of TV Broadcasting & Digital Media.

**PLO 2:** able to understand historic evolution and developing the required skill set to produce various genres of TV and digital media including news, documentaries, dramas, music videos, interviews, talk shows, and educational Programmes etc.

**PLO 3:** Equipped with the requisite skills of all major aspects of TV and Digital video production such as direction, set design, cinematography and editing.

**PLO 4:** Able to have digital media expertise such as digital media analytics, digital storytelling, Vlogging and web designing etc.

**PLO 5:** Able to create and disseminate all kinds of digital media content.

**PLO 6:** Skilled in their entrepreneurial abilities and become practically self-sufficient in terms of their career choices in TV Broadcasting & Digital Media domains.

**PLO 7:** able to develop socially responsible behaviours with respect to social norms and culture and practice these values in their professional roles.

### **Course Learning Outcomes**

Sr. No		PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	
CLO1	Practice characterization, dialogues, scenes, plots, and story building	✓				✓			
CLO2	Construct and develop a story considering industry standards	✓	✓	✓	✓	✓	✓		
CLO3	Reorganize the script formats, integrate national and international story structures	✓	✓		✓			✓	
CLO4	Consider the ethical issues in scriptwriting							✓	
CLO5	Debate and critique of existing screenplays			✓				✓	

#### Teaching & Learning Methodology

Teaching and learning goes hand in hand. The best learning occurs when teachers and students both come prepared to the class ready to deal with the issues that are presented. In this spirit, it is expected that students will assume the responsibility for their own learning, which includes: Regularly attending the class (atleast 75 % attendance is compulsory to take the final exams).

The teaching methodology will include:

- Lecture
- Self Directed Learning
- Student Projects
- Presentations.

#### Textbook(s)

No single textbook is followed. Excerpts from textbooks will be shared time to time.

#### Reference Book(s)

1. The tools of screenwriting: A writer's guide to the craft and elements of a screenplay by David Howard and Edward Mabley
2. Making a good script Great by Linda Seger, 3<sup>rd</sup> Ed
3. Television and Screen Writing: From concept to contract by Richard A Blum, 4<sup>th</sup> Ed

#### Magazine Articles/ Published Material/ Research Journals /Papers

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading material.

#### Grading Policy

Assessment Instruments	Percentage
Quiz	15%
Assignments + Projects	20%
Mid Term Exam	25%
Final Exam	40%

WEEK WISE COURSE OUTLINE			
Week/session	Contents	Reference material and activities	Learning objectives addressed
<b>Week 1</b>	<b>Introduction of the Course</b> <ul style="list-style-type: none"> <li>- Syllabus overview</li> <li>- Class Introduction</li> <li>- Pre Semester Assessment of the Students</li> <li>- Defining the Way Forward</li> </ul>	Activity based class	CLO1
<b>Week 2</b>	<b>The principles of writing</b> <ul style="list-style-type: none"> <li>- Introduction to script writing</li> <li>- Difference b/w Script writing and screenplay</li> <li>- The basics (character, story, structure, conflict)</li> </ul> <b>Story Spying</b> <ul style="list-style-type: none"> <li>- The premise: Story Spying</li> <li>- Finding the story</li> </ul>	Television and Screen Writing: From concept to contract by Richard A Blum, 4 <sup>th</sup> Ed	CLO1, 3
<b>Week 3</b>	<b>Developing a Marketable story</b> <ul style="list-style-type: none"> <li>- Introduction to various genres and themes</li> <li>- Scriptwriting for telecasting</li> </ul>	Making a good script Great by Linda Seger, 3 <sup>rd</sup> Ed	CLO 2
<b>Week 4</b>	<b>Three act structure</b> <ul style="list-style-type: none"> <li>- Beginning</li> <li>- Middle</li> <li>- End</li> <li>- Writing a treatment</li> <li>- Hero's journey</li> </ul>	Television and Screen Writing: From concept to contract by Richard A Blum, 4 <sup>th</sup> Ed	CLO 1, 3, 4
<b>Week 5</b>	<b>Exploring characters</b> <ul style="list-style-type: none"> <li>- Dramatizing characters</li> <li>- Classifying Characters</li> <li>- What Is a Character Arc?</li> <li>- Types of Character Arcs with Examples</li> </ul>	Television and Screen Writing: From concept to contract by Richard A Blum, 4 <sup>th</sup> Ed	CLO 1, 3, 4

<b>Week 6</b>	<b>What Is a Moral Dilemma?</b> <ul style="list-style-type: none"> <li>- Using Moral Dilemmas as a Storytelling Tool</li> <li>- Types of Moral Dilemmas</li> <li>- Moral Dilemmas for improved Storytelling</li> </ul>	Television and Screen Writing: From concept to contract by Richard A Blum, 4 <sup>th</sup> Ed	CLO 1, 3, 4
<b>Week 7</b>	<b>Exposition</b> <ul style="list-style-type: none"> <li>- How to write a step outline</li> </ul> <b>Dialogue as a Form of Characterization</b> <ul style="list-style-type: none"> <li>- Characterization methods</li> <li>- Effective Dialogue</li> <li>- Significance of Dialogue</li> <li>- What is dialogue in a story?</li> <li>- Five elements of fiction</li> <li>- How do you begin a story?</li> <li>- Effective dialogue</li> <li>- Major function of dialogue</li> <li>- Formatting dialogue in a story</li> <li>- Best Writers: Urdu/English</li> </ul>	Television and Screen Writing: From concept to contract by Richard A Blum, 4 <sup>th</sup> Ed	CLO 1, 3
<b>Week 8</b>	<b>Scenes: Form and Function</b> <ul style="list-style-type: none"> <li>- Film analysis character and plot</li> <li>- Structure and Meaning</li> <li>- Idea vs counter idea</li> <li>- How to write a step outline</li> <li>- Do's and Don't's of Scriptwriting</li> </ul>	The tools of screenwriting: A writer's guide to the craft and elements of a screenplay by David Howard and Edward Mabley	CLO 1, 3
<b>Week 9 Mid Term Exam</b>			
<b>Week 10</b>	In class exercise on script writing, story boarding and shotlisting	Software learning and practice	CLO 2
<b>Week 11</b>	In class exercise on script	Software learning and	CLO 2

	writing, story boarding and shotlisting	practice	
<b>Week 12</b>	Film analysis character and plot	The tools of screenwriting: A writer's guide to the craft and elements of a screenplay by David Howard and Edward Mabley	CLO 4, 5
<b>Week 13</b>	Editing and revising scripts	Making a good script Great by Linda Seger, 3 <sup>rd</sup> Ed	CLO 4, 5
<b>Week 14</b>	Screenings	Media Fair Week	CLO 3
<b>Week 15</b>	Guest lecture by a famous screenplay writer	<u>Seminar or Webinar</u>	CLO 2, 4
<b>Week 17</b>	Exploring national and international television writing industry	The tools of screenwriting: A writer's guide to the craft and elements of a screenplay by David Howard and Edward Mabley	CLO 1, 3, 5
<b>Week 18</b> <b>FINAL TERM EXAM</b>			

<b>Course Name</b>	Mass Communication Theories	<b>Prepared On</b>	Feb 8, 2023		
<b>Course Code</b>	MED 320				
<b>Credit Hours</b>	3				
<b>Course Prereq. Code</b>		<b>Revised On</b>			
<b>Course Type</b>	Core Course      Elective				
<b>Programme</b>	BS Media Studies				
<b>Semester</b>	5A				
<b>Instructor:</b>	FARWA KUNWAL				
<b>Course Description</b>					

This course aims to familiarize students will the main theories of mass communication that have shaped the direction of the field in the past one century. This course will help students better the effects of media from micro and macro perspectives. It would enable them to know what traits and characteristics at individual and societal levels determine the levels of media effects. Moreover, these theories are linked with the various methodological approaches in the field to enable them undertake independent research in the area.

#### **Programme Objectives (POs) BS MEDIA STUDIES**

**PO 1:** To provide students with advanced knowledge & critical awareness regarding, concepts and theoretical approaches in the study of television production & Digital Media.

**PO 2:** To develop an understanding of the history, structures and current practices of the television industry & Digital Media, including the primary genres and the critical skills to present analysis and evaluation in written, spoken and visual forms.

**PO 3:** To enable students to explore and reflect on the practical implications of working in television broadcasting and digital media as well as enabling them to build an understanding of appropriate methodologies for further research in television studies.

**PO 4:** To equip students with the technical as well as methodological expertise to understand the dynamics of digital and social media technologies in the current times. In order to create and build career opportunities in digital media spectrum.

**PO 5:** Enable students to effectively practice Electronic and Digital Media Ethics to play socially responsible role in the society.

#### **Programme Learning Outcomes (PLOs)**

**After completion of the degree, students will be**

**PLO 1:** Able to understand all types of visual and digital communication and their theoretical approaches of TV Broadcasting & Digital Media.

**PLO2:** able to understand historic evolution and developing the required skill set to produce various genres of TV and digital media including news, documentaries, dramas, music videos, interviews, talk shows, and educational Programmes etc.

**PLO 3:** Equipped with the requisite skills of all major aspects of TV and Digital video production such as direction, set design, cinematography and editing.

**PLO 4:** Able to have digital media expertise such as digital media analytics, digital storytelling, Vlogging and web designing etc.

**PLO 4:** Able to create and disseminate all kinds of digital media content.

**PLO 5:** Skilled in their entrepreneurial abilities and become practically self-sufficient in terms of their career choices in TV Broadcasting & Digital Media domains.

**PLO 6:** able to develop socially responsible behaviours with respect to social norms and culture and practice these values in their professional roles.

PLOs							
Sr. No		PLO1	PLO2	PLO3	PLO4	PLO 5	PLO 6
CLO1	To develop understanding of the key concepts and approaches in the field of mass communication	•	•	•	•	•	
CLO2	To enable students better analyze the effects of media both at macro and micro levels		•	•	•	•	•
CLO3	To enable students grasp the overall factors that determine the level and extent of effects of media	•		•	•		•
CLO4	To develop understanding of the conceptual and theoretical debates in the academia on the role of media in politics, culture and society		•	•	•	•	•
<b>Teaching &amp; Learning Methodology</b>							
Teaching and learning goes hand in hand. Therefore, this course is taught using a combination of lectures /presentations, Videos showing , creative class exercises, guest speakers and student participation. Classroom discussions will form an important part of the course, and students are expected to contribute to the dialogue and able to make discourse analysis. In this spirit, it is expected that students will assume the responsibility for their own learning, which includes: Regularly attending the class (at least 75 % attendance is compulsory to take your final exam). e. Respect & listen to the one who is talking. f. Present their ideas in a clear and articulate way.							
The teaching methodology will include:							
<ul style="list-style-type: none"> <li>• Lectures</li> <li>• Articles / Case Studies/ Video/ Analysis</li> <li>• Discussions</li> <li>• Presentations</li> </ul> Library/Consultancy							
<b>Textbook(s):</b> DeFleur, M. L., &DeFleur, M. H. (2016). <i>Mass communication theories: Explaining origins, processes, and effects</i> . Routledge.							
<b>Reference Book(s):</b> Rosenberry, J., &Vicker, L. A. (2017). <i>Applied mass communication theory: A guide for media practitioners</i> . Routledge.							
<b>Magazine Articles/ Published Material/ Research Journals /Papers</b>							

Students will be provided with latest Journal articles/working papers/case studies as extra reading material to expand their understanding of journalism and online work environment.

#### **Grading Policy**

<b>Assessment Instruments</b>	<b>Percentage</b>
Quizzes	15%
Assignments + project	20%
Mid Term Exam	25%
Final Exam	40%

#### **Week-wise breakdown:**

<b>Week/Session</b>	<b>Contents</b>	<b>Activities (Critical Thinking) Assignments, Presentations, Debates, Research Article Reviews, Case Studies</b>	<b>Course Learning Objectives Addressed</b>	<b>OBE outcomes addressed</b>	<b>OBE Evaluation Criteria</b>
<b>Week 1</b>	Introduction to MC theories	An introductory class, Lecture, Discussion, Q/A	CLO 1,2,3	<b>Understanding:</b> A basic understanding of mass communication theories: Students should demonstrate a keen understanding of the major theories, concepts and approaches of Mass Communication.	<b>Historical Walkthrough:</b> Students can research and present on the history of mass communication, including key events and figures, and how they influenced the development of various theories. The presentations can be in the form of 3D models.
<b>Week 2</b>	Normative Theories	Lecture, Discussion, Q/A	CLO 1,2,4		

<b>Week 3</b>	Magic Bullet Theory	Lecture, Discussion, Class Debate on the relevance of this theory in the current age of social media, Q/A	CLO 1,2,3,4	<b>Analysis:</b> Students should be able to analyze media messages and understand how they are created, and how they shape public perception and opinion.	<b>Media Critique:</b> Students can analyze a piece of media (e.g. a news article, film or advertisement) and apply different theories to understand how it was created, the message it conveys and how it is perceived by audiences.
<b>Week 4</b>	Two Step Flow of Information and Theories of Selectivity	Lecture, Discussion, Examples from Pakistan, Q/A	CLO 1,2,3		
<b>Week 5</b>	Diffusion of Innovation	Lecture, Discussion, Q/A	CLO 1,2,3,4		
<b>Week 6</b>	Social Cognitive Theory	Lecture, Discussion, Q/A	CLO 1,2,3,4		
<b>Week 7</b>	Cultivation Theory	Lecture, Discussion, Q/A	CLO 1,2,3,4	<b>Effects:</b> A thorough understanding of media effects: Students should have a deep and thorough understanding of media effects and how they impact individuals and society.	<b>Social Experiments or Research Projects:</b> Students can either conduct original research on a topic that studies media effects or carry out a social experiment in the form of a short video that addresses the impact of media on individuals

					and society.
<b>Week 8</b>	Hegemony Theory	Lecture, Discussion, Criticism on the theory, Q/A	CLO 2,3,4		
<b>Week 9</b>		Mids			
<b>Week 10</b>	Political Economy Theory	Lecture, Discussion, Relevance in Pakistani context, Q/A	CLO 1,2,3,4	<b>Application:</b> Students should be able to apply the theory in real-world scenarios and identify them.	<b>Group Discussions:</b> Students can be divided into groups and asked to debate and discuss on an important and relevant issue from the Pakistani context. They will study the issue through various theories and use different theories as their arguments
<b>Week 11</b>	Agenda Setting Theory	Lecture, Discussion, Q/A	CLO 1,2,3,4		
<b>Week 12</b>	Framing Theory	Lecture, Discussion, Q/A	CLO 1,2,3,4,5		
<b>Week 13</b>	Spiral of Silence	Lecture, Discussion, Q/A	CLO 1,2,3,4,5	<b>Research Skills:</b> Students should be able to review research articles, analyze data related to mass communication and be fully prepared to conduct original research in the future.	<b>Research Article Reviews:</b> Students can be assigned to study at least one latest research article on any theory and write a detailed review on it.
<b>Week 14</b>	Knowledge	Lecture,	CLO 1,2,3,4		

	Gap Theory	Discussion, Q/A			
<b>Week 15</b>	Media System Dependency Theory	Lecture, Discussion, Q/A	CLO 1,2,4		
<b>Week 16</b>	Trends in MC	Lecture, Discussion, Q/A	CLO 1,2,3,4,5		<b>Final Exams:</b> Students can be tested on their overall understanding of Mass Communication Theories through a written exam.

<b>Course Name</b>	<b>Podcast Development &amp; Production</b>	<b>Prepared On</b>	Revised on 03 Jan 2023
<b>Course Code</b>	MTB 421		
<b>Credit Hours</b>	03		
<b>Course Type</b>	Core Course		
<b>Programme</b>	BS BSTVBDM		
<b>Semester</b>			
<b>Instructor:</b>			
<b>Course Name</b>			

**Course Description and Objectives:**

The rise in podcast popularity began over a decade ago and shows no sign of abating, with over 1.5 million shows and over 34 million episodes available. In this course, students are introduced to podcast production and learn the essential skills required to create their own podcasts. This includes pitching ideas, writing a script, casting talent and finding guests, hosting, interviewing, audio and video recording, editing, podcast distribution and promotion.

**Programme Objectives POs:**

**PO 1:** To provide students with advanced knowledge & critical awareness regarding, concepts and theoretical approaches in the study of television production & Digital Media.

**PO 2:** To develop an understanding of the history, structures and current practices of the television industry & Digital Media, including the primary genres and the critical skills to present analysis and evaluation in written, spoken and visual forms.

**PO 3:** To enable students to explore and reflect on the practical implications of working in television broadcasting and digital media as well as enabling them to build an understanding of appropriate methodologies for further research in television studies.

**PO 4:** To equip students with the technical as well as methodological expertise to understand the dynamics of digital and social media technologies in the current times. In order to create and build

career opportunities in digital media spectrum.

**PO 5:** Enable students to effectively practice Electronic and Digital Media Ethics to play socially responsible role in the society.

**Programme Learning Outcomes PLOs:**

**After completion of the degree, students will be**

**PLO 1:** Able to understand all types of visual and digital communication and their theoretical approaches of TV Broadcasting & Digital Media.

**PLO2:** able to understand historic evolution and developing the required skill set to produce various genres of TV and digital media including news, documentaries, dramas, music videos, interviews, talk shows, and educational Programmes etc.

**PLO 3:** Equipped with the requisite skills of all major aspects of TV and Digital video production such as direction, set design, cinematography and editing.

**PLO 4:** Able to have digital media expertise such as digital media analytics, digital storytelling, Vlogging and web designing etc.

**PLO 5:** Able to create and disseminate all kinds of digital media content.

**PLO 6:** Skilled in their entrepreneurial abilities and become practically self-sufficient in terms of their career choices in TV Broadcasting & Digital Media domains.

**PLO 7:** Able to develop socially responsible behaviours with respect to social norms and culture and practice these values in their professional roles.

Course Learning Outcomes			Programme Learning Outcomes PLOs						
Sr. No			PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7
CLO 1	• Develop content for a specific podcast format.	x					x	x	
CLO 2	• Operate basic recording and editing equipment and software.	x					x		
CLO 3	• Collaborate with team members, crew and production staff.				x		x		
CLO 4	• Produce, distribute and promote their podcast episode.		x					x	x
CLO 5	• Produce full fledged Podcasts		x					x	x

**Teaching & Learning Methodology**

Teaching and learning goes hand in hand. The best learning occurs when teachers and students both came prepared to the class ready to deal with the issues that are presented. In this spirit, it is expected that students will assume the responsibility for their own learning, which includes: Regularly attending the class (at least 75 % attendance is compulsory to take your final exam).

- g. Ask as many Questions As you Want.
- h. Present their ideas in a clear and articulate way.

The teaching methodology will include:

- Multimedia Lectures
- Articles / Case Studies / Scenario Analysis
- Class Activities & Discussions

**Textbook(s):**

- Listening In: Radio and the American Imagination, by Susan Douglas
- Podcast Solutions: The Complete Guide to Audio and Video Podcasting, by Michael Geoghegan and Dan Klass Articles
- Inside the Podcast Brain: Why Do Audio Stories Captivate? The Atlantic, April, 2015
- 'Serial,' Podcasting's First Breakout Hit, Sets Stage for More, New York Times, Nov. 23, 2014
- Podcasting is the New Personal Essay, Columbia Journalism Review, December 12, 2017 Newsletter
- Follow Hot Pod, provides analysis, insight and commentary on the growing podcast industry.

**Magazine Articles/ Published Material/ Research Journals /Papers**

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading

**Grading Policy**

Assessment Instruments	Percentage	
Quizzes	15%	
Assignments + project	20%	
Mid Term Exam	25%	
Final Exam	40%	

**Class Policy:**

**1. Class Attendance**

Minimum 75% attendance is required to appear in final exam.

**2. Respecting Deadlines**

2.1 All assignments should be submitted on time & presentation should be delivered on the scheduled date. No work would be accepted after deadline.

**3. Assessments & Exams**

**3.1** No retake for any course activity. In case of emergency properly processed application along with the relevant documents must be provided to the instructor.

**4. Code of Conduct**

Week/ Session	Contents	Activities( Critical Thinking) Case Studies, Roleplays, Movie Clips, Assignments,	Learning Objectives Addressed	OBE Goals Addressed	Assesmt Criteria

		Research Papers, Presentations			
<b>Week 1</b>	Overview of podcasting: history, emergence of genres and formats, listening, not watching Podcasting Growth, Trends, and Landscape	Course overview, Discussion and understanding of course content, gauging students understanding of marketing concepts through class discussion	<b>CLO 1,2,3</b>	<i>Understanding and analysis of Current social, economic , national and international debates and international relation in terms of current issues</i>	<b>2 Quizzes</b> <b>Mid Term Exam</b> <b>Final term Exam</b> <b>On eanalytical report on selected issue</b>
<b>Week 2</b>	Best Practices for Recording "Good Tape" in the Studio and in the Field: Review of current top-rated podcasts.	Lecture / Class Discussion Albarran Ch. 1,4 Q&A Session	<b>CLO 1,2,3,</b>		
<b>Week 3</b>	Discussion and analysis of a podcast.	Lecture / Class Discussion Albarran Ch.5, Class Activity Q&A Session & Case Study	<b>CLO 2,4,5</b>		
<b>Week 4</b>	Podcast Formats: Selecting Topics and Formats	Lecture / Class Discussion Albarran Ch.,6 Class Activity Q&A Session <b>Quiz 1</b>	<b>CLO 2,4,5,</b>		
<b>Week 5</b>	Research for Podcasts	Lecture / Class Discussion Albarran Ch.,7 Class Activity Q&A Session	<b>CLO 2,4,5,7,</b>		
<b>Week 6</b>	Writing the script, podcast voicing and	<b>Assignment 1</b> Lecture / Class	<b>CLO 1,2,4,5</b>		

	moderating, booking hosts and guests	Discussion Albarran Ch.,8 Class Activity Q&A Session			
<b>Week 7</b>	Casting, balancing divergent and informed points-of-view, pre-interviewing guests	Lecture / Class Discussion Albarran Ch.,2 Class Activity Q&A Session	<b>CLO 1,2,4,5</b>		
<b>Week 8</b>	The Art of the Interview: Choosing talking points for podcast, anticipating progression, timing and surprises	Lecture / Class Discussion Albarran Ch.,2 Class Activity Q&A Session	<b>CLO 2,4,5,</b>		
<b>Week 9</b>	<b><i>Mid Terms</i></b>				
<b>Week 10</b>	Voice Techniques : Introduction to audio recording and mixing, crew roles and responsibilities.		<b>CLO 1,2,3,4,</b>	<i>Underdstan ding of Internationa l organizatio ns and its impact on Pakistan in current scenario. Ability to analyse the current crisis and explain in a structured way</i>	<i>1 Quizzes, Mid Term Final Term Presentation on given topic</i>
<b>Week 11</b>	Publishing Podcasts		<b>CLO 1,2,3,4</b>		
<b>Week 12</b>	Promotion Techniques and Strategies	<b>Assignment 2</b> Lecture / Class Discussion Albarran Ch.,03  Class Activity Q&A Session	<b>CLO 2,3,5</b>		
<b>Week 13</b>	Finding Maintaining Audience for Podcasts	Lecture / Class Discussion Albarran Ch.,12 - 13  Class Activity Q&A Session <b>Quiz 3</b>	<b>CLO 1,3,5</b>		
<b>Week 14</b>	Employment and Entrepreneurship in the Podcasting	Lecture / Class Discussion Albarran Ch.,9	<b>CLO 1,3, 5,</b>	<i>Understandi ng and</i>	<i>Poster Presnetation of given issue</i>

	Industry	Class Activity Q&A Session		<i>ability to analyse the national, regional and global current issues</i>	<i>Case Studies</i>
<b>Week 15</b>	Legal Issues in the Podcasting Industry	Lecture / Class Discussion Class Activity Q&A Session	<b>CLO 5,3,4</b>		
<b>Week 16</b>	Voice Techniques : Introduction to audio recording and mixing, crew roles and responsibilities.	Lecture / Class Discussion Class Activity Q&A Session	<b>CLO 5,3,4</b>		
<b>Week 17</b>	<b>Presentations</b>				
<b>Week 18</b>	<b>Final Examination</b>				

### COURSE OUTLINE OF INTRODUCTION TO THEATRE

Course Name	<b>Introduction to Theatre</b>	Prepared On	
Course Code	MTB 319		
Credit Hours	3	Revised On	
Course Prereq. Code			
Course Type	Core Course      Elective		
Programme	BS Media Studies		
Semester			
<b>Instructor:</b>			

#### **Course Description**

The Introduction to Theatre course is designed to provide students with a thorough understanding and greater appreciation of the theatrical form. Readings and lectures will focus on the relationship between theatrical theory and practice, the various creative/production roles essential to theatre, as well as major artists and movements throughout theatrical history. Students will analyze major works of dramatic literature to offer context for course content, as well as perform a live theatrical performance on campus. Students will identify and define significant theatrical techniques, terms, trends and theories that are centerpieces of dramatic literature, theatrical performance and production, both today and across the theatrical timeline.

#### **BS Media Studies**

#### **Programme Objectives (POs)**

PO1: To inculcate refined knowledge of Media practices supported by theoretical knowledge in specialized fields of media for successful career.

PO2: To develop analytical skills and abilities to investigate, analyze, monitor and assess the content as

vigilant media managers.

PO3: To sharpen the communication and presentation skills of students using technology to meet international standards.

PO4: Enable students to effectively practice Media Ethics to play socially responsible role in the society.

PO5: To train students in soft and hard skills for competing in the media industry by finding solutions in a timely, efficient and creative manner.

PO6: To equip students with media research skills from brainstorming, observing and integrating new information, theorizing and research writing in a conducive research environment.

PO7: To sharpen entrepreneurial skills by writing, developing, producing, directing, displaying media content in a professional manner to add into socio-economic development of the country.

#### **Programme Learning Outcomes (PLOs)**

After completion of the degree, scholars will be

PLO1: Able to inculcate sufficient knowledge of Media Theories and industry to equip media studies students with relevant knowledge for successful careers in their fields of specialization.

PLO 2: Able to sharpen the critical thinking of media studies students to evaluate as well as monitor the situation through creative and innovative skills.

PLO3: Able to develop intellectual and analytical skills for identifying and resolving the issues as media managers.

PLO4: Enable students to effectively communicate and advocate their viewpoint.

PLO5: Able to demonstrate the ability to communicate effectively in writing and presenting thorough various forms of media technologies.

PLO6: Trained to develop socially responsible individuals and respect for culture and understanding ethics differences in their communicative media practices as part of corporate social responsibility.

PLO7: Able to provide technological as well as efficient communication skills that provide problem solving abilities and instill professional personality traits in students.

PLO 8: Able to work in the media research environment and apply statistical knowledge for producing research theses and articles as per international standards.

PLO9: Able to understand media industry's professional and managerial knowledge while bridging the gap between academia and industry linkages for media and socio-economic development.

PLO10: Able to equip with professional environment for enhancing entrepreneurial skills through practical projects as per the market needs and demands

#### **Course Learning Outcomes**

#### **Course Learning Outcomes**

Sr. No		PO 1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	
CLO1	Identify and apply the fundamental concepts, theories and roles associated with modern theatrical practice and professional theatrical production (i.e. suspension of disbelief, empathy, actor, designer, Broadway, Off-Broadway, etc.).											
CLO2	Examine and define the skills, considerations and tasks associated with the creation of theatre, both individually and as a collective whole.											

CLO3	Evaluate and articulate how theatre is a socially-responsive artform that creates meaning and fosters discussion, debate and community											
CLO4	Analyze and define the central characteristics of the theatrical artform, both generally and in relation to the history of the Pakistan and Global Cultures.											

CLO5	Analyze and evaluate the experience and the various components of live theatrical production, and articulate its value both verbally and in writing											
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### **Teaching & Learning Methodology**

Teaching and learning goes hand in hand. Therefore, this course is taught using a combination of lectures /presentations, Videos display, creative class exercises, guest speakers , filed work , BUTV and FM 102.6 hands on experience and student participation. Classroom discussions will form an important part of the course, and students are expected to contribute to the dialogue and able to make discourse analysis. In this spirit, it is expected that students will assume the responsibility for their own learning, which includes:

Regularly attending the class (atleast 75 % attendance is compulsory to take your final exam).

Respect & listen to the one who is talking.

Present their ideas in a clear and articulate way.

The teaching methodology will include:

**Group Discussions Of students**

**Self & Group Brainstorming session techniques**

**Practical Assignments on (Storytelling, shot compositions, creating mood through lighting, understanding various Theatre forms and structures)**

**Examples of theatre, videos, documentaries, Award Winning plays/theatres**

**Practicing/Preseting various styles of editing**

### **Suggested Readings**

Theatre: The Lively Art, 10th Edition By Edwin Wilson and Alvin Goldfarb

The Theatre Experience, 14th Edition By Edwin Wilson and Alvin Goldfarb

Theatre, Brief, 13th Edition ,By Robert Cohen, Donovan Sherman and Michelle Liu Carriger

### **Reference Book(s)**

Lectures (ppt/word) provided/uploaded on LMS.

Reference books and material will be provided then and there and will be uploaded on LMS.

**Magazine Articles/ Published Material/ Research Journals /Papers**

Students will be provided with updated/latest Journal articles/working papers

**Grading Policy**

	<b>Assessment Instruments</b>	<b>Percentage</b>	
	Quizzes	15%	
	Assignments / Activities	20%	
	Mid Term Exam	25%	
	Final Project	40%	

**Mid/Final Term Exams' Questions Addressing CLOs**

Subjective

Questions no1:

(CLOs 1,2,3,6)

Scenerio Based

Question no2:

(CLOs 1,2,3,4,5,7)

### Week-wise breakdown

<b>Week/ Session</b>	<b>Contents</b>	<b>Activities</b> Case Studies, Roleplays, Theatre Clips, Assignments, Research Papers, Field work & Presentations	<b>Course Learning Objectives Addressed</b>	
<b>Week 1</b>	<b>Course Introduction</b>  Course Outlines Approach to the Course  Understanding Theatre & life  Discussion & Question and Answer session	<ul style="list-style-type: none"> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO 1,2</b>	
<b>Week 2</b>	<b>Origins of Theatre</b>  The Origins of theatre, rituals, various cultures and their forms of presentation	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO 1,2,3</b>	
<b>Week 3</b>	<b>Theatre History</b>  Introduction to Greek theatre and corresponding playwrights (Sophocles, Euripides, Aeschylus, Aristophanes) - Aristotle's POETICS (6 components of drama) - Roman Theatre - Medieval Theatre - Elizabethan Era & Shakespeare	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Practical Demos</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> <li>• Assignment</li> </ul>	<b>CLO 1,2,4,6</b>	
<b>Week 4</b>	<b>Dramatic Literature</b>  Introduction to Genre & Style.  Trends of distinct historical periods.	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO 1,3,5,7</b>	
<b>Week 5</b>	<b>Play Analysis/Playwriting</b>  Play Structures	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> </ul>	<b>CLO 1,4,6</b>	

	<p>(episodic, climactic, circular, etc.)</p> <p>Basic play analysis (protagonist, antagonist, rising action, climax, dénouement) –</p> <p>-The PLAYRIGHT and process - The CRITIC and process</p>	<ul style="list-style-type: none"> <li>• Q/A Session</li> <li>• Theatre Clips for understanding</li> <li>Assignment</li> </ul>		
<b>Week 6</b>	<p><b>Genre</b></p> <p>Introduce and provide examples of different genres of playwriting and theatre-making: tragedy, comedy, farce, melodrama, tragicomedy, etc.</p>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Theatre Clips</li> <li>• Assignment</li> </ul>	<b>CLO 1,2,4,5,6,7</b>	
<b>Week 7</b>	<p><b>Theatrical Movements/Isms</b></p> <p>How does genre connect and develop out of moments or events in world/theatre history?</p> <p>– Realism, absurdism, surrealism, post-modernism, etc.</p> <p>- What genre encapsulates the majority of playwriting? i.e. Psychological Realism? What subcategories are born out of realism and why?</p>	<ul style="list-style-type: none"> <li>• Lecture,</li> <li>• Interactive</li> <li>• Discussion,</li> <li>• Demos,</li> <li>• Theatre Clips</li> </ul>	<b>CLO 1,2,4,6,7</b>	
<b>Week 8</b>	<p><b>Current Theatre</b></p> <p>What is happening in Pakistan now?"! – current trends and productions</p> <p>- Theatrical venues and</p>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Practical Demos</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> <li>• Assignment</li> </ul>	<b>CLO 2,3,5</b>	

	<p>vehicles</p> <ul style="list-style-type: none"> <li>- Broadway, Off-Broadway, Off-Off-Broadway, Community Theatre,</li> <li>Repertory/Regional theatre &amp; Educational Theatre</li> <li>Theatre Commercial vs. non-profit theatre model.</li> </ul>			
<b>Week 9</b>	<b>MIDTERM EXAM</b> <b>CLO 1,2,3,5,6,7</b>			
<b>Week 10</b>	<b>Acting/Performance</b> <p>The profession of an actor today.</p> <ul style="list-style-type: none"> <li>- Actor training (Stanislavsky &amp; Realistic Acting Techniques)</li> <li>- Theatre vs. film acting</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive</li> <li>• Discussion</li> <li>• Theatre Clips</li> </ul>	<b>CLO 1,4,6</b>	
<b>Week 11</b>	<b>Spontaneity/Reacting</b> <ul style="list-style-type: none"> <li>- Introduction to development of character, playing actions and given circumstances.</li> <li>- Actor toolbox: headshots, resumes, agents.</li> </ul>	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive</li> <li>• Discussion</li> <li>• Theatre Clips</li> </ul>	<b>CLO 1,2,3,6</b>	
<b>Week 12</b>	<b>Theatre Direction</b> <p>The profession of a stage director today.</p> <ul style="list-style-type: none"> <li>- Director training - Theater vs. film directing</li> <li>Introduction to the role of the director (casting, working with the producer and designers, blocking rehearsals).</li> </ul>	<ul style="list-style-type: none"> <li>• Theatre Preview</li> <li>• Making Review</li> <li>• Interactive Discussion</li> <li>• Q/A Session</li> </ul>	<b>CLO 1,2,3</b>	

		- Related tasks: choreography, fight choreography, dramaturgy.		
Week 13	<b>Theatrical Design &amp; Technical Theatre</b>  Introduction to the various roles within technical theatre. Designers: Scenic, Lighting, Costume, Sound. Additional roles: Stage Manager & ASM's, House Manager/Ushers, Choreographer and Musical Director.	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> </ul>	<b>CLO 1,2,3,6,7</b>	
Week 14	<b>Stage Configurations</b>  (Black Box, Proscenium, Thrust, Arena) - Parts of the theatre (House, stage, wings, fly system, booths, shop, dressing rooms)	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> <li>• Theatre Clips</li> </ul>	<b>CLO 1,2,3,6</b>	
Week 15	<b>Specialty Discipline</b>  Musical Theatre, Asian Theatre Traditions, Devised Theatre, Contemporary European Theatre, London & the West End, Shakespeare, Theatre of Latin America, Applied Theatre, Theatre of the Global South, etc.	<ul style="list-style-type: none"> <li>• Lecture</li> <li>• Interactive Discussion</li> </ul>	<b>CLO 1,2,4,5</b>	
Week 16	<b>Final Project Presentations (CLO 1,2,3,4,5,6,7)</b> <b>Guidelines – Final Group Projects</b> <b>Literature Review: Articles adopting media methodologies from the journals and producing along with class presentation</b>			

<b>Course Name</b>	Digital Media Literacy	<b>Prepared On</b>	
<b>Course Code</b>	MTB 419		
<b>Credit Hours</b>	3	<b>Revised On</b>	
<b>Course Prereq. Code</b>	None		
<b>Course Type</b>	Core Course      Elective		
<b>Programme</b>	BSTVBDM		
<b>Semester</b>			
<b>Instructor:</b>			

**Course Description:**

This course is designed to give learners strategies and to help them build critical thinking skills and attain information literacy. Learners will explore different information search process models and strengthen their online research skills. Learners will then create a model for use in an Internet-based lesson that is designed to teach students where to find information, how to evaluate it, and how best to apply it to the task at hand.

**Course Objectives:**

Learners will develop a comprehensive understanding of the theories and practices of language use. They will be able to communicate to diverse audiences in a variety of contexts and genres. The course will impart knowledge to enhance the ability of learners to use, analyze, and learn communication technologies. They will develop textual, visual, and verbal communication abilities.

**Programme Objectives POs:**

**PO 1:** To provide students with advanced knowledge & critical awareness regarding, concepts and theoretical approaches in the study of television production & Digital Media.

**PO 2:** To develop an understanding of the history, structures and current practices of the television industry & Digital Media, including the primary genres and the critical skills to present analysis and evaluation in written, spoken and visual forms.

**PO 3:** To enable students to explore and reflect on the practical implications of working in television broadcasting and digital media as well as enabling them to build an understanding of appropriate methodologies for further research in television studies.

**PO 4:** To equip students with the technical as well as methodological expertise to understand the dynamics of digital and social media technologies in the current times. In order to create and build career opportunities in digital media spectrum.

**PO 5:** Enable students to effectively practice Electronic and Digital Media Ethics to play socially responsible role in the society.

**Programme Learning Outcomes PLOs:****After completion of the degree, students will be****PLO 1:** Able to understand all types of visual and digital communication and their theoretical approaches of TV Broadcasting & Digital Media.**PLO 2:** able to understand historic evolution and developing the required skill set to produce various genres of TV and digital media including news, documentaries, dramas, music videos, interviews, talk shows, and educational Programmes etc.**PLO 3:** Equipped with the requisite skills of all major aspects of TV and Digital video production such as direction, set design, cinematography and editing.**PLO 4:** Able to have digital media expertise such as digital media analytics, digital storytelling, Vlogging and web designing etc.**PLO 5:** Able to create and disseminate all kinds of digital media content.**PLO 6:** Skilled in their entrepreneurial abilities and become practically self-sufficient in terms of their career choices in TV Broadcasting & Digital Media domains.**PLO 7:** Able to develop socially responsible behaviours with respect to social norms and culture and practice these values in their professional roles.

	Sr. No	Course Learning Outcomes	Programme Learning Outcomes PLOs						
			PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7
	CLO 1	Explain the information search process and describe how it can support critical thinking skills and increase information literacy.		x		x	x		
	CLO 2	Compare and contrast several information search process models. Adapt elements of the models to construct your own unique Information Search Process model.	x	x		x			
	CLO 3	Apply your knowledge of information search processes to Internet-based classroom activities. Integrate your knowledge of the information search process	x	x		x		x	
	CLO 4	Demonstrate an understanding of the place of digital media technologies in changes in professional practice in communication industries, as well as in practices of citizenship and everyday life.		x	x	x	x		x
	CLO 5	Predict an insight into changes in communication industries and professional practice related to			x	x	x	x	

		changes in communication technologies							
<b>CLO 6</b>	Demonstrate insight into digital communication practices in relation to work, leisure and citizenship; Demonstrate practical literacies in the use of a number of web-based communication platforms.			x	x	x		x	

#### **Teaching & Learning Methodology**

Teaching and learning goes hand in hand. The best learning occurs when teachers and students both came prepared to the class ready to deal with the issues that are presented. In this spirit, it is expected that students will assume the responsibility for their own learning, which includes:

Students are expected to regularly attend the class (at least 75 % attendance is compulsory to be eligible for the final exam), and follow these rules:

- i. Respect & listen to others when they're talking.
- j. Speak up at your turn. Raise your hand if you've a point to make.
- k. Work effectively in groups and complete assigned tasks in time.

Teaching methodology will include:

- Multimedia lectures
- Data-driven articles, case studies, class exercises
- Class activities and discussions

#### **Textbook:**

International Society for Technology in Education (ISTE). (2016). ISTE Standards for Students.

#### **Reference Book(s):**

Melda N. Yildiz, Melda N. Yildiz, and Jared Keengwe. 2015. Handbook of Research on Media Literacy in the Digital Age (1st. ed.). IGI Global, USA

	<b>Magazine Articles/ Published Material/ Research Journals /Papers</b>	
	<b>Grading Policy</b>	
	<b>Assessment Instruments</b>	<b>Percentage</b>
	Quizzes	15%
	Assignments + project	20%
	Mid Term Exam	25%
	Final Exam	40%

#### **Class Policy:**

##### **1. Class Attendance**

Minimum 75% attendance is required to appear in final exam.

## **2. Respecting Deadlines**

2.1 All assignments should be submitted on time & presentation should be delivered on the scheduled date. No work would be accepted after deadline.

## **3. Assessments & Exams**

**3.1** No retake for any course activity. In case of emergency properly processed application along with the relevant documents must be provided to the instructor.

## **4. Code of Conduct**

4.1 Students would NOT be allowed to enter late in class.

4.2 Cell phones must be turned off otherwise phones will be confiscated

<b>Course Name</b>	Drama Production	<b>Prepared On</b>	October ,2022
<b>Course Code</b>	403		
<b>Credit Hours</b>	3		
<b>Programme</b>	BS TV Broadcasting and Digital Media		
<b>Semester</b>	7		
<b>Instructor:</b>	Ahsan Mahmood (ahsan_mahmood13@yahoo.com)		

### **Course Description:**

"I think cinema, movies, and magic have always been closely associated. The very earliest people who made film were magicians."

- Francis Ford Coppola.

For Visual Screen, Drama serves as the primary tool for people to create a Magic World of their own and show it to million of people. Be it a story about a specific era of history, a present-day environment or an alien world which only exist in someone's mind. And you know what? Drama is not limited to video production only, it also includes live performances, Theatres, or even audio productions as well.

### **Course Objectives:**

- Understanding the changing forms of drama production and requirements of the modern media industry to adapt traditional production techniques in contemporary era.
- Conceiving, researching, and pitching drama production proposals that are different yet easy to execute.
- Developing and learning various elements of Drama Production Design to complement the complete process including lighting techniques, art of illusion, camera angles etc.
- Articulate closely with Production, pre and postproduction process and to prepare students to produce quality drama production for the current Television market.
- Develop students' understanding of crew roles and processes involved in the production of a drama in accordance with TV industry practices.
- Provide practical experience in the directing of actors.

- Provide understanding of casting, budgeting, research, performance, and production management
- To prepare students to produce quality drama production for the current Television market

**Programme Objectives POs:**

**PO 1:** To provide students with advanced knowledge & critical awareness regarding, concepts and theoretical approaches inthe study of television production & Digital Media

**PO 2:** To develop an understanding of the history, structures and current practices of the television industry & Digital Media, including the primary genres and the critical skills to present analysis and evaluation in written, spoken and visual forms.

**PO 3:** To enable students to explore and reflect on the practical implications of working in television broadcasting and digital media as well as enabling them to build an understanding of appropriate methodologies for further research in television studies.

**PO 4:** To equip students with the technical as well as methodological expertise to understand the dynamics of digital and social media technologies in the current times. In order to create and build career opportunities in digital media spectrum.

**PO 5:** Enable students to effectively practice Electronic and Digital Media Ethics to play socially responsible role in the society.

**Programme Learning Outcomes PLOs:**

**After completion of the degree, students will be**

**PLO 1:** Able to understand all types of visual and digital communication and their theoretical approaches of TV Broadcasting& Digital Media.

**PLO2:** able to understand historic evolution and developing the required skill set to produce various genres of TV and digitalmedia including news, documentaries, dramas, music videos, interviews, talk shows, and educational Programmes etc.

**PLO 3:** Equipped with the requisite skills of all major aspects of TV and Digital video production such as direction, set design,cinematography, and editing.

**PLO 4:** Able to have digital media expertise such as digital media analytics, digital storytelling, Vlogging and web designingetc.

**PLO 5:** Able to create and disseminate all kinds of digital media content.

**PLO 6:** Skilled in their entrepreneurial abilities and become practically self-sufficient in terms of their career choices in TVBroadcasting & Digital Media domains.

**PLO 7:** Able to develop socially responsible behaviours with respect to social norms and culture and practice these values intheir professional roles.

## **COURSE LEARNING OUTCOMES**

**"We must all do theatre to find out who we are and to discover who we would become." (Augusto Boal)**

**"I started as Model builder (Miniature Set builder) at the Set of Director Roger Corman and then progressed to production design. But I always kept watching that GUY who was moving the actors and setting up the shots.(James Cameron)"**

- To equip the desiring students with relevant skills, technique and tools to address the complex reality of DramaProduction for TV, Theathere or Radio.

To enable the desiring students to acquire roles such as Assistant Art Director, Art Director and ultimately ProductionDesigner in relevant industries

Course Learning Outcomes		Programme Learning Outcomes PLOs						
Sr.No		PLO1	PLO 2	PLO3	PLO4	PLO5	PLO6	PLO 7
<b>CLO1</b>	Create comprehensive and persuasive Drama production proposals.	×		×	×	×		
<b>CLO2</b>	Be able to initiate preliminary Pre-Production, Production and Postproduction process of a drama on their own.	×		×	×	×		
<b>CLO3</b>	To be able to distinguish between different production forms such as Drama and Film production.	×		×				
<b>CLO4</b>	To be able to take any role in Drama Production Industry.		×	×	×	×		

## **Teaching & Learning Methodology (The Constitution)**

Learning is an amazing- process. In Learning, we will TEACH and In Teaching You will Learn. The Philopshy of Our Classwill be

**"Tell me and I forget, teach me and I may remember, involve me and I learn." The Quaid E Azam of USA**

Here are the 14 Points For Class BSTV 7 approved with consensus.

- 1) **RESPECT** is the first step towards Learning. Always Respect the opinion of Teacher and your Colleagues.
    - No one is allowed to laugh on any opnion or any question from a college. Each student is equal stakeholder inclass and it is not appreciated that he/she hold themselves back from class participation due to unhealthy environment.
    - Students are encouraged to ask as many as questions as they have.
    - Students are allowed to talk with each other during the class if and when necessary but are not allowed to talkwhen one of their colleagues is discussing any topic or questioning. This will result in the penality of -1 marks.
  - 2) **Willingness** is the second step of learning. Always Stay Foolish & Stay Hungry during the class. You may learn asingle aspect which can make your life.
  - 3) **ETHICS** are foremost step of Learning. When You "LEARN the difference between what you have a right to do and what is right to do", there will be no holding back to become a better human and brighter Artist.
    - Marks are secondary to learning. Students are encouraged to help others to complete their tasks and assignments.
    - Plagiarism in assignments is completely allowed. Student who copied the content of other colleague should havethe **courtesy** to inform in the beginning of assignment. He/ She will be allowed to submit the assignment in Handwritten form and least passing marks will be awarded along with +1 mark for honesty and truth.
    - If any student is not able to submit the assignment in due time due to any reason, 2 more days will be providedproviding the cause is accurate.
    - Students are advised to adapt and maintain discipline in class which is ethically,religiously and socially acceptable
    - Marks are secondary to learning. Students are encouraged to help others to complete their tasks and assignments.
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- Marks are secondary to learning. Students are encouraged to help others to complete their tasks and assignments.
  - Plagiarism in assignments is completely allowed. Student who copied the content of other colleague should havethe **courtesy** to inform in the beginning of assignment. He/ She will be allowed to submit the assignment in Handwritten form and least passing marks will be awarded along with +1 mark for honesty and truth.
  - If any student is not able to submit the assignment in due time due to any reason, 2 more days will be providedproviding the cause is accurate.
  - Students are advised to adapt and maintain discipline in class which is ethically,religiously and

socially acceptable

5) **Mandatory Laws and Regulations of BU:** In addition to above mentioned steps, the mandatory rules of BU regarding Course Scheme, Attendance and other issues will be followed.

6) *Teaching methodology will include but is not limited to*

- *Short Presentations from every student*
- *Articles / Case Studies / Scenario Analysis*
- *Class Activities & Discussions*
- *Students' observations and Achi Batein*
- *Multimedia Lectures*

**Note : You don't have to take notes of these Points. They will not come in exams But you should learn these points**

**by, they will definitely assist in the exam of life waiting . Thank you for your Concentration, that you didn't notice there isn't 4<sup>th</sup> point in the list.**

**Reference Book(s):**

*The visual Story Bruce Block*

*Directing Film Techniques and Aesthetics Michael Rabiger*

*Directing Screen Performances Robert Klenner The gift of Theatre*

*Drama and Theatre Studies Richard Vergette Television Production Handbook by Herbert Zettl*

*Introduction to Media Production The Path to Digital Media Production Fourth Edition Robert B.*

*Musburger Gorham KindeDIGITAL TELEVISION PRODUCTION A handbook Jeremy Orlebar*

*Television Production Fourteenth Edition GERALD MILLERSON JIM OWEN*

**Magazine Articles/ Published Material/ Research Journals /Papers**

- *Television Drama Series, INCORPORATION OF FILM NARRATIVE INNOVATION: THE CASE OF 24 Producing the Play*

#### **Grading Policy**

	<b>Assessment Instruments</b>	<b>Percentage</b>	
	Quizzes	15%	
	Assignments + project	20%	
	Mid Term Exam	25%	
	Final Project	20%	
	Final Exam	20%	

Contents	Activities in the Class	Learning Objectives Addressed
<b>Week 1 :</b> Introduction of course. Student Introduction and Course Explanation <ul style="list-style-type: none"> <li>• Knowing history of subject's students already learned.</li> <li>• Preparing Course outline</li> </ul>	Class Activities and Interaction.	<b>CLO 1,2</b>
<b>Week 2 :</b> Course outline discussion Rules and Regulations briefed Introduction of Course along with Teaching methodology explained	Class activities and Lecture	<b>CLO 1,2</b>
<b>Week 3</b> <b>History and Origin of Drama</b> <ul style="list-style-type: none"> <li>a. Historical development of drama</li> <li>b. Theatrical resemblance with TV Drama</li> <li>c. Greek Theatre – origin of drama</li> <li>d. Overview of drama Production</li> <li>e. Process and Evolution</li> </ul>	Students Presentation & LectureClass Activities	<b>CLO 1,2,3,4</b>
<b>Week 4</b> <b>Understanding TV Drama</b> <ul style="list-style-type: none"> <li>a. Features of the TV drama</li> <li>b. Types of TV Drama</li> <li>c. Current Dynamics - Genres</li> <li>d. Basic Dramatic Structures</li> <li>e. What makes drama different from other forms of Art</li> </ul>	Students Presentation & LectureClass Activities	<b>CLO 2,3</b>
<b>Week 5</b> <b>Drama Production Process.</b> <ul style="list-style-type: none"> <li>a. What is drama?</li> <li>b. The television production process</li> <li>c. Production Models</li> <li>d. TV Drama Production - Single Camera Techniques</li> <li>e. Types of TV Drama - one-off single drama, mini-series, serial, series and soap</li> <li>f. Producing and directing</li> <li>g. Lighting &amp; Camera Techniques: Different from other genres</li> </ul>	Students Presentation & LectureClass Activities	<b>CLO 1,2,3</b>

<b>Week 6</b> <b>Story Telling Techniques</b> a. The art of story telling b. Selection of stories c. Stories containing dramatic elements d. Dramaturgy of the screen e. The art of converting a story into a dramatic script	Students Presentation & Lecture Class Activities	<b>CLO 1,2,3</b>
<b>Week 7</b> <b>Visualization – Visual Communication</b> a. TV being a visual medium b. Scene & Shot Division c. Mise en scene; the arrangement of different elements of narratives in a scene d. Importance of Ambiance e. Visual language: angles science f. Tone, color, Rhythm, Movement	Students Presentation & Lecture Class Activities	<b>CLO 1,2,3</b>
<b>Week 8</b> <b>Drama Production: Techniques &amp; Aesthetics</b> a. Dramatic Composition b. Production design c. Sound effects in TV drama d. Drama Production styles	Students Presentation & Lecture Class Activities	<b>CLO 3,4</b>
<b>Week 9 : Mid Term Exams</b>		
<b>Week 10</b> <b>The Role of Director &amp; the Process</b> a. A Director Trait's and Vision b. Modern Directors & their Techniques c. Auditioning and selection criteria of team d. Production crew- Functions and skills e. How to manage Key Crew Roles: The Producer, Writer, Cameraman, Film Editor f. Budgeting g. Selection of Location h. Designing sets i. Logistics involved in actual shooting j. Essential Guide to Planning a Drama Shoot k. <b>Selection of topic and drama type for final project</b>		<b>CLO 4</b>

<b>Week 11</b> <b>Directors &amp; Their Actors</b> a. Acting methods b. Directing Actors c. Group formation and Preproduction Process		<b>CLO 4</b>
<b>Week 12</b> <b>The Language of Drama Editing</b> a. Dramatic Post Production b. Dramatic editing and pace c. Background music d. Credits and show packaging e. Production of promotional elements f. Setting the stage for dialogue g. Editing & Completion h. Introduction to VFX Producing i. <b>Script Approval and rest of Pre-Production Process</b>		<b>CLO 1,2,3</b>
<b>Week 13 Pitching Drama</b> a. Proposal Making for Production Companies Production Process for Final Project		<b>CLO 1,2,3</b>
<b>Week 14</b> a. Drama Production Terminologies & Jargons Raw footage Review for final Project		<b>CLO 1,2,3</b>
<b>Week 15</b> Final Project Production Process • <b>First draft view and suggestions for Final Cut</b>		
<b>Week 16</b> Revision of Course • <b>Final Cut of final project</b>		
<b>Week 17</b> Revision of Course		
<b>Finals</b>		

**NEW PROGRAMME PROPOSAL**  
**MS IN CRIMINOLOGY**

<b>A. ACADEMIC DETAILS</b>	
1	<b>Faculty/Department:</b> Department of Humanities and Social Sciences, Bahria University, Islamabad Campus (BUIC)
2	<b>Name of the Programme:</b> Master of Science (MS) in Criminology
3	<b>Mission of the Programme:</b> <ul style="list-style-type: none"> <li>● To help individuals understand the sprouting criminal behavior in Social, Economic political, technological, and physical milieu in order to respect the dignity and essential worth of all individuals</li> <li>● To value the need of conformity and to formulate the policies that reject discrimination, bigotry, and violence in society.</li> </ul>
4	<b>Objectives of the Programme:</b> <ul style="list-style-type: none"> <li>● To equip the students with classical and contemporary criminological knowledge and perspectives for understanding crimes and criminality in society.</li> <li>● To prepare students with a sound criminological academic foundation that help them to think logically, question critically, communicate clearly, act resourcefully, and live ethically.</li> <li>● To develop thinkers, leaders, professionals and innovators whose, subsequent efforts will benefit the human social world by eliminating the criminality.</li> <li>● To impart criminological discourses &amp; techniques among students and professionals for understanding the problems and issues of deviancy.</li> <li>● To prepare criminologists who can contribute to socio-cultural growth, building of national character and sustainable development of the country.</li> </ul>
5	<b>Outcomes of the Programme:</b> <ul style="list-style-type: none"> <li>● To make the students and professionals healthy and competent social members of the society who may serve humanity in a better way thereof.</li> <li>● To equip professionals with adjacent &amp; evolving tactics, patience, tolerance and better communication skills through criminological knowledge.</li> <li>● To enable students for pursuing a professional and successful career in their field of specialization.</li> </ul>
6	<b>Rationale for the Programme:</b> Criminology is one of the fastest growing fields in Pakistan. A couple of years back, Higher Education Commission of Pakistan mobilized universities to launch criminology departments in different universities of the country. In response, several public sector universities launched their MSc criminology Programmes. University of The Punjab Lahore, PMAS Arid Agriculture University Rawalpindi, University of Peshawar, Sindh University and University of Karachi are examples to start the Department of Criminology and offered MSc (16 years degree). However, MS/MPhil Programmes are only available in few of those departments. Further, many of law enforcement agencies are centrally controlled, based in Islamabad and they are in dire need to skillfully train their personnel. MS Criminology is a specialized Programme that would help to cater their needs of professional training, equip them

	with the techniques of modern criminal investigation and help them scientifically understanding the deviance and antisocial behavior. Bahria University Islamabad is one of the top research universities that can produce high skilled graduates, professionals, and trainers in the field of criminology. It is hoped that it will attract the professionals from LEAs that aspire to enhance their credentials and train themselves pedagogically.
7	<b>Brief Description of the Programme:</b> Criminology is one of the most pivotal branches of Sociology and is having a great demand within the contemporary Pakistani society. It is etiological analysis of deviancy, crime, criminal behavior and crime detection. It's systemic and scientific study of making of law, breaking of law and reactions of society towards latter. The department of Humanities & Social Sciences is a continuously growing department of Bahria University aiming to strengthen itself day by day. Currently, the department offers three independent MS Programmes namely International Relations, Government and Public Policy and Applied Anthropology. The department of HSS has planned to launch the full fledge separate degree Programme i.e. MS in Criminology w.e.f. Fall-2023. It has been realized that a larger number of students and professionals mainly from Law enforcement agencies aspire to do MS Criminology for enhancing their academic and research capabilities. In twin cities only QAU is currently offering and successfully running this Programme. MS in Criminology not only prepares the scholars for their intellectual and professional development but also offers a greater scope to the graduates in the existing job market apart from academia, particularly in Law enforcement agencies. This degree Programme has high market reputation in terms of its employability as the graduates in Criminology have scope in Law enforcement agencies such as Police, ANF, FIA, NAB, Military Intelligence, Intelligence Bureau, ISI, Naval Intelligence, PAF Intelligence, Crime Scene Investigation and Forensic Department etc. It's also having scope in Prisons Department, academics, research, civil services, management, NGOs and administration too. It is an excellent spring board to a variety of careers. Moreover, the Programme will not only bring revenue to university but also a great source of marketing of the institution as it will provide a substantive portion of such students to professional segments of the society.
8	<b>Duration:</b> 2 Years (4 Semesters)
9	<b>Venue(s): On Site/Off Site/Both On &amp; Off Site</b> ( <i>Tick one; if Off Site, give details</i> ) Department of Humanities and Social Sciences, Bahria University, Islamabad Campus, Shangrilla Road Islamabad.
10	<b>Programme Scheduling Format:</b> Twice a year
11	<b>Proposed Date of Commencement:</b> Fall- 2023 (Subject to NOC from HEC)
12	<b>Mode of Study/Examination:</b> Semester System
13	<b>Additional Faculty Member(s) Required:</b> ( <i>Indicate if there is a requirement for additional faculty members, fulltime/visiting, along with qualifications.</i> ) The department has 02 PhD PFM's in the relevant field. 02 VFM's will be hired according to need and expertise.
14	<b>Additional Skilled-Worker(s) Required:</b> ( <i>Indicate if there is a requirement for additional Skilled Staff, fulltime/part-time, along with their qualifications/skill sets.</i> ) <b>Nil</b>
15	<b>Additional Classroom(s) required:</b> ( <i>The requirement is to include the number of classrooms and their capacities.</i> ) <b>Nil</b> (Existing classrooms of HSS department will be utilized)
16	<b>Additional Requirement for Laboratories:</b> ( <i>The requirement is to include the number of laboratories, their equipment and their capacities.</i> ) <b>Nil</b>

17	<b>Additional Requirement for Books, Subscriptions, Memberships to Online Research Sites/ Repositories:</b> Yes (Around 0.2 Million/annum)
18	<b>Minimum Entry Level:</b> 16 years of education in Social Sciences (Preferably), Natural Sciences, Management Sciences or any related fields (minimum 2.5 CGPA or 50 % marks, where CGPA is not mentioned) from HEC recognized educational institutes.
19	<b>Admission Criteria:</b> As per HEC/BU Policy
20	<b>Additional/Different Examination Requirement</b> <i>(Indicate if there will be any examination requirement, additional to or different from the BU Academic Rules or Examination Policy in vogue).</i> As per BU Policy
21	<b>Number of Admissions Expected for First Intake:</b> 10-12 students
22	<b>Number of Admissions Planned/Expected for Subsequent Intakes:</b> Up to 15 students in total are expected in each subsequent semester
23	<b>Referred by:</b> (delete which is inapplicable) <b>36<sup>th</sup> FBOS: Held on February 13-14, 2023:</b>
24	<b>Complete Plan of Studies, inclusive of complete Roadmap:</b> (Attach as Annex 'A') Attached
25	<b>Course Outlines, Descriptions, Pre-Requisites &amp; Readings (Compulsory &amp; Recommended)</b> (Attach as Annex 'A') Attached
<b>B. FINANCIAL DETAILS</b>	
1	<b>Source of Funding:</b> <b>BU: Fully</b>
2	<b>Degree Duration:</b> <u>Annual or Semester System:</u> Semester System: Minimum 04 semesters (2 years) <b>Total Number of Credit Hours:</b> 30
3	<b>Expected fee to be charged based on Cost &amp; Benefits Analysis:</b> (show working) Fee is to be in uniformity with other Masters Programmes of HSS Department.
4	<b>Expected Number of students for 1<sup>st</sup> &amp; 2<sup>nd</sup> Intakes:</b> 10-12 students
5	<b>Expected Earning from first two Intakes (B5):</b> (Show working) $96,220 \times 10 \text{ (1}^{\text{st}} \text{ intake)} + 96,220 \times 12 \text{ (2}^{\text{nd}} \text{ intake)} = 0.9622 \text{ Million} + 1.154 \text{ Million} = 2.116 \text{ Million}$
6	<b>Expected Earnings for the Next Five Years (B6):</b> (show working) One semester earning: $12 \times 96,220 = 1.154 \text{ Million}$ Five years earning= $1.154 \text{ Million} \times 10 \text{ semesters} = 11.54 \text{ Million}$
7	<b>Total Estimated Salaries of all Additional Human Resources per annum (B7):</b> (Show working) Salary of two PhD VFM = $100000 \times 04 = 0.4 \text{ Million/annum}$
8	<b>Cost of Additional Laboratory Equipment/Tools (B8):</b> (show working) <b>Nil</b>
9	<b>Cost of Additional Classrooms (B9):</b> (Include furniture, technical aids etc) <b>Nil</b>
10	<b>Cost of Additional Books, Subscription &amp; Memberships to on-line Sites/Repositories (B10):</b> (show details) <b>0.2 Million/annum</b>
11	<b>Off-Site rental Expenses and Cost of other Fixtures (B11):</b> (Show details) <b>Nil</b>
12	<b>Miscellaneous Expenses required for Starting the Programme (B12):</b> <ul style="list-style-type: none"> <li>- Advertisement:</li> <li>- Printing &amp; Stationery:</li> <li>- Admin Cost:</li> </ul> Any other - <b>Total:</b> 0.2 million
13	<b>Annual Recurring Expenditures in Subsequent Years (B13):</b> <ul style="list-style-type: none"> <li>- Salaries: 0.4M</li> </ul>

	<ul style="list-style-type: none"> <li>- Rentals: Nil</li> <li>- Subscriptions/Memberships: 0.2 M</li> <li>- Advertisements, Printing &amp; Stationery, Admin Cost: 0.2 M</li> <li>- Any other -</li> <li><b>Total: 0.8 Million</b></li> </ul>
14	<b>Total Cost of the Programme (B14):</b> [Add B (7) to B (12)] B (7) -B (12) = 0.4 Million+0.2 Million+0.2Million = 0.8 Million
15	<b>Net Cost of the Programme (B15):</b> [Subtract B (1) from B (14)] B (14) – B (1) = 0.8 Million - 0 = 0.8 Million
16	<b>Net Earnings in First Year (B16:</b> [Subtract B (15) from B (5)] B (5) – B (15) = 2.116 Million- 0.8 Million = 1.316 Million
17	<b>Projected Annual Gross Earning in Subsequent Years (B 17):</b> ( <i>show details &amp; working; add 10% towards all expenses in subsequent years.</i> ) 1.236 Million (incremental)
18	<b>Projected Annual Net Earning in Subsequent Years:</b> [Subtract B (13) from B (17)] B (17) – B (13) = 1.236 million – 0.8 million = 0.436 Million

**SCHEME OF STUDIES – MS IN CRIMINOLOGY**

Semester/Year	Name of Subject	Credits
<b>First</b>	Core i- Philosophy of Social Sciences	3
	Core II- Deviance, Crime and Criminality	3
	Optional I	3
	Optional II	3
		<b>12</b>
<b>Second</b>	Core III- Research Methods in Criminology	3
	Core IV- Theories in Criminology	3
	Optional III	3
	Optional IV	3
		<b>12</b>
<b>Third &amp; fourth</b>	Thesis (Ths-600)	6
<b>Total</b>		<b>30</b>

**CORE COURSES**

S. No.	Course Code	Course Title	Credit Hours
1	CRM-501	Philosophy of Social Sciences	03
2	CRM-502	Deviance, Crime and Criminology	03
3	CRM-503	Research Methods in Criminology	03
4	CRM-504	Theories in Criminology	03

**OPTIONAL COURSES**

S. No.	Course Code	Course Title	CH
1	CRM-505	Globalization and crime	03
2	CRM-506	Statistics in Criminology	03
3	CRM-507	Creative and Scientific Rhetoric in Criminology	03
4	CRM-508	Introduction to Pakistan Penal Code, Criminal Procedure Code and Crime	03
5	CRM-509	Penology, Penal system and Rehabilitation	03
6	CRM-510	Criminal Justice and Management System	03
7	CRM-511	Drugs and Crime	03
8	CRM-512	Environmental Criminology	03
9	CRM-513	Ethnicity, Sectarianism and hate Crime	03
10	CRM-514	Forensic science and crime detection	03

11	CRM-515	Investigation and Crime Detection	03
12	CRM-516	Irregular and illegal Migration	03
13	CRM-517	Juvenile Delinquency	03
14	CRM-518	Crime, security and Media in Pakistan	03
15	CRM-519	Terrorism and Violence	03
16	CRM-520	Cyber Crime	03
17	CRM-521	Police and Policing	03

**PROPOSAL FOR LAUNCHING**  
**MS IN MEDICAL LABORATORY SCIENCES**

<b>A. ACADEMIC DETAILS</b>	
1	<b>Faculty/Department:</b> Bahria University Health Sciences Post Graduate Institute (BUHS-PGI)
2	<b>Name of the Programme:</b> Master of Science in Medical Laboratory sciences (MS-MLS)
3	<b>Mission of the Programme:</b> BUHSC-PGI mission: To attain highest standards in knowledge through creativity driven health professional skills of learning, teaching and transformative research involving national and international linkages for prevention, diagnosis, treatment of human illnesses and community care The mission of MS Programme in Medical Laboratory science is to prepare skillful postgraduate lab professionals with advanced scientific knowledge and expertise to deliver quality health care services in the field of laboratory sciences
4	<b>Objectives of the Programme:</b> MS MLS Degree Programme is designed to : <ul style="list-style-type: none"> <li>• Provide opportunity of postgraduate education to the bachelors of lab sciences</li> <li>• Provide a status of recognition in the health care delivery system through capacity building</li> <li>• Prepare a team of postgraduate clinical laboratory professionals who can effectively assist senior health professionals in the delivery of quality health services.</li> <li>• Prepare medical laboratory experts with the advanced knowledge and abilities needed for certification by nationally recognized professional agencies at par with international standards.</li> <li>• Interpret and evaluate patient results and suggest or select appropriate additional testing.</li> <li>• Design, implement and evaluate resource management strategies to maintain optimal laboratory efficiency</li> <li>• Use educational methods to present information and develop instructional materials.</li> <li>• Use research methods to design, conduct and disseminate results of studies on new technologies, procedures or diagnostic correlations in molecular science</li> </ul>
5	<b>Outcomes of the Programme:</b> <b>At the end of the Programme medical lab professionals will be able to</b> <ul style="list-style-type: none"> <li>• Apply the expertise in performing , analyzing and reporting the the full range of clinical laboratory tests in areas such as hematology, clinical chemistry, immunohematology, microbiology, serology/immunology, coagulation, molecular, and other emerging diagnostics.</li> <li>• Facilitate diagnosis of diseases as team member with physicians.</li> <li>• Interpret and evaluate patient results and suggest or select appropriate additional testing.</li> <li>• Efficiently apply clinical lab administration including financial, operations, marketing, and human resource management of the clinical laboratory set up</li> <li>• Provide cost-effective, high-quality, value-added laboratory services.</li> </ul>

	<ul style="list-style-type: none"> <li>• Exhibits the qualities of effective teacher to deliver the quality of medical lab education</li> <li>• Produce active researchers in the field of medical lab sciences for generating innovative concepts and ideas.</li> <li>• Continue to learn throughout their professional careers after graduation</li> <li>• Apply educational methodologies and terminology at a level to train/educate users and providers of laboratory services.</li> <li>• Apply knowledge of principles and practices of administration and supervision applied to clinical laboratory science to improve the efficiency of the workplace</li> <li>• contribute to quality assurance/quality improvement plans and collaborative healthcare teams to ensure quality healthcare delivery to the community.</li> </ul>
6	<p><b>Rationale for the Programme:</b></p> <p>Medical laboratory professionals are the vital members of the health care team. Doctors make many of their decisions about diagnosis and treatment of disease based on laboratory test results and about 70 percent of treatment decisions are based on these results.</p> <ul style="list-style-type: none"> <li>• This Programme will help to meet the BUHSC-PGI vision 2030 to start postgraduate education in allied health sciences in Fall 2023-24.</li> <li>• This Programme will facilitate to fulfil the indispensable need of specialized postgraduate education in the field of medical lab sciences due to lack or less opportunities nationwide.</li> <li>• This Programme will provide excellent opportunity to laboratory technologists already working in clinical labs and hospitals to establish their career as senior medical lab technologist and can earn a decent salary.</li> <li>• This Programme will provide a career path to the Medical lab technology students and lab workers with advanced research opportunities as scientists, which can boost their professional career and enhances the promotion chances up to senior and supervisor level.</li> <li>• This Programme will also enable the allied health science department to fully utilize its preexisting laboratory resources and PhD qualified faculty for future growth of allied health sciences <ul style="list-style-type: none"> <li>• This Programme will develop specialized medical lab postgraduates for provision of quality health care in the province and country</li> </ul> </li> </ul>

7	<p><b>Brief Description of the Programme:</b></p> <p>Bahria University Health Sciences Campus is offering Master of Science (MS) in Medical Laboratory Sciences in the field of Clinical Laboratory Science/Clinical Pathology/Clinical Chemistry / Medical Biochemistry. This is two Year Degree Programme consisting of Core (compulsory) courses and elective courses. The Programme of study is as follows.</p> <table border="1"> <tr> <td><b>Course title</b></td><td>MS (2 year degree Programme) in Medical Lab Sciences</td></tr> <tr> <td><b>Course duration</b></td><td>2 YEARS (minimum)</td></tr> <tr> <td><b>Study system</b></td><td>SEMESTER SYSTEM</td></tr> <tr> <td><b>No. of regular semesters</b></td><td>4</td></tr> <tr> <td><b>Semester Duration</b></td><td>Minimum of 16 weeks of teaching excluding examinations</td></tr> <tr> <td><b>Total credit hours</b></td><td>30</td></tr> <tr> <td><b>Number of courses per semester</b></td><td>5-6</td></tr> <tr> <td><b>Course Load per Semester</b></td><td>9-12 credit hr</td></tr> <tr> <td><b>**Summer Session Only for deficiency/failure/repetition</b></td><td>**Summer Session Only for deficiency/failure/repetition</td></tr> <tr> <td><b>Course Title</b></td><td> <ul style="list-style-type: none"> <li>• Table 1 MS Medical Lab Sciences (with thesis/ course work)</li> </ul> </td></tr> </table>	<b>Course title</b>	MS (2 year degree Programme) in Medical Lab Sciences	<b>Course duration</b>	2 YEARS (minimum)	<b>Study system</b>	SEMESTER SYSTEM	<b>No. of regular semesters</b>	4	<b>Semester Duration</b>	Minimum of 16 weeks of teaching excluding examinations	<b>Total credit hours</b>	30	<b>Number of courses per semester</b>	5-6	<b>Course Load per Semester</b>	9-12 credit hr	<b>**Summer Session Only for deficiency/failure/repetition</b>	**Summer Session Only for deficiency/failure/repetition	<b>Course Title</b>	<ul style="list-style-type: none"> <li>• Table 1 MS Medical Lab Sciences (with thesis/ course work)</li> </ul>
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8	<b>Duration:</b> 2 years																				
9	<p><b>Venue(s): On Site ✓ /Off Site/Both On &amp; Off Site</b> (tick one/strike-through the ones not applicable; if Off Site, give details)</p> <p>On Site</p>																				
10	<p><b>Programme Scheduling Format:</b></p> <ul style="list-style-type: none"> <li>• <u>Morning</u> ✓ /Evening/Weekend (tick one/strike-through the ones not applicable) <u>Morning</u></li> <li>• Bi-Semester ✓ /Trimester/Semester+Summer Session/Annual/Bi-Annual (tick one/strike-through the ones not applicable)</li> </ul>																				
11	<p><b>Proposed Date of Commencement:</b> Fall 2023 subject to HEC NOC to launch proposal</p>																				
12	<p><b>Mode of Study/Examination:</b> Semester system</p>																				
13	<p><b>Additional Faculty Member(s) Required:</b> (Indicate if there is a requirement for additional faculty members, fulltime/visiting, along with qualifications.)</p> <p>1) Visiting faculty is required.</p>																				
14	<p><b>Additional Skilled-Worker(s) Required:</b> (Indicate if there is a requirement for additional Skilled Staff, fulltime/part-time, along with their qualifications/skill sets.)</p> <p>No additional skilled worker is required.</p>																				
15	<p><b>Additional Classroom(s) required:</b> (The requirement is to include the number of classrooms and their capacities.)</p> <p>One class room or well-equipped lecture hall of 10 student capacity is required.</p>																				
16	<p><b>Additional Requirement for Laboratories:</b> (The requirement is to include the number of laboratories, their equipment and their capacities.)</p> <p>There are three kinds of Lab required.</p> <p>1) Basic Research Lab esixts in form of Multidisciplinary Research Lab      2) Skill Lab      3) PNS Shiffa clinical labs required for lab internship and course lab performance</p>																				

17	<b>Additional Requirement for Books, Subscriptions, Memberships to Online Research Sites/ Repositories:</b> <ol style="list-style-type: none"> <li>1. Manual of Laboratory medicines AFIP, Third Edition 2005 Publication Armed Forces Institute of Pathology Rawalpindi Pakistan.</li> <li>2. District laboratory practice in tropical countries Vol. 1 &amp; 2 Monica Cheesbrough Cambridge University Press Low Price Edition 2000.</li> <li>3. Clinical chemistry: principles, methods &amp; interpretation 2nd Edition by Prof. Dr. Abdus Salam Khan Gandapur 2003. Tahir Instruments Ltd Singapura Road Lahore-Pakistan</li> <li>4. Medical instrumentation By Kaplin, edition 5<sup>th</sup></li> <li>5. Foundation of Clinical Research by Portney LG Walkais MP in 1993, Publisher by Appleton and lauge USA</li> <li>6. Practical Hematology, Dacie J.V. 10th edition</li> <li>7. John A. Koepre, Guide to clinical laboratory diagnosis 3th edition 2013</li> <li>8. A handbook of "Laboratory Quality Management System" by World Health Organization, 2011, ISBN 978 92 4 154827 4</li> <li>9. Henry's Clinical Diagnosis &amp;Management by Laboratory method.</li> </ol>
18	<b>Minimum Entry Level: BS (four years) in / MSc in relevant field</b> Minimum 16 years of education with BS in Medical Lab Technology/Clinical Lab Science/ Biochemistry/ Microbiology/Pathology or MSc or equivalent degree from an HEC recognized university in the relevant discipline/field of study with a minimum CGPA 2.5/4.0 or 50% marks where CGPA is not given.
19	<b>Admission Criteria:</b> <b>For Allied Health Sciences</b> All candidates seeking admission are required to appear in entrance test which will be conducted by Bahria University on particular time and date with 50 % passing marks in a BU test
20	<b>Additional/Different Examination Requirement</b> <i>(Indicate if there will be any examination requirement, additional to or different from the BU Academic Rules or Examination Policy in vogue)</i> Examinations will be done as per BU rules for MS/MPhil rule book.
21	<b>Number of Admissions Expected for First Intake:</b> 10-15
22	<b>Number of Admissions Planned/Expected for Subsequent Intakes:</b> 10-15
23	<b>Referred by:</b> <b>FBOS:</b> ( <i>Indicate the FBOS meeting reference and Item No,</i> <i>Approved in 7<sup>th</sup> DBOS and 26<sup>th</sup> FBOS</i> <b>Competent Authority:</b> ( <i>Indicate the File No &amp; date; reproduce the decision</i> )
24	<b>Complete Plan of Studies, inclusive of complete Roadmap:</b> ( <i>As per Programme road map</i> )
25	<b>Course Outlines, Descriptions, Pre-Requisites &amp; Readings (Compulsory &amp; Recommended)</b> (as given Course outlines)

**B. FINANCIAL DETAILS**

1	<b>Source of Funding:</b> <ul style="list-style-type: none"> <li>• <b>BU: Fully✓/Partially:</b></li> <li>• <b>Public Sector (B1): Fully/Partially</b> (<i>provide complete details; attach MOU, agreement etc.)</i></li> <li>• <b>NNGO (B1): Fully/Partially</b> (<i>provide complete details; attach MOU, agreement etc.)</i></li> </ul>
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	<ul style="list-style-type: none"> <li><b>INGO (B1): Fully/Partially</b> (provide complete details; attach MOU, agreement etc.)</li> <li><b>UN/IGO (B1): Fully/Partially</b> (provide complete details; attach MOU, agreement etc.)</li> </ul>																																										
2	<p><b>Degree Duration:</b> <b>Annual or Semester System:</b></p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">Annual</td> <td style="width: 25%;">Number of Years</td> <td style="width: 25%;">2</td> </tr> <tr> <td>Semester:</td> <td>Number of Semester</td> <td>4</td> </tr> </table> <p><b>Total Number of Credit Hours:</b> 30</p>	Annual	Number of Years	2	Semester:	Number of Semester	4																																				
Annual	Number of Years	2																																									
Semester:	Number of Semester	4																																									
3	<p><b>Expected fee to be charged based on Cost &amp; Benefits Analysis:</b> (show working)</p> <p><i>Fee structure is proposed on the basis of comparative fee structure of already existing MPhil Programme in BUCAHS</i></p> <p><i>Expected fee proposed can be 57,000 at the time of admission and 135468 per semester/9credit hrs.</i></p> <p>Per annum fee can be calculated as : 327,936/ year</p>																																										
4	<p><b>Expected Number of students for 1<sup>st</sup> &amp; 2<sup>nd</sup> Intakes:</b></p> <p>Approximately 10-15</p>																																										
5	<p><b>Expected Earning from first two Intakes (B5):</b> (Show working)</p> <p><i>Just <u>one intake</u> to be recommended as yearly practice is followed in various medical universities.</i></p> <p>A = Total fee of first intake: 327,936/-</p> <p>B = No. of Students = 15</p> <p>B5 = B X A = 4.91 million</p> <p><b>B5 = B x A = 4.91 million</b> per intake</p>																																										
6	<p><b>Expected Earning for the Next Five Years (B6):</b> (show working)</p> <p><i>Working of Five years is given below, as MS is 2 year Programme</i></p> <p>A = Total fee of first intake: : 4.91 million</p> <p>B = fee of next year = 2.438 million</p> <p>For five years</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Per Student</th> <th>1st Year</th> <th>2nd Year</th> <th>Earning/Student</th> <th>Students</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td><b>Batch 1</b></td> <td>327,396</td> <td>180624</td> <td>508,020</td> <td>15</td> <td>7.6 million</td> </tr> <tr> <td><b>Batch 2</b></td> <td>327,396</td> <td>180624</td> <td>508,020</td> <td>15</td> <td>7.6 million</td> </tr> <tr> <td><b>Batch 3</b></td> <td>327,396</td> <td>180624</td> <td>508,020</td> <td>15</td> <td>7.6 million</td> </tr> <tr> <td><b>Batch 4</b></td> <td>327,396</td> <td>180624</td> <td>508,020</td> <td>15</td> <td>7.6 million</td> </tr> <tr> <td><b>Batch 5</b></td> <td>327,396</td> <td>X</td> <td>327,396</td> <td>15</td> <td>4.19 million</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td><b>34.59 million</b></td> </tr> </tbody> </table> <p><b>B6 = 34.59 million</b></p>	Per Student	1st Year	2nd Year	Earning/Student	Students	Total	<b>Batch 1</b>	327,396	180624	508,020	15	7.6 million	<b>Batch 2</b>	327,396	180624	508,020	15	7.6 million	<b>Batch 3</b>	327,396	180624	508,020	15	7.6 million	<b>Batch 4</b>	327,396	180624	508,020	15	7.6 million	<b>Batch 5</b>	327,396	X	327,396	15	4.19 million						<b>34.59 million</b>
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7	<p><b>Total Estimated Salaries of all Additional Human Resources per annum (B7):</b> (Show working) <b>Nil</b></p>																																										
8	<p><b>Cost of Additional Laboratory Equipment/Tools (B8):</b> (show working) <b>0.3 Million</b></p>																																										
9	<p><b>Cost of Additional Classrooms (B9):</b> (Include furniture, technical aids etc)</p> <p>Furniture comprises of 15 chairs, multimedia, board, comprises of approximately (repairement) <b>0.4 million</b></p>																																										
10	<p><b>Cost of Additional Books, Subscription &amp; Memberships to on-line Sites/Repositories (B10):</b> (show details) <b>0.5 million</b></p>																																										

11	<b>Off-Site rental Expenses and Cost of other Fixtures (B11): (Show details) Nil</b>
12	<b>Miscellaneous Expenses required for Starting the Programme (B12):</b> <ul style="list-style-type: none"> <li>- Advertisement:</li> <li>- Printing &amp; Stationery</li> <li>- Admin Cost</li> <li>- Any other</li> <li>- <b>Total 0.15 million</b></li> </ul>
13	<b>Annual Recurring Expenditures in Subsequent Years (B13):</b> <ul style="list-style-type: none"> <li>- Salaries -</li> <li>- Rentals: -</li> <li>- Subscriptions/Memberships: -</li> <li>- Advertisements: 0.2 million</li> <li>- Printing &amp; Stationery:</li> <li>- Admin Cost</li> <li>- Any other</li> <li>- <b>Total 0.2 million</b></li> </ul>
14	<b>Total Cost of the Programme (B14): [Add B(7) to B(12)]</b> <p><b>B14 = 1.55 million/ 1<sup>st</sup> year 0.8 / 2<sup>nd</sup> year</b></p> <p><b>For five years = 4.75 /5year = 0.95 / Year</b></p>
15	<b>Net Cost of the Programme (B15): [Subtract B(6) from B(14)]</b> $34.59 - 4.75 = 29.84 \text{ million} / 5 \text{ years}$ <p><b>B15 = 29.84 million/5 year</b></p>
16	<b>Net Earnings in First Year (B16: [Subtract B(15) from B(5)]</b> $29.84 - 4.91 = 24.93 \text{ million}$ <p><b>B16 = 24.93 million</b></p>
17	<b>Projected Annual Gross Earning in Subsequent Years (B 17): (show details &amp; working; add 10% towards all expenses in subsequent years.)</b> $10 \% \text{ of } 4.75 \text{ million } = (0.95 \text{ million} + 9.5 - 10.45) / 34.59 - 8.55 \text{ million } = 26.04 \text{ million}$ <p><b>B17 = 26.04 million</b></p>
18	<b>Projected Annual Net Earning in Subsequent Years: [Subtract B(13) from B(17)]</b> $26.04 - 0.2 \quad \boxed{\text{B18 = 25.84 million}}$

### ROAD MAP OF MS IN MEDICAL LAB SCIENCES PROGRAMME OF STUDY

<b>Course title</b>	MS (4 year degree Programme) in Medical Lab Sciences
<b>Course duration</b>	2 YEARS (minimum)
<b>Study system</b>	SEMESTER SYSTEM
<b>No. of regular semesters</b>	4
<b>Semester Duration</b>	Minimum of 16 weeks of teaching excluding examinations
<b>Total credit hours</b>	30 (24+6)
<b>Number of courses per semester</b>	5-6
<b>Course Load per Semester</b>	9-12 credit hrs
<b>**Summer Session Only for deficiency/failure/repetition</b>	**Summer Session Only for deficiency/failure/repetition
<b>Course Title with study hrs</b>	See Table 1, MS Medical Lab Sciences (with thesis or course work)

### MS-MLS ROAD MAP

**SEMESTER-I**

Sr No.	Course Code	Course Title	Credit Hours	Theory	Practical
1	MED 701	Research Methodology & Biostatistics	3+0	3	0
2	CBI 751	Clinical Biochemistry	2+1	2	1
3	CHM 752	Clinical Hematology	2+1	2	1
4	MLS 754	Journal Club -I	No credit hour	0	0
5	MLS 755	Teaching/Lab Internship (Essential)-I	No credit hour	0	0
<b>Total Credit Hours in Semester-I</b>			<b>7</b>	<b>7</b>	<b>2</b>

**SEMESTER-II**

Sr No.	Course Code	Course Title	Credit Hours	Theory	Practical
1	CIM 756	Clinical Immunology	3 (2+1)	2	1
2	CMB 757	Clinical Microbiology	3 (2+1)	2	1
3		Elective I	3 (2+1)	2	1
4	MLS 758	Journal Club (Essential)-2	No credit hour	0	0
5	MLS 759	Teaching/Lab Internship (Essential)-2	No credit hour	0	0
<b>Total Credit Hours in Semester-2</b>			<b>9</b>	<b>6</b>	<b>3</b>

**SEMESTER-III**

Sr No.	Course Code	Course Title	Credit Hours	Theory	Practical
1		Elective-II	3 (2+1)	2	1
2		Elective-III	3 (2+1)	2	1
3	THS 700 CTM 704	Thesis-I MS with thesis OR Current trends and issues in medical laboratory sciences	3+0	3	0
4	MLS 760	Journal Club (Essential)-III	No credit hour	0	0
5	MLS 761	Teaching/ Lab Internship (Essential)-III	No credit hour	0	0
<b>Total Credit Hours</b>			<b>9</b>	<b>7</b>	<b>2</b>

**SEMESTER-IV**

Sr No.	Course Code	Course Title	Credit Hours	Theory	Practical
1	THS 701 PCM 703	Thesis-II (MS with thesis) OR Professional communication & manuscript writing in the Medical laboratory sciences	3+0	3	0
<b>Total Credit Hours</b>			<b>3</b>	<b>3</b>	<b>0</b>

**LIST OF ELECTIVES**

<b>Elective I      3 (2 +1)</b>	<b>Elective II      3 (2 +1)</b>	<b>Elective III  3 (2 +1)</b>
1. Virology and Current trends in Viral infections (VCT 745)	1. Antimicrobial Agents and Drug Resistance (AMA 748)	1. Clinical Lab administration and management (CLA 752)

2. Laboratory Genomics (LGE 746)	2. Laboratory Biosafety and Biosecurity (LBS 749)	2. Biomedical technology (BTE 753)
3. Blood bank technology (BBT 747)	3. Blood Transfusion Medicine BTM (750)	3. Coagulation Studies (COS 754)
4. Clinical Pharmacology (CPH 748)	4. Neurobiology (NBI 751)	4. Histological techniques 5. (HIE 755)

**COURSE OUT LINES****First FIRST SEMESTER****RESEARCH METHODOLOGY, BIOSTATISTICS & EPIDEMIOLOGY****3 (3+0)**

Approved in 32 ACM.

<b>Course Code:</b>	MLS 702
<b>Credit Hours:</b>	3 (2+1)
<b>Course Title</b>	CLINICAL BIOCHEMISTRY
<b>Prerequisite</b>	Basic concept of Biochemistry at undergraduate level
<b>Course Objectives</b>	<p>This course is designed to:</p> <ol style="list-style-type: none"> <li>Provide students with a knowledge and understanding of the biochemical consequences of common disorders of the body's major organs.</li> <li>Equip students with the knowledge and necessary skills to enable them to diagnose major organ disease through the analysis and interpretation of data generated by the laboratory investigation of organ function.</li> <li>Provide students with a critical appreciation of the role biochemical investigations play in the assessment of an individual's nutritional status. Analyze the molecular basis of biochemically based pathologies.</li> <li>Develop skills in the management and analysis of biochemical diagnosis parameters.</li> <li>Identify and define diseases with a biochemical base through analysis and practical cases.</li> <li>Apply different biochemical analytical techniques to the diagnosis of human diseases.</li> <li>Highlight the molecular markers of the different physiological alterations.</li> <li>Associate the cardiac alterations with their molecular markers.</li> <li>Define specific kidney and liver diseases.</li> <li>Develop specialized knowledge of gastrointestinal alterations.</li> <li>Associate neurodegenerative diseases with their molecular basis.</li> <li>Analyze the alterations of various endocrine glands.</li> <li>Examine the different diagnosis techniques involved in clinical chemistry</li> </ol>
<b>Course Outcomes</b>	<p>Upon completion of course the students will be able to:</p> <ol style="list-style-type: none"> <li>Understand the role of clinical biochemistry plays in the diagnosis and management of disease.</li> <li>Develop theoretical understanding and practical skills relating to laboratory based biochemical techniques and enable them to undertake experimental research in medical biochemistry</li> <li>Develop knowledge and understanding of the common disorders of the major organs of the body.</li> <li>Investigate, assess and diagnosis of patients with common disorders.</li> <li>Interpret biochemical data obtained from the investigation of organ function.</li> <li>Applied knowledge of the theory and practice of clinical biochemistry.</li> <li>Apply and integrate a critical understanding of how biochemical investigations are</li> </ol>

	<p>employed to develop a clinical diagnosis.</p> <ol style="list-style-type: none"> <li>8. Develop the necessary professional and research skills to promote lifelong learning and career development.</li> <li>9. Establish advance knowledge and understanding of the scientific basis and practice of clinical biochemistry.</li> </ol>
<b>Course Contents</b>	This course covers the Metabolism of Nutrients, Concept of Metabolism, Biochemical Phases of Nutrition: Digestion, Transport, Metabolism, Excretion, Clinical Laboratory in the Study of Alterations in Digestion, Absorption and Metabolism of Nutrients, Biochemical Study of Vitamins and Vitamin Deficiency Absorption, Biochemical Study of Protein Alterations and Nitrogen Compounds Phase and lipids , Biochemical Study of Carbohydrate Metabolism Regulation and its Pathophysiological Alterations, Molecular Pathologies of Nucleotide Bases Alterations of Purine and Pyrimidine Metabolism, Study of Renal Function, Thyroid and Parathyroid Function, Hypothalamic and Pituitary Functions.
<b>Recommended Text Books</b>	<ol style="list-style-type: none"> <li>1. Rifai, N. (2017). <i>Tietz textbook of clinical chemistry and molecular diagnostics</i>. Elsevier Health Sciences.</li> <li>2. Nichols, James H., and Carol A. Rauch. <i>Clinical chemistry: quality in laboratory diagnosis</i>. Demos Medical Publishing, 2013.</li> <li>3. Burke, M. Desmond, David N. Bailey, Betsy D. Bennett, Gregory S. King, Jay M. McDonald, John M. Matsen, John C. Neff et al. "Graylyn Conference Report: Recommendations for Reform of</li> <li>4. Clinical Pathology Residency Training: Conjoint Task Force on Clinical Pathology Residency Training Writing Committee." <i>American journal of clinical pathology</i> 103, no. 2 (1995): 127-129.</li> <li>5. Marshall, W. J., Lapsley, M., Day, A., &amp; Shipman, K. (2020). <i>Clinical chemistry</i>. Elsevier Health Sciences.</li> <li>6. Palmer, T., &amp; Bonner, P. L. (2007). <i>Enzymes: biochemistry, biotechnology, clinical chemistry</i>. Elsevier.</li> </ol>
<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>1. Foye, W. O. (2008). <i>Foye's principles of medicinal chemistry</i>. Lippincott Williams &amp; Wilkins.</li> <li>2. Larson, D. (2015). <i>Clinical chemistry-e-book: fundamentals and laboratory techniques</i>. Elsevier Health Sciences.</li> <li>3. Case Studies in Clinical Laboratory Science, Linda Graves Ed.D. MT (ASCP), Elizabeth Gockel-Blessing</li> <li>4. David N. Bailey, Clinical Chemistry Practical Laboratory Diagnosis of Disease</li> </ol>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li>1. <a href="https://www.healthcareers.nhs.uk/explore-roles/healthcare-science/roles-healthcare-science/life-sciences/clinical-biochemistry">https://www.healthcareers.nhs.uk/explore-roles/healthcare-science/roles-healthcare-science/life-sciences/clinical-biochemistry</a>. American Society of Clinical Pathologists Press</li> <li>2. <a href="https://www.rcpath.org/trainees/examinations/examinations-by-specialty/clinical-biochemistry.html">https://www.rcpath.org/trainees/examinations/examinations-by-specialty/clinical-biochemistry.html</a></li> </ol> <p><b>Journals:</b></p> <ol style="list-style-type: none"> <li>1. Annals of Clinical Biochemistry</li> <li>2. Clinical &amp; Medical Biochemistry,</li> <li>3. Cell Chemical Biology</li> </ol> <p><b>Others:</b></p> <ol style="list-style-type: none"> <li>1. Clinical Biochemistry: Metabolic and Clinical Aspects. William J. Marshall. Apr 2014</li> <li>2. Marks' Basic Medical Biochemistry: A Clinical Approach, 2nd Edition Chapter 26: Basic Concepts. Textbook of Biochemistry for Medical Students.</li> </ol>

**SIXTEEN WEEK LECTURE PLAN OF CLINICAL BIOCHEMISTRY (MLS-702)**

<b>Week #</b>	<b>Lecture Topic</b>	<b>Duration</b>	<b>Outcome</b>
Week 1	Metabolism of Nutrients	2 hrs	<p>At the end of lecture, student will be able to</p> <ul style="list-style-type: none"> <li>• Explain concept of Metabolism Nutrition: Digestion, Transport, Metabolism, &amp; Excretion</li> <li>• Study the Laboratory investigations in the Alterations related to Digestion, Absorption and Metabolism of Nutrients in human body.</li> </ul>
Week 2	Biochemical Study of Vitamins and Vitamin Deficiency Absorption	2 hrs	<ul style="list-style-type: none"> <li>• Describe Lipid and water soluble Vitamins</li> <li>• Identify the diseases based on Vitamin Deficiencies and detection on the basis of lab tests.</li> </ul>
Week 3	Biochemical Study of Protein Alterations and Nitrogen	2 hrs	<ul style="list-style-type: none"> <li>• Acquire advanced knowledge of Compounds Phase Plasmatic Proteins</li> <li>• Compare the Enzyme alterations in protein and nitrogen impairment</li> </ul>
Week 4	Biochemical Study of Carbohydrate Metabolism	2 hrs	<ul style="list-style-type: none"> <li>• Describe Carbohydrate Metabolism Regulation and its Pathophysiological Alterations related to <ul style="list-style-type: none"> <li>○ Hypoglycemia</li> <li>○ Hyperglycemia</li> </ul> </li> <li>• Review Diabetes Mellitus, its Diagnosis and Monitoring in a Clinical Laboratory</li> </ul>
Week 5	Pathophysiological conditions related to lipid metabolism	2 hrs	<ul style="list-style-type: none"> <li>• Demonstrate alterations of Lipids and Plasma Lipoproteins <ul style="list-style-type: none"> <li>○ Lipoproteins</li> <li>○ Primary Dyslipidemia</li> <li>○ Hyperlipoproteinemia</li> <li>○ Sphingolipidosis</li> </ul> </li> </ul>
Week 6	Biochemistry of Blood in a Chemical Laboratory	2 hrs	<ul style="list-style-type: none"> <li>• Define Blood Hemostasis, Coagulation and Fibrinolysis</li> <li>• Interpret Biochemical Analysis of Iron Metabolism</li> </ul>
Week 7	Biochemistry of Nucleotide	2 hrs	<ul style="list-style-type: none"> <li>• Define Introduction to Purine and Pyrimidine Metabolism</li> <li>• Discuss lab investigation reports related to Purine and Pyrimidine Metabolism</li> </ul>
Week 8	Molecular Pathologies of Nucleotide Bases	2 hrs	<ul style="list-style-type: none"> <li>• Illustrate Diagnostic tests related to Purine and pyrimidine Metabolism Disorders</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	Urea Cycle Disorders	2 hrs	<ul style="list-style-type: none"> <li>• Discuss disorders associated with urea cycle</li> </ul>
Week 11	Metabolism Disorders	2 hrs	<ul style="list-style-type: none"> <li>• Interpret clinical investigations related to Bilirubin Metabolism disorders including Congenital Jaundice, Hemolytic Jaundice and Hepatic Jaundice</li> </ul>
Week 12	Overview of Renal	2 hrs	<ul style="list-style-type: none"> <li>• Discuss Diagnosis of Alterations of Renal Function</li> </ul>

	Function		<ul style="list-style-type: none"> <li>• Correlate Alterations of Renal Function</li> </ul>
Week 13	Overview of Pancreatic Function	2 hrs	<ul style="list-style-type: none"> <li>• Discuss the Diagnostic tests to detect Pancreatic Function abnormality</li> </ul>
Week 14	Overview of Thyroid and Parathyroid Functions	2 hrs	<ul style="list-style-type: none"> <li>• Categorize thyroid and Parathyroid Function and interpret the clinical cases with reference to lab investigation</li> </ul>
Week 15	Overview of Adrenal Gland Function	2 hrs	<ul style="list-style-type: none"> <li>• Explain the Functions of Adrenal Gland and Diagnostic tests to detect the impairment.</li> </ul>
Week 16	Overview of Gonad Function	2 hrs	<ul style="list-style-type: none"> <li>• Review the Gonad Function and related lab investigations</li> </ul>
Week 17	Overview of Hypothalamic and Pituitary Functions	2 hrs	<ul style="list-style-type: none"> <li>• Discuss Diagnostic Techniques related to Alterations in Hypothalamic and Pituitary Functions</li> <li>• Analyze the Alterations in Hypothalamic and Pituitary Functions</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

#### SIXTEEN WEEK PRACTICAL PLAN OF CLINICAL BIOCHEMISTRY (MLS-702)

Week #	Lecture Topic	Duration	Outcome
Week 1	Clinical chemistry lab practices	3 hrs	<p>At the end of practical, student will be able to</p> <ul style="list-style-type: none"> <li>• Demonstrate Laboratory Work Flow cycle with Phlebotomy equipment's along with Identification of Blood Collection Tubes &amp; Preparation of Blood Plasma and Serum</li> </ul>
Week 2	Vitamin Deficiency	3 hrs	<ul style="list-style-type: none"> <li>• Perform the Vitamin D estimation by ELISA kit method</li> </ul>
Week 3	Alterations in blood biochemical tests for Protein and Nitrogen	3 hrs	<ul style="list-style-type: none"> <li>• Quantitative Estimation of Blood Urea Nitrogen. (BUN) &amp; it's interpretation</li> </ul>
Week 4	Diabetic Profile Tests	3 hrs	<ul style="list-style-type: none"> <li>• Measurement of Blood Glucose</li> </ul>
Week 5	Lipid metabolism alterations	3 hrs	<ul style="list-style-type: none"> <li>• Quantitative Estimation of blood cholesterol, TG, LDL, VLDL &amp; it's interpretation</li> </ul>
Week 6	Blood biochemistry	3 hrs	<ul style="list-style-type: none"> <li>• Measurement of Hb and Iron levels</li> </ul>
Week 7	Biochemistry of Nucleotide	3 hrs	<ul style="list-style-type: none"> <li>• Analyze lab investigation reports related to Purine and Pyrimidine Metabolism</li> </ul>
Week 8	Molecular Pathologies of Nucleotide Bases	3 hrs	<ul style="list-style-type: none"> <li>• Demonstrate inherited disorders of purine and pyrimidine metabolism through PUPYU / Purines and Pyrimidines Panel, Random, Urine in a clinical lab.</li> </ul>

Week 9	<b>MID-TERM SEMESTER EXAM</b>		
Week 10	Urea Cycle Disorders	3 hrs	<ul style="list-style-type: none"> <li>Quantitative Estimation of Urea by berthelot method &amp; it's interpretation</li> </ul>
Week 11	Metabolism Disorders	3 hrs	<ul style="list-style-type: none"> <li>Measurement of Serum Bilirubin (Total, direct &amp; indirect)</li> </ul>
Week 12	Renal Function	3 hrs	<ul style="list-style-type: none"> <li>Quantitative Estimation of serum creatinine by Jaff's method &amp; it's interpretation</li> </ul>
Week 13	Overview of Pancreatic Function	3 hrs	<ul style="list-style-type: none"> <li>Quantitative Estimation of Pancreatic enzyme by color method &amp; it's interpretation</li> </ul>
Week 14	Thyroid and Parathyroid Functions	3 hrs	<ul style="list-style-type: none"> <li>Quantitative Determination of TSH levels in blood</li> </ul>
Week 15	Overview of Adrenal Gland Function	3 hrs	<ul style="list-style-type: none"> <li>Detection of cortisol levels in blood</li> </ul>
Week 16	Overview of Gonad Function	3 hrs	<ul style="list-style-type: none"> <li>Determination of estrogen levels in serum by ELISA technique</li> </ul>
Week 17	Hypothalamic and Pituitary Functions	3 hrs	<ul style="list-style-type: none"> <li>Quantitative Estimation of TSH by ELISA &amp; it's interpretation</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**3. CLINICAL HEMATOLOGY****3(2+1)**

<b>Course Code:</b>	<b>MLS 703</b>
<b>Credit Hours:</b>	<b>3 (2 +1)</b>
<b>Course Title</b>	<b>Clinical Hematology</b>
<b>Prerequisite</b>	Basic concept of Hematology at undergraduate level
<b>Course Objectives</b>	<p>This course is designed to:</p> <ol style="list-style-type: none"> <li>Provide students, a broad and comprehensive understanding of bone marrow assessment.</li> <li>Describe erythropoiesis and how to apply standard operational procedures to evaluate erythrocytes and their physical properties using patient blood and quality control samples.</li> <li>Explain leucopoiesis</li> <li>Correlate the maturation sequence and identify distinguishing morphology for stages of developing blood granulocytes and agranulocytes.</li> <li>Classify malignant and nonmalignant leukocytic disorders.</li> <li>Identify the clinical signs and symptoms, and hematologic findings of red blood cell disorders.</li> <li>Describe hemoglobinopathy and distinguish between qualitative and quantitative hemoglobin defects.</li> <li>Categorize neoplastic disorders of leukocytes.</li> <li>Apply general criteria to classify leukemias and identify diagnostic findings on permanently stained blood and bone marrow smears.</li> <li>Classify the chronic myeloproliferative and lymphoproliferative disorders by cell type and identification of key morphologic features on permanently stained blood and bone marrow smears.</li> </ol>

	<ol style="list-style-type: none"> <li>11. Discuss the disorders based on proliferation of plasma cells and abnormal production of immunoglobulins.</li> <li>12. Identify distinguishing morphology for stages of developing platelets and list the maturation sequence</li> <li>13. Differentiate between hemostasis, the coagulation process, and fibrinolysis.</li> <li>14. Discuss the disorders of primary and secondary hemostasis.</li> <li>15. Recognize the instrumentation used in the hematology department along with the quality assurance and quality control measures</li> </ol>
<b>Course Outcomes</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Explain the origin of blood cells and articulate the process of erythropoiesis and leukopoiesis as it relates to health and diseases.</li> <li>2. Discuss the coagulation process and identified qualitative and quantitative disorders of platelets and coagulation.</li> <li>3. Describe the all malignant and nonmalignant disorders of white blood cells.</li> <li>4. Analyze current hematological procedures used to diagnose, monitor and evaluate disorders.</li> <li>5. Demonstrate the advance principles of hematology instrumentation and perform the quality assurance and quality control measures used in evaluation in the field of hematology.</li> </ol>
<b>Course Contents:</b>	<p>Structure, function and classification of red blood cell, white blood cell, platelets, Describe Iron deficiency anemia, Sideroblastic anemia, Megaloblastic anemia, Classification of Hemolytic anemia, Hemoglobinopathies (Thalassaemia, Sickle cell anemia), Enzymopathies and their laboratory diagnosis, Membranopathies and Laboratory diagnosis of membranopathies, Immune and non- immune hemolytic anemias, Aplastic anemia, Malignant disorders of leukocytes, Molecular genetics of acute leukemia, Myeloproliferative Neoplasms, Myelodysplastic syndromes, lymphoproliferative disorders, Diagnosis and classification of: Hodgkin's lymphoma and Non-hodgkin lymphomas , Plasma cell dyscrasias, Platelet disorders, Immune thrombocytopenic purpura, Essential thrombocytopenia, Platelet function defects, disorders of coagulation cascade. Reticulocyte count, Perl's staining of bone marrow, Kleihaur's test, Osmotic fragility test, Sickling test, Ham's test, Hemoglobin electrophoresis, G6PD Essay, Differential leukocyte count, LE preparation, Leucocyte cytochemistry, Special stains used for the diagnosis of acute leukemia Meylo peroxidase (MPO), Sudan Black B (SBB), Neutrophil alkaline phosphates (NAP), Periodic acid-schiff (PAS) reaction, Acid phosphatase, Esterases, Marrow puncture needles, Preparation and examination of bone marrow smear, Reporting on bone marrow films, Types of trephine biopsy needle, Technique of bone marrow trephine biopsy, Reporting on bone marrow trephine biopsy sections</p>
<b>Recommended Text Books</b>	<ol style="list-style-type: none"> <li>1. Blood Cells: A Practical Guide, Barbara J. Bain, 5<sup>th</sup> Edition, Wiley-Blackwell. 2015.</li> <li>2. Clinical Laboratory Hematology, Shirlyn B. McKenzie, Ph. D., CLS (NCA), Lynne Williams, 3<sup>rd</sup> edition. 2015.</li> <li>3. Textbook of Hematology for the Undergraduates, Dr. Muhammad Saboor., Dr. Moiuddin, 1<sup>st</sup> edition, 2015, Higher Education Commission Pakistan.</li> </ol>

<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>1. Dacie and Lewis Practical Haematology, Barbara J. Bain, FRACP, FRCPath, 12<sup>th</sup> edition, 2016.</li> <li>2. Hoffbrand's Essential Haematology, 7th Edition, <a href="#">A. Victor Hoffbrand, Paul A. H. Moss</a>, 2015, Wiley-Blackwell</li> </ol>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li>1. <a href="https://pti.edu.krd/wp-content/uploads/2021/04/COURSE-SYLLABUS-Haematology">https://pti.edu.krd/wp-content/uploads/2021/04/COURSE-SYLLABUS-Haematology</a>.</li> <li>2. <a href="https://med.und.edu/education-training/medical-laboratory-science/ms-curriculum.html">https://med.und.edu/education-training/medical-laboratory-science/ms-curriculum.html</a></li> <li>3. <a href="https://www.aum.edu/degree/medical-laboratory-science/">https://www.aum.edu/degree/medical-laboratory-science/</a></li> </ol> <p><b>Journals:</b></p> <ol style="list-style-type: none"> <li>1. American Journal of Hematology</li> <li>2. British Journal of Haematology</li> <li>3. Expert Review of Hematology</li> <li>4. Journal of Thrombosis and Haemostasis</li> <li>5. Clinical and Applied Thrombosis/Hemostasis</li> </ol> <p><b>Others:</b></p> <p>Haematology at a Glance, Atul B. Mehta, A. Victor Hoffbrand, 4th Edition. 2014, Wiley-Blackwell.</p>

### SIXTEEN WEEK LESSON PLAN OF CLINICAL HEMATOLOGY (MLS 703)

Week #	Lecture Topic	Duration	Outcome
Week 1	<ul style="list-style-type: none"> <li>• Structure, function and classification of Red blood cell.</li> <li>• Structure, function and classification of White blood cell.</li> </ul>	2 hrs	<p>At the end of lecture, student will be able to</p> <ul style="list-style-type: none"> <li>• Describe the morphology, function and development of RBC.</li> <li>• Discuss the morphology, function and development of WBC</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>• Iron deficiency anemia</li> <li>• Sideroblastic anemia</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Explain the classification, etiology, pathophysiology and lab diagnosis of IDA</li> <li>• Discuss the classification, etiology, pathophysiology and lab diagnosis of sideroblastic anemia</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>• Megaloblastic anemia</li> <li>• Classification of Hemolytic anemia</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Discuss the causes, pathophysiology and lab diagnosis of megaloblastic anemia.</li> <li>• Classify the extrinsic and intrinsic type of hemolytic anemia</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>• Hemoglobinopathies (Thalassaemia)</li> <li>• Sickle cell anemia</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Discuss the types, pathophysiology and lab diagnosis of thalassemia</li> <li>• Identify the types, pathophysiology and lab</li> </ul>

			diagnosis of sickle cell anemia
Week 5	<ul style="list-style-type: none"> <li>Enzymopathies and their laboratory diagnosis</li> <li>Membranopathies and their laboratory diagnosis</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Describe the types, pathophysiology and lab diagnosis of PK and G6PD deficiency.</li> <li>Recognize the types, pathophysiology and lab diagnosis of HS and HE</li> </ul>
Week 6	<ul style="list-style-type: none"> <li>Immune hemolytic anemias</li> <li>Non - immune hemolytic anemias</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Discuss the pathophysiology and lab diagnosis of immune hemolytic anemia.</li> <li>Interpret lab diagnosis of non- immune hemolytic anemia.</li> </ul>
Week 7	<ul style="list-style-type: none"> <li>Bone marrow failure syndrome (Aplastic anemia)</li> <li>Overview of WBC malignancy</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Describe the classification, causes, pathophysiology and lab diagnosis of Aplastic anemia</li> <li>Comprehend the Overview of WBC malignancies</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>Classify malignant disorders of leukocytes</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Identify the malignant disorders of WBC</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	<ul style="list-style-type: none"> <li>Molecular genetics of acute leukemia's</li> <li>Molecular genetics of chronic leukemia's</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Demonstrate the classification, pathophysiology and lab diagnosis of MPD</li> <li>Illustrate the classification, pathophysiology and lab diagnosis of MDS</li> </ul>
Week 11	<ul style="list-style-type: none"> <li>myeloproliferative disorders (MPD)</li> <li>Myelodysplastic syndromes (MDS)</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Describe the classification, pathophysiology of lymphoproliferative disorders</li> <li>Demonstrate the classification, pathophysiology and lab diagnosis of plasma cell dyscrasias</li> </ul>
Week 12	<ul style="list-style-type: none"> <li>Lymphoproliferative disorders</li> <li>Plasma cell dyscrasias</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Discuss the Diagnosis and classification of Hodgkin lymphoma</li> <li>Discuss the Diagnosis and classification of non-Hodgkin lymphoma</li> </ul>
Week 13	<ul style="list-style-type: none"> <li>Structure, function and classification of Platelets</li> <li>Hemostasis</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Explain the Structure, function and development of platelets</li> <li>Differentiate the primary and secondary hemostasis</li> </ul>
Week 14	Platelet disorders	2 hrs	<ul style="list-style-type: none"> <li>Discuss the classification, pathophysiology and diagnosis of Qualitative platelets disorder</li> <li>Discuss the classification, pathophysiology and</li> </ul>

			diagnosis of Quantitative platelets disorder
Week 15	<ul style="list-style-type: none"> <li>• Immune thrombocytopenic purpura (ITP)</li> <li>• Essential thrombocytopenia (ET)</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Demonstrate the types, pathophysiology and diagnosis of ITP</li> <li>• Demonstrate the WHO criteria ,pathophysiology and diagnosis of ET</li> </ul>
Week 16	<ul style="list-style-type: none"> <li>• Immune thrombocytopenic purpura (ITP)</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Describe the pathophysiology and diagnosis of coagulation cascade disorders</li> </ul>
Week 17	<ul style="list-style-type: none"> <li>• Essential thrombocytopenia (ET) Revision</li> </ul>	2 hrs	
Week 18	<b>FINAL TERM EXAM</b>		

### SIXTEEN WEEK PRACTICAL PLAN OF CLINICAL HEMATOLOGY (MLS 703)

Week #	Lecture Topic	Duration	Outcome
Week 1	Overview of Manual techniques of hematology tests	3 hrs	<p>At the end of practical, student will be able to</p> <ul style="list-style-type: none"> <li>• Identify the advanced collection techniques, preparation and staining of smears, and key terms and concepts as they apply to assessing bone marrow tissue.</li> <li>• Identify the Manual techniques of all hematology tests</li> </ul>
Week 2	Perl's staining	3 hrs	<ul style="list-style-type: none"> <li>• Demonstrate the principle, procedure and interpretation of perl's stain in bone marrow</li> </ul>
Week 3	Hemoglobin electrophoresis,	3 hrs	<ul style="list-style-type: none"> <li>• Describe principle of different types of electrophoresis, its application and their uses</li> </ul>
Week 4	G6PD Essay	3 hrs	<ul style="list-style-type: none"> <li>• Identify the procedure, methods and interpretation of G6PD assay</li> </ul>
Week 5	Leucocyte Cytochemistry	3 hrs	<ul style="list-style-type: none"> <li>• Describe the principles and techniques of WBC cytochemistry and their important in disease</li> </ul>
Week 6	Bleeding tendency	3 hrs	<ul style="list-style-type: none"> <li>• Identify the principle, procedure and types of bleeding time and their importance in diagnosis</li> </ul>
Week 7	Coagulation defects	3 hrs	<ul style="list-style-type: none"> <li>• Identify the principle, procedure and types of clotting time and their importance in diagnosis</li> </ul>
Week 8	Bone marrow aspiration	3 hrs	<ul style="list-style-type: none"> <li>• Demonstrate the purpose, procedure, advantages and disadvantages of bone marrow aspiration</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	Bone marrow smear	3 hrs	<ul style="list-style-type: none"> <li>• Identify the Preparation and examination of bone marrow smear, reporting on bone marrow films</li> </ul>
Week 11	Special stains used for the diagnosis of	3 hrs	<ul style="list-style-type: none"> <li>• Identify the principle, procedure and interpretation of Myeloperoxidase (MPO) stain</li> </ul>

	leukemia		
Week 12	Special stains used for the diagnosis of leukemia	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate the principle, procedure and interpretation of Sudan Black B (SBB)</li> </ul>
Week 13	Neutrophil alkaline phosphates (NAP) score	3 hrs	<ul style="list-style-type: none"> <li>Perform the procedure and interpretation of NAP score and their importance in disease</li> </ul>
Week 14	Special stains used for the diagnosis of leukemia	3 hrs	<ul style="list-style-type: none"> <li>Interpret NAP score with reference to clinical case</li> </ul>
Week 15	Special stains used for the diagnosis of leukemia	3 hrs	<ul style="list-style-type: none"> <li>Record the principle, procedure and interpretation of Periodic acid-Schiff (PAS) reaction</li> </ul>
Week 16	Bone marrow biopsy	3 hrs	<ul style="list-style-type: none"> <li>Perform the procedure with interpretation of Acid phosphatase</li> </ul>
Week 17	Bone marrow biopsy	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate the principle, procedure and interpretation of Esterases</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**SECOND SEMESTER****4. CLINICAL IMMUNOLOGY****3(2+1)**

<b>Course Code:</b>	<b>MLS 705</b>	
<b>Credit Hours:</b>	<b>3 (2 +1)</b>	
<b>Course Title</b>	<b>Clinical Immunology</b>	
<b>Prerequisite</b>	Semester I	
<b>Course Objectives</b>	<p>This course is designed to:</p> <ol style="list-style-type: none"> <li>the basic concepts of clinical immunology</li> <li>Acquire knowledge on components of immune system and immune response.</li> <li>Identify the structure, function, and characteristics of immunoglobulins.</li> <li>Understand the role of vaccines in controlling diseases.</li> <li>Discuss various immune system disorders, their causes and mechanisms including <ul style="list-style-type: none"> <li>Auto immunity</li> <li>Hypersensitivity</li> <li>Immunodeficiency</li> <li>Tumor immunology</li> <li>Transplantation immunology</li> </ul> </li> <li>Comprehend knowledge of immunological Laboratory procedures, principles of various immunological tests and their clinical significance</li> </ol>	

<b>Course Outcomes</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Identify immunological processes at a cellular and molecular level.</li> <li>2. Illustrate the components of the immune system ie. organs, cells and their mediators (antibody, cytokines, TNF, IFN and complement)</li> <li>3. Analyze the key mechanisms and cellular players of Innate and adaptive immunity.</li> <li>4. Correlate the complement system (the components, activation pathways and biological activities and diseases)</li> <li>5. Identify the main mechanisms of inflammation and related diagnostic tests.</li> <li>6. Define the structure and biological functions of MHC class I and II molecules</li> <li>7. Classify hypersensitivity reactions: types, mechanisms/pathogenesis, and diseases.</li> <li>8. Explain the basis of transplantation and principles of cross-matching, allograft rejection mechanism, of HLA-Typing.</li> <li>9. Elucidate immunodeficiency diseases primary immunodeficiency, secondary immunodeficiency: HIV infection and cancer.</li> <li>10. Describe immunotherapy (drug, antibodies, and recombinant molecules)</li> <li>11. Describe systemic autoimmune diseases (systemic lupus erythematosus, Sjogren syndrome, systemic sclerosis, rheumatoid arthritis,</li> <li>12. Analyze Laboratory Methods of Immunology: classification of serological tests; primary serological test.</li> <li>13. Acquire knowledge and practical skills in conducting the laboratory tests related to immunology and serology with reference to clinical cases.</li> <li>14. Articulate the process of erythropoiesis and leukopoiesis as it relates to health and diseases.</li> <li>15. Identify qualitative and quantitative disorders of platelets and coagulation.</li> <li>16. Describe all malignant and nonmalignant disorders of white blood cells.</li> <li>17. Analyze current hematological procedures used to diagnose, monitor and evaluate disorders.</li> <li>18. Understand the advanced principles of hematology instrumentation with respect to the quality assurance and quality control measures used in evaluation in the field of hematology.</li> </ol>
<b>Course Contents:</b>	<p>Introduction, history and scope of immunology. Immunity and its types, humoral and cellular immunity. Immune system: cells tissues and organs constituting the immune system. Immune response: humoral Immune response and Cell mediated Immune response. Complement system: Pathways classical and alternate and regulation, Antigen and Antigenicity: antigen structure and different categories of antigen. Immunoglobulins: structure, function and classes. Immunoglobulin genetics. Introduction to HLA &amp; MHC and its role in immune response, disease and its significance in tissue transplantation. Immune-regulation and tolerance. Introduction to Cancer immunology. Introduction to immunopathology, hypersensitivity reactions, autoimmune diseases and immune deficiencies, Immunization (methods of immunization, vaccines and adjuvants). Introduction to antigen-antibody reactions: Laboratory methods of Immunology for detecting antigens and antibodies (agglutination, precipitation, complement fixation, EIA, etc.).</p>

<b>Recommended Text Books</b>	<ol style="list-style-type: none"> <li>1. Kuby Immunology 7th Edition 2013, by W. H. Freeman and Company New York.</li> <li>2. Fundamentals of Medical Immunology by Venugopal Jayapal.</li> <li>3. Text book of Microbiology and Immunology 2nd edition by Subhash Chandra Parija</li> <li>4. Fundamentals of Immunology by Otto G. Bier, Wilmar Dias Da Silva, Dietrich Götze, Ivan Mota</li> </ol>
<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>1. Chen, E. R. and Kasturi, S. 2006. Deja Review: Microbiology and Immunology, McGraw-Hill Companies, N.Y.</li> <li>2. Van Emon, V. M. 2006. Immunoassay and Other Bioanalytical Techniques, CRC Press, F.L...</li> <li>3. Abbas, A. K., Lichtman, A. H. and Pillai, S. 2007. Cellular and Molecular Immunology, Elsevier Health Sciences, N.Y.</li> <li>4. Johnson, A. G., Ziegler, R. J., Lukasewycz, O. A. and Lukasewycz, O. A. 2007. Microbiology and Immunology: Board Review Series, Lippincot Williams and Wilkins, M.D. Molecular Immunology, Elsevier Health Sciences, N.Y.</li> </ol>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li>1. Department of Immunology, School of Medical Sciences, USM Health Campus, 16150 Kubang Kerian, Kelantan, Malaysia. Master of Pathology, post graduate (Clinical Immunology) Programme.</li> <li>2. Austin Community College, Master Programme. Medical laboratory Technology, (Immunology/Serology Course Syllabus), Fall 2022</li> <li>3. Norwegian university of Science and Technology (NTNU), Master two-year Programme (subjects: Molecular Medicine MOL3005 – Immunology</li> <li>4. <a href="https://www.hec.gov.pk/english/services/universities/RevisedCurricula/Document">https://www.hec.gov.pk/english/services/universities/RevisedCurricula/Document</a></li> </ol> <p><b>Journals:</b></p> <ol style="list-style-type: none"> <li>1. Nature Reviews Immunology.</li> <li>2. Nature Reviews Immunology.</li> <li>3. Immunity.</li> <li>4. Annual Review of Immunology.</li> <li>5. Nature Immunology.</li> <li>6. Science Immunology.</li> <li>7. Cellular &amp; Molecular Immunology.</li> </ol> <p><b>Others:</b></p> <ol style="list-style-type: none"> <li>1. Lichtman, A. H. 2007. Basic Immunology. Elsevier Health Sciences, N.Y.</li> <li>2. Murphy, K., 2011. Janeway's Immunobiology (Immunobiology: The Immune System, 8 th Edition. Garland Science Publishers.</li> </ol>

## SIXTEEN WEEK LECTURE PLAN OF CLINICAL IMMUNOLOGY (MLS 705)

<b>Week #</b>	<b>Lecture Topic</b>	<b>Duration</b>	<b>Outcome</b>
Week 1	<ul style="list-style-type: none"> <li>• Introduction to clinical immunology</li> <li>• History and scope of immunology</li> </ul>	2 hrs	<p>At the end of lecture, student will be able to</p> <ul style="list-style-type: none"> <li>• Explain clinical immunology, history and scope of</li> </ul>

			immunology
Week 2	<ul style="list-style-type: none"> <li>Organization of the immune system</li> <li>Components of Immune system</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Describe Components of Immune system</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Cellular components of the Innate Immune system</li> <li>Immunity and its types</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Compare the Cellular components of the Innate Immune system</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>Innate immune response of Infection</li> <li>Immunization (methods of immunization, vaccines and adjuvants)</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Describe Innate immune response of Infection</li> </ul>
Week 5	<ul style="list-style-type: none"> <li>Antigen and Immunogenicity</li> <li>Immunoglobulins and their types</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Demonstrate Immunoglobulins and their types alterations of Lipids and Plasma</li> </ul>
Week 6	<ul style="list-style-type: none"> <li>Complement System (Classical, Alternate and Lectin pathways)</li> <li>Regulation of Complement System</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Define Regulation of Complement System</li> </ul>
Week 7	<ul style="list-style-type: none"> <li>Immunogenetics</li> <li>Major histocompatibility complex (Antigen processing and presentation; T cell development and response)</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Elaborate Major histocompatibility complex (Antigen processing and presentation)</li> <li>Major histocompatibility complex (Antigen processing and presentation)</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>Immunological Tolerance</li> <li>Mechanism of Peripheral T-Cell Tolerance</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Illustrate Immunological Tolerance</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	Blood grouping (ABO group, Rh-typing)	2 hrs	<ul style="list-style-type: none"> <li>Discuss Blood grouping (ABO group, Rh-typing)</li> </ul>
Week 11	Humoral and cellular immune response	2 hrs	<ul style="list-style-type: none"> <li>Define Humoral and cellular immune response</li> </ul>
Week 12	Transplantation immunology	2 hrs	<ul style="list-style-type: none"> <li>Discuss Transplantation immunology</li> </ul>
Week 13	Prevention of graft rejection.	2 hrs	<ul style="list-style-type: none"> <li>Discuss the Prevention of graft rejection.</li> </ul>
Week 14	Tumor Immunology	2 hrs	<ul style="list-style-type: none"> <li>Categorize Tumor Immunology</li> </ul>
Week 15	Immunotherapy (drug, antibodies and recombinant molecules)	2 hrs	<ul style="list-style-type: none"> <li>Explain the Immunotherapy (drug, antibodies and recombinant molecules)</li> </ul>
Week 16	Hypersensitivity reactions and its types I	2 hrs	<ul style="list-style-type: none"> <li>Discuss Hypersensitivity reactions and its types II</li> </ul>
Week 17	Hypersensitivity reactions and its types II	2 hrs	

Week 18	<b>FINAL TERM EXAM</b>		
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**SIXTEEN WEEK PRACTICAL PLAN OF CLINICAL IMMUNOLOGY (MLS 705)**

Week #	Lecture Topic	Duration	Outcome
Week 1	Introduction to Immunological Techniques	3 hrs	<p>At the end of practical, student will be able to</p> <ul style="list-style-type: none"> <li>• Demonstrate Immunological Techniques</li> </ul>
Week 2	Agglutination reaction (ABO Blood grouping)	3 hrs	<ul style="list-style-type: none"> <li>• Perform the Agglutination reaction (ABO Blood grouping)</li> </ul>
Week 3	Enzyme linked Immunosorbent Assay (ELISA) by kit method	3 hrs	<ul style="list-style-type: none"> <li>• Perform the ELISA</li> </ul>
Week 4	Dot enzyme linked immunosorbent assay (Dot ELISA)	3 hrs	<ul style="list-style-type: none"> <li>• Perform the Dot enzyme linked immunosorbent assay (Dot ELISA)</li> </ul>
Week 5	Rapid Anti streptolysin O Latex Agglutination Test (kit Method)	3 hrs	<ul style="list-style-type: none"> <li>• Demonstarte the Rapid Anti streptolysin O Latex Agglutination Test (kit Method)</li> </ul>
Week 6	Rapid plasma Reagin (RPR)card test	3 hrs	<ul style="list-style-type: none"> <li>• Perform the Rapid plasma Reagin (RPR)card test</li> </ul>
Week 7	Precipitation Test	3 hrs	<ul style="list-style-type: none"> <li>• Analyze lab investigation reports related to Precipitation Test</li> </ul>
Week 8	Radial Immunodiffusion Assay	3 hrs	<ul style="list-style-type: none"> <li>• Demonstrate Radial Immunodiffusion Assay</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	Ouchterlony Double Diffusion Test	3 hrs	<ul style="list-style-type: none"> <li>• Perform the Ouchterlony Double Diffusion Test</li> </ul>
Week 11	Demonstration of WIDAL Test	3 hrs	<ul style="list-style-type: none"> <li>• Demonstrate WIDAL Test</li> </ul>
Week 12	Rapid plasma Reagin (RPR)card test	3 hrs	<ul style="list-style-type: none"> <li>• Perform the Rapid plasma Reagin (RPR)card test</li> </ul>
Week 13	Demonstration of Human chorionic gonadotropin (HCG) by Hemagglutination Inhibition Test	3 hrs	<ul style="list-style-type: none"> <li>• Perform the Hem agglutination Inhibition Test</li> </ul>
Week 14	Demonstration of Immunochromatographic	3 hrs	<ul style="list-style-type: none"> <li>• Demonstrate Immunochromatographic Test (ICT)</li> </ul>

	Test (ICT)		
Week 15	Complement fixation test	3 hrs	<ul style="list-style-type: none"> <li>• Perform the Complement fixation test</li> </ul>
Week 16	Rocket Immunoelectrophoresis	3 hrs	<ul style="list-style-type: none"> <li>• Demonstrate the Rocket Immunoelectrophoresis Determination of estrogen levels in serum by ELISA technique</li> </ul>
Week 17	Cells Harvestig in Biosafety Cabinet	3 hrs	<ul style="list-style-type: none"> <li>• Demonstrate the Cells Harvestig in Biosafety Cabinet</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		<b>(3+0)</b>

**4. CLINICAL MICROBIOLOGY**

<b>Course Code:</b>	MLS 706
<b>Credit Hours:</b>	3 (2+1)
<b>Course Title</b>	CLINICAL MICROBIOLOGY
<b>Prerequisite</b>	Basic concept of Microbiology at undergraduate level
<b>Course Objectives</b>	<p>This course is designed to:</p> <ol style="list-style-type: none"> <li>1. basic concepts of clinical immunology</li> <li>2. Acquire knowledge on components of immune system and immune response.</li> <li>3. Identify the structure, function, and characteristics of immunoglobulins.</li> <li>4. Understand the role of vaccines in controlling diseases.</li> <li>5. Discuss various immune system disorders, their causes and mechanisms including</li> <li>6. Auto immunity</li> <li>7. Hypersensitivity</li> <li>8. Immunodeficiency</li> <li>9. Tumor immunology</li> <li>10. Transplantation immunology</li> <li>11. Comprehend knowledge of immunological Laboratory procedures, principles of various immunological tests and their clinical significance</li> </ol>
<b>Course Outcomes</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Have a complete knowledge of microbiology laboratory procedures, Waste disposal and reporting.</li> <li>2. Understand Standard procedures of sterilization</li> <li>3. Observe Microscopic examination (staining procedures used in the lab)</li> <li>4. Know the preparation of culture media (selection of media and their incubation aerobic and anaerobic). Use of biochemical tests in bacterial identification. Antimicrobial sensitivity testing.</li> <li>5. Differentiate between bacterial and fungal structure. Pathogenesis and different lab test to identify fungal disease. Dermatophytes and subcutaneous mycoses.</li> <li>6. Explain the Pathogenesis and transmission of viral and parasitic</li> </ol>

	infection
<b>Course Contents:</b>	General rules of conduct in the laboratory. Laboratory equipment and microscope. Sterilization and disinfection, hot air oven, autoclave, filtration, inoculation, incubation. preparation and storage of reagents and culture media. Collection, transport, storage and disposal of specimens. Identification of Gram-positive cocci, Gram negative cocci, Gram positive bacilli, Gram negative bacilli, Spirochetes, Mycobacteria, Mycoplasma, Chlamydia, Rickettsia, structure, function and classification of viruses. Special emphasis will be given to the understanding of pathogenesis, techniques and protocols to diagnose different viral infections. basic knowledge of parasitology. protozoa, cestodes, nematodes and related infestations will be addressed in detail. Basic mycology, cutaneous and subcutaneous mycosis, systemic mycosis, opportunistic mycosis.
<b>Recommended Text Books</b>	<ol style="list-style-type: none"> <li>Cell and Molecular Biology: Concepts and Experiments, 4th ed., Gerald Karp, Wiley, 2005</li> <li>Essential Concepts in Molecular Pathology (Hardcover) by William B. Coleman, Gregory J. Tsongalis, Academic Press</li> </ol>
<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>Molecular Pathology: The Molecular Basis of Human Disease, William B. Coleman, Gregory J. Tsongalis Academic Press.</li> <li>Basic Concepts of Molecular Pathology Editors: Cagle, Philip T., Allen, Timothy Craig. Springer Publisher</li> <li>Molecular Pathology in Clinical Practice edited by Debra G.B. Leonard. Springer Publisher</li> </ol>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li><a href="http://library.med.utah.edu/WebPath/webpath.html">library.med.utah.edu/WebPath/webpath.html</a></li> <li><a href="https://www.clinicalmicrobiologyandinfection.com/">https://www.clinicalmicrobiologyandinfection.com/</a></li> </ol> <p><b>Journals:</b></p> <p>Journal of Clinical Microbiology      Journal of Medical Microbiology      International Journal of Medical Microbiology      Clinical Microbiology Reviews      Clinical Microbiology and Infections</p> <p><b>Others:</b></p> <p><a href="https://ann-clinmicrob.biomedcentral.com/">https://ann-clinmicrob.biomedcentral.com/</a></p>

#### SIXTEEN WEEK LECTURE PLAN OF CLINICAL MICROBIOLOGY (MLS 706)

Week #	Lecture Topic	Duration	Outcome
Week 1	Gram-positive cocci Gram negative cocci	2 hrs	<p>At the end of lecture, student will be able to</p> <ul style="list-style-type: none"> <li>Identify Gram-positive cocci (by using microscopy staining, growth on selective media, biochemical reactions serology, molecular methods and antibiotic sensitivity pattern)</li> <li>Distinguish Gram negative cocci (by using staining microscopy, growth on selective media, biochemical reactions, serology, molecular methods and antibiotic sensitivity pattern)</li> </ul>

Week 2	<ul style="list-style-type: none"> <li>• Gam positive &amp; negative bacilli</li> <li>• Spirochetes</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Basic concept of Gram positive and negative bacilli (by using microscopy staining, growth on selective media, biochemical reactions, serology, molecular methods and antibiotic sensitivity pattern)</li> <li>• Demonstrate the Identification of Spirochetes and diagnostic tests of syphilis.</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>• Mycobacteria</li> <li>• Mycoplasma organisms by serologic methods.</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Demonstrate essential skills to diagnose Mycobacteria by (acid-fast staining, culture, molecular methods)</li> <li>• Identify Mycoplasma organisms by serologic methods.</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>• Chlamydia, Rickettsia</li> <li>• Mechanism &amp; mode of action of various Antibiotics,</li> <li>• Types and mechanisms of Bacterial Vaccines</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Demonstrate essential skills to diagnose Chlamydia, Rickettsia organisms by serology.</li> <li>• Discuss mechanism of various Antibiotics</li> <li>• Types and mechanisms of Bacterial Vaccines</li> </ul>
Week 5	<ul style="list-style-type: none"> <li>• Giardia Lamblia, entameoba histolytica</li> <li>• Plasmodium</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Describe the morphological features &amp; life cycle of Giardia Lamblia, entameoba histolytica</li> <li>• Describe different features &amp; life cycle of plasmodium</li> </ul>
Week 6	<ul style="list-style-type: none"> <li>• Intestinal and tissue nematodes in relation to their diagnosis.</li> <li>• Ascaris lumbricoides</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Discuss the life cycle and pathogenesis of intestinal and tissue nematodes in relation to their diagnosis.</li> <li>• Morphological features &amp; pathogenesis of Ascaris.</li> </ul>
Week 7	<ul style="list-style-type: none"> <li>• Taenia solium &amp; Taenia saginata</li> <li>• Schistosoma and Leishmania</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Describe the pathogenesis, and diagnosis of taenia solium &amp;Taenia saginata</li> <li>• Demonstrate the laboratory diagnosis and pathogenesis of Schistosoma and Leishmania</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>• Toxoplasma</li> <li>• Structure, replication and classification of virus</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Discuss the lab diagnosis of Toxoplasma</li> <li>• Discuss structure , replication and classification of virus</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	<ul style="list-style-type: none"> <li>• Herpes viruses</li> <li>• Orthomyxovirus</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Discuss disorders associated with urea cycle</li> </ul>

Week 11	<ul style="list-style-type: none"> <li>Picorna virus and Corona virus</li> <li>Rabies and Rota virus</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Describe structure, pathogenesis and lab diagnosis of Picorna virus and Corona virus</li> <li>Describe structure, pathogenesis and lab diagnosis of Rabies and Rota virus</li> </ul>
Week 12	<ul style="list-style-type: none"> <li>Arbo and oncogenic virus</li> <li>Hepatitis virus</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Describe structure, pathogenesis and lab diagnosis of Arbo and oncogenic virus</li> <li>Describe structure, types, pathogenesis and lab diagnosis of Hepatitis virus</li> </ul>
Week 13	<ul style="list-style-type: none"> <li>HIV</li> <li>Morphological structure, Classification and replication of Fungi.</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Describe structure, pathogenesis and lab diagnosis of HIV</li> <li>Discuss Morphological structure, Classification and replication of Fungi.</li> </ul>
Week 14	<ul style="list-style-type: none"> <li>Superficial Mycosis, Cutaneous mycosis, Subcutaneous mycosis</li> <li>Systemic mycosis and Opportunistic Fungi</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Superficial Mycosis, Cutaneous mycosis , Subcutaneous mycosis</li> <li>Systemic mycosis and Opportunistic Fungi</li> </ul>
Week 15	<ul style="list-style-type: none"> <li>Fungal toxins (Mycotoxins)</li> <li>Mechanism of fungal pathogenesis</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Discuss fungal toxins (Mycotoxins)</li> <li>Mechanism of fungal pathogenesis</li> </ul>
Week 16	<ul style="list-style-type: none"> <li>Growth and isolation of fungi</li> <li>Lab diagnosis of fungi</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Describe the Growth and isolation of fungi</li> <li>Describe lab diagnosis of fungi (microscopy, culture and molecular methods).</li> </ul>
Week 17	<ul style="list-style-type: none"> <li>Overview of clinical categorization of fungal infection</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Discuss clinical categorization of fungal infection</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**SIXTEEN WEEK PRACTICAL PLAN OF CLINICAL MICROBIOLOGY (MLS 706)**

Week #	Lecture Topic	Duration	Outcome
Week 1	Sterilization & disinfection	3 hrs	<p>At the end of the practical student should be able to</p> <ul style="list-style-type: none"> <li>Perform Sterilization &amp; disinfection</li> </ul>

Week 2	Collection, transport, storage and disposal of specimens	3 hrs	<ul style="list-style-type: none"> <li>• Examine Collection, transport, storage and disposal of specimens</li> </ul>
Week 3	Techniques of isolation & cultivation of pure & mixed bacterial culture	3 hrs	<ul style="list-style-type: none"> <li>• Perform the techniques of isolation &amp; cultivation of pure &amp; mixed bacterial culture</li> </ul>
Week 4	Gram positive cocci and negative bacilli by Biochemical testing	3 hrs	<ul style="list-style-type: none"> <li>• Identify Gram positive cocci and negative bacilli by Biochemical testing</li> </ul>
Week 5	Preparation of various culture media & stains	3 hrs	<ul style="list-style-type: none"> <li>• Perform the reparation of various culture media &amp; stains</li> </ul>
Week 6	Collection and transportation of specimen for mycological Examination	3 hrs	<ul style="list-style-type: none"> <li>• Examine the Collection and transportation of specimen for mycological Examination</li> </ul>
Week 7	Processing for mycological examination	3 hrs	<ul style="list-style-type: none"> <li>• Demonstrate the processing for mycological examination</li> </ul>
Week 8	Direct microscopic mount and KOH Preparation  Staining of fungal cell by using LPCB	3 hrs	<ul style="list-style-type: none"> <li>• Perform Direct microscopic mount and KOH Preparation and staining of fungal cell by using LPCB</li> </ul>
Week 9	<b>MID SEMESTER EXAM</b>		
Week 10	Various techniques Stool Examination	3 hrs	<ul style="list-style-type: none"> <li>• To perform various techniques of stool Examination</li> </ul>
Week 11	Stool examination of various Ova, Cyst & Trophozoite form of parasite	3 hrs	<ul style="list-style-type: none"> <li>• Preform stool D/R to analyze various ova, cyst and trophozoite form of parasite</li> </ul>
Week 12	Candida albican	3 hrs	<ul style="list-style-type: none"> <li>• To perform Lab diagnosis &amp; germ tube test for identification of Candida albican</li> </ul>
Week 13	C.neoformans	3 hrs	<ul style="list-style-type: none"> <li>• Demonstration of Lab diagnosis of C.neoformans and capsule staining</li> </ul>

Week 14	Sample Collection in virology	3 hrs	<ul style="list-style-type: none"> <li>Demonstration of Sample Collection in virology</li> </ul>
Week 15	ICT device	3 hrs	<ul style="list-style-type: none"> <li>Demonstration of ICT device &amp; results interpretation in virology</li> </ul>
Week 16	Detection of HBV and HCV by Elisa Method	3 hrs	<ul style="list-style-type: none"> <li>Perform by Elisa test for the detection of HBV and HCV</li> </ul>
Week 17	Detection of HBV and HCV by PCR	3 hrs	<ul style="list-style-type: none"> <li>Perform by PCR test for the detection of HBV and HCV</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**THESIS REPLACED BY CORE CORSES****1. CURRENT TRENDS AND ISSUES IN MEDICAL LABORATORY SCIENCES****(3+0)**

<b>Course Code:</b>	MLS 708
<b>Credit Hours:</b>	3 (3+0)
<b>Course Title</b>	CURRENT TRENDS AND ISSUES IN MEDICAL LABORATORY SCIENCES
<b>Prerequisite</b>	Semester I and II
<b>Course Objectives</b>	This course is designed to explore the introductory experience that occurs at the beginning of the degree process to get awareness of current trends and issues related to all aspects of the profession.
<b>Course Outcomes</b>	At the end of the course, through group discussion, presentations, and paper reviews, MS-Medical Laboratory Science students will be able to explore current trends and issues related to all aspects of the lab profession.
<b>Course Contents:</b>	<ol style="list-style-type: none"> <li>Leadership and Educational Strategies in Medical Laboratory Science</li> <li>Applications and Issues of Teaching with Technology</li> <li>Quality Management Systems</li> <li>Laboratory Design</li> <li>Point-of-Care Testing</li> <li>Telepathology</li> <li>Applications and Analyses in Molecular Diagnostics</li> <li>Applications and Analyses in Biochemical Diagnostics</li> <li>Applications and Analyses in Microbiological Diagnostics</li> <li>Applications and Analyses in Histopathological Diagnostics</li> <li>Applications and Analyses in Blood Banking</li> <li>Concepts &amp; Applications for Clinical Immunology</li> <li>Concepts &amp; Applications for Infection Control</li> <li>Health Systems Management: Organization &amp; Delivery</li> <li>Health Policy: Regulation, Legal &amp; Ethical Issues</li> <li>Issues and Ethics in Medical Laboratory Science</li> </ol>

<b>Recommended Text Books</b>	1. Medicare Laboratory Payment Policy: Now and in the Future. Institute of Medicine (US) Committee on Medicare Payment Methodology for Clinical Laboratory Services; Miller Wolman D, Kalfoglou AL, LeRoy L, editors. Washington (DC): National Academies Press (US); 2000.
<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>1. Clinical Laboratory Science, 9th Edition Concepts, Procedures, and Clinical Applications By Mary Louise Turgeon, EdD, MLS(ASCP)CM, Associate Professor (Adjunct), University of Texas Medical Branch, Galveston, Texas; Clinical Laboratory Education Consultant, Mary L. Turgeon and Associates, Boston, Massachusetts; St. Petersburg, Florida</li> <li>2. Applying Evidence-Based Laboratory Medicine: A Step-By-Step Guide by Dr. Gabriel J. Connor</li> <li>3. Lab Values Interpretation: The ultimate laboratory tests manual of reference ranges and what they mean by Christopher P. Price</li> <li>4. Evidence Based Pathology and Laboratory Medicine by Alberto M. Marchevsky and Mark Wick</li> </ol>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li>1. <a href="https://healthmanagement.org/c/hospital/issuearticle/an-american-perspective-current-trends-in-laboratory-management">https://healthmanagement.org/c/hospital/issuearticle/an-american-perspective-current-trends-in-laboratory-management</a></li> <li>2. <a href="https://www.clinicallab.com/trends">https://www.clinicallab.com/trends</a></li> </ol> <p><b>Journals:</b></p> <p>Journal of IMAB      American Association of Clinical Chemistry      Annals of Clinical &amp; Laboratory Science      Critical Reviews in Clinical Laboratory</p> <p><b>Others:</b></p> <p><a href="https://www.aacc.org/science-and-research/poct-how-to-guide-for-non-laboratorians">https://www.aacc.org/science-and-research/poct-how-to-guide-for-non-laboratorians</a></p>

## SIXTEEN WEEK LESSON PLAN OF CURRENT TRENDS AND ISSUES IN MEDICAL LABORATORY SCIENCES (MLS 708)

Week #	Lecture Topic	Duration	Outcome
Week 1	Leadership and Educational Strategies in Medical Laboratory Science	3 hrs	<p>At the end of class, student will be able to</p> <ul style="list-style-type: none"> <li>• Understand Leadership and Educational Strategies in Medical Laboratory Science</li> </ul>
Week 2	Applications and Issues of Teaching with Technology	3 hrs	<ul style="list-style-type: none"> <li>• Discuss Issues of Lab Teaching with Technology</li> </ul>
Week 3	Quality Management Systems	3 hrs	<ul style="list-style-type: none"> <li>• Elaborate the Recent Quality Management Systems of Lab</li> </ul>

Week 4	Laboratory Design	3 hrs	<ul style="list-style-type: none"> <li>Identify the key indicators required to Design the laboratory</li> </ul>
Week 5	Point-of-Care Testing	3 hrs	<ul style="list-style-type: none"> <li>Describe the importance of point of care testing in today's world</li> </ul>
Week 6	Telepathology	3 hrs	<ul style="list-style-type: none"> <li>Discuss the significance of Telepathy</li> </ul>
Week 7	Applications and Analyses in Molecular Diagnostics	3 hrs	<ul style="list-style-type: none"> <li>Correlate various Applications and Analyses in Molecular Diagnostics in the light of modern research.</li> </ul>
Week 8	Applications and Analyses in Biochemical Diagnostics	3 hrs	<ul style="list-style-type: none"> <li>Apply Biochemical Diagnostics in different clinical scenarios</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	Applications and Analyses in Histopathological Diagnostics	3 hrs	<ul style="list-style-type: none"> <li>Define the recent histopathological diagnostic techniques</li> </ul>
Week 11	Applications and Analyses in Histopathological Diagnostics	3 hrs	<ul style="list-style-type: none"> <li>Review Histopathological image analysis</li> </ul>
Week 12	Applications and Analyses in Blood Banking	3 hrs	<ul style="list-style-type: none"> <li>Discuss informatics application in Blood Banking</li> </ul>
Week 13	Concepts & Applications for Clinical Immunology	3 hrs	<ul style="list-style-type: none"> <li>Discuss important immunological tests and related recent advances</li> </ul>
Week 14	Concepts & Applications for Infection Control	3 hrs	<ul style="list-style-type: none"> <li>Analyze the infection control measures in a clinical lab</li> </ul>
Week 15	Health Systems Management: Organization & Delivery	3 hrs	<ul style="list-style-type: none"> <li>Define Health Systems Management: Organization &amp; Delivery</li> </ul>
Week 16	Health Policy: Regulation, Legal & Ethical Issues	3 hrs	<ul style="list-style-type: none"> <li>Correlate Health Policy: Regulation, Legal &amp; Ethical Issues with respect to diagnostic lab</li> </ul>
Week 17	Issues and Ethics in Medical Laboratory Science	3 hrs	<ul style="list-style-type: none"> <li>Discuss the Issues and Ethics in Medical Laboratory Science</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

## 2. PROFESSIONAL WRITING IN THE MEDICAL LABORATORY SCIENCES (3+0)

Course Code:	MLS 710
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<b>Credit Hours:</b>	3(3+0)
<b>Course Title</b>	Professional Writing in the Medical Laboratory Sciences
<b>Prerequisite</b>	Semester I and II
<b>Course Objectives</b>	<p>This course is designed to</p> <ol style="list-style-type: none"> <li>1. Develop professional writing skills as a foundation to apply in a medical laboratory profession.</li> <li>2. Review of articles from various related journals</li> <li>3. Write a manuscript as per national and international journal requirement</li> <li>4. Submit an article Online through a journal peer review system</li> <li>5. Conduct Literature search from data base</li> <li>6. Explore the introductory experience that occurs at the beginning of the degree process to get awareness of current trends and issues related to all aspects of the profession.</li> </ol>
<b>Course Outcomes</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Provide the confidence to use written communication in lab work and personal experience beyond subjective course learning</li> <li>2. Acquaint with the concept of a writer-reader relationship</li> <li>3. identify the need for active participation from both writer and reader</li> <li>4. Learn the skills needed to successfully communicate in a modern world through written materials.</li> <li>5. Learn to identify and select many types of writing frequently required in a variety of careers,</li> <li>6. Practice audience analysis and develop effective communication strategies for a variety of audiences.</li> <li>7. Determine your purposes/objectives and develop skill in composing and revising on the computer documents with formats and language appropriate for those purposes.</li> <li>8. Demonstrate in your writing the effective communication principles encouraged by professional writers,</li> <li>9. Achieve a greater awareness of the importance of selecting and integrating graphics with written communication,</li> <li>10. Improve your ability to differentiate among and to use facts, inferences and judgments.</li> </ol>
<b>Course Contents:</b>	<p>One review article writing and submitted publication is required for passing the course.</p> <p>Following is the list of some key journals under the scope of Medical Laboratory Sciences for generating ideas, finding relevant articles and publication of the review article:</p> <ul style="list-style-type: none"> <li>• American Journal of Clinical Pathology</li> <li>• American Journal of Hematology</li> <li>• Annals of Clinical and Laboratory Science</li> <li>• Archives of Pathology &amp; Laboratory Medicine</li> <li>• Blood</li> <li>• Clinical and Diagnostic Laboratory Immunology</li> <li>• Clinical and Vaccine Immunology</li> <li>• Clinical Chemistry</li> <li>• Clinical Chemistry and Laboratory Medicine</li> </ul>

	<ul style="list-style-type: none"> <li>• Clinical Laboratory Science</li> <li>• Clinics in Laboratory Medicine</li> <li>• Critical Reviews in Clinical Laboratory Sciences           <ul style="list-style-type: none"> <li>• Diagnostic Cytopathology</li> <li>• International Journal of Laboratory Hematology</li> <li>• Journal of Clinical Laboratory Analysis</li> <li>• Journal of Clinical Microbiology</li> <li>• Journal of Molecular Diagnostics</li> <li>• Laboratory Medicine</li> <li>• Medical Laboratory Observer</li> <li>• Morbidity and Mortality Weekly Report</li> </ul> </li> </ul>
<b>Recommended Text Books</b>	<p>Atlas of Clinical Hematology by L. Heilmeyer (Founded by); Johann Rastetter (Editor); Torsten Haferlach (Editor); H. Begemann (Founded by); Helmut Löffler (Editor)</p> <p>Henry's Clinical Diagnosis and Management by Laboratory Methods by Richard A. McPherson; Richard I. McPherson; Matthew R. Pincus ISBN: 9780323295680</p>
<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>1. Hematology by Ronald Hoffman; Edward J. Benz; Leslie E. Silberstein; Helen Heslop; John Anastasi; Jeffrey Weitz ISBN: 9781437729283</li> <li>2. Lab Values Interpretation: The ultimate laboratory tests manual of reference ranges and what they mean by Christopher P. Price</li> <li>3. Evidence Based Pathology and Laboratory Medicine by Alberto M. Marchevsky and Mark Wick</li> </ol>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li>1. CDC Division of Laboratory</li> <li>2. The Internet Pathology Laboratory for Medical Education</li> <li>3. International Federation of Biomedical Laboratory Science</li> </ol> <p><b>Journals:</b></p> <p>Journal of IMAB American Association of Clinical Chemistry Annals of Clinical &amp; Laboratory Science Critical Reviews in Clinical Laboratory</p> <p><b>Others:</b></p> <ol style="list-style-type: none"> <li>1. Review of Medical Microbiology and Immunology by Warren Levinson</li> </ol>

## SIXTEEN WEEK LESSON PLAN PROFESSIONAL WRITING IN THE MEDICAL LABORATORY SCIENCES (MLS 710)

Week #	Lecture Topic	Duration	Outcome
Week 1	American Journal of Clinical Pathology	3 hrs	At the end of class, student will be able to to Read and review from an Academic and research Journal.
Week 2	American Journal of Hematology	3 hrs	
Week 3	Annals of Clinical and Laboratory Science	3 hrs	

Week 4	Archives of Pathology & Laboratory Medicine	3 hrs	
Week 5	Blood	3 hrs	
Week 6	Clinical and Diagnostic Laboratory Immunology	3 hrs	
Week 7	Clinical Chemistry	3 hrs	
Week 8	Clinical Chemistry and Laboratory Medicine	3 hrs	
Week 9	<b>MID TERM EXAM</b>		
Week 10	Critical Reviews in Clinical Laboratory Sciences	3 hrs	
Week 11	Diagnostic Cytopathology	3 hrs	
Week 12	Journal of Molecular Diagnostics	3 hrs	
Week 13	Medical Laboratory Observer	3 hrs	At the end of class, student will be able to write manuscript and submit to journal through online process.
Week 14	Laboratory Medicine	3 hrs	
Week 15	Journal of Molecular Diagnostics	3 hrs	
Week 16	Diagnostic Cytopathology	3 hrs	
Week 17	Blood	3 hrs	
Week 18	<b>FINAL TERM EXAM</b>		

### **LIST OF ELECTIVES**

#### **1. VIROLOGY AND CURRENT TRENDS IN VIRAL INFECTION**

**3(2+1)**

<b>Course Code:</b>	MLS 711
<b>Credit Hours:</b>	3 (2+1)
<b>Course Title</b>	VIROLOGY AND CURRENT TRENDS IN VIRAL INFECTION
<b>Prerequisite</b>	SEMESTER I and SEMESTER II
<b>Course Objectives</b>	<p>This course is designed to:</p> <p>Classify viruses and discuss general characteristics of viruses with relation to their host</p> <p>Discuss Pathogenicity pattern of different type of viruses</p> <p>Explain the structure, pathogenesis, diagnosis and immunization of influenza virus</p> <p>Describe the pathogenesis and laboratory investigation of Viral Hepatitis.</p> <p>Distinguish between different type of Hepatitis: Hepatitis A, B, C and E</p> <p>Interpret the viral markers of hepatitis.</p> <p>Describe morphological structure and pathogenesis of human immunodeficiency virus</p>

	<p>Classify Herpes viruses family and discuss the pathogenesis and clinical feature of herpes simplex type1 and type2</p> <p>Describe the pathogenesis, clinical finding and investigation of Arthropod born viral infection. (Aeboviruses)</p> <p>Discuss the pathogenesis and immunization of paramyxovirus</p> <p>Discuss the pathogenesis and immunization of mumps, measles and rubella virus.</p> <p>Describe the pathogenesis, clinical finding and investigation of picorna virus.</p> <p>Describe the pathogenesis, clinical findings, investigation and immunization of rabies virus.</p> <p>Discuss the pathogenesis and immunization of adenovirus,</p> <p>Discuss the pathogenesis and immunization of Rota virus.</p> <p>Discuss the pathogenesis and immunization of Reoviridae virus</p> <p>Discuss the infectious agents and pathogenesis of cancer causing viruses (Human tumor virus)</p> <p>Discuss the pathogenesis, clinical finding and investigation &amp; causes of new emerging viruses</p> <p>Explain vaccine strategies and mechanisms of antiviral drugs</p>
<b>Course Outcomes</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Describe the pathogenesis, clinical and morphological features of different viruses and identify these in various human samples</li> <li>2. Distinguish the laboratory tests related to the diagnosis of viral diseases.</li> </ol>
<b>Course Contents:</b>	Structure, function and classification of viruses. Special emphasis will be given to the understanding of pathogenesis, techniques and protocols to diagnose different viral infections. The course is also planned to provide a comprehensive knowledge of Hepatitis, HIVs and other current emerging viruses such as Pandemic influenza H1N1pdm09, highly pathogenic avian influenza (AI) infection (H5N1) and the Middle East respiratory syndrome coronaviruses (MERS-CoV) , Crimean-Congo hemorrhagic fever virus, hantaviruses, tick-borne encephalitis viruses, and Zika virus, dengue, chikungunya as well as various precautionary measures for protection against viral infections.
<b>Recommended Text Books</b>	<ol style="list-style-type: none"> <li>1. Modern Trends in Virology Latest edition by Heinz Bauer (Editor), Hans-Dieter Klenk (Editor), Christoph Scholtissek (Editor) Springer.</li> <li>2. Michael J. Pelczar .Microbiology. 6th ed. TataMcGraw</li> <li>3. Clinical Virology, 4th Edition Douglas D. Richman (Editor), Richard J. Whitley (Editor), Frederick G. Hayden (Editor) ISBN: 978-1-683-67316-3 December 2016 ASM Press</li> </ol>
<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>1. Clinical Virology, 4th Edition Douglas D. Richman (Editor), Richard J. Whitley (Editor), Frederick G. Hayden (Editor) ISBN: 978-1-683-67316-3 December 2016 ASM Press</li> <li>2. Vaccine Design: Innovative Approaches and Novel Strategies Edited by: Rino Rappuoli and Fabio Bagnoli Published: 2011 Book: 978-1-904455-74-5. Ebook: 978-1-912530-76-2</li> </ol>

<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li>1. library.med.utah.edu/WebPath/webpath.html www.asm.org</li> <li>2. <a href="https://www.selectscience.net/editorial-articles/7-of-the-top-trends-and-latest-resources-in-virology-and-infectious-diseases">https://www.selectscience.net/editorial-articles/7-of-the-top-trends-and-latest-resources-in-virology-and-infectious-diseases</a></li> <li>3. <a href="https://www.comstech.org/virology-and-epidemiology/">https://www.comstech.org/virology-and-epidemiology/</a></li> </ol> <p><b>Journals:</b></p> <p>Journal of Clinical Microbiology      Journal of Medical Microbiology      International Journal of Medical Microbiology      Clinical Microbiology Reviews      Clinical Microbiology and Infection</p> <p><b>Others:</b></p> <ol style="list-style-type: none"> <li>1. Evolution: Current Research and Future Directions. Edited by: Scott C. Weaver, Mark Denison, Marilyn Roossinck and Marco Vignuzzi          Published: 2016 Book: 978-1-910190-23-4. Ebook: 978-1-910190-24-1</li> </ol>
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## SIXTEEN WEEK LESSON PLAN OF VIROLOGY AND CURRENT TRENDS IN VIRAL INFECTION (MLS 711)

Week No	Lecture Topic	Duration	Outcome
<b>Week 1</b>	<ul style="list-style-type: none"> <li>• Structure and Classification of viruses</li> <li>• Influenza virus</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Structure and Classification of viruses</li> <li>• Explain the structure, pathogenesis, diagnosis and immunization of influenza virus</li> </ul>
<b>Week 2</b>	<ul style="list-style-type: none"> <li>• Hepatitis virus</li> <li>• Distinguish between Hepatitis: Hepatitis A, B, C and E</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Describe morphological structure and pathogenesis &amp; lab diagnosis of Hepatitis virus</li> <li>• Distinguish between different type of Hepatitis: Hepatitis A, B, C and E</li> </ul>
<b>Week 3</b>	<ul style="list-style-type: none"> <li>• Viral markers for hepatitis</li> <li>• Human Immunodeficiency virus</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Interpret the viral markers of hepatitis.</li> <li>• Describe morphological structure and pathogenesis &amp; lab investigations of Human Immunodeficiency virus</li> </ul>
<b>Week 4</b>	<ul style="list-style-type: none"> <li>• Herpes viruses family</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Classify Herpes viruses family</li> <li>• Discuss the pathogenesis and clinical feature of herpes simplex type1 and type2</li> </ul>
<b>Week 5</b>	<ul style="list-style-type: none"> <li>• Cytomegalovirus</li> <li>• Epstein Barr virus</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Discuss the pathogenesis and clinical feature of cytomegalovirus</li> <li>• Discuss the pathogenesis and clinical feature of Epstein Barr virus</li> </ul>

<b>Week 6</b>	<b>Arboviruses</b> <ul style="list-style-type: none"><li>• Dengue virus, Chicken gunya virus</li><li>• Ebola and congo virus</li></ul>	2 hrs	<ul style="list-style-type: none"><li>• Describe the pathogenesis, clinical finding and investigation of Arthropod born viral infection (Arboviruses)</li><li>• Dengue virus and Chicken gunya virus</li><li>• Ebola and congo virus</li></ul>
<b>Week 7</b>	<ul style="list-style-type: none"><li>• Mumps, Measles and Rubella virus.</li><li>• Picorna virus.</li></ul>	2 hrs	<ul style="list-style-type: none"><li>• Discuss the pathogenesis and immunization of mumps, measles and rubella virus.</li><li>• Describe the pathogenesis, clinical finding and investigation of picorna virus.</li></ul>
<b>Week 8</b>	<ul style="list-style-type: none"><li>• Paramyxovirus</li><li>• Rabies virus.</li></ul>	2 hrs	<ul style="list-style-type: none"><li>• Demonstrate the pathogenesis and immunization of paramyxovirus</li><li>• Describe the morphological structure of pathogenesis, clinical findings, investigation and immunization of rabies virus.</li></ul>
<b>Week 9</b> <b>MID TERM EXAM</b>			
<b>Week 10</b>	<ul style="list-style-type: none"><li>• Adenovirus,</li><li>• Rota virus.</li></ul>	2 hrs	<ul style="list-style-type: none"><li>• Discuss the pathogenesis and immunization of adenovirus,</li><li>• Discuss the morphological structure &amp; pathogenesis and immunization of Rota virus.</li></ul>
<b>Week 11</b>	Reaoviridae virus	2 hrs	<ul style="list-style-type: none"><li>• Discuss the pathogenesis and immunization of Reaoviridae virus</li></ul>
<b>Week 12</b>	<ul style="list-style-type: none"><li>• Human tumor virus</li><li>• Human T-Cell Leukemia Virus (HTLV-1), Hepatitis C Virus (HCV), Human Papillomavirus (HPV), Hepatitis B Virus (HBV),</li><li>• Human Papillomavirus (HPV), Hepatitis B Virus (HBV)</li></ul>	2 hrs	<ul style="list-style-type: none"><li>• Describe the pathogenesis of Human T-Cell Leukemia Virus (HTLV-1), Hepatitis C Virus (HCV), Human Papillomavirus (HPV), Hepatitis B Virus (HBV),</li></ul>
<b>Week 13</b>	<ul style="list-style-type: none"><li>• Epstein-Barr Virus (EBV), Cytomegalovirus</li><li>• Kaposi's Sarcoma-Associated Herpesvirus (KSHV)/Human Herpes Virus 8 (HHV8)</li></ul>	2 hrs	<ul style="list-style-type: none"><li>• Demonstrate Epstein-Barr Virus (EBV) and Cytomegalovirus</li><li>• Kaposi's Sarcoma-Associated Herpesvirus (KSHV)/Human Herpes Virus 8 (HHV8)</li></ul>
<b>Week 14</b>	<ul style="list-style-type: none"><li>• New emerging</li></ul>	2 hrs	<ul style="list-style-type: none"><li>• Discuss the antigenic structure, pathogenesis, clinical finding and investigation &amp; causes of</li></ul>

	<ul style="list-style-type: none"> <li>viruses</li> <li>Pandemic influenza H1N1pdm09 avian influenza (AI) infection (H5N1)</li> </ul>		<ul style="list-style-type: none"> <li>new emerging viruses</li> <li>Pandemic influenza H1N1pdm09, highly pathogenic avian influenza (AI) infection (H5N1)</li> </ul>
<b>Week 15</b>	<ul style="list-style-type: none"> <li>SARS Covid-19</li> <li>The Middle East respiratory syndrome coronaviruses (MERS-CoV)</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Demonstrate the antigenic structure, pathogenesis, clinical finding and investigation of SARS Covid-19</li> <li>comprehend the Middle East respiratory syndrome coronaviruses (MERS-CoV)</li> </ul>
<b>Week 16</b>	<ul style="list-style-type: none"> <li>Vaccine and antiviral drugs</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Explain vaccine strategies and mechanisms of antiviral drugs</li> </ul>
<b>Week 17</b>	<ul style="list-style-type: none"> <li>Recent trends of virology</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Overview of recent trends of virology</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

### SIXTEEN WEEK PRACTICAL PLAN OF VIROLOGY AND CURRENT TRENDS IN VIRAL INFECTION (MLS 711)

Week #	Lecture Topic	Duration	Outcome
Week 1	<ul style="list-style-type: none"> <li>Collection and transportation of virology samples</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>At the end of the practical, student should be able to</li> <li>Demonstration of collection and transportation of samples in virology</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>Demonstration of ICT device in virology</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Perform viral test on ICT device and interpret the results to diagnose the virus</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Detection of Hepatitis B Virus by Elisa Method</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Perform Elisa test to detect Hepatitis B Virus</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>DNA/ RNA Extraction</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Demonstration of DNA/ RNA Extraction</li> </ul>
Week 5	<ul style="list-style-type: none"> <li>Qualitative analysis of Hepatitis B Virus by PCR Method.</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Perform Qualitative analysis of Hepatitis B Virus by PCR Method.</li> </ul>
Week 6	<ul style="list-style-type: none"> <li>Quantitative analysis of Hepatitis B Virus by PCR</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Perform Quantitative analysis of Hepatitis B Virus by PCR Method.</li> </ul>

	Method.		
Week 7	<ul style="list-style-type: none"> <li>Hepatitis C Virus by PCR Method.</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Detection of Hepatitis C Virus by performing PCR Method.</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>Quantitative analysis of Hepatitis C Virus by PCR Method.</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Quantitative analysis of Hepatitis C Virus by PCR Method.</li> </ul>
Week 9	<b>MID-TERM SEMESTER EXAM</b>		
Week 10	<ul style="list-style-type: none"> <li>HCV genotypings</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Detection of HCV genotyping</li> </ul>
Week 11	<ul style="list-style-type: none"> <li>SARS-CoV 19 antigen by rapid Method.</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Detection of SARS-CoV 19 antigen by rapid Method.</li> </ul>
Week 12	<ul style="list-style-type: none"> <li>SARS-CoV 19 by PCR Method</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Detection of SARS-CoV 19 by PCR Method.</li> </ul>
Week 13	<ul style="list-style-type: none"> <li>Virus cultivation and bacteriophages</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>demonstrate the Virus cultivation and bacteriophages</li> </ul>
Week 14	<ul style="list-style-type: none"> <li>Heteroduplex mobility analysis (HMA)</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Inoculation of virus in egg to isolate virus</li> </ul>
Week 15	<ul style="list-style-type: none"> <li>Inoculation of virus in egg</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Inoculation of virus in egg to isolate virus</li> </ul>
Week 16	<ul style="list-style-type: none"> <li>Recent advancements in virology lab</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Examine the latest techniques of virology</li> </ul>
Week 17	<ul style="list-style-type: none"> <li>Overview of virological techniques</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Revise the various virological techniques</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**2. LABORATORY GENOMICS****3(2+1)**

<b>Course Code:</b>	MLS 712
<b>Credit Hours:</b>	3 (2+1)
<b>Course Title</b>	Laboratory Genomics
<b>Prerequisite</b>	SEMSTER I
<b>Course Objectives</b>	<p>This course is designed to:</p> <ol style="list-style-type: none"> <li>Understand basic molecular biology, chromosome biology and genomic mechanisms of disease</li> <li>Apply the most appropriate current and evolving technologies, including</li> </ol>

	<p>DNA/RNA extraction, primer designing, PCR and DNA sequencing methodologies, to diagnose human genetic diseases</p> <p>3. Analyze various tissue types such as: tumors, cell free DNA, bone marrow, fibroblasts, and saliva</p> <p>4. Interpret a broad range of genetic diagnostic tests, including methodologies that assess for chromosomal aneuploidies, structural chromosome rearrangements, genomic copy number variants (CNVs), single nucleotide variants (SNVs), structural changes within single genes, and absence or loss of heterozygosity (AOH/LOH)</p> <p>5. Integrate clinical data (e.g., family history, physical examination, results of any diagnostic testing) into an individualized interpretation of laboratory results</p> <p>6. Facilitate discussion of laboratory results with referring providers, and that allow a team approach to guiding further testing and clinical management</p> <p>7. Communicate cytogenetic and molecular genetic laboratory results directly to patients, when necessary and in conjunction with other members of the clinical team</p>
<b>Course Outcomes</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Discuss the genetic underpinning of health and the role of genetic factors in disease</li> <li>2. Discuss the link between mutation and phenotype in a range of named single gene defects and chromosomal abnormalities</li> <li>3. Discuss approaches to therapy involving genes and gene products</li> <li>4. Locate and use sources of genetic information</li> <li>5. Guide the development and validation of appropriate assays used in the evaluation of disorders with a chromosomal or molecular basis</li> <li>6. Supervise and direct the operations of a clinical molecular genetics or clinical cytogenetics diagnostic laboratory, including requisite technical expertise, understanding of quality control and quality assessment procedures and adherence to regulatory requirements</li> </ol>
<b>Course Contents:</b>	<p>Central Dogma of Molecular Biology, DNA structure and replication, Introduction to Mendelian Genetics, Recombination in sexually reproducing organisms transcription, RNA types and structures, RNA polymerases, Regulation of transcription, Amino acids, genes and the genetic code and Translation, Isolation of DNA and RNA, Measurement of nucleic acid quality and quantity Electrophoresis Detection systems, Restriction enzyme mapping, Hybridization technologies Probes and its Hybridization conditions, Stringency detection systems, Array-based hybridization Solution, hybridization Target amplification, Probe amplification, Signal amplification Chromosomal structure analysis, Detection of genome and chromosomal mutations, Gene mutations, DNA Sequencing and Next Generation Sequencing, DNA Polymorphisms and human identification, Molecular detection of inherited diseases, Molecular oncology DNA-based tissue typing, Quality assurance and quality control in laboratory genomics Introduction to Genetic Counseling</p>

<b>Recommended Text Books</b>	<ol style="list-style-type: none"> <li>Rifai, N. (2017). Tietz textbook of clinical chemistry and molecular diagnostics-e-book. Elsevier Health Sciences.</li> <li>Micklos, D. A., Hilgert, U., &amp; Nash, B. (2013). Genome science: a practical and conceptual introduction to molecular genetic analysis in Eukaryotes (Vol. 1). Cold Spring Harbor, NY: Cold Spring Harbor Laboratory Press.</li> </ol>
<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>Buckingham, L. (2019). Molecular diagnostics: fundamentals, methods and clinical applications. FA Davis.</li> <li>Jorde, L. B., Carey, J. C., &amp; Bamshad, M. J. (2019). Medical genetics e-Book. Elsevier Health Sciences.</li> <li>Firth, H. V., &amp; Hurst, J. A. (2017). Oxford desk reference: clinical genetics and genomics. Oxford University Press.</li> </ol>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li><a href="https://asia.ensembl.org/index.html">https://asia.ensembl.org/index.html</a></li> <li><a href="https://www.ncbi.nlm.nih.gov/genbank/">https://www.ncbi.nlm.nih.gov/genbank/</a></li> <li><a href="https://www.ncbi.nlm.nih.gov/snp/">https://www.ncbi.nlm.nih.gov/snp/</a></li> <li><a href="https://blast.ncbi.nlm.nih.gov/Blast.cgi">https://blast.ncbi.nlm.nih.gov/Blast.cgi</a></li> <li><a href="https://primer3.ut.ee/">https://primer3.ut.ee/</a></li> <li><a href="http://primer1.soton.ac.uk/primer1.html">http://primer1.soton.ac.uk/primer1.html</a></li> </ol> <p><b>Journals:</b></p> <p style="padding-left: 40px;">Genome Research Genetics in Medicine Genes &amp; Development Clinical Genetics American Journal of Human Genetics Journal of Genetics</p> <p><b>Others:</b></p> <ol style="list-style-type: none"> <li><a href="https://academicworks.cuny.edu/cgi/viewcontent.cgi?article=1008&amp;context=ny_oers">https://academicworks.cuny.edu/cgi/viewcontent.cgi?article=1008&amp;context=ny_oers</a></li> <li><a href="https://ocw.mit.edu/ans7870/6/6.047/f15/MIT6_047F15_Compiled.pdf">https://ocw.mit.edu/ans7870/6/6.047/f15/MIT6_047F15_Compiled.pdf</a></li> <li><a href="https://edisciplinas.usp.br/pluginfile.php/5286455/mod_resource/content/1/Genomes_3%20-%20T.A.%20Brown_.pdf">https://edisciplinas.usp.br/pluginfile.php/5286455/mod_resource/content/1/Genomes_3%20-%20T.A.%20Brown_.pdf</a></li> </ol>

### SIXTEEN WEEK LESSON PLAN OF LABORATORY GENOMICS (MLS 712)

Week #	Lecture Topic	Duration	Outcome
Week 1	Fundamentals of DNA Biochemistry: An Overview-I	2 hrs	<p>At the end of lecture, student will be able to</p> <ul style="list-style-type: none"> <li>Describe the structure of DNA</li> </ul>
Week 2	Fundamentals of DNA Biochemistry: An Overview-II	2 hrs	<ul style="list-style-type: none"> <li>Explain the basis of genetics</li> </ul>
Week 3	Fundamentals of RNA	2 hrs	<ul style="list-style-type: none"> <li>Define how gene is transcribed into RNA</li> </ul>

	Biochemistry: An Overview-I		
Week 4	Fundamentals of RNA Biochemistry: An Overview-II	2 hrs	
Week 5	Fundamentals of Protein Biochemistry: An Overview-I	2 hrs	<ul style="list-style-type: none"> <li>• Illustrate how gene is translated into protein</li> </ul>
Week 6	Fundamentals of Protein Biochemistry: An Overview-II	2 hrs	
Week 7	Nucleic Acid Extraction Methods-I	2 hrs	
Week 8	Nucleic Acid Extraction Methods-II	2 hrs	<ul style="list-style-type: none"> <li>• Define the nucleic acid extraction methods</li> </ul>
Week 9	<b>MID TERM SEMESTER EXAM</b>		
Week 10	Gene Mutation	2 hrs	
Week 11	DNA Polymorphism and Human Identification	2 hrs	<ul style="list-style-type: none"> <li>• Discuss the clinical cases and interpret lab investigations related to genetic disorders</li> </ul>
Week 12	DNA Sequencing	2 hrs	<ul style="list-style-type: none"> <li>• Define DNA Sequencing and elaborate its mechanism</li> </ul>
Week 13	Detection and Identification of Microorganisms	2 hrs	<ul style="list-style-type: none"> <li>• Identify the genetic basis to detect various microorganism</li> </ul>
Week 14	Types of Gene Mutation	2 hrs	<ul style="list-style-type: none"> <li>• Distinguish various types of gene Mutation</li> </ul>
Week 15	Molecular Detection of Inherited Diseases-I	2 hrs	<ul style="list-style-type: none"> <li>• Discuss the clinical cases related to inherited disorders with reference to the lab diagnostic tests</li> </ul>
Week 16	Molecular Oncology	2 hrs	<ul style="list-style-type: none"> <li>• Explain the molecular basis of molecular oncology and related genes.</li> </ul>
Week 17	DNA-Based Tissue Typing	2 hrs	<ul style="list-style-type: none"> <li>• Elaborate DNA-Based Tissue Typing</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**SIXTEEN WEEK PRACTICAL PLAN OF LABORATORY GENOMICS (MLS 712)**

Week #	Lecture Topic	Duration	Outcome
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Week 1	Biosafety and Security in Genomic Laboratory	3 hrs	<p>At the end of practical, student will be able to</p> <ul style="list-style-type: none"> <li>Demonstrate Biosafety and Security in Genomic Laboratory</li> </ul>
Week 2	Introduction of Genomic Laboratory Equipment	3 hrs	<ul style="list-style-type: none"> <li>Elaborate the Genomic Laboratory Equipment</li> </ul>
Week 3	Introduction of Genomic Laboratory Consumables and Glasswares	3 hrs	<ul style="list-style-type: none"> <li>Define genomic lab consumables</li> </ul>
Week 4	Nucleic Acid Extraction Methods	3 hrs	<ul style="list-style-type: none"> <li>Perform DNA extraction by manual and kit methods</li> </ul>
Week 5	Resolution and Detection of Nucleic Acids	3 hrs	
Week 6	Analysis and Characterization of Nucleic Acids and Proteins	3 hrs	<ul style="list-style-type: none"> <li>Visualize DNA by electrophoresis</li> </ul>
Week 7	Nucleic Acid Amplification	3 hrs	<ul style="list-style-type: none"> <li>Perform DNA amplification of PCR</li> </ul>
Week 8	Chromosomal Structure and Chromosomal Mutations	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate diagnostic tests to detect Chromosomal Mutations</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	Gene Sequence Retrieval and Annotation by Ensembl Genome Browser	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate Gene Sequence Retrieval and Annotation by Ensembl Genome Browser</li> </ul>
Week 11	Single Nucleotide Polymorphism Identification and Selection	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate Single Nucleotide Polymorphism Identification and Selection</li> </ul>
Week 12	Primer Designing	3 hrs	<ul style="list-style-type: none"> <li>Design primer of desired sequence</li> </ul>
Week 13	DNA Purification for Sequencing	3 hrs	<ul style="list-style-type: none"> <li>Perform DNA purification</li> </ul>
Week 14	DNA Sequencing	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate sequencing procedures</li> </ul>
Week 15	DNA Sequencing Results Analysis	3 hrs	<ul style="list-style-type: none"> <li>Interpret DNA sequence results</li> </ul>
Week 16	Restriction Fragment Length Polymorphism (RFLP), Enzyme selection for RFLP by using NEBcutter	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate Length Polymorphism (RFLP), Enzyme selection for RFLP by using NEBcutter</li> </ul>
Week 17	Overview of lab genomics	3 hrs	<ul style="list-style-type: none"> <li>Overview of lab genomics and related tests</li> </ul>

Week 18	<b>FINAL TERM EXAM</b>
<b>3. BLOOD BANK TECHNOLOGY</b>	<b>3(2+1)</b>
<b>Course Code:</b>	MLS 713
<b>Credit Hours:</b>	3 (2+1)
<b>Course Title</b>	Blood Bank Technology
<b>Prerequisite</b>	SEMSTER I
<b>Course Objectives</b>	<p>This course is designed to:</p> <p>Describe the structure, properties and function of antigen and antibodies.</p> <p>Describe the Reagents, equipment and requirements of blood banking.</p> <p>Describe the biochemistry, genetics, antigen and antibodies of ABO and Rh blood groups system.</p> <p>Discuss the genetics, antibodies, antigens and clinical significance of minor blood group systems.</p> <p>Explain the Preparation, storage and quality control of blood components.</p> <p>Discuss the selection and rejection criteria of blood donor.</p> <p>Describe the types, pathophysiology and diagnosis of Hemolytic disease of the newborn (HDN).</p> <p>Discuss the Immunological and Non-immunological complications of transfusion reactions.</p> <p>Explain the Organization of blood bank and Quality control in blood bank.</p> <p>Describe and explain the risks, adverse effects, interactions and monitoring when using: whole blood; packed red cells; platelet concentrate; fresh frozen plasma; cryoprecipitate; human albumin solution; clotting factor concentrates; immunoglobulins.</p> <p>Discuss the types and methods of cross matching and coombs testing.</p> <p>Describe the precautions and testing that takes place to donated blood.</p>
<b>Course Outcomes</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Discuss the biochemistry, genetics, antigens and antibodies of major and minor blood group systems.</li> <li>2. Describe the donor selection and rejection criteria with screening.</li> <li>3. Explain the preparations, storage, adverse effects and quality control of all blood components.</li> <li>4. Compare the immunological and non- immunological complication of transfusion reactions take place in blood banking.</li> <li>5. Interpret the selection and Diagnosis of various tests for hemolytic disease of newborn.</li> </ol>
<b>Course Contents:</b>	Antigen and Antibodies, Reagents and equipment used in Blood banking, ABO blood group and Rh blood group system, minor blood group system, coombs test, cross matching, Antibody screening, Antibody titration, Investigation of acute hemolytic transfusion reactions, Du testing., Hemolytic disease of the newborn, transfusion reactions, selection and rejection criteria of blood donor. Organization and Quality control in blood banking.
<b>Recommended Text Books</b>	<ol style="list-style-type: none"> <li>1. AABB. Standards for Blood Banks and Transfusion Services (30th ed.) Bethesda, MD: AABB Publications. 2016.</li> <li>2. AABB. Standards for Immunohematology Reference Laboratories (9th</li> </ol>

	<p>ed.). Bethesda, MD AABB Publications. 2015.</p> <p>3. Blaney, K. D. &amp; Howard, P. R. Basic &amp; Applied Concepts of Blood Banking &amp; Transfusion Practices (3rd ed.). Maryland Heights, MO: Mosby. 2012.</p>
<b>Recommended Reference Books</b>	<p>1. Fung, M., et al. (Eds.). Technical Manual (18th ed.). Bethesda, MD: AABB Publications. 2014.</p> <p>2. Harmening, D.M. Modern Blood Banking and Transfusion Practices (6th ed.).Philadelphia: F.A. Davis Company. 2012.</p> <p>3. Johns, G., Zundel, W., Gockel-Blessing, E., &amp; Denesiuk, L. Clinical Laboratory Blood Banking &amp; Transfusion Medicine Practices (1st ed.). 7. Marques, M. Quick Guide to Hemostasis (3rd ed.). Washington, DC: AACC Publications. 2015.</p>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <p>1. <a href="https://zcmt.zu.edu.pk/postgraduate/ms-mphil-pgd-medical-technology/introduction/">https://zcmt.zu.edu.pk/postgraduate/ms-mphil-pgd-medical-technology/introduction/</a></p> <p>2. <a href="https://med.und.edu/education-training/medical-laboratory-science/categorical/index.html">https://med.und.edu/education-training/medical-laboratory-science/categorical/index.html</a></p> <p><b>Journals:</b></p> <p>Asian Journal of Transfusion Science</p> <p>International Journal of Blood Transfusion and Immunohematology</p> <p>Indian Journal of Hematology and Blood Transfusion</p> <p>Journal of applied hematology</p> <p>Journal of clinical and diagnostic research</p> <p><b>Others:</b></p> <p><a href="https://www.aabb.org/education/certificate-programmes/specialist-in-blood-bank-technology-and-other-certifications">https://www.aabb.org/education/certificate-programmes/specialist-in-blood-bank-technology-and-other-certifications</a></p>

### SIXTEEN WEEK LESSON PLAN OF BLOOD BANK TECHNOLOGY (MLS 713)

Week #	Lecture Topic	Duration	Outcome
Week 1	<ul style="list-style-type: none"> <li>Structure and functions of Antigen and Antibodies</li> <li>Detection of antigen antibodies reactions</li> </ul>	2 hrs	<p>At the end of lecture, student will be able to</p> <ul style="list-style-type: none"> <li>Define the structure and function of antigen and antibodies</li> <li>Detect antigen and antibody reaction fine the Demonstrate Laboratory Work Flow cycle with Phlebotomy equipment's along with Identification of Blood Collection Tubes &amp; Preparation of Blood Plasma and Serum</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>Requirements of a standard blood bank</li> <li>Preparation of basic reagents for blood bank</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Discuss the Requirements of a standard blood bank</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Types of anticoagulant use in</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Define the Types of anticoagulant use in blood bank</li> </ul>

	<p>blood bank</p> <ul style="list-style-type: none"> <li>• Structure and functions of ABO and Rh D Blood group system</li> </ul>		<ul style="list-style-type: none"> <li>• Discuss the Structure and functions of ABO and Rh D Blood group system</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>• Kell blood group system &amp; Duffy blood group system</li> <li>• MNS blood group system &amp; Ked blood group system</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Define the Kell blood group system &amp; Duffy blood group system</li> <li>• MNS blood group system &amp; Ked blood group system</li> </ul>
Week 5	<ul style="list-style-type: none"> <li>• Donor selection and Rejection criteria, phlebotomy of donor.</li> <li>• Screening and Processing of donor's blood</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Discuss the Donor selection and Rejection criteria, phlebotomy of donor.</li> </ul>
Week 6	<ul style="list-style-type: none"> <li>• Blood component &amp; products preparation</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Define the Blood component &amp; products preparation</li> </ul>
Week 7	<ul style="list-style-type: none"> <li>• Storage of blood and its importance in blood banking</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Explain the significance Storage of blood and its importance in blood banking</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>• Major and minor compatibility testing</li> <li>• Methods , procedure and importance of compatibility testing</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Define Major and minor compatibility testing Methods , procedure and importance of compatibility testing</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	<ul style="list-style-type: none"> <li>• Anti-human globulin test, &amp; types of AHG test</li> <li>• Procedure, importance and quality control of AHG</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Define the Anti-human globulin test, &amp; types of AHG test</li> </ul>
Week 11	<ul style="list-style-type: none"> <li>• Introduction of check cells, and its preparation</li> <li>• Importance of check cells, its application</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Define check cells, and its preparation</li> </ul>

Week 12	<ul style="list-style-type: none"> <li>Introduction of hemolytic transfusion reactions (HTR)</li> <li>Types of hemolytic transfusion reactions</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Compare the Types of hemolytic transfusion reactions</li> </ul>
Week 13	<ul style="list-style-type: none"> <li>Lab diagnosis of transfusion reaction</li> <li>Management of transfusion reaction</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Interpret the lab results related to diagnosis of transfusion reaction</li> </ul>
Week 14	<ul style="list-style-type: none"> <li>Hemolytic disease of newborn and its classification, Pathophysiology, diagnosis and management of HDN</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Discuss the clinical cases related to Hemolytic disease of newborn and its classification</li> </ul>
Week 15	<ul style="list-style-type: none"> <li>HLA typing</li> <li>Quality control in blood bank</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Define HLA typing and significance of QA control in blood banking</li> </ul>
Week 16	<ul style="list-style-type: none"> <li>Quality assurance of blood banking</li> <li>Organization of blood bank</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Propose Quality assurance of blood banking as per guidelines</li> </ul>
Week 17	<ul style="list-style-type: none"> <li>Anti-human globulin test, &amp; types of AHG test</li> <li>Procedure, importance and quality control of AHG</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Interpret the Anti-human globulin test results</li> <li>Discuss the types of AHG test</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

#### SIXTEEN WEEK PRACTICAL PLAN OF BLOOD BANK TECHNOLOGY (MLS 713)

Week #	Lecture Topic	Duration	Outcome
Week 1	Advanced Phlebotomy I/V technique	3 hrs	<p>At the end of practical, student will be able to</p> <ul style="list-style-type: none"> <li>Perform Phlebotomy as per WHO guidelines</li> </ul>
Week 2	Instruments use in blood bank	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate the Instruments use in blood bank</li> </ul>
Week 3	ABO Blood grouping (forward and Reverse)	3 hrs	<ul style="list-style-type: none"> <li>Perform the ABO blood grouping</li> </ul>

Week 4	Rh Blood grouping and Du testing	3 hrs	<ul style="list-style-type: none"> <li>• Perform the Rh Blood grouping</li> </ul>
Week 5	Direct and Indirect Coomb's test with various methods (manual + Gel card method)	3 hrs	<ul style="list-style-type: none"> <li>• Perform the Direct and Indirect Coomb's test</li> </ul>
Week 6	Major and minor Cross match by various methods	3 hrs	<ul style="list-style-type: none"> <li>• Demonstrate the Major and minor Cross match by various methods</li> </ul>
Week 7	Antibodies screening	3 hrs	<ul style="list-style-type: none"> <li>• Describe Antibodies screening</li> </ul>
Week 8	Antibodies Identification	3 hrs	<ul style="list-style-type: none"> <li>• Demonstrate Antibodies Identification</li> </ul>
Week 9	<b>MID-TERM SEMESTER EXAM</b>		
Week 10	Blood component preparation (packed Red blood cells)	3 hrs	<ul style="list-style-type: none"> <li>• Demonstrate and Perform Blood component preparation</li> </ul>
Week 11	Blood component preparation (FFP and Platelets)	3 hrs	
Week 12	Blood component preparation (Cryoprecipitate)	3 hrs	
Week 13	Check cell preparation and its uses.	3 hrs	<ul style="list-style-type: none"> <li>• Demonstrate the cell preparation and its uses.</li> </ul>
Week 14	Antibody titration	3 hrs	<ul style="list-style-type: none"> <li>• Perform the antibody titration</li> </ul>
Week 15	Discrepancies in ABO grouping	3 hrs	<ul style="list-style-type: none"> <li>• Interpret the Discrepancies in ABO grouping</li> </ul>
Week 16	Quality control of all Equipment's and reagents used in blood banking	3 hrs	<ul style="list-style-type: none"> <li>• Analyze the Quality control of all Equipment's and reagents used in blood banking</li> </ul>
Week 17	Overview of the blood bank techniques	3 hrs	<ul style="list-style-type: none"> <li>• Discuss the blood bank techniques</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**4. CLINICAL PHARMACOLOGY AND THERAPEUTICS****3(2+1)**

<b>Course Code:</b>	MLS 714
<b>Credit Hours:</b>	3 (2+1)
<b>Course Title</b>	<b>CLINICAL PHARMACOLOGY AND THERAPEUTICS</b>
<b>Prerequisite</b>	SEMESTER I
<b>Course Objectives</b>	<p>This course is designed to:</p> <p>Provide students comprehensive understanding of issues related to the development and regulation of drugs, biologics, vaccines and in vitro diagnostics.</p> <p>Provide an in-depth look at drug absorption, distribution, metabolism and excretion.</p> <p>Describe the impact of age, pregnancy, and disease on pharmacokinetics.</p> <p>Define the basic principles in the assessment of drug effects.</p> <p>Identify factors that can influence drug action.</p> <p>Compare drug tolerance and cumulative drug effect.</p> <p>Explore the adverse drug actions and allergic drug reactions</p> <p>Provide an overview of clinical pharmacotherapy including pharmacogenomics and medication safety.</p> <p>Understand Drug Development and Clinical Trials</p> <p>Evaluate the science, laws, and regulations pertaining to the development and review of new drug products.</p> <p>Expand students' knowledge base beyond their initial field of specialization and hence, to empower them to make critical decisions during the development of a medicine</p>
<b>Course Outcomes</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Describe the pharmacokinetics., mechanism of action, indications, side effects, toxicity and contraindications of drugs used in common diseases prevalent in Pakistan</li> <li>2. Acquire advance knowledge and focuses on understanding what a drug is doing to the body (pharmacodynamics), what happens to a drug in the body (pharmacokinetics), and how drugs work in terms of treating a particular disease</li> <li>3. Describe how drugs influence human physiology and the way the body responds</li> <li>4. Correlate clinical investigations exploring pharmacokinetic and pharmacodynamics relationships</li> <li>5. Investigate and formulate the role of novel drug targets against multiple disease</li> <li>6. Understand, analyze, interpret and to report clinical research and clinical trials</li> </ol>
<b>Course Contents:</b>	This course covers the fundamentals of clinical pharmacology as a translational scientific discipline focused on rational drug development and utilization in therapeutics. The course focuses on the following core principles of pharmacology: Drug nomenclature, Drug classes, Drug modalities, Routes of administration pharmacokinetics; Absorption, Bioavailability, Distribution,

	Body compartments, Volume of distribution, drug metabolism and transport; drug therapy in special populations; assessment of drug effects; drug discovery and development; pharmacogenomics and pharmacotherapy.
<b>Recommended Text Books</b>	<ol style="list-style-type: none"> <li>Huang, S. M., Lertora, J. J., &amp; Atkinson Jr, A. J. (Eds.). (2012). Principles of clinical pharmacology. Academic Press.</li> <li>Katzung, Bertram G., and Anthony J. Trevor, eds. "Basic &amp; clinical pharmacology." (2012).</li> <li>Bennett, P. N., &amp; Brown, M. J. (2007). Clinical Pharmacology E-Book: With STUDENTCONSULT Access. Elsevier health sciences.</li> <li>Ritter, J., Lewis, L., Mant, T., &amp; Ferro, A. (2008). A textbook of clinical pharmacology and therapeutics. CRC Press.</li> <li>Crommelin, D. J., &amp; Sindelar, R. D. (2008). Pharmaceutical biotechnology: fundamentals and applications. CRC Press.</li> </ol>
<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>Gallin, J. I., &amp; Ognibene, F. P. (Eds.). (2012). Principles and practice of clinical research. Academic Press.</li> <li>Steimer, J. L., Vozeh, S., Racine-Poon, A., Holford, N., &amp; O'Neill, R. (1994). The population approach: rationale, methods, and applications in clinical pharmacology and drug development. In Pharmacokinetics of drugs (pp. 405-451). Springer, Berlin, Heidelberg.</li> <li>Strom, B. L., Kimmel, S. E., &amp; Hennessy, S. (Eds.). (2013). Textbook of pharmacoepidemiology (pp. 447-454). John Wiley &amp; Sons.</li> </ol>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li><a href="https://pharmacology.georgetown.edu/ms-in">https://pharmacology.georgetown.edu/ms-in</a> pharmacology -courses/</li> <li><a href="https://www.superior.edu.pk/faculties/ms-mphil-pharmacology/">https://www.superior.edu.pk/faculties/ms-mphil-pharmacology/</a></li> <li><a href="https://www.edx.org/course/introduction-to_pharmacology">https://www.edx.org/course/introduction-to_pharmacology</a></li> <li><a href="https://study.com/academy/course/introduction-to-pharmacology.htm">https://study.com/academy/course/introduction-to-pharmacology.htm</a></li> </ol> <p><b>Journals:</b></p> <p>Frontiers in pharmacology      Advances in Pharmacology (Hindawi)      British journal of Pharmacology (Wiley online library)      Journal of Pharmacology and Experimental Therapeutics</p> <p><b>Others:</b></p> <p>Strom, B. L., Kimmel, S. E., &amp; Hennessy, S. (Eds.). (2013). Textbook of pharmacoepidemiology (pp. 447-454). John Wiley &amp; Sons</p>

**SIXTEEN WEEK LESSON PLAN OF CLINICAL PHARMACOLOGY AND THERAPEUTICS (MLS 714)**

Week #	Lecture Topic	Duration	Outcome
Week 1	Introduction to Clinical Pharmacology	2 hrs	<ul style="list-style-type: none"> <li>Acquire basic knowledge of Drug nomenclature &amp; Drug classes Drug modalities &amp; Routes of administration</li> </ul>
Week 2	Pharmacokinetics I	2 hrs	<ul style="list-style-type: none"> <li>Explain Drug Absorption, Bioavailability, Distribution, Volume of distribution</li> </ul>

Week 3	Pharmacokinetics II	2 hrs	<ul style="list-style-type: none"> <li>Understand Phase 1 and 2 reactions, First-pass metabolism, Excretion</li> </ul>
Week 4	Drug Therapy in Special Populations	2 hrs	<ul style="list-style-type: none"> <li>Describe Drug Therapy in Special Populations</li> </ul>
Week 5	Assessment of Drug Effects	2 hrs	<ul style="list-style-type: none"> <li>Understand assessment of Drug Effects</li> </ul>
Week 6	Drug Discovery and Development Drug discovery and design	2 hrs	<ul style="list-style-type: none"> <li>Acquire advance knowledge of Drug Discovery and Development</li> </ul>
Week 7	Drug development	2 hrs	<ul style="list-style-type: none"> <li>Explain phases of Preclinical drug development and Clinical drug development</li> </ul>
Week 8	Drug Metabolism and Transport	2 hrs	<ul style="list-style-type: none"> <li>Explain Drug Metabolism and Transport</li> </ul>
Week 9	<b>MID TERM SEMESTER EXAM</b>		
Week 10	Drug toxicity	2 hrs	<ul style="list-style-type: none"> <li>Describe Toxic and lethal dosing and Mechanisms of drug toxicity</li> </ul>
Week 11	Drug and Receptor	2 hrs	<ul style="list-style-type: none"> <li>Understand receptor and ligand binding</li> </ul>
Week 12	Pharmacogenomics and Pharmacotherapy	2 hrs	<ul style="list-style-type: none"> <li>Acquire advance knowledge of Pharmacogenomics and Pharmacotherapy</li> </ul>
Week 13	Drug interactions	2 hrs	<ul style="list-style-type: none"> <li>Describe adverse drug reactions</li> </ul>
Week 14	Common drug mechanisms	2 hrs	<ul style="list-style-type: none"> <li>Understand role of Receptors, enzymes, ion channels, and transporters</li> </ul>
Week 15	Drug therapies	2 hrs	<ul style="list-style-type: none"> <li>Describe the Protein-based, gene-based, and cell-based therapies</li> </ul>
Week 16	Dose response relationships	2 hrs	<ul style="list-style-type: none"> <li>Understand advanced knowledge of Dose response relationships and Individual variation</li> </ul>
Week 17	New drug mechanism	2 hrs	<ul style="list-style-type: none"> <li>Understand the mechanism of action of commonly used drugs</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**SIXTEEN WEEK PRACTICAL PLAN OF CLINICAL PHARMACOLOGY AND THERAPEUTIC (MLS 714)**

Week #	Lecture Topic	Duration	Outcome
Week 1	Overview of instruments, essential in clinical pharmacology	3 hrs	<p>At the end of the practical, the student should be able to</p> <ul style="list-style-type: none"> <li>Identify instruments used in pharmacology lab for research</li> </ul>
Week 2	Spectroscopic techniques	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate commonly used instruments in</li> </ul>

Week 3	High performance liquid chromatography	3 hrs	experimental pharmacology
Week 4	Drug administration	3 hrs	<ul style="list-style-type: none"> <li>Study of different routes of drug administration</li> </ul>
Week 5	Drug dose	3 hrs	<ul style="list-style-type: none"> <li>Study forms and formulation of drugs and calculation of drug dose</li> </ul>
Week 6	Solution preparation for test dose	3 hrs	<ul style="list-style-type: none"> <li>Prepare solution for test dose of penicillin</li> </ul>
Week 7	Pharmacokinetics of oral drug	3 hrs	<ul style="list-style-type: none"> <li>Analyze the pharmacokinetics of a tablet following single oral dose</li> </ul>
Week 8	Pharmacokinetic parameters	3 hrs	<ul style="list-style-type: none"> <li>Study primary and secondary pharmacokinetic parameters</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	Study of Lab Animals	3 hrs	<ul style="list-style-type: none"> <li>To study the laboratory animals</li> <li>Mice</li> <li>Rats</li> <li>Rabbit</li> <li>Guinea pigs</li> </ul>
Week 11	Blood Collections	3 hrs	<ul style="list-style-type: none"> <li>Perform techniques of blood collection form laboratory animals</li> </ul>
Week 12	Pre-clinical research	3 hrs	<ul style="list-style-type: none"> <li>Explore the types of pre-clinical experiments</li> </ul>
Week 13	Cardiac stimulants	3 hrs	<ul style="list-style-type: none"> <li>Observe the Effect of cardiac stimulants and depressants on perfused frog's heart</li> </ul>
Week 14	Antidepressants drugs	3 hrs	<ul style="list-style-type: none"> <li>Examine the action of antidepressants/ anxiolytics on rats</li> </ul>
Week 15	Assessment Locomotors activity	3 hrs	<ul style="list-style-type: none"> <li>Examine the study of drugs on locomotor activity using behavioral models</li> </ul>
Week 16	Drug overdose and poisoning	3 hrs	<ul style="list-style-type: none"> <li>Study of drug overdose and poisoning</li> </ul>
Week 17	Study of Lab Animals	3 hrs	<ul style="list-style-type: none"> <li>To study the laboratory animals</li> <li>Mice</li> <li>Rats</li> <li>Rabbit</li> <li>Guinea pigs</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**5. ANTIMICROBIAL AGENTS AND DRUG RESISTANCE****3 (2+1)**

<b>Course Code:</b>	MLS 715
<b>Credit Hours:</b>	3 (2+1)
<b>Course Title</b>	Antimicrobial Agents and Drug Resistance
<b>Prerequisite</b>	SEMESTER I and SEMESTER II
<b>Course Objectives</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the basic concepts and general principles of antimicrobial agents and drug resistance against microbial diseases.</li> <li>2. Describe the classes and clinical use of antimicrobial agents.</li> <li>3. Explain the mode of action of Beta-Lactam group of antibiotics.</li> <li>4. Describe the mode of action of other cell wall and membrane active antibiotics.</li> <li>5. Outline the mechanism of action, resistance and pharmacokinetic properties of tetracycline.</li> <li>6. Illustrate the mechanism of action, pharmacokinetics and clinical uses of macrolide, clindamycin and lincomycin group of antibiotics.</li> <li>7. Classify the mechanism of action and current use of glycyclcycline, glycopeptides, lipopeptides and lipoglycopeptides.</li> <li>8. Classify the mode of action, mechanism of resistance and clinical use of aminoglycosides.</li> <li>9. Compare the use of other drugs like fosfomycin and metranidazole in specialized cases.</li> <li>10. Categorize the basic concepts, antimicrobial activity and resistance of sulfonamides.</li> <li>11. Examine the mechanism of action, resistance, pharmacokinetics and clinical uses of quinolones group of antibiotics.</li> <li>12. Explain the use of antimycobacterial drugs against the diseases tuberculosis.</li> <li>13. Comprehend the clinical use of topical antibacterial and antifungal drugs for various infections.</li> <li>14. Investigate the drug classification, chemoprophylaxis and clinical uses of antiprotozoal drugs.</li> <li>15. Recommend the use of miscellaneous antimicrobial agents, disinfectants, antiseptics according to the diseases.</li> <li>16. Assess the recent advancements about the use of natural medicine to decrease drug resistance.</li> <li>17. Employ online databases to utilize genomic, chemical, and epidemiological data on AMR</li> </ol>
<b>Course Outcomes</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Define the basic principles of antimicrobial agents and resistance against microbial diseases.</li> <li>2. Explain the mechanism of action, resistance, pharmacokinetics, clinical uses and drug resistance of antibacterial, antifungal, anti mycobacterial and antiprotozoal therapeutic agents.</li> <li>3. Differentiate the use of effective antimicrobial agents and disinfectants according to the specific infections.</li> <li>4. Comprehend the use of alternative medicine according to the recent research.</li> </ol>

<b>Course Contents:</b>	Antimicrobial agents and their increased resistance, Mechanism of Action, drug resistance and clinical uses of Beta-Lactam, Tetracycline, Macrolide, Aminoglycoside, Sulfonamide, Quinolone group of antibiotics. Use of antimycobacterial agents for tuberculosis, Use of miscellaneous antimicrobial agents for protozoal infections, Use of alternatives or natural Medicine against drug resistance.
<b>Recommended Text Books</b>	<ol style="list-style-type: none"> <li>1. Basic &amp; Clinical Pharmacology, 14th Edition, A LANGE Medical Book</li> <li>2. Antimicrobial Agents, Edited by Varaprasad Bobbarala., A Text Book.</li> <li>3. Goodman &amp; Gilman's Manual of Pharmacology and Therapeutics</li> </ol>
<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>1. Handbook of Antimicrobial Agents (2015), Leslie Hunt (Editor)</li> <li>2. Jawetz, Melnick Adelberg's Medical Microbiology 28th Edition</li> <li>3. Antibiotic Drug Resistance (2020), Editor: José-Luis Capelo-Martínez, Gilberto Igrejas.</li> <li>4. Multi Drug Resistance: A Global Concern (2012), Editors: Asad Ullah Khan, Raffaele Zarrilli</li> </ol>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li>1. <a href="https://www.sciencedirect.com/science/article/pii/B9780444521668500339">https://www.sciencedirect.com/science/article/pii/B9780444521668500339</a></li> <li>2. <a href="https://www.sciencedirect.com/science/article/pii/B9780128053515000077">https://www.sciencedirect.com/science/article/pii/B9780128053515000077</a></li> <li>3. <a href="https://www.ncbi.nlm.nih.gov/books/NBK8263/">https://www.ncbi.nlm.nih.gov/books/NBK8263/</a></li> </ol> <p><b>Journals:</b></p> <ol style="list-style-type: none"> <li>1. International Journal of Antimicrobial Agents</li> <li>2. Journal of Microbial Drug Resistance</li> <li>3. Infection and Drug Resistance</li> <li>4. Journal of Antimicrobial Agents and Chemotherapy</li> </ol> <p><b>Others:</b></p> <p>Antimicrobial Agents: Antibacterial and Antifungals, Editor André Bryskier</p>

#### SIXTEEN WEEK LESSON PLAN OF ANTIMICROBIAL AGENTS AND DRUG RESISTANCE (MLS 715)

Week #	Lecture Topic	Duration	Outcome
Week 1	Drug Resistance and Cross Resistance	2 hrs	<p>At the end of the lecture , student will able to</p> <ul style="list-style-type: none"> <li>• Define drug resistance, their origin and cross resistance with clinical implications.</li> <li>• Explain the mechanism of drug resistance and their selective toxicity.</li> </ul>

Week 2	Classes of Antimicrobial Agents	2 hrs	<ul style="list-style-type: none"> <li>Classify the antimicrobial agents based on their chemical groups.</li> <li>Differentiate many antimicrobial agents according to generalized diseases and infections</li> </ul>
Week 3	Penicillin and their Mechanism of action.	2 hrs	<ul style="list-style-type: none"> <li>Explain the mode of action of Penicillin, Penicillin binding proteins and their targeted sites.</li> <li>Understand the Mode of action od B-Lactam antibiotics specifically inhibiting the peptidoglycan of cell wall</li> </ul>
Week 4	Inhibition of Cell Wall Synthesis	2 hrs	<ul style="list-style-type: none"> <li>Describe the gram negative cell wall inhibitors of penem group of penicillin antibiotic.</li> <li>Explain the broad spectrum of antibiotics by studying the drugs that inhibit cell wall synthesis.</li> </ul>
Week 5	Inhibition of Protein Synthesis	2 hrs	<ul style="list-style-type: none"> <li>Explain the mode of action tetracycline group of antibiotics against gram negative bacteria.</li> <li>Distinguish the current mechanism of resistance of tetracycline against protein synthesis.</li> </ul>
Week 6	Inhibition of Protein Synthesis, Chromosomal and Plasmid Resistance	2 hrs	<ul style="list-style-type: none"> <li>Describe the mode of action of Macrolide, clindamycin and lincomycin group of antibiotics.</li> <li>Compare the Chromosomal Plasmid Resistance and Phage Resistance mechanisms against macrolide group of antibiotics.</li> </ul>
Week 7	Aminoglycosides and glycopeptides.	2 hrs	<ul style="list-style-type: none"> <li>Explain the mode of Action of Aminoglycosides and glycopeptides.</li> </ul>
Week 8	Inhibition of Nucleic acid Synthesis	2 hrs	<ul style="list-style-type: none"> <li>Explain Inhibition of Nucleic acid Synthesis and Mechanism of Resistance of (Sulfonamides)</li> <li>Mode of action of fosfomycin and metronidazole in specialized diseased cases.</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	Drug Resistance and Cross Resistance	2 hrs	<ul style="list-style-type: none"> <li>Describe the Classification and Inhibition of Nucleic acid Synthesis (Quinolone Antibiotics)</li> <li>Internal Drug Resistance and Efflux Pump for Quinolone Group of Antibiotics.</li> </ul>
Week 11	Classes of Antimicrobial Agents	2 hrs	<ul style="list-style-type: none"> <li>Understand Antibiotic Resistance: Bacterial Biofilms</li> <li>Multidrug Resistant Bacteria: MRSA and VRSA</li> </ul>
Week 12	Penicillin and their Mechanism of action.	2 hrs	<ul style="list-style-type: none"> <li>Explain Drugs used to treat Mycobacterium tuberculosis</li> <li>Resistant Mycobacterial Strains and Techniques for Detection of mycobacterial resistant organisms.</li> </ul>

Week 13	Inhibition of Cell Wall Synthesis	2 hrs	<ul style="list-style-type: none"> <li>Describe Antifungal Prophylaxis and Chemotherapy</li> <li>Antifungal and Antibacterial Drugs used to treat Topical Infections.</li> </ul>
Week 14	Inhibition of Protein Synthesis	2 hrs	<ul style="list-style-type: none"> <li>Describe Antibiotic Resistance Reservoirs</li> <li>Sterilants, Disinfection and Antiseptic agents.</li> </ul>
Week 15	Inhibition of Protein Synthesis, Chromosomal and Plasmid Resistance	2 hrs	<ul style="list-style-type: none"> <li>Understand Antimicrobial Resistance: Parasitic Infections</li> <li>Pesticide Resistance: Genetically Modified Organisms.</li> </ul>
Week 16	Aminoglycosides and glycopeptides.	2 hrs	<ul style="list-style-type: none"> <li>Natural Medicine used as Alternative Therapy</li> <li>Extraction of Antimicrobial Natural Compounds to decrease resistance</li> </ul>
Week 17	Inhibition of Nucleic acid Synthesis	2 hrs	<ul style="list-style-type: none"> <li>Antibiotic Resistance Genes in Waste water</li> <li>Online Database for AMR Genes</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**SIXTEEN WEEK PRACTICAL PLAN OF ANTIMICROBIAL AGENTS AND DRUG RESISTANCE  
(MLS 715)**

Week #	Lecture Topic	Duration	Outcome
Week 1	Stock Solutions	3 hrs	At the end of the practical, student should be able to <ul style="list-style-type: none"> <li>Demonstrate the stock solutions of antibiotics.</li> </ul>
Week 2	Bacterial Turbidity Index	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate the inoculum of microorganism according to Mc Farland's Turbidity Index and Spectrophotometer.</li> </ul>
Week 3	Antibiotic Sensitivity Testing (Automatic Method)	3 hrs	<ul style="list-style-type: none"> <li>Identify the bacterial isolate and sensitivity through Vitek Compact System.</li> </ul>
Week 4	Minimum Inhibitory Concentration	3 hrs	<ul style="list-style-type: none"> <li>Determine the Minimum Inhibitory Concentration (MIC) through broth dilution method.</li> </ul>
Week 5	Minimum Bactericidal Concentration	3 hrs	<ul style="list-style-type: none"> <li>Determine the Minimum Bactericidal Concentration (MBC) through broth dilution Method.</li> </ul>
Week 6	Epsilometer Test	3 hrs	<ul style="list-style-type: none"> <li>Determine the Minimum Inhibitory Concentration through Epsilometer Test (E-Test).</li> </ul>
Week 7	Synergistic and Antagonistic Effect of Antibiotics	3 hrs	<ul style="list-style-type: none"> <li>Compare the synergistic and antagonistic effects through combination based antimicrobial therapy.</li> </ul>

Week 8	Fractional Inhibitory Concentration (FIC)	3 hrs	<ul style="list-style-type: none"> <li>Determine the Fractional Inhibitory Concentration (FIC).</li> </ul>
Week 9	<b>MID-TERM SEMESTER EXAM</b>		
Week 10	Fractional Bactericidal Concentration (FBC)	3 hrs	<ul style="list-style-type: none"> <li>Determine the Fractional Inhibitory Concentration (FIC).</li> </ul>
Week 11	Development of Animal Models	3 hrs	<ul style="list-style-type: none"> <li>Observe the effect of B-Lactam antibiotics on Mice Animal Models.</li> </ul>
Week 12	Development of Animal Models	3 hrs	<ul style="list-style-type: none"> <li>Detect the effect of B-Lactam antibiotics on Mice Animal Models.</li> </ul>
Week 13	Antifungal Agents	3 hrs	<ul style="list-style-type: none"> <li>Observe the effect of antifungal agents against Candidiasis.</li> </ul>
Week 14	Antifungal Agents	3 hrs	<ul style="list-style-type: none"> <li>Detect the effect of antifungal agents against Candidiasis.</li> </ul>
Week 15	Synthetic and Man-made Antibiotics	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate the efficacy and potency between synthetic antibiotics and natural medicines.</li> </ul>
Week 16	Synthetic and Man-made Antibiotics	3 hrs	<ul style="list-style-type: none"> <li>Analyze the the efficacy and potency between synthetic antibiotics and natural medicines.</li> </ul>
Week 17	Synthetic and Man-made Antibiotics	3 hrs	<ul style="list-style-type: none"> <li>Analyze the the efficacy and potency between synthetic antibiotics and natural medicines.</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**6. LABORATORY BIOSAFETY AND BIOSECURITY****3 (2+1)**

<b>Course Code:</b>	MLS 716
<b>Credit Hours:</b>	3 (2+1)
<b>Course Title</b>	Laboratory Biosafety and Biosecurity
<b>Prerequisite</b>	SEMESTER I
<b>Course Objectives</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>Understand the basic concepts of biosafety and biosecurity.</li> <li>Describe the primary controls and levels of biosafety.</li> <li>Outline the strategies of Biological Risk Mitigation.</li> <li>Determine the risk and their types and classification of risk groups.</li> <li>Distinguish the different classes of fire extinguishers and their application in laboratory.</li> <li>Classify the basic concepts regarding the use of chemical with their appropriate chemical safety levels.</li> <li>Assess the basic principles and practices of containment levels in applied biosafety.</li> <li>Demonstrate the Evaluation and Verification of Standard Operating</li> </ol>

	<p>Procedures.</p> <ol style="list-style-type: none"> <li>9. Explain the personal protective equipment's used in the laboratory.</li> <li>10. Examine the safety surveillance system in laboratories.</li> <li>11. Categorize the ethics, principles, and basic concepts for shipping of infectious substances.</li> <li>12. Explain the biosafety cabinets and working principle of biosafety cabinet types.</li> <li>13. Compose an occupational health Programme and one health security Programme in biosafety.</li> <li>14. Understand the eight primary controls of biosecurity and dual-use of pathogens.</li> <li>15. Study the select agent Programme for biosecurity and potential use of agents as a bioterrorism.</li> <li>16. Establish the policy for Dual Use Research of Concern (DURC) for Institutional Oversight of Life Sciences.</li> <li>17. Construct the segregation strategies of waste and managing biomedical waste.</li> </ol>
<b>Course Outcomes</b>	Upon successful completion of this course, the student will be able to: <ol style="list-style-type: none"> <li>1. Students will be able to describe the basic features of a BSL-1, 2,3, and 4 by BMBL and Core, Heightened and Maximum Containment by WHO</li> <li>2. Student will be able to define the components of a biological risk assessment</li> <li>3. Students will understand how PPE protect the different routes of exposure from infection</li> <li>4. Students will describe when it is appropriate to use the PPE.</li> <li>5. Students will learn that an engineering control is the removal of a hazard at its source by design of equipment or facility.</li> <li>6. Students will learn that a biosafety cabinet provides, user, product, and environmental protection.</li> <li>7. Students will learn that laboratories are rated by the estimated volume of flammable materials present and designed accordingly with sprinkler systems, fire extinguishers, and emergency exits.</li> <li>8. Students will distinguish the biosecurity controls and appropriate use of pathogens as dual use research concern.</li> </ol>
<b>Course Contents:</b>	General concepts and basic principles of biosafety and biosecurity controls. The course will also cover the principles, practices, and containment strategies according to biosafety and biosecurity regulations.
<b>Recommended Text Books</b>	<ol style="list-style-type: none"> <li>1. Biosafety in Microbiological and Biosafety Laboratories, BMBL, 5th Edition</li> <li>2. WHO Laboratory Biosafety Manual</li> <li>3. Biological Safety: Principles and Practices (ASM Books) 5th Edition by Karen B. Byers (Editor), Dawn P. Wooley</li> </ol>

<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>1. Laboratory Biorisk Management: Biosafety and Biosecurity, 1st Edition By Reynolds M. Salerno (Editor), Jennifer Gaudioso (Editor).</li> <li>2. Laboratory Biosecurity Handbook [Laboratory Biosecurity Handbook] Sandia National Laboratories.</li> <li>3. CEN Workshop Agreement 15793: Laboratory Biorisk Management Standard[CWA 15793]European Committee for Standardization (CEN)</li> </ol>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li>1. <a href="https://www.ncbi.nlm.nih.gov/books/NBK218639/">https://www.ncbi.nlm.nih.gov/books/NBK218639/</a></li> <li>2. <a href="https://apps.who.int/iris/bitstream/handle/10665/69390/WHO_CDS_EPR_2006.6_eng.pdf">https://apps.who.int/iris/bitstream/handle/10665/69390/WHO_CDS_EPR_2006.6_eng.pdf</a></li> <li>3. <a href="https://www.bgsu.edu/content/dam/BGSU/envhs/documents/Lab-Safety/Biosafety-and-Infectious-Waste-Safety-Procedures.pdf">https://www.bgsu.edu/content/dam/BGSU/envhs/documents/Lab-Safety/Biosafety-and-Infectious-Waste-Safety-Procedures.pdf</a></li> </ol> <p><b>Journals:</b></p> <ol style="list-style-type: none"> <li>1. Journal of Biosafety and Biosecurity</li> <li>2. International Journal of Environmental Research and Public Health</li> <li>3. Journal of Biosafety and Health</li> </ol> <p><b>Others:</b></p> <ol style="list-style-type: none"> <li>1. Biosafety and Biosecurity: Regulatory Impact 551, Robert J. Hawley and Theresa D. Bell Toms</li> </ol>

## SIXTEEN WEEK LESSON PLAN OF LABORATORY BIOSAFETY AND BIOSECURITY (MLS 716)

Week #	Lecture Topic	Duration	Outcome
Week 1	<ul style="list-style-type: none"> <li>• Principles and Four Primary Controls of Biosafety</li> <li>• Using Biosafety in Microbiological and Biomedical Laboratories</li> </ul>	2 hrs	<p>At the end of lecture, student will able to</p> <ul style="list-style-type: none"> <li>• Understand the basic principles, controls and containment practices of biosafety in laboratory.</li> <li>• Discuss the current practices used in the laboratory and standard protocols for clinical laboratories</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>• Safety Equipment (Primary and Secondary Barrier)</li> <li>• Personal Protective Equipment</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Explain the significance of containment barriers.</li> <li>• Use of PPE relevant to the clinical laboratory and modified PPE with other sophisticated procedures.</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>• Biological Risk Assessment</li> <li>• Facilitating a Culture of Safety through Risk Assessment</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Identify the biological hazards and valuable biological materials in laboratory</li> <li>• Create a risk assessment strategy and implement in the clinical laboratory.</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>• Sterilization, Disinfection and Antiseptics</li> <li>• Safety Climate in Lab Versus Safety</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Explain the basic concepts of complete removal and partial removal of organisms.</li> <li>• Illustrate the difference between What we say in laboratory and What we really do in Laboratory.</li> </ul>

	Culture		
Week 5	<ul style="list-style-type: none"> <li>Classification of Risk Groups</li> <li>Risk Criteria for Ascending Level of Containment</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Outline the basic features of Risk groups with different levels of risk.</li> <li>Design a Containment Plan according to the surrounding laboratories explaining the levels of risk</li> </ul>
Week 6	<ul style="list-style-type: none"> <li>Classification of Fire Extinguishers and their use.</li> <li>Chemical Safety Levels and their use.</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Use of fire extinguishers and their classification.</li> <li>Comprehend the chemical safety levels and their specific precautions according to the laboratory.</li> </ul>
Week 7	<ul style="list-style-type: none"> <li>Laboratory Biosafety Levels (BSL-1 , BSL, Standard Microbiological Practices, Special Practices, Safety Equipment and Laboratory Facilities.</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Compare the different levels of Biosafety levels 1 and Levels 2 according to BMBL and WHO guidelines.</li> <li>Compare the different levels of Biosafety levels 3 and Levels 4 according to BMBL and WHO guidelines.</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>Vertebrate Animal Biosafety Levels (ABSL 1 2 3 4 ) Standard Microbiological Practices, Special Practices, Safety Equipment and Laboratory Facilities</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Compare the different levels of Animal Biosafety levels 1 and Levels 2 according to BMBL and WHO guidelines</li> <li>Compare the different levels of Animal Biosafety levels 3 and Levels 4 according to BMBL and WHO guidelines.</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	<ul style="list-style-type: none"> <li>Safety Surveillance System in Laboratory</li> <li>Occupational Health Support System and One Health Security</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Compare the difference between a well-written and poorly-written SOP.</li> <li>Create a document of well-written SOP according to the laboratory infrastructure.</li> </ul>
Week 11	<ul style="list-style-type: none"> <li>Standard Operating Procedures</li> <li>Writing a SOP</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Outline the principles of primary containment and bio hazardous materials in the laboratory.</li> <li>Categorize different packaging materials for the</li> </ul>

	according to Laboratory Design.		shipment of infectious substances.
Week 12	<ul style="list-style-type: none"> <li>Primary Containment and Biohazard</li> <li>Transportation of Infectious Substances</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Explain the use of HEPA and ULPA filter, directional airflow and their importance in laboratory.</li> <li>Categorize the different types of biological safety cabinets and their recommendations according to the guidelines.</li> </ul>
Week 13	<ul style="list-style-type: none"> <li>Types of Filters - HEPA and ULPA Filters</li> <li>Biological Safety Cabinet and their types</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Discuss the standard protocols for the use of volatile chemical agents.</li> <li>Categorize the different classes of chemical, their specific use and record keeping in the form Management Safety Data Sheets (MSDS).</li> </ul>
Week 14	<ul style="list-style-type: none"> <li>Working with Volatile and Chemical Agents in BSC</li> <li>Chemicals, their Life Cycle and Safety Data Sheets.</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Explain the principles, practices of intentional release of pathogens in environment.</li> <li>Design a risk assessment and management plan for the potential agents that can underlie in biosecurity.</li> </ul>
Week 15	<ul style="list-style-type: none"> <li>Principles and Primary Controls of Laboratory Biosecurity</li> <li>Core Elements of Laboratory Biosecurity Programme and their Risk Assessment and Management</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Categorize different biological weapons and their usage in warfare as bioterrorism.</li> <li>Illustrate the select agent plan and DURC through institutional guidelines.</li> </ul>
Week 16	<ul style="list-style-type: none"> <li>Biological Weapons and Bioterrorism</li> <li>Select Agent Programme and use of Dual Use Research Concern in Institutions</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Categorize different biological weapons and their usage in warfare as bioterrorism.</li> <li>Illustrate the select agent plan and DURC through institutional guidelines.</li> </ul>
Week 17	<ul style="list-style-type: none"> <li>Waste and their types</li> <li>Waste Segregation</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Categorize the different types of waste generated from the laboratory</li> <li>Implementation of Waste Segregation</li> </ul>

			Practices and strategies according to BMBL and WHO guidelines.
Week 18			<b>FINAL TERM EXAM</b>

**SIXTEEN WEEK PRACTICAL PLAN OF LABORATORY BIOSAFETY AND BIOSECURITY (MLS 716)**

Week #	Lecture Topic	Duration	Outcome
Week 1	Gloves Removal and Hand Washing	3 hrs	<ul style="list-style-type: none"> <li>Describe the Glove Removal and Hand Washing Technique through Glo Germ Method</li> </ul>
Week 2	Donning and Doffing (BSL-2)	3 hrs	<ul style="list-style-type: none"> <li>Explain the Donning and Doffing of Personal Protective Equipment through BSL-2 Level.</li> </ul>
Week 3	Donning and Doffing (BSL-3)	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate the Donning and Doffing of Personal Protective Equipment through BSL-3 Level.</li> </ul>
Week 4	Needle-Stick Injury	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate Needle Stick Injury in the Laboratory.</li> </ul>
Week 5	Spills and Aseptic Handling	3 hrs	<ul style="list-style-type: none"> <li>Distinguish different types of spills how to handle spills with aseptic handling,</li> </ul>
Week 6	Waste Management	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate Biomedical Waste Management in Hospitals</li> </ul>
Week 7	Emergency Evacuations	3 hrs	<ul style="list-style-type: none"> <li>Perform Emergency Evacuations and dealing in emergency evacuations situations.</li> </ul>
Week 8	Biosafety Cabinets	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate working inside a Biosafety Cabinet and efficacy of BSC through smoke test.</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	Biosafety Cabinets	3 hrs	<ul style="list-style-type: none"> <li>Implement the measures used for Packaging and shipping of infectious material.</li> </ul>
Week 11	Fire Extinguishers	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate the use of various types of Fire Extinguisher</li> </ul>
Week 12	Fire Extinguishers	3 hrs	<ul style="list-style-type: none"> <li>Plan and execute Fire drill with all measures to be taken.</li> </ul>
Week 13	Fire Extinguishers	3 hrs	<ul style="list-style-type: none"> <li>Design a material safety data sheets the different chemicals used in laboratory</li> </ul>
Week 14	Shipping of Infectious Material	3 hrs	<ul style="list-style-type: none"> <li>Observe the measures used for Packaging and shipping of infectious material.</li> </ul>
Week 15	Shipping of Infectious Material	3 hrs	<ul style="list-style-type: none"> <li>Implement the measures used for Packaging and shipping of infectious material.</li> </ul>

Week 16	Material Safety Data Sheets	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate a material safety data sheets the different chemicals used in laboratory</li> </ul>
Week 17	Material Safety Data Sheets	3 hrs	<ul style="list-style-type: none"> <li>Design material safety data sheets the different chemicals used in laboratory</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**7. TRANSFUSION MEDICINE****3 (2+1)**

<b>Course Code:</b>	MLS 717
<b>Credit Hours:</b>	3 (2+1)
<b>Course Title</b>	Transfusion Medicine
<b>Prerequisite</b>	Semester I and Semester II
<b>Course Objectives</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>To discuss an overview of transfusion medicine from basic science concepts to the regulations and quality systems required, along with research concepts and presentation skills.</li> <li>Describe Principles of basic genetics, immunology and red blood cell biochemistry are investigated and applied to blood group serology.</li> <li>To Discusses history, genetics and biochemistry of the carbohydrate-based antigens. And explores their relationship to transfusion therapy and disease epidemiology.</li> <li>To describe a comprehensive investigation into the theoretical and practical basis involving the selection and processing of blood donors.</li> <li>To discuss a physiological aspect of Apheresis, blood storage and transport. Emphasizes infectious disease testing as well as the FDA, AABB and CLIA regulations concerning testing.</li> <li>To describe an advanced study in the pathological mechanisms underlying the production of human disease involving anemias and leukemias.</li> <li>Identify autoimmune hemolytic anemias, drug-dependent immune hemolytic anemias and hemolytic disease of the fetus and newborn.</li> <li>Discuss a complete understanding of disease process as it relates to serological and molecular detection of bleeding and clotting diseases.</li> <li>Describe histocompatibility antigens and nomenclature in relation to transfusion and transplantation.</li> <li>Apply an advanced study in the pathophysiology of blood transfusion.</li> <li>Review indications for blood transfusion including blood component therapy.</li> <li>Discuss an adverse event in transfusion medicine.</li> <li>Describe the symptoms and signs of hemolytic and non-hemolytic transfusion reactions</li> <li>Discuss the major infectious complications of blood transfusions and the current risk of these infections, and explain how these infections can be prevented.</li> <li>Discuss the major noninfectious complications of blood transfusions, including transfusion-related acute lung injury, the risk of these</li> </ol>

	complications, and strategies to prevent them
<b>Course Outcomes</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Explain in depth knowledge of methods, laboratory equipment, quality requirements and bioengineering tasks in transfusion medicine and immunohematology.</li> <li>2. Described the regulations and relevant procedures related to blood donation and further treatment of blood drawn.</li> <li>3. Explain the Knowledge of screening Programmes and standardized test courses.</li> <li>4. Demonstrate the transfusion reactions, hemolytic disease in fetuses and newborns and auto hemolytic disease in adults.</li> <li>5. They should Know the quality management systems, rules for HSE, certification and accreditation schemes - Know the historical development and traditions of transfusion medicine, and know the role of other professions in transfusion medicine</li> </ol>
<b>Course Contents:</b>	Genetics, Antigens, Antibodies, Clinical Significance of major ABO Blood Group Systems, Rh Blood Group System, and minor blood group system like (Kell Blood Group System, MNS Blood Group System, Lewis Blood Group System, Duffy Blood Group System, Kidd Blood Group System, p blood group , Ii blood group, Iuthran blood group), HLA Blood Group System, Platelet Antigens Blood Group System, relationship between anemias and leukemias with transfusion related complications, Component preparation, Apheresis, Auto logus blood donation, Administration of blood & its components, Stem cell transplantation, Prenatal issues in transfusion practice, Neonatal & pediatric transfusion practice, Advanced Screening techniques of blood donor units by - ELISA - PCR - NAT 9, Adverse effects of blood (Classification of transfusion reaction), Transfusion transmitted diseases, organization of blood transfusion services (Donor selection, and rejection criteria), Blood collection & storage, Organization of blood bank, Quality control in blood banking. Overview of Blood substitutes and alternatives, synthetic blood products, Risks and benefits of blood substitutes and alternatives, Emerging trends in transfusion medicine including Advances in blood testing and screening technologies and development of personalized blood products, Gene therapy and blood disorders
<b>Recommended Text Books</b>	<p>AABB. Standards for Blood Banks and Transfusion Services (30th ed.). Bethesda, MD: AABB Publications. 2016.</p> <p>AABB. Standards for Immunohematology Reference Laboratories (9th ed.). Bethesda, MD: AABB Publications. 2015.</p> <p>Blaney, K. D. &amp; Howard, P. R. Basic &amp; Applied Concepts of Blood Banking &amp; Transfusion Practices (3rd ed.). Maryland Heights, MO: Mosby. 2012.</p> <p>Fung, M., et al. (Eds.). Technical Manual (18th ed.). Bethesda, MD: AABB Publications. 2014.</p> <p>Harmening, D.M. Modern Blood Banking and Transfusion Practices (6th ed.). Philadelphia: F.A. Davis Company. 2012.</p>
<b>Recommended Reference Books</b>	Johns, G., Zundel, W., Gockel-Blessing, E., & Denesiuk, L. Clinical Laboratory Blood Banking & Transfusion Medicine Practices (1st ed.).

	<p>New Jersey: Prentice Hall. 2014.</p> <p>Marques, M. Quick Guide to Hemostasis (3rd ed.). Washington, DC: AACC Publications. 2015.</p> <p>Quinley, E. D. Immunohematology: Principles and Practice (3rd ed.). Philadelphia: Lippincott, Williams &amp; Wilkins. 2010.</p> <p>Williams, L., Fritsma, M., &amp; Marques, M. Quick Guide to Transfusion Medicine (2nd ed.) Washington DC: AACC Press.2014</p>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li>1. <a href="https://bulletin.marquette.edu/grad/Programmes/transfusionmedicine/">https://bulletin.marquette.edu/grad/Programmes/transfusionmedicine/</a></li> <li>2. <a href="https://onlinelibrary.wiley.com/journal/13653148">https://onlinelibrary.wiley.com/journal/13653148</a></li> </ol> <p><b>Journals:</b></p> <ol style="list-style-type: none"> <li>1. Journal of transfusion medicine reviews</li> <li>2. International journal of clinical transfusion medicine</li> <li>3. International Journal of Blood Transfusion and Immunohematology</li> </ol> <p><b>Others</b></p> <ol style="list-style-type: none"> <li>1. International Journal of Blood Transfusion and Immunohematology</li> </ol>

### SIXTEEN WEEK LESSON PLAN OF TRANSFUSION MEDICINE (MLS 717)

Week #	Lecture Topic	Duration	Outcome
Week 1	<ul style="list-style-type: none"> <li>• Genetics, Antigens, Antibodies, Clinical Significance of major ABO Blood Group Systems,</li> <li>• Rh Blood Group System</li> </ul>	2 hrs	<p>At the end of lecture, student will be able to</p> <ul style="list-style-type: none"> <li>• Understand the basic principles of Significance of major ABO Blood Group Systems and Rh Blood Group System</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>• Overview of minor blood group system</li> <li>• Kell Blood Group System, MNS Blood Group System</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Explain the significance of minor blood group system and Kell Blood Group System, MNS Blood Group System</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>• Lewis Blood Group System, Duffy Blood Group System</li> <li>• Kidd Blood Group System, p blood group</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Identify the Lewis Blood Group System, Duffy Blood Group System Kidd Blood Group System, p blood group</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>• Ii blood group,</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Explain the Clinical significance of all blood group</li> </ul>

	Luthran blood group • Clinical significance of all blood group system		system
Week 5	• HLA (Human leukocyte antigen) • HPA (Human Platelet Antigen)	2 hrs	• Outline the basic features HLA (Human leukocyte antigen) and HPA (Human Platelet Antigen) of Risk groups with different levels of risk.
Week 6	• Donor selection, and rejection criteria • Blood collection & storage	2 hrs	• Discuss the Donor selection, and rejection criteria and Blood collection & storage Use of fire extinguishers and their classification.
Week 7	• Component preparation. • Administration of blood & its components	2 hrs	• Compare the component preparation
Week 8	• Prenatal issues in transfusion practice • Neonatal & pediatric transfusion practice	2 hrs	• Define the Prenatal and neonatal issues in transfusion practice
Week 9	<b>MID TERM EXAM</b>		
Week 10	• Apheresis, Autologus blood donation • Stem cell transplantation	2 hrs	• Explain Apheresis, Autologus blood donation and Stem cell transplantation
Week 11	• Advanced Screening techniques of blood donor units by - ELISA • Polymerase chain reactions (PCR)	2 hrs	• Understand Advanced Screening techniques of blood donor units by - ELISA
Week 12	• Nucleic acid testing (NAT)	2 hrs	• Explain the Nucleic acid testing (NAT) • Enlist the Adverse effects of blood transfusion

	<ul style="list-style-type: none"> <li>• Adverse effects of blood transfusion</li> </ul>		
Week 13	<ul style="list-style-type: none"> <li>• Immediate hemolytic transfusion reaction</li> <li>• Delayed hemolytic transfusion reaction</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Compare the Immediate hemolytic transfusion reaction and Delayed hemolytic transfusion reaction</li> </ul>
Week 14	<ul style="list-style-type: none"> <li>• ABO Hemolytic disease of the newborn and fetus (HDN)</li> <li>• RH Hemolytic disease of the newborn and fetus (HDN)</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Discuss the clinical case with ABO and RH Hemolytic disease of the newborn and fetus (HDN)</li> </ul>
Week 15	<ul style="list-style-type: none"> <li>• Hazards of transfusion (Immunological complications)</li> <li>• Non-immunological complications</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Categorize different biological weapons and their usage in warfare as bioterrorism.</li> <li>• Illustrate the Hazards of transfusion (Immunological complications)</li> </ul>
Week 16	<ul style="list-style-type: none"> <li>• Transfusion transmitted diseases</li> <li>• Organization of blood bank</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Discuss the Transfusion transmitted diseases</li> </ul>
Week 17	<ul style="list-style-type: none"> <li>• Quality control in blood banking.</li> <li>• Quality Assurance and Quality management in blood banking</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Plan Quality control in blood banking. And Quality Assurance and Quality management in blood banking</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

#### SIXTEEN WEEK PRACTICAL PLAN OF TRANSFUSION MEDICINE (MLS 717)

Week #	Lecture Topic	Duration	Outcome
Week 1	<ul style="list-style-type: none"> <li>• ABO Blood</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Describe the ABO Blood Grouping by tube and tile method with quality control</li> </ul>

	Grouping by tube and tile method with quality control		
Week 2	<ul style="list-style-type: none"> <li>Rh Typing with quality control</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Perform Rh typing</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Discrepancies in ABO Grouping and significance of Du Testing</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Discuss the lab investigations due to Discrepancies in ABO Grouping</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>Antiglobulin AGH testing and their evaluation of Positive Coom's Test</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Perform Coom's Test</li> </ul>
Week 5	<ul style="list-style-type: none"> <li>Compatibility Testing by gel method and manual method</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Perform Compatibility Testing by gel method and manual method</li> </ul>
Week 6	<ul style="list-style-type: none"> <li>Antibody Screening and Identification</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate the Antibody Screening and Identification</li> </ul>
Week 7	<ul style="list-style-type: none"> <li>Serologic principles and transfusion medicine</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Illustrate the Serologic principles and transfusion medicine</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>Antibody titration</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate Antibody titration</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	<ul style="list-style-type: none"> <li>Alloantibody identification</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Implement the Alloantibody identification</li> </ul>
Week 11	<ul style="list-style-type: none"> <li>Granulocyte concentrate</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate the Granulocyte concentrate</li> </ul>
Week 12	<ul style="list-style-type: none"> <li>Factor VIII concentrate</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate the Factor VIII concentrate</li> </ul>
Week 13	<ul style="list-style-type: none"> <li>Factor IX concentrates</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate the Factor IX concentrates</li> </ul>
Week 14	<ul style="list-style-type: none"> <li>Cryoprecipitated Antihemophilic factor concentrate</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Define the Cryoprecipitated Antihemophilic factor concentrate</li> </ul>
Week 15	<ul style="list-style-type: none"> <li>Massive blood</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Explain the Massive blood transfusion</li> </ul>

	transfusion		
Week 16	<ul style="list-style-type: none"> <li>Development of personalized blood products</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate development of personalized blood products</li> </ul>
Week 17	<ul style="list-style-type: none"> <li>Blood substitutes and alternatives, synthetic blood products</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Analyze the effect of Blood substitutes and alternatives, synthetic blood</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**8. NEUROBIOLOGY****3 (3+0)**

<b>Course Code:</b>	MLS 718
<b>Credit Hours:</b>	3(3+0)
<b>Course Title</b>	Neurobiology
<b>Prerequisite</b>	SEMESTER I
<b>Course Objectives</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>Provide understanding of fundamentals of Neuroscience</li> <li>Provide comprehensive understanding of the functions of the major components of the central and peripheral nervous system.</li> <li>Review human neural function at multiple scales, from molecules and molecular interactions to interactions of neural circuits and brain pathways.</li> <li>Explain that how information is encoded by neurons and neural circuits</li> <li>Describe how perceptions are represented, stored, and recalled for later use in decision making and control of behavior</li> <li>Correlate how the brain generates complex cognitive functions including communication, emotions, sleep and cognition.</li> <li>Distinguish synaptic connections between neurons and the mechanisms they use to create sensory perception and behavior outputs.</li> <li>Develop students' knowledge regarding pathological mechanism underlying majority of brain disorders such as Alzheimer's and Parkinson's disease.</li> </ol>
<b>Course Outcomes</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>Describe the major areas of neuroscience with a clear understanding of the main research approaches, techniques, and topics</li> <li>Apply and integrate their knowledge of neuroscience to other areas of their studies and to their everyday life.</li> <li>Describe in-depth insight in basic brain structure and function reaching from the molecular to systems level.</li> <li>Understand how neural systems contribute to sensory experiences, thoughts, emotions, behavior.</li> </ol>

	<p>5. Acquire advance knowledge of Chemical and electrical signaling, cellular integration, regulation of neuronal activity, excitatory and inhibitory transmission and the related cellular mechanisms (transmitter synthesis, packaging, release, receptor binding, location and regulation of receptor expression).</p> <p>6. Investigate and formulate the role of novel drug targets against brain disorders.</p>
<b>Course Contents:</b>	Structure of neurons, including the biophysical properties of excitable cells, synaptic transmission, neurochemistry, neurodevelopment, and integration of information in simple systems and the visual system. The different types of synapses are also covered, from chemical synapses to electrical synapses, known as gap junctions, in the squid giant axon. The problem sets are designed to ground students in the understanding that ionic gradients are the primary power source of neuronal transmission. Details about Biochemistry of neurotransmitters, receptors and second messenger systems, synapse formation, higher order cognitive functions and disease, neuronal mechanisms for sensation and memory in the cerebral cortex.
<b>Recommended Text Books</b>	<p>Squire, L. R., D. Berg, et al. Fundamental Neuroscience. 4th ed. Academic Press, 2008. ISBN: 9780123740199.</p> <p>Kandel, Eric R., James H. Schwartz, and Thomas M. Jessell, eds. Principles of Neural Science. 6th ed. McGraw-Hill, Health Professions Division, 2000. ISBN: 9780838577011.</p> <p>Nicholls, John G. From Neuron to Brain. Sinauer Associates, 2011. ISBN: 9780878936090.</p> <p>Dale Purves, George J. Augustine, David Fitzpatrick, William C. Hall, Anthony-Samuel LaMantia, Richard D. Mooney, Michael L. Platt , Leonard E. White. Neuroscience, 6th edition, 2017.</p>
<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>Rao, M. S., &amp; Jacobson, M. (Eds.). (2006). Developmental neurobiology. Springer Science &amp; Business Media.</li> <li>Daw, N. D., &amp; Doya, K. (2006). The computational neurobiology of learning and reward. <i>Current opinion in neurobiology</i>, 16(2), 199-204.</li> </ol>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <p><a href="https://www.ncl.ac.uk/postgraduate/degrees/8300f-75/?utm_campaign=postgrad&amp;utm_source=findamasters&amp;utm_medium=listing&amp;utm_content=Neuroscience_MPhil">https://www.ncl.ac.uk/postgraduate/degrees/8300f-75/?utm_campaign=postgrad&amp;utm_source=findamasters&amp;utm_medium=listing&amp;utm_content=Neuroscience_MPhil</a></p> <p><a href="https://www.coursera.org/learn/neurobiology">https://www.coursera.org/learn/neurobiology</a></p> <p><a href="https://pll.harvard.edu/course/neurobiology-0?delta=0">https://pll.harvard.edu/course/neurobiology-0?delta=0</a></p> <p><a href="https://ocw.mit.edu/courses/7-29j-cellular-neurobiology-spring-2012/">https://ocw.mit.edu/courses/7-29j-cellular-neurobiology-spring-2012/</a></p> <p><a href="https://neurobiology.northwestern.edu/courses/undergraduate-courses/2022-2023/index.html">https://neurobiology.northwestern.edu/courses/undergraduate-courses/2022-2023/index.html</a></p> <p><b>Journals:</b></p> <ol style="list-style-type: none"> <li>Molecular Neurobiology-Springer</li> <li>Progress in Neurobiology</li> <li>Internal journal of Neurobiology</li> <li>Frontiers in Neuroscience</li> </ol>

**SIXTEEN WEEK LESSON PLAN OF NEUROBIOLOGY (MLS 718)**

Week #	Lecture Topic	Duration	Outcome
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Week 1	<ul style="list-style-type: none"> <li>Introduction to the Nervous System:</li> <li>Somatic Nervous System</li> <li>Autonomic Nervous System</li> <li>Sympathetic Nervous System</li> <li>Parasympathetic Nervous System</li> </ul>	3 hrs	<p>At the end of lecture, student will be able to</p> <ul style="list-style-type: none"> <li>Understand the nervous system</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>Membrane channels and signaling:</li> <li>Ion Channels, Ligand-Gated Channels, Mechanically-Gated Channels, Voltage-Gated Channels, and Leak Channels</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Explain the Membrane channels and signaling</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>Ionic Basis of the Resting Potential</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Identify the Ionic Basis of the Resting Potential</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>Action Potential I</li> <li>Action potential in sensory neuron</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Describe the action potential in sensory neuron</li> </ul>
Week 5	<ul style="list-style-type: none"> <li>Action Potential II</li> <li>Depolarization and repolarization</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Compare the depolarization and repolarization</li> </ul>
Week 6	<ul style="list-style-type: none"> <li>Neurons as conductors: Propagation of the action potential</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Discuss the Propagation of the action potential</li> </ul>
Week 7	<ul style="list-style-type: none"> <li>Long Term potentiation and Long Term Depression in synaptic connection</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Compare the Long Term potentiation and Long Term Depression in synaptic connection</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>Mechanisms of transmitter release at synapse</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Analyze the mechanisms of transmitter release at synapse</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	<ul style="list-style-type: none"> <li>Biochemistry of neurotransmitters</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Explain Apheresis, Autologus blood donation and Stem cell transplantation</li> </ul>
Week 11	<ul style="list-style-type: none"> <li>Neuronal Mechanisms for Sensation &amp;</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Understand Advanced Screening techniques of blood donor units by - ELISA</li> </ul>

	Memory in the Cerebral Cortex		
Week 12	<ul style="list-style-type: none"> <li>• Learning and Memory</li> <li>• Sensory memory, short-term memory, and long-term memory</li> <li>• autobiographical (event) memories, semantic structures, and emotional responses</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Explain the Learning and Memory</li> </ul>
Week 13	<ul style="list-style-type: none"> <li>• Brain structure and Genomics</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Correlate Brain structure and Genomics</li> </ul>
Week 14	<ul style="list-style-type: none"> <li>• Synapse formation</li> <li>• Communicating axosomatic synapses</li> <li>• Communicating axodendritic synapses</li> <li>• Communicating axoaxonic synapses</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Discuss the Synapse formation</li> </ul>
Week 15	<ul style="list-style-type: none"> <li>• Understanding of neurodegenerative disorders</li> <li>• Alzheimer's disease and other memory disorders.</li> <li>Movements disorders such as Parkinson's disease, Multiple system atrophy, Progressive supranuclear palsy</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Discuss clinical cases related to neurodegenerative disorders</li> </ul>
Week 16	<ul style="list-style-type: none"> <li>• Higher Order Cognitive Function and Diseases</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Discuss the Higher Order Cognitive Function and Diseases</li> </ul>
Week 17	<ul style="list-style-type: none"> <li>• Olfaction and Other Sensory Systems</li> <li>• Touch, pain and thermoreception</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Define Olfaction and Other Sensory Systems</li> </ul>

Week 18	FINAL TERM EXAM
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**9. CLINICAL LAB MANGEMENT & ADMINISTRATION****3 (2+1)**

<b>Course Code:</b>	MLS 719
<b>Credit Hours:</b>	3 (2+1)
<b>Course Title</b>	CLINICAL LAB MANGEMENT & ADMINISTRATION
<b>Prerequisite</b>	Semester I
<b>Course Objectives</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Enable students to understand the basic concepts of laboratory management</li> <li>2. Acquire knowledge of total quality management, to be able to assume administrative responsibility in any laboratory setting.</li> <li>3. Understand different equipment's maintenance documentation, purchasing and records keeping. Strengthen students' understanding in technical quality management of laboratory testing processes of healthcare laboratories.</li> <li>4. Introduce the students with management of different equipment's, their maintenance documentation, purchasing and records keeping.</li> <li>5. Develop administrative skills, quality control and quality improvement in laboratory.</li> <li>6. Introduce the students with basic concepts of quality assessment through internal and external audits.</li> <li>7. Describe students International standards and standardization bodies. certification and accreditation.</li> <li>8. Familiarize students with various information of safety management Programmes and database management systems used in healthcare organization</li> </ol>
<b>Course Outcomes</b>	<p>Upon successful completion of this course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Develop laboratory policies, rules, and regulations.</li> <li>2. Develop managerial skills to effectively supervise and evaluate laboratory personnel.</li> <li>3. Manage and sustain a profitable laboratory and clinical QC at high standards.</li> <li>4. Acquire understanding in technical quality management of laboratory testing processes.</li> <li>5. Apply national and international guidelines in different laboratory settings to achieve accreditation</li> <li>6. Exhibit leadership abilities and professional conduct in laboratory settings.</li> <li>7. Deliver knowledge and understanding of the functions, current issues and trends involved in the management of human resources in a laboratory setting.</li> <li>8. Display competence and confidence in working with various clinical as well as industrial laboratories as a quality officer.</li> <li>9. Train students with the professional literacy, competencies, teamwork, and skills needed to meet challenges in the dynamic work</li> </ol>

	<p>environment of today's health sector.</p> <p>10. Justify the implementation of a new laboratory test, automation and/or information system</p>
<b>Course Contents:</b>	<p>Introduction to Management, management principles and processes, Quality management systems of different laboratories sections Laboratory design guidelines and Organization. Safety management in lab , occupational Health, Personal protective equipment, Biosafety and Bio risk , waste management Safety management Programme Introduction of quality, The quality management system model, Equipment Selecting and acquiring equipment, , Equipment maintenance documentation, Purchasing and inventory, Implementing an inventory management Programme, Forms and logs, Receipt and storage of supplies, sample management, The laboratory handbook, Collection and preservation, Sample storage, retention and disposal, Sample transport, Control materials, Establishing the value range for the control material, Graphically representing control ranges, Interpreting quality control data, Using quality control information, audits, External audit, Internal audit, external quality assessment, International standards and standardization bodies, Certification and accreditation, Standard operating procedures (SOPs), Competency and competency assessment, Training and continuing education, Quality indicators, Documents and records , Laboratory Human resource management and Personnel Records. Occurrence management Customer service, Customer satisfaction surveys,Personnel, Recruitment and orientation, Employee performanc appraisal, Personnel records, Laboratory Strategic Planning ,Laboratory-Based Surveillanc, Laboratory waste management, Organizational requirements for a quality management system , Computerized laboratory information systems</p>
<b>Recommended Text Books</b>	<p>Mary Coulter &amp; Robbins, Management, International ed.</p> <p>Good Clinical Laboratory Practices in Pakistan, Pakistan Academy of Sciences in corporation with the U.S. National Academies of Sciences, Engineering, and Medicine..</p> <p>Laboratory Quality Management System Hand book, World Health Organization 2011</p>
<b>Recommended Reference Books</b>	<p>1. Clinical Laboratory Management, Editor(s):Lynne S. Garcia, Paul Bachner, Vickie S. Baselski, Michael R. Lewis, Andrea J. Linscott, Dale A. Schwab, John C. H. Steele Jr., Alice S. Weissfeld, David S. Wilkinson, Donna M. Wolk</p>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li>1. <a href="https://www.clma.org/">https://www.clma.org/</a></li> <li>2. <a href="https://www.clinicallab.com/management">https://www.clinicallab.com/management</a></li> </ol> <p><b>Journals:</b></p> <ol style="list-style-type: none"> <li>1. Clinical Laboratory Management Review</li> <li>2. Annals of Laboratory Medicine</li> </ol> <p><b>Others</b></p> <ol style="list-style-type: none"> <li>1. American Journal of Clinical Pathology</li> </ol>

**SIXTEEN WEEK LESSON PLAN OF CLINICAL LAB MANGEMENT & ADMINISTRATION (MLS 719)**

<b>Week #</b>	<b>Lecture Topic</b>	<b>Duration</b>	<b>Outcome</b>
Week 1	Introduction to Management and Management principles  Laboratory Quality Management	2 hrs	At the end of lecture, student will be able to <ul style="list-style-type: none"> <li>Understand Lab Management Rules and Quality Policy</li> </ul>
Week 2	Lab Design, physical aspects and Organization  Organizational structure and management functions	2 hrs	<ul style="list-style-type: none"> <li>Describe Lab Design, physical aspects and Organization</li> <li>Develop Organogram of Lab Staff</li> </ul>
Week 3	Lab safety, Bio hazards and Biosafety  Emergency management and first aid Safety management Programme	2 hrs	<ul style="list-style-type: none"> <li>Correlate biosafety and lab safety Proteins</li> <li>Plan emergency response and safety measures</li> <li>Compare the Enzyme alterations in protein and nitrogen impairment</li> </ul>
Week 4	Introduction to Quality The Quality management system model	2 hrs	<ul style="list-style-type: none"> <li>Define Quality management system in a lab</li> </ul>
Week 5	<ul style="list-style-type: none"> <li>Laboratory equipment Technology</li> <li>Purchasing and monitoring Inventory</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Discuss the procurement process of lab</li> </ul>
Week 6	Samples management and laboratory handbook  Specimen Logistics	2 hrs	<ul style="list-style-type: none"> <li>Define Specimen Logistics and handling guidelines</li> </ul>
Week 7	<ul style="list-style-type: none"> <li>Laboratory Quality control for quantitative tests</li> <li>Laboratory Quality control for qualitative and semi-quantitative procedures</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Ensure quality control in a lab</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>Laboratory audit systems</li> <li>Internal and external quality audits</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>DefienInternal and external audit system</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	<ul style="list-style-type: none"> <li>External quality assessments</li> <li>Internal standards and standardization bodies</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Ensure understanding of Internal and external audit system</li> </ul>
Week 11	Laboratory Accreditation and certification	2 hrs	<ul style="list-style-type: none"> <li>Define Laboratory Accreditation and</li> </ul>

	Standard Operating Procedures (SOPs) for Laboratory Procedures		certification
Week 12	Competency and competency assessment  Training and Continuing Education	2 hrs	<ul style="list-style-type: none"> <li>Discuss Competency and competency assessment</li> </ul>
Week 13	Quality Indicators  Laboratory Documents and Records	2 hrs	<ul style="list-style-type: none"> <li>Discuss the Quality Indicators</li> <li>Describe the ways of Documentation</li> </ul>
Week 14	<ul style="list-style-type: none"> <li>Customer service and Customer Satisfaction Surveys</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Categorize Customer service and Customer Satisfaction Surveys</li> </ul>
Week 15	<ul style="list-style-type: none"> <li>Laboratory Human resource management and Personnel Records</li> <li>Laboratory Strategic Planning</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Explain the Laboratory Strategic Planning with HR management</li> </ul>
Week 16	Laboratory-Based Surveillance  Laboratory waste management	2 hrs	<ul style="list-style-type: none"> <li>Review the Laboratory-Based Surveillance</li> <li>Plan to conduct waste management as per guidelines</li> </ul>
Week 17	<ul style="list-style-type: none"> <li>Organizational Requirements for a quality management system</li> <li>Computerized laboratory information systems</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>Discuss Computerized laboratory information systems</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

#### SIXTEEN WEEK PRACTICAL PLAN OF CLINICAL LAB MANGEMENT & ADMINISTRATION (MLS 719)

Week #	Lecture Topic	Duration	Outcome
Week 1	Lab Designing and organization	3 hrs	At the end of practical, student will be able to <ul style="list-style-type: none"> <li>Design the lab structure.</li> </ul>
Week 2	Quality Assurance Documentation	3 hrs	<ul style="list-style-type: none"> <li>Prepare documents as per QA procedure</li> </ul>
Week 3	Audit Documentation	3 hrs	<ul style="list-style-type: none"> <li>Document lab for internal and external audit</li> </ul>
Week 4	Accidents in Lab	3 hrs	<ul style="list-style-type: none"> <li>Perform Incident response and prepare its corrective action plan</li> </ul>
Week 5	Down Time Report Preparation	3 hrs	<ul style="list-style-type: none"> <li>Prepare down time report</li> </ul>
Week 6	Lab Organization	3 hrs	<ul style="list-style-type: none"> <li>Make organogram of the lab</li> </ul>
Week 7	Log Book Preparation	3 hrs	<ul style="list-style-type: none"> <li>Prepare log book for lab items</li> </ul>

Week 8	Traceability Measurements	of 3 hrs	<ul style="list-style-type: none"> <li>Record the Traceability of Measurements</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	Sample Management	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate Sample management procedure</li> </ul>
Week 11	Preparation of Standard Operating Procedure (SOPs)	3 hrs	<ul style="list-style-type: none"> <li>Prepare the document of SOP of lab equipment</li> </ul>
Week 12	Lab inventory	3 hrs	<ul style="list-style-type: none"> <li>Develop lab inventory</li> </ul>
Week 13	Quality Control	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate quality control procedures</li> </ul>
Week 14	Calibration	3 hrs	<ul style="list-style-type: none"> <li>Develop calibration certificates</li> </ul>
Week 15	Training record	3 hrs	<ul style="list-style-type: none"> <li>Document Training record</li> </ul>
Week 16	Key performance indicators	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate KPIs and future objectives</li> </ul>
Week 17	Competency assessment	3 hrs	<ul style="list-style-type: none"> <li>Assess competency of lab staff</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

**10. BIOMEDICAL TECHNOLOGY****(3+0)**

<b>Course Code:</b>	MLS 720
<b>Credit Hours:</b>	3 (3+0)
<b>Course Title</b>	BIOMEDICAL TECHNOLOGY
<b>Prerequisite</b>	Semester I
<b>Course Objectives</b>	<p>This course is designed to:</p> <ol style="list-style-type: none"> <li>Acquire students with a basic knowledge and understanding of Biomedical technology with its branches and the role of Biomedical technologist</li> <li>Describe students with a knowledge of Biomedical instrumentation fundamentals, critical care devices used in Biomedical Technology, Radiological Instrumentation, Diagnostic Biomedical devices, Therapeutic Biomedical devices with special reference to lab technology</li> <li>Describe students about the applications used in Biomedical Technology and their examples i.e. Rehabilitation Engineering, Physiological modeling and simulation, Biomedical signal processing, Clinical Technology, Biomaterial, Biomechanics, Tissue Engineering and regenerative medicine, Neural Engineering, Medical Image processing.</li> <li>Analyze the various biomedical sensor and transducer characteristics used in diagnostic lab and health care</li> <li>Acquire the students with knowledge of common defects in medical equipment, performance measurement, Calibration and Maintenance and repair.</li> <li>Demonstrate the students with knowledge of basic amplifier requirements and their circuits.</li> <li>Acquire the students with knowledge of non-spectral methods and automation.</li> </ol>

	<p>8. Explain Implantable cardiac pacemakers, Implantable Defibrillators, Motor cortex stimulation, Implantable stimulators for neuromuscular control.</p> <p>9. Acquire the students with knowledge of interaction and effects of UV-IR radiation on biologic tissues, Penetration and Effects of UV-IR Laser Radiation into Biologic Tissues, Effects of Mid-IR Laser Radiation, Effects of Near-IR Laser Radiation, Effects of visible – range Laser Radiation, Effects of UV Laser Radiation, Effects of UV laser Radiation, Effects of Continuous and Pulsed IR-Visible Laser Radiation, Association Temperature Rise, General Description and Operations of Lasers, Biomedical Laser Beam Delivery Systems</p> <p>10. Acquire the students about the medical instruments and lab devices used at home or related with point of care devices.</p>
<b>Course Outcomes</b>	Upon completion of course the students will be able to:
	<ol style="list-style-type: none"> <li>1. Acquire the basic knowledge Biomedical Technology with special reference to diagnostic lab</li> <li>2. Describe the applications of biomedical technology with examples</li> <li>3. Identify sources of biopotentials</li> <li>4. Analyze various Biomedical sensor and transducer characteristics</li> <li>5. Acquire the knowledge of medical device quality and system standard</li> <li>6. Describe the Bio potentials Amplifier</li> <li>7. Analyze the clinical laboratory Non spectral method and Automation</li> <li>8. Acquire the knowledge Implantable devices</li> <li>9. Describe the importance of Biomedical laser in Biomedical technology</li> <li>10. Acquire the knowledge regarding working of medical and lab instruments and devices</li> </ol>
<b>Course Contents:</b>	Introduction of Biomedical Technology, diagnostic equipment, devices used in biomedical technology, application with examples, Bio-potentials, Biosensors and transducers, Quality assurance and quality control, Bio-potential Amplifiers, Clinical laboratory equipment working: Non-spectral methods and automation, Implantable devices, Biomedical lasers, Medical instruments and point of care devices.
<b>Recommended Text Books</b>	<ol style="list-style-type: none"> <li>1. Introduction to Biomedical Engineering, 4th Edition, John Enderle</li> <li>2. Biomedical Engineering Handbook Volume I &amp; II, J. D. Bronzino</li> <li>3. Biomedical Instrumentation &amp; Measures 2nd edition by Leslie Cromwell.1980. ISBN: 978-81-203-0653-0.</li> <li>4. Bioinstrumentation by John G. Webster.2004.ISBN: 978-81-265-1369-7</li> <li>5. John G. Webster (Editor), Medical Instrumentation 2nd &amp; 3rd ed.</li> </ol>
<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>1. Medical Instrumentation: Application and Design by John G. Webster.4th ed, 2010. ISBN: 978-0-471-67600-3</li> <li>2. Cromwell, Bio-Medical Instrumentation &amp; Measures 2nd ed.</li> </ol>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li>1. <a href="https://www.dovepress.com/Medical-Devices-Technology-journals-c15">https://www.dovepress.com/Medical-Devices-Technology-journals-c15</a></li> <li>2. <a href="https://www.sciencedirect.com/journal/medicine-in-novel-">https://www.sciencedirect.com/journal/medicine-in-novel-</a></li> </ol>

	<p>technology-and-devices <a href="https://www.clma.org/">https://www.clma.org/</a></p> <p><b>Journals:</b></p> <ol style="list-style-type: none"> <li>1. Journal of Medical Engineering &amp; Technology.</li> <li>2. Medical Technology News.</li> <li>3. The American journal of medical technology.</li> </ol> <p><b>Others</b></p> <ol style="list-style-type: none"> <li>1. <a href="https://www.medtronic.com/me-en/healthcare-professionals">https://www.medtronic.com/me-en/healthcare-professionals</a></li> </ol>
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### SIXTEEN WEEK LESSON PLAN OF BIOMEDICAL TECHNOLOGY (MLS 720)

Week #	Lecture Topic	Duration	Outcome
Week 1	<ul style="list-style-type: none"> <li>• Biomedical technology</li> <li>• What is biomedical technology</li> <li>• Branches of biomedical technology</li> </ul>	3 hrs	<p>Upon completion of the course, student should be able to</p> <ul style="list-style-type: none"> <li>• Describe medical technology and its branches</li> </ul>
Week 2	<ul style="list-style-type: none"> <li>• Devices used in Biomedical Engineering</li> <li>• Biomedical instrumentation fundamental</li> <li>• Critical care devices used in biomedical engineering</li> <li>• Radiological instrumentation.</li> <li>• Diagnostic biomedical devices</li> <li>• Therapeutic Biomedical devices</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Identify the devices used in Biomedical Engineering with reference to application in diagnostic lab</li> </ul>
Week 3	<ul style="list-style-type: none"> <li>• Applications of Biomedical Engineering</li> <li>• Rehabilitation Engineering</li> <li>• Physiological modeling and simulation</li> <li>• Biomedical signal processing</li> <li>• Clinical Engineering</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Discuss the Physiological modeling and simulation with Biomedical signal processing</li> <li>• Apply the biomedical engineering to the lab equipment</li> </ul>
Week 4	<ul style="list-style-type: none"> <li>• Biomaterials</li> <li>• Biomechanics</li> <li>• Tissue Engineering</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Discuss the biomaterials involved in health care devices</li> </ul>

	<p>and regenerative medicine</p> <ul style="list-style-type: none"> <li>• Neural engineering</li> <li>• Medical Image Processing</li> </ul>		
Week 5	<ul style="list-style-type: none"> <li>• Bio-potentials, biosensors and transducers</li> <li>• Biomedical signals of the human body,</li> <li>• Sensors and transducers for bio-potential measurements</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Compare Bio-potentials, biosensors and transducers</li> </ul>
Week 6	<ul style="list-style-type: none"> <li>• Problems encountered in measuring biopotentials of the human body</li> <li>• Invasive and noninvasive measurement techniques and related equipment.</li> <li>• Functional Building blocks of a Biomedical Instrumentation System</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Analyze the Problems encountered in measuring bio potentials of the human body</li> </ul>
Week 7	<ul style="list-style-type: none"> <li>• Common defects in medical equipment</li> <li>• Performance measurement</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Identify the trouble shooting and common effects in medical equipment.</li> </ul>
Week 8	<ul style="list-style-type: none"> <li>• Calibration</li> <li>• Maintenance and repair</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Correlate Calibration, maintenance and repair</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	<ul style="list-style-type: none"> <li>• Basic amplifier requirements and their circuits</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Define Basic amplifier requirements and their circuits</li> </ul>
Week 11	<ul style="list-style-type: none"> <li>• Non-spectral methods and automation</li> <li>• Electrochemical</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>• Examine the Automation, Trends in Laboratory Instrumentation</li> </ul>

	methods, Ion-specific electrodes, Radioactive methods, Coagulation timers, Osmometers, Automation, Trends in Laboratory Instrumentation		
Week 12	<ul style="list-style-type: none"> <li>Implantable cardiac pacemakers,</li> <li>Implantable Defibrillators,</li> <li>Motor cortex stimulation,</li> <li>Implantable stimulators for neuromuscular control</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Define Implantable cardiac pacemakers</li> </ul>
Week 13	<ul style="list-style-type: none"> <li>Interaction and effects of UV-IR radiation on biologic tissues,</li> <li>Penetration and Effects of UV-IR Laser Radiation into Biologic Tissues</li> </ul>	3 hrs	
Week 14	<ul style="list-style-type: none"> <li>Effects of Mid-IR Laser Radiation,</li> <li>Effects of Near-IR Laser Radiation,</li> <li>Effects of visible – range Laser Radiation</li> </ul>	3 hrs	
Week 15	<ul style="list-style-type: none"> <li>Effects of Continuous and Pulsed IR-Visible Laser Radiation,</li> <li>Association Temperature Rise,</li> <li>General Description and Operations of Lasers,</li> <li>Biomedical Laser Beam Delivery Systems</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Explain the Biomedical Laser Beam Delivery Systems</li> </ul>
Week 16	<ul style="list-style-type: none"> <li>Point of care devices</li> </ul>	3 hrs	<ul style="list-style-type: none"> <li>Explore the significance of point of care</li> </ul>

			devices
Week 17	• Overview	3 hrs	• Analyze the lab instruments in the light Biomedical engineering rules
Week 18	<b>FINAL TERM EXAM</b>		

**10. HISTOLOGICAL TECHNIQUES****3 (2+1)**

<b>Course Code:</b>	MLS 721
<b>Credit Hours:</b>	3 (2+1)
<b>Course Title</b>	<b>HISTOLOGICAL TECHNIQUES</b>
<b>Prerequisite</b>	Semester I and semester II
<b>Course Objectives</b>	<p>This course is designed to:</p> <ol style="list-style-type: none"> <li>1. Discuss the process of tissue preparation used for light microscopy</li> <li>2. Identify the various types of fixatives used for tissue preservation</li> <li>3. Demonstrate tissue processing techniques</li> <li>4. Explain the process of paraffin embedding</li> <li>5. Differentiate between different types of tissue sectioning (Microtomy)</li> <li>6. Illustrate the process of tissue sectioning (Microtomy)</li> <li>7. Explain Freezing microtome/ cryostat frozen sectioning</li> <li>8. Execute the process of dehydration and clearing</li> <li>9. Discuss the chemical basis of staining</li> <li>10. Identify basic histological staining</li> <li>11. Distinguish different kinds of tissue staining (special staining)</li> <li>12. Discuss Immunohistochemistry staining technique</li> <li>13. Illustrate fine needle aspiration cytology (FNAC) and cytological staining.</li> <li>14. Prepare cell Block preparation</li> </ol>
<b>Course Outcomes</b>	<p>Upon completion of course the students will be able to:</p> <p>Differentiate tissue preservation, processing and microtome</p> <p>Describe tissue processing techniques</p> <p>Analyze the process of tissue sectioning on microtome</p> <p>Correlate histological staining among various samples</p> <p>Discuss Immunohistochemistry staining</p> <p>Elaborate FNAC and cytological staining technique</p> <p>Perform cell block preparation</p>
<b>Course Contents:</b>	Fixation of tissues: Phenomenon, Common fixatives composition advantages and disadvantages. Tissue Processing: dehydration, Clearing; Paraffin Embedding process; Sectioning Process: Microtomes and their types and uses, Problems encountered and their remedies. Freezing microtome / Cryostat and frozen sectioning, Staining: Procedure, uses and interpretation of: Routine Haematoxylin and Eosin, special stains for connective tissues, nervous tissues, glycogen, PAS and PAS-D stain, Vital and supravital dyes and study of cells; FNAC & Cell block formation, Tumor markers, Immunohistochemistry Staining and its application in identification of Tumors.

<b>Recommended Text Books</b>	<ol style="list-style-type: none"> <li>1. Junqueira LC, Carneiro J. Basic histology. California, U.S.A, Lange Medical publication.</li> <li>2. Kelly, D.E, Wood, R.L, Enders, A.C. Bailey's Text Book of Microscopic Anatomy. Baltimore, U.S.A, Williams and Wilkins.</li> </ol>
<b>Recommended Reference Books</b>	<ol style="list-style-type: none"> <li>1. Burkit HG, Young B, Heath JW. Wheater's Functional histology London, Churchill living stone.</li> <li>2. Faustett, D.W.A Text Book of Histology. London, Chapman and Hall. Medical Instrumentation: Application and Design by John G. Webster. 4th ed, 2010. ISBN: 978-0-471-67600-3</li> </ol>
<b>Web and Other Resources</b>	<p><b>Website:</b></p> <ol style="list-style-type: none"> <li>1. <a href="https://journals.lww.com/ajsp/fulltext/2009/02000/theory_and_practice_of_histological_techniques.23.aspx">https://journals.lww.com/ajsp/fulltext/2009/02000/theory_and_practice_of_histological_techniques.23.aspx</a></li> <li>2. <a href="https://icp.bmjjournals.org/content/21/1/116.1">https://icp.bmjjournals.org/content/21/1/116.1</a></li> <li>3. <a href="https://icp.bmjjournals.org/content/21/1/116.1">https://icp.bmjjournals.org/content/21/1/116.1</a></li> </ol> <p><b>Journals:</b></p> <ol style="list-style-type: none"> <li>1. Histopathology</li> <li>2. Cytometry</li> <li>3. Journal of Histochemistry and Cytochemistry</li> <li>4. Microscopy Research and Technique</li> <li>5. Biotechnical &amp; Histochemistry</li> <li>6. Histochemistry and Cell Biology</li> <li>7. Histology &amp; Histopathology</li> <li>8. The Journal of Pathology</li> </ol> <p><b>Others</b></p> <ol style="list-style-type: none"> <li>1. Journal of Cytology</li> <li>2. Cell and Tissue Research</li> </ol>

#### SIXTEEN WEEK LESSON PLAN OF HISTOLOGICAL TECHNIQUES (MLS 721)

<b>Week #</b>	<b>Lecture Topic</b>	<b>Duration</b>	<b>Outcome</b>
Week 1	Introduction to Histopathology equipment, microscope	2 hrs	Describe the Introduction to Histopathology equipment, & microscope
Week 2	Tissue Fixation	2 hrs	<ul style="list-style-type: none"> <li>• Introduce Tissue Fixation techniques</li> </ul>
Week 3	Gross examination of specimen	2 hrs	<ul style="list-style-type: none"> <li>• Discuss Gross examination of specimen</li> </ul>
Week 4	Tissues Processing and Steps in processing: dehydration, clearing and impregnation	2 hrs	<ul style="list-style-type: none"> <li>• Differentiate between Steps of tissue processing</li> </ul>
Week 5	Paraffin method of embedding	2 hrs	<ul style="list-style-type: none"> <li>• Explain Paraffin method of embedding</li> </ul>

Week 6	Microtomy / tissue sectioning techniques	2 hrs	<ul style="list-style-type: none"> <li>• Introduce tissue sectioning techniques</li> </ul>
Week 7	Floating water bath	2 hrs	<ul style="list-style-type: none"> <li>• Elaborate the importance of floating water bath and its functioning</li> </ul>
Week 8	Decalcification of bone	2 hrs	Define Decalcification of bone and its importance
Week 9	<b>MID TERM EXAM</b>		
Week 10	Routine Hematoxylin-Eosin Staining Of Paraffin Sections:	2 hrs	<ul style="list-style-type: none"> <li>• Understand the basic principle of Routine Hematoxylin-Eosin Staining Of Paraffin Sections</li> <li>• Differentiate Types and composition of Hematoxylin-eosin stain.</li> </ul>
Week 11	Special staining technique <ul style="list-style-type: none"> <li>• Stain for carbohydrate ( PAS ,PAS-D, Alcian Blue)</li> <li>• For microorganism (Giemsa stain , ZN Staining ,Gram stain, GMS stain</li> </ul>	2 hrs	<ul style="list-style-type: none"> <li>• Comprehend the principle &amp; Significance of Schiff reaction</li> <li>• Define the principle &amp; Significance of Geimsa and Zeihl Nelsen stain and Gomori methenamine silver stain</li> </ul>
Week 12	Stain For connective tissues and Fiber	2 hrs	<ul style="list-style-type: none"> <li>• Demonstrate the principle, composition, purpose and procedure and of Retuculin methods for reticulin fiber and Massons Trichrome</li> </ul>
Week 13	Pigments, Minerals and Cytoplasmic Granules	2 hrs	<ul style="list-style-type: none"> <li>• Demonstrate the principle, composition and procedure and significance of Malanin, Perls Prussian blue stain for iron, Van Kossa Stain</li> </ul>
Week 14	Tumor Markers & Immunohistochemistry technique	2 hrs	<ul style="list-style-type: none"> <li>• Differentiate the Types of different tumor markers and their role in diagnosis.</li> <li>• Illustrate the Immunohistochemistry techniques and introduction to various steps in this procedure.</li> </ul>
Week 15	Autopsy Techniques	2 hrs	<ul style="list-style-type: none"> <li>• Understand Procedure and stages of Autopsy techniques.</li> <li>• Comprehend the basic concept of cytological specimen, handling, fixation ,equipment's, &amp;reagents used,</li> </ul>

Week 16	Collection of Cytology specimen and Routine staining in cytology	2 hrs	<ul style="list-style-type: none"> <li>Understand the collection of cytological specimen</li> <li>Introduce the principle, composition and procedure of routine cytological stain (Papanicolaou staining methods)</li> </ul>
Week 17	Introduction to Fine needle aspiration technique & cell block formation	2 hrs	<ul style="list-style-type: none"> <li>Analyze Fine needle aspiration technique &amp; cell block formation</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

#### SIXTEEN WEEK PRACTICAL PLAN OF HISTOLOGICAL TECHNIQUES (MLS 721)

Week #	Practical	Duration	Outcome
Week 1	Over view of various equipment essential for Histopathology techniques	3 hrs	<ul style="list-style-type: none"> <li>Identify various equipment used in Histopathology techniques</li> </ul>
Week 2	Preparation of reagents used in histopathology lab	3 hrs	<ul style="list-style-type: none"> <li>Prepare various reagents used in the fixation and processing of tissues</li> </ul>
Week 3	Fixation of biopsy specimen	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate fixation of small and large biopsy specimen</li> </ul>
Week 4	To Study Gross Examination, Selection, Collection and Fixation of Specimen	3 hrs	<ul style="list-style-type: none"> <li>Perform gross Examination, Selection, Collection and Fixation of Specimen</li> </ul>
Week 5	Tissue processing by manual method	3 hrs	<ul style="list-style-type: none"> <li>Perform steps of tissue processing</li> </ul>
Week 6	Tissue processing by automation	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate steps of tissue processing by processor</li> </ul>
Week 7	Methods of tissue embedding	3 hrs	<ul style="list-style-type: none"> <li>Perform tissue embedding to make blocks for cutting .</li> </ul>
Week 8	Methods of tissue sectioning or microtomy	3 hrs	<ul style="list-style-type: none"> <li>Perform tissue sectioning or microtomy to cut thin slices of tissues for the diagnosis of cells.</li> </ul>
Week 9	<b>MID TERM EXAM</b>		
Week 10	Routine staining (H & E)	3 hrs	<ul style="list-style-type: none"> <li>Perform routine staining (H &amp; E) procedure to visualize under light microscope</li> </ul>
Week 11	To Study methods of decalcification	3 hrs	<ul style="list-style-type: none"> <li>Demonstrate technique of bone decalcification with preparation of decalcifying</li> </ul>

			agent.
Week 12	Methods of special staining on tissues (PAS), (PAS - D) & Geimsa stain	3 hrs	<ul style="list-style-type: none"> <li>Perform staining procedure to identify glycogen or Mucin found in tissues</li> </ul>
Week 13	Methods of special staining on tissues (Alcian blue, gram staining, ZN staining)	3 hrs	<ul style="list-style-type: none"> <li>Perform staining procedure of Alcian blue, gram staining, ZN staining) to identify the presence organism in tissues</li> </ul>
Week 14	To Study methods of special staining on tissues (Gomori methenamine silver stain)	3 hrs	<ul style="list-style-type: none"> <li>Perform staining procedure of Gomori methenamine silver stain to identify the presence fungi in tissues</li> </ul>
Week 15	Methods of special staining on tissues (connective tissues and Fiber)	3 hrs	<ul style="list-style-type: none"> <li>Perform staining procedure of reticulin fiber and Masson's Trichrome</li> </ul>
Week 16	Immunohistochemistry staining	3 hrs	<ul style="list-style-type: none"> <li>Perform Immunohistochemistry staining</li> </ul>
Week 17	Methods of cytology staining ( Papanicolaou stain)	3 hrs	<ul style="list-style-type: none"> <li>Explain method of preparing slide of fluids or exudates and staining technique in cytological material</li> </ul>
Week 18	<b>FINAL TERM EXAM</b>		

### Appendage 4326

#### ISSUANCE OF EQUIVALENCY CERTIFICATE FROM PERCENTAGE TO GPA/CGPA FOR MBBS AND BDS PROGRAMMES

##### **Background**

1. Conversion of percentages attained in the final examinations results into equivalent GPA/CGPA is often required by the MBBS and BDS graduated students while applying for higher studies abroad and to claim reimbursement of tuition fee (for wards of Govt employees and in need of financial assistance). Presently there is no approved formula/ format for such conversion adopted by BU. BUHSCK DME has formulated a suitable equivalency frame work, as required by BUHO Exams Dte, which is aligned with the HEC/ BU criteria for the conversion of semester-based Programmes, and is recommended by FBOS-HS for adoption in case of annual examinations results (MBBS, BDS). Details are as follows:

- a. At first, In the absence of credit hours proposed criteria for conversion of percentages to GPA/CGPA has been based on BU Grading System for Semester based Health Sciences courses
- b. Later on this found to be unfair on the part of medical and dental students as they rarely are able to score above 80% and are not eligible to get admissions for higher studies below 2.00 GPA
- c. Keeping this bracket in mind a new table as under, was devised in collaboration with examination department BUHO to cater the needs of medical and dental students.

**Conversion Table from Percentage to GPA/CGPA for MBBS and BDS Programmes**

Percentage	Grade	GPA
80 and above	A	4.00
75 to 79 and above	A-	3.31-3.9
65 to 74 and above	B+	3.01-3.30
60 to 64 and above	B	2.71-3.00
55 to 59 and above	C+	2.31-2.70
50 to 54 and above	C	2.00-2.30
Marks less than 50% =Fail		GPA/CGPA less than 2.00= Fail

**APPLICATION NOTES**

2. Minimum % and CGPA required to determine qualification of the MBBS/BDS Programmes (both in theory and practical) will be 50% and CGPA 2.00 respectively)
3. For conversion from percentage into CGPA, minimum CGPA of corresponding percentage interval shall be granted. For example, a student getting total aggregate marks of 79 % shall be equated to CGPA of 3.31 (i.e., Minimum of CGPA interval 3.31 to 3.9)
4. For conversion from CGPA to percentage (%) minimum % of the corresponding CGPA/GPA interval shall be taken. For example, a student scoring CGPA/GPA of 3.30 shall be given equivalence to 65% marks (i.e., minimum of the percentage interval 65 to 74%)
5. This conversion table is a conservative approximation for determining the equivalence of total aggregate percentage (%) to CGPA and vice versa (HEC Guidelines for Uniform Implementation of Semester based Programmes at HEIs also relevant). The same can be used as a benchmark for individual subject(s) covering both theory and practical aspects of MBBS/BDS Programmes

**Appendage 4327**

**CLINICAL CLOCK HOUR CERTIFICATE -DPT**

NAME		PROGRAMME	DPT
Father name		Date of Admission	
Enrollment no		Date of Graduation	
Roll No		Medium of Education	English

S.NO	CLINICAL PRACTICE\ WARD\CLINIC	CLOCK HOURS
1	SUPERVISED CLINICAL PRACTICE- I	144
2	SUPERVISED CLINICAL PRACTICE- II	144

3	SUPERVISED CLINICAL PRACTICE- III	144
4	SUPERVISED CLINICAL PRACTICE- IV	144
5	SUPERVISED CLINICAL PRACTICE- V	144
6	SUPERVISED CLINICAL PRACTICE- VI	192
		<b>TOTAL: 912</b>

Note: The details of course content are mentioned in curriculum

### CONTACT HOUR CERTIFICATE

(CURRICULUM 2011- DPT)

REFERENCE NO:

DATED:

NAME					ENROLMENT NO					
SUBJECTS	1 <sup>ST</sup> YEAR (32 WEEKS)		2 <sup>ND</sup> YEAR (32 WEEKS)		3 <sup>RD</sup> YEAR (32 WEEKS)		4 <sup>TH</sup> YEAR (32 WEEKS)		5 <sup>TH</sup> YEAR (32 WEEKS)	
	THEORY CONTACT HOURS	PRACTICAL CONTACT HOURS	THEORY CONTACT	PRACTICAL CONTACT HOURS	THEORY CONTACT	PRACTICAL CONTACT HOURS	THEORY CONTACT	PRACTICAL CONTACT HOURS	THEORY CONTACT	PRACTICAL CONTACT HOURS
Anatomy	96	64	64	64	-----	-----	-----	-----	-----	-----
Physiology	64	64	32	32	-----	-----	-----	-----	-----	-----
Kinesiology	64	64	-----	-----	-----	-----	-----	-----	-----	-----
English	96	-----	48	-----	-----	-----	-----	-----	-----	-----
Pakistan Studies	32	-----	-----	-----	-----	-----	-----	-----	-----	-----
Biostatistics	96	-----	-----	-----	-----	-----	-----	-----	-----	-----
Islamic Studies / Ethics	32	-----	-----	-----	-----	-----	-----	-----	-----	-----
Biomechanics & Ergonomics	-----	-----	80	32	-----	-----	-----	-----	-----	-----
Biochemistry & Genetics	-----	-----	64	-----	-----	-----	-----	-----	-----	-----
Introduction To Computer	-----	-----	32	32	-----	-----	-----	-----	-----	-----
Exercise Physiology	-----	-----	48	---	-----	-----	-----	-----	-----	-----
Medical Physics	-----	-----	32	32	-----	-----	-----	-----	-----	-----
Behavioral Sciences (/ Psychiatry & Psychology)	-----	-----	48	-----	-----	-----	-----	-----	-----	-----
Pathology & Microbiology	-----	-----	-----	-----	64	32	-----	-----	-----	-----
Pharmacology	-----	-----	-----	-----	80	-----	-----	-----	-----	-----
Physical Agents & Electrotherapy	-----	-----	-----	-----	64	64	-----	-----	-----	-----
Therapeutic Exercises & Techniques	-----	-----	-----	-----	32	32	-----	-----	-----	-----
Sociology	-----	-----	-----	-----	32	-----	-----	-----	-----	-----
Health & Wellness	-----	-----	-----	-----	32	-----	-----	-----	-----	-----

Supervised Clinical Practice	-----	-----	-----	-----	-----	<b>288</b>	-----	<b>288</b>	-----	<b>336</b>
Manual Therapy	-----	-----	-----	-----	<b>32</b>	<b>32</b>	-----	-----	-----	-----
Teaching Methodology & Community Medicine	-----	-----	-----	-----	<b>48</b>	-----	-----	-----	-----	-----
Medicine I + II	-----	-----	-----	-----	-----	-----	<b>96</b>	-----	-----	-----
Surgery I + II	-----	-----	-----	-----	-----	-----	<b>96</b>	-----	-----	-----
Radiology & Diagnostic Imaging	-----	-----	-----	-----	-----	-----	<b>32</b>	<b>32</b>	-----	-----
Musculoskeletal physical Therapy	-----	-----	-----	-----	-----	-----	<b>32</b>	<b>32</b>	-----	-----
Human Growth, Development & Community Based Rehabilitation	-----	-----	-----	-----	-----	-----	<b>32</b>	-----	-----	-----
Neurological Physical Therapy	-----	-----	-----	-----	-----	-----	<b>32</b>	<b>32</b>	-----	-----
Evidence Based Practice	-----	-----	-----	-----	-----	-----	<b>32</b>	<b>32</b>	-----	-----
Prosthetics & Orthotics	-----	-----	-----	-----	-----	-----	<b>32</b>	-----	-----	-----
Cardiopulmonary Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	<b>32</b>
Emergency Procedures & Primary Care In Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	-----
Clinical Decision Making & Differential Diagnosis	-----	-----	-----	-----	-----	-----	-----	-----	<b>48</b>	-----
Scientific Inquiry & Research Methodology	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	<b>32</b>
Professional Practice ( Laws , Ethics & Administration)	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	-----
Integumentary Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	-----
Pediatric Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	-----
Gerontology & Geriatric Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	-----
Sports Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	-----
Research Project	-----	-----	-----	-----	-----	-----	-----	-----	-----	<b>288</b>
Obstetrics & Gynae Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	-----

THEORY HOURS: 2032 + PRACTICAL HOURS: 1936 TOTAL CONTACT HOURS= 3968

**PRINCIPAL****CONTACT HOUR CERTIFICATE**

(CURRICULUM 2016- DPT)

REFERENCE NO:

DATED:

NAME					ENROLNMENT NO					
SUBJECTS	1 <sup>ST</sup> YEAR (32 WEEKS)		2 <sup>ND</sup> YEAR (32 WEEKS)		3 <sup>RD</sup> YEAR (32 WEEKS)		4 <sup>TH</sup> YEAR (32 WEEKS)		5 <sup>TH</sup> YEAR (32 WEEKS)	
	THEORY CONTACT HOURS	PRACTICAL CONTACT HOURS								
Anatomy	<b>96</b>	<b>64</b>	<b>64</b>	<b>64</b>	-----	-----	-----	-----	-----	-----
Physiology	<b>64</b>	<b>64</b>	<b>32</b>	<b>32</b>	-----	-----	-----	-----	-----	-----
Kinesiology	<b>64</b>	<b>64</b>	-----	-----	-----	-----	-----	-----	-----	-----
English	<b>96</b>	-----	<b>48</b>	-----	-----	-----	-----	-----	-----	-----
Pakistan Studies	<b>32</b>	-----	-----	-----	-----	-----	-----	-----	-----	-----
Biostatistics	<b>96</b>	-----	-----	-----	-----	-----	-----	-----	-----	-----
Islamic Studies / Ethics	<b>32</b>	-----	-----	-----	-----	-----	-----	-----	-----	-----
Biomechanics & Ergonomics	-----	-----	<b>80</b>	<b>32</b>	-----	-----	-----	-----	-----	-----
Biochemistry	-----	-----	<b>64</b>	<b>32</b>	-----	-----	-----	-----	-----	-----
Introduction To Computer	-----	-----	<b>32</b>	<b>32</b>	-----	-----	-----	-----	-----	-----
Exercise Physiology	-----	-----	<b>32</b>	<b>32</b>	-----	-----	-----	-----	-----	-----
Medical Physics	-----	-----	<b>32</b>	<b>32</b>	-----	-----	-----	-----	-----	-----
Molecular Biology & Genetics	-----	-----	<b>32</b>	-----	-----	-----	-----	-----	-----	-----
Behavioral Sciences (Psychology & Ethics)	-----	-----	<b>32</b>	-----	-----	-----	-----	-----	-----	-----
Pathology & Microbiology	-----	-----	-----	-----	<b>64</b>	<b>32</b>	-----	-----	-----	-----
Pharmacology & Therapeutics	-----	-----	-----	-----	<b>64</b>	-----	-----	-----	-----	-----
Physical Agents & Electrotherapy	-----	-----	-----	-----	<b>64</b>	<b>64</b>	-----	-----	-----	-----
Therapeutic Exercises & Techniques	-----	-----	-----	-----	<b>32</b>	<b>32</b>	-----	-----	-----	-----
Sociology	-----	-----	-----	-----	<b>32</b>	-----	-----	-----	-----	-----
Health & Wellness	-----	-----	-----	-----	<b>32</b>	-----	-----	-----	-----	-----
Supervised Clinical Practice	-----	-----	-----	-----	-----	<b>288</b>	-----	<b>288</b>	-----	<b>336</b>
Manual Therapy	-----	-----	-----	-----	<b>32</b>	<b>32</b>	-----	-----	-----	-----
Community Medicine & Rehabilitation	-----	-----	-----	-----	<b>48</b>	-----	-----	-----	-----	-----
Medicine	-----	-----	-----	-----	-----	-----	<b>96</b>	-----	-----	-----
Surgery	-----	-----	-----	-----	-----	-----	<b>96</b>	-----	-----	-----
Radiology & Diagnostic Imaging	-----	-----	-----	-----	-----	-----	<b>32</b>	<b>32</b>	-----	-----
Musculoskeletal physical Therapy	-----	-----	-----	-----	-----	-----	<b>32</b>	<b>32</b>	-----	-----
Neurological Physical Therapy	-----	-----	-----	-----	-----	-----	<b>32</b>	<b>32</b>	-----	-----
Evidence Based Practice	-----	-----	-----	-----	-----	-----	<b>32</b>	<b>32</b>	-----	-----
Prosthetics & Orthotics	-----	-----	-----	-----	-----	-----	<b>32</b>	-----	-----	-----
Cardiopulmonary Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	<b>32</b>
Emergency Procedures & Primary Care In Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	<b>32</b>
Clinical Decision Making & Differential Diagnosis	-----	-----	-----	-----	-----	-----	-----	-----	<b>48</b>	-----
Scientific Inquiry & Research Methodology	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	<b>32</b>
Professional Practice (Laws , Ethics & Administration)	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	-----
Integumentary Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	-----
Pediatric Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	-----
Gerontology & Geriatric Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	-----
Sports Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	-----
Research Project	-----	-----	-----	-----	-----	-----	-----	-----	-----	<b>288</b>
Obstetrics & Gynecological Physical Therapy	-----	-----	-----	-----	-----	-----	-----	-----	<b>32</b>	-----

THEORY HOURS: 1984 + PRACTICAL HOURS: 2032 TOTAL CONTACT HOURS= 4016

PRINCIPAL

**Format A****BS IN BIOTECHNOLOGY ORIGINAL ROADMAP – PROGRAMME OF STUDY**

Course title	BS (4-year degree Programme) in Biotechnology
Course duration	4 YEARS
Study system	SEMESTER SYSTEM
No. of regular semesters	8
Semester Duration	16- 18 weeks
Total credit hours	134 (HEC recommended: 124-136)
Number of courses per semester	5-6
Course Load per Semester	15-18 credit hr
Course Title with study hrs	See table 1& II

**TABLE I: DISTRIBUTION OF CREDIT HOURS COURSE WORK**

Semester	Total No. of Credit hrs
I	17
II	17
III	18
IV	18
V	15
VI	18
VII	16
VIII	15
<b>TOTAL</b>	<b>134</b>

**TABLE II: DETAILS WITH TITLE OF COURSES****YEAR ONE - SEMESTER ONE**

S. No	Course	Name of Subject	Credits
1	ENG 116	English-I	3+0
2	PAK 101	Pakistan Studies	2+0
3	MAS 102	Mathematics-I (pre-calculus)	3+0
4	EBE 103	Ecology, Biodiversity & Evolution – I	3+0
5	OCH 104	Organic Chemistry	2+1
6	CBI 105	Cell Biology	2+1
		<b>Total</b>	<b>17</b>

**YEAR ONE - SEMESTER TWO**

S. No		Name of Subject	Credits
1	ENG 118	English-II	3+0
2	ISL 103	Islamic Studies/Ethics	2+0
3	BMA 106	Biomathematics	3+0
4	ICH 107	Inorganic Chemistry	2+1
5	OCH 108	Ecology, Biodiversity & Evolution – II	2+1
6	MIC 102	Microbiology	2+1
		<b>Total</b>	<b>17</b>

**YEAR TWO - SEMESTER THREE**

S. No		Name of Subject	Credits
1	ENG 122	English-III	3+0
2	CSC 107	Introduction to Computer Science	2+1
3	PHC 111	Physical Chemistry	3+0
4	BSC 103	Behavioral Science	3+0
5	BIO 112	Biochemistry-I	2+1
6	CGE 114	Classical Genetics	3+0
		<b>Total</b>	<b>18</b>

**YEAR TWO - SEMESTER FOUR**

S. No		Name of Subject	Credits
1	BPH 207	Biological Physics	3+0
2	PBI 208	Probability & Biostatistics	3+0
3	SOC 209	Sociology	3+0
4	ACI 210	Analytical Chemistry & Instrumentation	2+1
5	BIO 210	Biochemistry-II	2+1
6	MBI 206	Basics of Molecular Biology	3+0
		<b>Total</b>	<b>18</b>

**YEAR THREE - SEMESTER FIVE**

S. No		Name of Subject	Credits
1	BIT 301	Introduction to Biotechnology	3+0
2	IMM 302	Immunology	3+0*
3	MMB 303	Methods in Molecular Biology	1+2
4	PBE 304	Principles of Biochemical Engineering	2+1
5	BIN 305	Bioinformatics	1+2
		<b>Total</b>	<b>15</b>

**YEAR THREE - SEMESTER SIX**

S. No		Name of Subject	Credits
1	GRC 306	Genetic Resources & Conservation	3+0
2	MBT 307	Microbial Biotechnology	3+0*
3	AGB 308	Agriculture Biotechnology	2+1
4	FBT 309	Food Biotechnology	3+0*
5		Elective I* Virology Cell and tissue culture Molecular diagnostics Biosensors	3+0
6	RMS 311	Research Methodology & Skill Enhancement	3+0
		<b>Total</b>	<b>18</b>

**YEAR FOUR - SEMESTER SEVEN**

S. No		Name of Subject	Credits
1	HBT 405	Health Biotechnology	3+0*
2	SMR 409	Seminar-I	1+0
3	EMB 403	Environment Biotechnology	3+0*
4	GPR 404	Genomics and Proteomics	3+0
5		Elective II*	3+0

6	RPT 407	Research Project I	3+0
		<b>Total</b>	<b>16</b>

**YEAR FOUR - SEMESTER EIGHT**

S. No		Name of Subject	Credits
1		Elective III*	3+0
2		Elective-IV*	3+0
3	SEM 410	Seminar-II	1+0
4	IMB 404	Industrial Biotechnology	3+0
5	RPT 408	Research Project II	3+0
6	BET 406	Biosafety & Bioethics	2+0
7	INT 407	Internship ( 9 weeks non credit hrs)	0
		<b>Total</b>	<b>15</b>

**TOTAL CREDIT HOURS: 134****\*LIST OF ELECTIVES:**

<b>Elective I (any one)</b>	
VIR 310 CTC 311 MOD 312 BIS 313	Virology Cell and tissue culture Molecular diagnostics Biosensors
<b>Elective II (any one)</b>	
WWT 401 HWM 402 RAB 403 BFB 404	Water and waste water treatment Hospital waste management Radiobiology Biofuels and bio refineries
<b>Elective III (any one)</b>	
MBT 410 ABT 411 FBT 412	Marine biotechnology Animal biotechnology Fungal biotechnology
<b>Elective IV (any one)</b>	
PBT 413 NBT 414 FBT 415	Pharmaceutical biotechnology Nano biotechnology Fermentation biotechnology

**REVIEW OF BU HR POLICY DOCUMENT 2017**

**Revised Title:** BU HR Policy Manual 2023

**Comparison of Current and Revised Chapters:**

BU HR Policy Document 2017		BU HR Policy Manual 2012	
Chapter-I	Service Structure	Chapter 1	Service Structure
Chapter-II	Leave Rules	Chapter 2	Induction of Academic and Non-Academic Staff
Chapter-III	Induction of Academic and Non-Academic Staff	Chapter 3	Faculty Workload
Chapter-IV	Employees Efficiency and Discipline Rules	Chapter 4	Leave Procedures
Chapter-V	Human Resource Development Programmes	Chapter 5	Human Resource Development Programmes
Chapter-VI	Performance Management System	Chapter 6	Employees Efficiency and Discipline
Chapter-VII	Faculty Consultancy Policy	Chapter 7	Performance Management System
Chapter-VIII	Honorarium and Allowances	Chapter 8	Honoraria and Allowances
Chapter-IX	Workload Policy	Chapter 9	Faculty and Employees Awards
Chapter-X	Awards Policy	Chapter 10	Faculty Consultancy
Chapter-XI	Psychological Services Policy	Chapter 11	Psychological Services

**Annexes in Revised Manual:**

A	Employment Contract BU Officers
B	Employment Contract BU Permanent Faculty Members
C	Employment Contract BU Visiting Faculty Members
D	Employment Contract Between BU Support & Admin Staff
E	Employment Contract BU Adjunct Faculty
F	Faculty Members Candidate Assessment Form
G	Administrative Posts and Criteria for Course Load Waiver
H	Leave Approving Authorities
I	Inquiry Committee Convening Order Format
J	Performance Evaluation Report (for Faculty)
K	Performance Evaluation Report (for Cluster Heads)
L	Performance Evaluation Report (for PGP Coordinator)
M	Performance Evaluation Report (for Head of Department)
N	Performance Evaluation Report (for Dean/ Principal)
O	Approved Rates of Honoraria and Allowances
P	Best Employee Award Nomination Form

**Chapter 1 – Service Structure**

- Initial period of contract (Retired Naval Personnel) increased to two years
- Appointments of PFM through promotions retained within BU jurisdiction
- Sub-clause pertaining to promotion of PFM through re-induction deleted
- Reinduction of employees in higher Pay Grades (PG 2-11) restricted to BUO & BUSAS cadres
- Appointment of PFM on admin posts at BUHO/ CU limited to 3 years, further extendable by the Rector on annual basis

- CUs explicitly tasked to maintain the service record of respective BUSAS
- BUOs allowed to contribute in CP Fund (own share only)

### **Chapter 2 – Induction of Academic and Non Academic Staff**

- In selection of regular faculty, CUs to shortlisted 1 x Principal and preferably 3 x Standby candidates
- Principals included in Regular Faculty Selection Board
- VFMIs allowed more than 2 x make-up classes in a semester in emergency cases only

### **Chapter 3 – Faculty Workload**

- No major change

### **Chapter 4 – Leave Procedures**

- FMs to avail P/Leave preferably during the summer semester
- Special Leave allowed in case of wards (besides the spouse)
- Duration of Special Leave amended to 4.5 months in case of death of an employee's husband and maximum of 10 days for all other cases
- Clause inserted for Deans performing the Principal duties to pursue their Ty Duty through DG and Pro-Rector concerned.

### **Chapter 5 – Human Resource Development Programme**

- LDC replaced with LPDC and its TORs updated as per existing
- New clause included for Training Need Analysis (TNAs)
- New clause included for Faculty Development Training Certification (FDTC)
- Amplifying clause included for International Training & development Activities
- New clauses included for the following, as per current practice:
  - ✓ Developing Faculty through Corporate Training Service Policy
  - ✓ Non-Academic Employees Development
  - ✓ Conduct of Certificate and Diploma Courses
- Section for Promotions reviewed, as per revised BU Promotion Policy

### **Chapter 6 – Employees Efficiency and Discipline**

- Principals included in Authorised Officers for Show Cause Notice to respective FMs

### **Chapter 7 – Performance Management System**

- No major change

### **Chapter 8 – Honouraria and Allowances**

- Contents updated, with rates of Honouraria & Allowances and composition of Weekend Admin Teams moved in separate Annex
- Details of Invigilation terms & conditions deleted because of duplication with related BU Exams Policy, promulgated separately
- Clause pertaining to the Letter of Appreciation shifted to proposed Chapter 3 (Employee Efficiency and Discipline)
- New clauses included for the following, as per current practice:
  - ✓ Consultant for BU
  - ✓ Evening Allowance to Security personnel
  - ✓ Eid Allowance

### **Chapter 9 – Faculty, Students and Employees Awards**

- Title amended from current Awards Policy for better coverage and separate promulgation of related Policies
- Following clauses generalized due separate promulgation of related BU Policies:
  - ✓ Distinguished Teacher Award
  - ✓ Best Faculty Researcher Award
  - ✓ Best Student Researcher Award
- Clause for the Letter of Appreciation shifted from current Chapter VIII (Honorarium and Allowances) due better relevance in this Chapter
- Clause pertaining to the Hajj Policy replaced with Umrah Scheme as general contents

### **Chapter 10 – Faculty Consultancy**

- Contents updated as per latest Policy, promulgated through BU R&D Policy Handbook
- Approval procedure for Faculty Consultancy deleted to avoid duplication with related contents in BU R&D Policy Handbook

### **Chapter 11 – Psychological Services**

- No major changes

**Changes in Proposed HR Policy Manual 2023****Chapter 4**

- a. Duration of Special Leave in case of death of an employee's husband to be **maximum** upto 4 ½ months, **not** as standard duration.
- b. Clause inserted for processing of leave by Deans performing the Principal duties is also to be adopted for approval of TY Duty cases.

**Chapter 5**

Promotion Policy is to be retained in HR Policy Manual 2023 as per the latest/ revised policy, approved separately by the Rector, based on recommendations of CUs.

**Chapter 8**

In Annex for *Honourarium and Allowences* only those categories are to be retained which are already approved and promulgated by BUHO.

**Chapter 9**

- a. Contents pertaining to *Best Student Research Award* are to be removed (including the title of the Chapter) due to not being BUHR Policy related.
- b. Contents pertaining to *Umrah Scheme* are to be removed for promulgation of the Scheme through Registrar Notifications only, and **not** as part of BUHR Policy.



Registrar Notification No. 53/2022

**Bahria University**  
Discovering Knowledge  
Head Office

See Distribution

December 2022

**AMENDMENT - REVISED BU AFFILIATION COMMITTEE**

## References:

- A. HEC letter no. 15(18)/A&A/Acc./HEC/2022/188 dated 07 Nov 2022.(NOTAL)
- B. Registrar Notification No. 053/2020 dated 30 July 2020.
- C. BU Affiliation Policy 2017.

1. In order to comply with HEC directive at Reference A, an Expert to be nominated by HEC, needs to be included in the Revised BU Affiliation Committee i.a.w Clause 7.1(iii) of HEC Affiliation Criteria. Accordingly, following amendment is issued in Registrar Notification at Reference B:

Add sub-para (k) to Para 1 of Ref B:

- k. An Expert to be nominated by Higher Education Commission (HEC) - Member
- 2. The above is issued with the approval of Honourable Rector (OAS Case File: BU-HQ/Exams/2022/278) and to be ratified during the forthcoming Academic Council Meeting.
- 3. Forwarded for information and compliance by all concerned.

SHAFQAT AZAD SI(M), S.B.T  
Commodore (Retd.)  
Registrar

## Distribution:

Internal:

Rector's Secretariat - for info  
All Pro Rectors  
All Deans  
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All Directors at BUHO

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DG NIMA  
DG BU Islamabad Campus  
DG BUM&DC, Karachi  
DG BU Karachi Campus  
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**REVIEW OF WEIGHTAGE CRITERIA – MS/ MPHIL ADMISSION INTERVIEWS****CLAUSE 2.12.3: EXISTING WEIGHTAGE CRITERIA OF PG PROGRAMMES:**

BU Admission Test/ ETS Score: 55%, Bachelor: 35% & Interview: 10%

**CLAUSE 2.12.3: NEW WEIGHTAGE CRITERIA OF PG PROGRAMMES:**

Admission Test/GRE/GAT/GMAT: 50%, BS or equivalent: 50%

**EXISTING BU ADMISSION POLICY CLAUSE 6.2****6.2 Selection, Admission & Registration Procedure:**

Every candidate shall undergo following process:

- a. The candidate shall having satisfied him/herself will appear in BU Entry Test / GAT (General) test as applicable.
- b. Admission Test Merit List shall be prepared by Admission Directorate in coordination with IT Directorate.
- c. Admission Test Merit List shall be forwarded to Respective Campuses or CUs by Admission Directorate.
- d. Director Campuses shall forward **Admission Test Merit List** to concerned HODs for making candidates interview list which shall be displayed on websites along with date and time of the interview.
- e. An Admission Committee shall be constituted by the Respective Campuses/CUs, names of FMs and interviews' schedule are to be forwarded to the Admissions Dte. The Admission Committee shall interview the eligible applicants and evaluate their suitability for the MS/MPhil Programme. Any further selection procedure, including test, may also be used to assess the suitability of the candidates. During the
- f. interview, original documents shall be thoroughly checked and further eligibility requirements shall be validated by Admission Committee and Admission office of respective campuses.
- g. Pre-requisite / deficiency courses are to be assigned by the Admission Committee of each department as per the approved roadmap of the concerned Programme.
- h. After interview, a Provisional Merit List (including 10% marks of interview) shall be prepared by HoD concerned and forwarded to the
- i. Director Admission through Director Campus for soliciting Rector's Approval; Annex Meanwhile, the CUs issue provisional admission
- j. challan form to the candidates for submission of admission fee.
- k. Submission of fee by candidates in designated bank.
- l. After approval of Rector, Director Admissions will forward Final Merit List to Director Campus for confirmation of admission.
- m. Manager (Accounts) shall generate final list of candidates who submitted fee for the Programme. Full reimbursement is to be made to
- n. those candidates who were issued fee challans but their names do not appear in the Final Merit List.
- o. Final list of candidates is further verified and validated by the department with original merit list.
- p. DD Academics' office of respective campuses shall generate list of candidates with enrollment numbers for registration purpose and shall forward it to concerned HoD.
- q. Concerned Student's Advisor registers candidates in the first semester.

- r. Upon final selection of students in each Programme, respective HODs shall forward list of candidates (Consolidated) to Director
- s. Admissions and Director (PGP) through Director Campus within 05 days of start of semester.

## **NEW ADMISSION POLICY CLAUSE 6.2**

### **6.2 Selection, Admission & Registration Procedure:**

Every candidate shall undergo following process:

- a. The candidate shall be having satisfied him/herself will appear in BU Entry Test / GAT (General) test as applicable.
- b. Admission Test Merit List shall be prepared by Admission Directorate in coordination with IT Directorate.
- c. Admission Test Merit List shall be submitted for Rector's approval.
- d. Approved Merit List shall be forwarded to Respective Campuses or CUs by Admission Directorate for uploading on BU Website through IT Directorate.
- e. Director Campuses/Director Academics shall forward Approved Merit List to concerned HODs for making candidates interview list which shall be displayed on websites along with date and time of the interview.
- f. Admission Committee(s) consisting of at least three faculty members headed by Associate Professor/Senior Assistant Professor for interviewing candidates shall be constituted.
- g. During the interview, original educational documents etc. (SSC/HSSC/BS/BSc/Masters or equivalent, ID cards and Affidavit in case result of /BS/BSc/Masters level is awaited) are thoroughly checked and eligibility requirements are verified and validated.
- h. Deficiency courses are to be assigned by the Admission Committee of each department as per the approved roadmap of the concerned Programme.
- i. Admission evaluation form Annex J filled by the Admission Committee is forwarded to the Admission Office of Campus for further verification and validation of candidate's documents and eligibility.
- j. Final Verification and Validation of documents and eligibility from Admissions Office of Campus submission of Admission Evaluation Form to Fee's Office of the campus by the candidate for issuance of fee voucher.
- k. Submission of fee in Bank by the candidate.
- l. Second merit list and subsequent lists shall be displayed on website by concerned HOD if seats are available for admission after fee deadline.
- m. After filling up of all seats of admission in the specific Programme, Manager (Accounts) is to generate final list of candidates who submitted fee for the Programme.
- n. Final list of candidates is verified and validated by HOD with original merit list.
- o. Office of the Dir (Academics)/ Head of Admission Cell of respective campuses shall generate list of candidates with enrollment numbers for registration purpose and shall forward it to concerned HOD.
- p. Concerned Student's Advisor registers candidates in the first semester.
- q. Upon final selection of students in each Programme, respective HODs are to forward list of candidates, (consolidated) through Director Campus/ Academics within 05 days of start of the semester.

**REVIEW OF MS/ MPHIL ADMISSION INTERVIEW WEIGHTAGE CRITERIA****OLD FORM**

**MS – 1A**  
**ADMISSION EVALUATION FORM**  
**(MBA/MS/LLM/MPhil Programmes)**

SEMESTER: \_\_\_\_\_ Date: \_\_\_\_\_

S.NO. \_\_\_\_\_ APPLICATION NO: \_\_\_\_\_ PROGRAMME APPLIED

FOR: \_\_\_\_\_

DEPARTMENT \_\_\_\_\_ CAMPUS

APPLICANT'S NAME: \_\_\_\_\_

PREVIOUS BU REGISTRATION No (IF ANY):  
\_\_\_\_\_  
\_\_\_\_\_**A. Academic Eligibility:**

BS/MASTER CGPA/PERCENTAGE \_\_\_\_\_

(Weightage of Previous Academic Qualification in Overall Merit: 35%)

**B. GAT/BU Entry Test:**GAT (GENERAL) SCORE  Yes  NO if Yes Marks: \_\_\_\_\_**OR**BU ENTRY TEST SCORE  Yes  NO if Yes Marks: \_\_\_\_\_

(Weightage of GAT General/BU Entrance Test in Overall Merit: 55%)

C. TOC Case  Yes  NO**D. Interview By Admission Committee**

S. No.	Description	Marks Allocated	Marks Awarded
1	Teaching / Industrial /Research Experience	15	
2	Communication Skills	20	
3	Question Asked by the Interviewer	45	
4	Aptitude toward Programme of study	20	
	<b>Total Marks:</b>	<b>100</b>	

(Weightage of Interview in Overall Merit: 10%)

Final Score ( $0.35 \times A + 0.55 \times B + 0.10 \times C$ ) = \_\_\_\_\_ Recommended Not RecommendedIf not recommended, please mention reasons:  
\_\_\_\_\_  
\_\_\_\_\_

**Member****Member****Head of Department****NEW FORM**

**MS-1A**  
**PROVISIONAL ADMISSION FORM**  
**(MBA/MS/LLM/MPhil Programmes)**

SEMESTER: \_\_\_\_\_ Date: \_\_\_\_\_

S.NO. \_\_\_\_\_ APPLICATION NO: \_\_\_\_\_ PROGRAMME APPLIED FOR: \_\_\_\_\_

DEPARTMENT \_\_\_\_\_ CAMPUS \_\_\_\_\_

APPLICANT'S NAME: \_\_\_\_\_

PREVIOUS BU REGISTRATION No (IF ANY): \_\_\_\_\_

**PRELIMINARY VERIFICATION BY DEPARTMENTAL ADMISSION COMMITTEE****Eligibility Criteria Check:**

CGPA/%age in Masters/Bachelors/ equivalent degree \_\_\_\_\_

The following documents of the candidate were checked and verified.

- |   |  |
|---|--|
| a. CNIC   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| b. SSC / O level (IBCC equivalence)   | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| c. HSSC / A Level (IBCC equivalence)  | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| d. Masters/Bachelors/ Equivalent (HEC Verified)                                       | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| e. Affidavit (If result of Masters/Bachelors or Equivalent final semester is awaited) | <input type="checkbox"/> Yes <input type="checkbox"/> No |

Signature \_\_\_\_\_

Faculty Name \_\_\_\_\_

 Selected Rejected

If rejected, please mention reasons: \_\_\_\_\_

**Deficiency Courses (if any)** \_\_\_\_\_

The candidate has been interviewed for the admission in \_\_\_\_\_ Programme. Fee slip to above mentioned candidate may please be issued. Fee deposit date cannot be extended/ amended by account section. **Last date for fee submission is** \_\_\_\_\_. Extension in fee submission date is not allowed.

Signature \_\_\_\_\_

Signature \_\_\_\_\_

Faculty Name \_\_\_\_\_

Faculty Name \_\_\_\_\_

Signature \_\_\_\_\_

Head of Department

**FINAL VERIFICATION BY ADMISSION OFFICE OF CAMPUS**

Stamp	Signature _____ Name _____ (Admission Office Staff)
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**Manager (Accounts)**

Issued By \_\_\_\_\_

**Note:**

Only Admission Department of CU is authorized to extend/amend the fee deposit due date.

## **SOP FOR OUTBOUND EXCHANGE STUDENTS FOR UNIVERSITY OF AIRLANGGA, INDONESIA**

a) Based on the maximum provision of students to be sent in an academic year, as permitted by University of Airlangga, Indonesia, there shall be students selected from each campus of Bahria University including, Islamabad, Karachi & Lahore, to go on the exchange Programme to University of Airlangga, Indonesia. The maximum number of students that can be recommended by any Campus would be based on the percentage of number of relevant students at that Campus. In case suitable candidate(s) are not available in a campus, the seat may be transferred to the other campus.

b) The recommendation of students is to be made by the following authorities:

<b>CAMPUSES</b>	<b>Nominating Authority</b>
• BUIC	Director Academics BUIC
• BUKC	Director Academics BUKC
• IPP	Director Professional Psychology
• BULC	Director Campus Lahore

c) The above authorities will interview and shortlist students from their respective campuses based on following selection criteria, which should reflect the highest quality of students:

### **Selection Criteria:**

- i. The students must be a regular student of Bahria University taking full course load.
    - ii. The minimum CGPA of the student should be 3.0.
  - iii. The student must have studied for more than a year (2 semesters) with Bahria University. Students in 2<sup>nd</sup> semester will be eligible to apply.
  - iv. The student must be proficient in English and have good communication skills.
  - v. The student must not have any disciplinary cases against them and should be void of any attitude problem.
- d) The shortlisted students will be re-evaluated by a following member committee at Bahria University to shortlist students for final approval of Rector:

i. Pro-Rector (Academics)	-	Chairperson
ii. Registrar	-	Member
iii. Director Academics	-	Member
iv. Director Admissions	-	Member
v. Director Examinations	-	Member
vi. Director Students Affairs	-	Member
vii. Director International Office	-	Member

e) The selected students must sign a written bond with Bahria University to return to Pakistan to continue their remaining studies with Bahria University or to complete remaining degree requirements.

f) The responsibility of accommodation arrangement in Indonesia, during the course of stay, will be on student. The International office will assist the selected students in finding suitable accommodation. In addition to the expenses pertaining to accommodation, students will also be responsible for travelling & visa/pass expenses, medical/health insurance or any additional service charges they wish to avail or are required for travel to Indonesia for exchange Programme. University of Airlangga, Indonesia, may provide living allowance to BU students to support their living expenses in Indonesia.

g) The student will defer their semester prior going to University of Airlangga, Indonesia, under the Exchange Programme. There shall be no tuition fee charged for this process. The decision on duration & number of semesters, to defer, is to be taken by the relevant Head of Department according to number of days the student will spend at University of Airlangga,

Indonesia, under exchange Programme. The student must adhere to departure and return dates as specified by his/her department.

h) The duration of the semester(s) studied abroad will not be counted towards the calculation of time bar.

#### **Eligibility for Honors & Awards:**

- i) Students availing the exchange Programme at the University of Airlangga, Indonesia, will be eligible for academic honors & awards, as long as they are taking full semester loads in their studies at Bahria University and finishing remaining degree requirement with their batch of registration.
- j) If, as a result of the exchange activity, any of their courses are affected, these students would be permitted to make up for the shortfall (of the affected courses only) on return to Bahria University either during the summer sessions, if offered, or during succeeding regular semester, in excess to their regular course load.
- k) If during the summer session,
- i. the students take shortfall courses, they will be awarded actual grades and no capping will apply.
- ii. the students take any course, which were not affected by the exchange Programme, summer session rules will apply and the students will become ineligible for Honors & Awards.

#### **Transfer of Credits as a result of an Outbound Exchange Programme:**

- l) Student interested in registering for the courses at University of Airlangga, Indonesia, for which they can avail **credits transfer** at Bahria University, shall be properly advised by the relevant Head of Department about the compatibility of the courses they wish to take, based on the course content, before departure.
- m) The student must inform their Head of Department about the possible courses they wish to take at University of Airlangga, Indonesia, along with the course outline. A preliminary meeting of the Equivalence Committee should take place, before the departure of student. The committee shall give clear instructions to the student, in writing, on a prescribed form (attached), on the course(s) he/she can take to avail **credits transfer**, against course(s) of similar nature, at Bahria University as per the road map of the Programme he/she is studying.
- n) The final decision on **credits transfer** is to be taken, on return of the student, and successful completion of the courses, as per following criteria:
- i. Students applying for **credits transfer** are to submit original interim transcript and the course outlines of the course(s) studied at University of Airlangga, Indonesia, to their relevant Head of Department (HOD) on return. The HOD will then formulate an Equivalence Committee to make final recommendations to their relevant Director of Institute. The Director will then forward recommendation of the Equivalence Committee to Director International Office for processing case for final approval. There shall be no fee charged from the student for **credits transfer**.
- ii. **Credits transfer** of courses will only be allowed for Degree level Programmes (*equivalent to similar level Programme at Bahria University*) offered on campus.
- iii. **Credits transfer** for only those courses will be allowed for which a course with at least similar standard, credit hours and matching description is available in the relevant academic Programme of Bahria University. As the marking criteria at University of Airlangga, Indonesia, is different from what is followed at Bahria University, therefore following grade mapping mechanism is to be followed:

	<b>University of Airlangga Grading System</b>		<b>Bahria University (Old Grading System)</b>		<b>Bahria University (New Grading System)</b>	
	<b>Grade</b>	<b>Grade Point</b>	<b>Grade</b>	<b>GP</b>	<b>Grade</b>	<b>GP</b>

a	A	4.0	A	4.0	A	4.0
b	AB	3.5	B+	3.5	B+	3.33
c	B	3.0	B	3.0	B	3.0
d	BC	2.5	C+	2.5	B-	2.67
e	C	2.0	C	2.0	C	2.0
f	D	1.0	D	1.5	D	1.0
g	E	0	F	0.0	F	0.0

\* Due to lesser number of grades at University of Silesia in Katowice, Grade A-,C+,C- & D+ (new Grading system) of BU have been excluded

\*\* For postgraduate students, BU equivalent grade D(old grading system) & D+(new grading system) and below will be converted into an F grade

- iv. The courses must equate in description and laboratory work, if any, with the similar course of the relevant academic Programme of Bahria University.
- v. **Credits transfer** of courses equating to maximum of 50% of the total credit hours of the relevant academic Programme of Bahria University will be allowed

#### **SOP FOR INBOUND EXCHANGE STUDENTS FROM UNIVERSITY OF AIRLANGGA, INDONESIA,**

- a) Bahria University will accept students from University of Airlangga, Indonesia, under the exchange Programme in any given academic year. The maximum number of students to be accepted will be decided for each department in consultation with the Dean and relevant HoD.
- b) Only students recommended by the International office of University of Airlangga, Indonesia, will be entertained under this arrangement.
- c) The inbound students from University of Airlangga, Indonesia, will be advised on the availability of courses, which they want to take at Bahria University, after consultation with the HOD of the relevant department. The HOD must ensure that there are no clashes between the selected courses by the individual.
- d) The student will be responsible for own accommodation arrangement in Pakistan, but the International office of BU will assist in finding suitable accommodation.
- e) There shall be no tuition fee charged by Bahria University from students of University of Airlangga, Indonesia, under student's Exchange Programme.
- f) On successful completion of the course work at Bahria University, the student will be responsible to meet the **credits transfer** requirements of University of Airlangga, Indonesia, as per its own policy. Bahria University will only award official interim transcript to the student for courses he / she has studied at Bahria University.

#### **PRE-VISIT EQUIVALENCE FORM**

#### **CONFIRMATION OF COURSE TRANSFER AS A RESULT OF STUDENTS' EXCHANGE WITH**

#### **UNIVERSITY OF AIRLANGGA, INDONESIA**

(DECISION AFTER PRELIMINARY MEETING OF THE EQUIVALENCE COMMITTEE)

##### **Section A: Student Details:**

Student Name: .....  
 Programme of Study: .....  
 Semester: .....  
 Enrolment No: .....

Campus: Islamabad  Karachi  Lahore  IPP

**Section B: Course Mapping**

<b>List of courses planned to be studied at University of Airlangga, Indonesia</b>	<b>Transferable Courses at Bahria University, recommended by the Equivalence Committee:</b>
--	---

<u>Course Code</u>	<u>Course Title &amp; Credit Hours</u>	<u>Course Code</u>	<u>Course Title &amp; Credit Hours</u>
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

**Section C: Student Declaration:**

I fully understand that the final decision of transfer of courses will be taken on my return and will be conditional to successful completion of course work. In case any other course is studied, which is not stated in the list above (section B) then the decision for the transfer of credits for that course will be taken on my return, based on Credit Transfer procedure as specified in Bahria University SOP for Students' Exchange with University of Airlangga, Indonesia.

**Student's Signature**

**EQUivalence COMMITTEE**

**Remarks: (If any) .....**  
.....

**Member 1**

Name:  
Designation:

**Member 2**

Name:  
Designation:

**Member 3**

Name:  
Designation:

**Head of Department**

**Director/Principal of Concerning Constituent Unit/School  
POST-VISIT EQUIVALENCE FORM**

**CONFIRMATION OF COURSE TRANSFER AS A RESULT OF STUDENTS' EXCHANGE WITH  
UNIVERSITY OF AIRLANGGA, INDONESIA**

**Section A: Student Details:**

Student Name: .....  
Programme of Study: .....  
Semester: .....  
Enrolment No: .....

Campus: Islamabad  Karachi  Lahore  IPP

**Section B: Course Mapping**

<b>List of courses planned to be studied at University of Airlangga, Indonesia</b>	<b>Transferable Courses at Bahria University, recommended by the Equivalence Committee:</b>
--	---

<u>Course Code</u>	<u>Course Title &amp; Credit Hours</u>	<u>Course Code</u>	<u>Course Title &amp; Credit Hours</u>
.....	.....	.....	.....
.....	.....	.....	.....

**Section C: Student Declaration:**

I fully understand that the final decision on Transfer of Credits is subject to policy outlined in the Bahria University SOP FOR OUTBOUND EXCHANGE STUDENTS FOR UNIVERSITY OF AIRLANGGA, INDONESIA

**Student's Signature****EQUIVALENCE COMMITTEE**

**Remarks: (If any) .....**  
.....

**Member 1**

Name:  
Designation:

**Member 2**

Name:  
Designation:

**Member 3**

Name:  
Designation:

**Head of Department****Director/Principal of Concerning Constituent Unit/School****APPROVED/NOT APPROVED****Director Academics****Appendage 4334****NEW PROGRAMME PROPOSAL****MS IN APPLIED LINGUISTICS**

<b>A. ACADEMIC DETAILS</b>	
1	<b>Faculty/Department:</b> Humanities and Social Sciences, BUKC
2	<b>Name of the Programme:</b> MS Applied Linguistics
3	<b>Mission of the Programme:</b> The key mission is to produce MS scholars/graduates equipped with a diverse range of knowledge of professional fields who can stand by their own in the face of 21 <sup>st</sup> century learners and able to accept global challenges enthusiastically
4	<b>Objectives of the Programme:</b> <ul style="list-style-type: none"> <li>• Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics</li> <li>• Explore language acquisition and language teaching: Applied linguistics often focuses on language acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition</li> <li>• Conduct original research: One of the primary objectives of MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics</li> <li>• Apply linguistic theories and methods to real-world language issues: The Programme aims</li> </ul>

	to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.
5.	<p><b>Learning Outcomes of the Programme:</b></p> <ul style="list-style-type: none"> <li>Advanced knowledge of linguistic theory: Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations</li> <li>Research skills: Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers</li> <li>Language teaching skills: Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods</li> <li>Communication skills: Graduates may have developed advanced communication skills, including the ability to write and present research findings to academic audiences</li> <li>Career opportunities: Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research</li> <li>Further academic pursuits: Graduates may have the opportunity to pursue further academic study, such as a PhD in Applied Linguistics or a related field</li> </ul>
6	<p><b>Rationale for the Programme:</b></p> <ul style="list-style-type: none"> <li>The Department of Humanities and Social Sciences has devised a plan to launch a Master of Science in Applied Linguistics Programme.</li> <li>The decision is based on a comprehensive evaluation of the current market trends and demands</li> <li>It has been noted that a significant number of our alumni have been pursuing admissions in other academic institutions</li> <li>Therefore, this initiative is deemed to be a strategic step towards addressing the academic needs and aspirations of students seeking admission in this Programme</li> </ul>
7	<p><b>Brief Description of the Programme:</b> The Master of Science Programme in Applied Linguistics is a specialized academic Programme that aims to equip students with an in-depth understanding of language acquisition, linguistics, and their applications in various fields. The Programme focuses on developing the skills and knowledge required to analyze and solve language-related problems in real-world scenarios</p>
8	<b>Duration:</b> 2 years
9	<p><b>Venue(s):</b> On Campus Department of Humanities and Social Sciences, Bahria University Karachi Campus</p>
10	<b>Programme Scheduling Format:</b> Evening (Bi-Semester)
11	<b>Proposed Date of Commencement:</b> Fall-2023, subject to the approval of HEC
12	<b>Mode of Study/Examination:</b> Mode of study of MS Applied Linguistics is based on classroom teaching. Assignments, quizzes, mid-term and final term exams will be used to evaluate the students in each semester. Students will be required to undertake 6 credit hours of thesis/Project
13	<p><b>Additional Faculty Member(s) Required:</b> Regular: 2 PhDs (One has already joined the other will join in August)</p>
14	<b>Additional Skilled-Worker(s) Required:</b> Nil
15	<b>Additional Classroom(s) required:</b> Nil



	<p>*5000 Rs per credit hour and 12 credit hour per semester (Total 30 credit hours)  **For the first semester 25K admission fee, 5000 Misc. expenditures, and 10K refundable security fee shall be applicable  <b>First Year:</b> Rs. 2,650,000  <b>Second Year:</b> Rs. 4,730,000</p>
7	<p><b>Total Estimated Salaries of all Additional Human Resources per annum (B7):</b>  <i>Salary Estimates of Faculty for 1st Year: 1,267,200</i>  <i>Salary Estimate of Supporting Staff for 1<sup>st</sup> Year(Admin Cost): 257,220</i>  <i>Total of Faculty and Supporting Staff: Rs 1,524,420 (Approximately)</i></p>
8	<b>Cost of Additional Laboratory Equipment/Tools (B8):</b> Existing Lab facilities shall be used.
9	<b>Cost of Additional Classrooms (B9):</b> Nil
10	<b>Cost of Additional Books, Subscription &amp; Memberships to on-line Sites Repositories (B10):</b> Cost of Additional Books: 200,000 approx. Cost of Additional Journal: Nil
11	<b>Off-Site rental Expenses and Cost of other Fixtures (B11):</b> ( <i>Show details</i> ); Nil
12	<p><b>Miscellaneous Expenses required for Starting the Programme (B12):</b></p> <ul style="list-style-type: none"> <li>- Advertisement:</li> <li>- Printing &amp; Stationery:</li> <li>- Admin Cost:</li> <li>- Any other:</li> <li>- <b>Total:</b> included in admin cost B7</li> </ul>
13	<p><b>Annual Recurring Expenditures in Subsequent Years (B13):</b></p> <ul style="list-style-type: none"> <li>- Salaries: ---</li> <li>- Rentals: Nil</li> <li>- Subscriptions/Memberships: Nil</li> <li>- Advertisements: Nil</li> <li>- Printing &amp; Stationery: Nil</li> <li>- Others: Nil</li> </ul> <p>*Admin Cost includes all of above included in B7</p>
14	<b>Total Cost of the Programme (B14):</b> [Add B (7) to B (12)]: 1,724,420
15	<b>Net Cost of the Programme (B15):</b> [Subtract B (1) from B (14)]: 1,724,420
16	<b>Net Earnings in First Year (B16):</b> [Subtract B (15) from B (5)]: 925,580

### MS APPLIED LINGUISTICS ROADMAP

#### **1<sup>st</sup> Semester**

Course Codes	Course Title	Type	CH
ENG 501	Research Methods in Linguistics	Core	3
ENG 502	Linguistic Theories	Core	3
-	Elective-I	Elective	3
-	Elective-II	Elective	3

#### **2<sup>nd</sup> Semester**

Course Codes	Course Title	Type	CH
-	Elective-III	Elective	3
-	Elective-IV	Elective	3
-	Elective-V	Elective	3
-	Elective-VI	Elective	3

**Semester-3**

S.No.	Codes	Courses	Level	CH
1	THS 600	Thesis-I	Core	3

**Semester-4**

S.No.	Codes	Courses	Level	CH
1	THS 600	Thesis-II	Core	3

**LIST OF ELECTIVE COURSES FOR MS APPLIED LINGUISTICS**

Course Codes	Course Title	Type	CH
ENG 511	Discourse Studies	Electives	3
ENG 512	Corpus Linguistics	Electives	3
ENG 513	Latest Trends in Linguistics	Electives	3
ENG 514	Advanced Stylistics	Electives	3
ENG 515	Language and Technology	Electives	3
ENG 516	Systemic Functional Linguistics	Electives	3
ENG 517	Cross-Cultural Communication	Electives	3
ENG 518	Language Programme Management	Electives	3
ENG 519	Cognitive Linguistics	Electives	3
ENG 520	Sociolinguistics	Electives	3
ENG 521	World Englishes	Electives	3

**LIST OF DEFICIENCY COURSES FOR ZERO SEMESTER**

Course Code	Course Title	Type	CH
ENG 414	Introduction to Applied Linguistics	Core	3
ENG 112	Introduction to Phonetics & Phonology	Core	3
ENG 408	TEFEL-I	Core	3
ENG 210	Semantics	Core	3

**MS APPLIED LINGUISTICS**  
**COURSE OUTLINES**

**COURSE OUTLINE OF RESEARCH METHODS IN LINGUISTICS**

<b>Course Name</b>	Research Methods in Linguistics	<b>Prepared On</b>	30, March, 2023
<b>Course Code</b>	ENG 501		
<b>Credit Hours</b>	3		
<b>Course Prereq. Code</b>		<b>Revised On</b>	
<b>Course Type</b>	Core Course      Elective		
<b>Programme</b>	MS Applied Linguistics		
<b>Semester</b>	MS 2 (Eve)		
<b>Instructor:</b>			
<b>Course Description</b>	This course looks at various approaches to the study of linguistics using both qualitative and quantitative methods of investigation. With a focus on the area of linguistics, students are introduced to the process of hypothesis formulation and testing, issues of interpretation, evaluation and replicability of data and of research results, questionnaire and interview design, data gathering and recording, statistical description and analysis.		
<b>Programme Objectives (POs)</b>			

**PO 1:** Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics

**PO 2:** Explore language acquisition and language teaching: Applied linguistics often focuses on language acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition

**PO 3:** Conduct original research: One of the primary objectives of an MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics

**PO 4:** Apply linguistic theories and methods to real-world language issues: The Programme aims to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.

#### **Programme Learning Outcome (PLOs)**

**PLO 1:** Advanced knowledge of linguistic theory: Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations

**PLO 2:** Research skills: Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers

**PLO 3:** Language teaching skills: Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods

**PLO 4:** Communication skills: Graduates may have developed advanced communication skills, including the ability to write and present research findings to academic audiences

**PLO 5:** Career opportunities: Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research

**PLO 6:** Further academic pursuits: Graduates may have the opportunity to pursue further academic study, such as a PhD in Applied Linguistics or a related field

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>					
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
<b>CLO1</b>	Understand the basic principles and concepts of research methods in linguistics	✓		✓		✓	
<b>CLO2</b>	Select appropriate research methods and tools for linguistic research		✓				
<b>CLO3</b>	Design and implement a research study in linguistics	✓			✓		
<b>CLO4</b>	Analyze and interpret data collected from linguistic research	✓		✓			✓

#### **Teaching & Learning Methodology**

Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.

- a. Respect & listen to the one who is talking.
- b. Present their ideas in a clear and articulate way.

The teaching methodology will include:

- Lectures
- Articles / Case Studies? Scenario Analysis
- Discussions
- Group Project

<b>Textbook(s)</b>												
<ul style="list-style-type: none"> <li>• Alvesson, Mats. &amp; Sköldberg, Kaj. (2000). <i>Reflexive Methodology: New Vistas for Qualitative Research</i>. Sage Publication.</li> <li>• Black, T. R. (1999). <i>Doing Quantitative Researching the Social Sciences: An Integrated Approach to Research Design, Measurement, and Statistics</i>. London, UK: Sage..</li> </ul>												
<b>Reference Book(s)</b>												
<ul style="list-style-type: none"> <li>• Blaikie, N. (2003). <i>Analysing Quantitative Data: From Description to Explanation</i>. Thousand Oaks, CA: Sage.</li> <li>• Bogdan, R. C., Biklen, S. K. (1998). <i>Qualitative Research for Education: An Introduction to Theory and Methods</i> (Third edition.). New York: Allyn and Bacon.</li> <li>• Byrne, D. (2003). <i>Interpreting Quantitative data</i>. Thousand Oaks, CA: Sage.</li> <li>• Cohen, L., Manion, L., &amp; Morrison, K. (2000). <i>Research methods in education</i>. (Fifth edition). London: Routledge.</li> <li>• Creswell, J. W. (2002). <i>Research design: Qualitative, Quantitative, and Mixed Methods Approaches</i>. London: Sage Publication</li> <li>• Darlington, Y. &amp; Scott, D. (2002). <i>Qualitative Research in Practice: Stories from the Field</i>. Philadelphia: Open University</li> <li>• Day, C., Elliot, J., Somekh, B. &amp; Winter, R. (Eds.), (2002). <i>Theory and Practice in Action research</i>. Oxford: Symposium Books.</li> <li>• Denzin, N. K. &amp; Lincoln, Y. S. (2005). <i>The Handbook of Qualitative Research</i>. (Third edition). Sage.</li> <li>• Field, A. &amp; Graham, H. (2003). <i>How to Design and Report Experiments</i>. Sage.</li> <li>• Fielding, N. G. &amp; Lee, R. M. (1998). <i>Computer Analysis and Qualitative Research</i>. London: Sage.</li> <li>• Glesne, C. (1999). <i>Becoming Qualitative Researchers: An Introduction</i>. New York: Longman.</li> <li>• Gorard, S. (2001). <i>Quantitative Methods in Educational Research</i>. London: Continuum.</li> </ul>												
<b>Magazine Articles/ Published Material/ Research Journals /Papers</b>												
Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.												
<b>Grading Policy</b>												
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<b>Week/ Session</b>	<b>Contents</b>	<b>Activities ( Critical Thinking)</b> Case Studies, Video Clips, Assignments, Research Papers, Presentations	<b>Learning Objectives Addressed</b>									
<b>Week 1</b>	Research Questions in Linguistics	Lecture 1 (ppt) + Activities	<b>CLO1,2,</b>									
<b>Week 2</b>	Principles of Research Design	Lecture (ppt) + Activities	<b>CLO 1,3</b>									
<b>Week 3</b>	Basic Features and Philosophical Underpinnings of Qualitative Studies	Lecture (ppt) + Activities	<b>CLO 2,3</b>									

<b>Week 4</b>	Quantitative, Qualitative or Both? Combining Methods in Linguistic	Lecture (ppt) + Activities	<b>CLO 1,2,3</b>
<b>Week 5</b>	Data Collection and Data Analysis in the Social Sciences	Lecture (ppt) + Activities	<b>CLO 1, 2,</b>
<b>Week 6-</b>	Descriptive and Inferential Statistical Techniques and the handling of Multivariate Data	Lecture (ppt) + Activities	<b>CLO 2,3,4</b>
<b>Week 7</b>	Standard Descriptive Terminology and Concepts in Applied Linguistics,	Lecture (ppt) + Activities	<b>CLO 1,2,3</b>
<b>Week 8</b>	Organising and Processing Data: the Nuts and Bolts of Quantitative Analyses	Lecture (ppt) + Activities	<b>CLO 1,2,</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	Qualitative Research Methods	(Handouts, Presentations)	<b>CLO 2,3</b>
<b>Week 11</b>	Discourse Analytic Approaches to Text and Talk	Lecture (ppt) + Activities	<b>CLO 2,3</b>
<b>Week 12</b>	Linguistic Ethnography	Lecture (ppt) + Activities	<b>CLO 2,3,4</b>
<b>Week 13</b>	Interviews and Focus Groups	Lecture (ppt) + Activities	<b>CLO 3,4</b>
<b>Week 14</b>	Multimodal Analysis: Key Issues	Lecture (ppt) + Activities	<b>CLO 2,3,4</b>
<b>Week 15</b>	Narrative Analysis in Linguistic Research	Lecture (ppt) + Activities	<b>CLO 1,3,4</b>
<b>Week 16</b>	<b>Revision</b>		
<b>Week 17</b>	<b>Final Examination</b>		

### COURSE OUTLINE OF LINGUISTICS THEORIES

<b>Course Name</b>	Linguistic Theories	<b>Prepared On</b>	30, March, 2023
<b>Course Code</b>	ENG 502		
<b>Credit Hours</b>	3		
<b>Course Prereq. Code</b>		<b>Revised On</b>	
<b>Course Type</b>	Core Course      Elective		
<b>Programme</b>	MS Applied Linguistics		
<b>Semester</b>	MS 1 (Eve)		
<b>Instructor:</b>			
<b>Course Description</b>	<p>This course aims to provide students with an introduction to broad theoretical approaches to linguistics through the writings of important linguists including: Descartes, Saussure, Sapir, Jespersen, Bloomfield, Chomsky and others. Furthermore, the course will situate the field in terms of historical context and the philosophy of science. Readings for the course largely include articles from the philosophy of science and history of linguistics. Moreover, papers by well-known linguists will be deconstructed specifically in terms of assumptions, argumentation, and methodology.</p>		
<b>Programme Objectives (POs)</b>			

**PO 1:** Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics

**PO 2:** Explore language acquisition and language teaching: Applied linguistics often focuses on language acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition

**PO 3:** Conduct original research: One of the primary objectives of an MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics

**PO 4:** Apply linguistic theories and methods to real-world language issues: The Programme aims to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.

#### Programme Learning Outcome (PLOs)

**PLO 1:** Advanced knowledge of linguistic theory: Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations

**PLO 2:** Research skills: Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers

**PLO 3:** Language teaching skills: Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods

**PLO 4:** Communication skills: Graduates may have developed advanced communication skills, including the ability to write and present research findings to academic audiences

**PLO 5:** Career opportunities: Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research.

**PLO 6:** Further academic pursuits: Graduates may have the opportunity to pursue further academic study, such as a PhD in Applied Linguistics or a related field

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>					
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
<b>CLO1</b>	Read and understand several authors' own exposition of their theories	✓		✓		✓	
<b>CLO2</b>	Summarize and outline such theories with care;		✓				
<b>CLO3</b>	Discern crucial assumptions of such approaches				✓		
<b>CLO4</b>	Compare and contrast theories, both in terms of philosophies and applications	✓		✓			

#### Teaching & Learning Methodology

Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.

- c. Respect & listen to the one who is talking.
- d. Present their ideas in a clear and articulate way.

The teaching methodology will include:

- Lectures
- Articles / Case Studies? Scenario Analysis
- Discussions
- Group Project

<b>Textbook(s)</b>																				
<ul style="list-style-type: none"> <li>Chomsky, N. (1995). <i>The minimalist Programme</i> (Vol. 28). Cambridge, MA: MIT press.</li> <li>Chomsky, N. (1975). <i>The logical structure of linguistic theory</i>.</li> </ul>																				
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<b>Week/ Session</b>	<b>Contents</b>	<b>Activities( Critical Thinking)</b> Case Studies, Video Clips, Assignments, Research Papers, Presentations	<b>Learning Objectives Addressed</b>																	
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<b>Week 4</b>	Post-structuralism Michel Foucault	Lecture (ppt) + Activities	<b>CLO 2,3</b>																	

<b>Week 5-6</b>	Post-structuralism Jacques Lacan Roland Barthes	Lecture (ppt) + Activities	<b>CLO 1, 3,4</b>
<b>Week 7</b>	Post-structuralism Julia Kristeva	Lecture (ppt) + Activities	<b>CLO 2,3</b>
<b>Week 8</b>	Deconstruction Jacques Derrida	Lecture (ppt) + Activities	<b>CLO 1, 3,4</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	Language and skills -reading	(Handouts, Presentations)	<b>CLO2,3</b>
<b>Week 11</b>	Functionalism M. A. K. Halliday	Lecture (ppt) + Activities	<b>CLO 1,2,3</b>
<b>Week 12</b>	Transformational Grammar Noam Chomsky.	Lecture (ppt) + Activities	<b>CLO 1,3,4</b>
<b>Week 13</b>	Minimalist Programme Noam Chomsky	Lecture (ppt) + Activities	<b>CLO 3,4</b>
<b>Week 14</b>	Optimality Theory Alan Prince	Lecture (ppt) + Activities	<b>CLO 2,3,4</b>
<b>Week 15</b>	Optimality Theory Paul Smolensky John J. McCarthy	Lecture (ppt) + Activities	<b>CLO 3,4</b>
<b>Week 16</b>	<i>Revision</i>		
<b>Week 17</b>	<i>Final Examination</i>		

**COURSE OUTLINE OF DISCOURSE STUDIES**

<b>Course Name</b>	Discourse Studies	<b>Prepared On</b>	30, March, 2023	
<b>Course Code</b>	ENG 511			
<b>Credit Hours</b>	3			
<b>Course Prereq. Code</b>		<b>Revised On</b>		
<b>Course Type</b>	Core Course <input type="checkbox"/> Elective <input checked="" type="checkbox"/>			
<b>Programme</b>	MS Applied Linguistics <input checked="" type="checkbox"/>			
<b>Semester</b>	MS 1 (Eve)			
<b>Instructor:</b>				
<b>Course Description</b>				
This course builds on the foundations laid in Introduction to Discourse Analysis and explores in greater depth the basic assumptions, concepts and procedures of discourse studies, focusing particularly on literary discourse. The overall goal is to help students develop awareness and familiarity with the discourse analytic research process and practice it.				
The analysis of discourse - frequently defined as "language use above the level of the sentence" (Stubbs, 1983) - provides students with the opportunity to study the meaningful production and interpretation of texts and talk. The analysis of discourse encourages students to reconsider and re-evaluate the 'rules' of language with which they are already familiar. The examination of texts problematizes traditional word-class classifications and sheds new light on the functions and workings of grammatical categories (tense, mood and aspect, for example). In this respect, students may be encouraged to critically engage with discourses and explore how the meaning and interpretation of a text may be negotiated around the selection and use of particular syntactic and lexical forms or even aspects of pronunciation.				
Through the study of discourse analysis students may gain an advanced and sophisticated understanding of the concept of 'context'. Students engage with the study of how, in social interaction, human beings convey their meaning not as an individualistic enterprise but as a result of				

dynamic and ongoing negotiation with their interlocutors. In this way, students gain knowledge and understanding of the (symbolic) function of language in social life, and the role that language plays in the construction and shaping of social relationships. Students also have the opportunity to explore how power relations underpin the construction and meaning of discourse, and to learn about the ways in which control, dominance and inequality may be both asserted and resisted in discourse.

#### **Programme Objectives (POs)**

**PO 1:** Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics

**PO 2:** Explore language acquisition and language teaching: Applied linguistics often focuses on language acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition

**PO 3:** Conduct original research: One of the primary objectives of an MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics

**PO 4:** Apply linguistic theories and methods to real-world language issues: The Programme aims to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.

#### **Programme Learning Outcome (PLOs)**

**PLO 1:** Advanced knowledge of linguistic theory: Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations

**PLO 2:** Research skills: Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers

**PLO 3:** Language teaching skills: Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods

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**PLO 5:** Career opportunities: Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research

**PLO 6:** Further academic pursuits: Graduates may have the opportunity to pursue further academic study, such as a PhD in Applied Linguistics or a related field

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>					
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
<b>CLO1</b>	Understand formal and contextual features of discourse;	✓	✓				
<b>CLO2</b>	Develop skills in analysing the properties of different texts, in characterizing the interpersonal stances adopted by speakers and writers, and in identifying and classifying the various genres or texts types which operate in particular social settings.	✓	✓	✓			✓
<b>CLO3</b>	Improve knowledge about both the internal structure of discourse and the varied uses of language in context.	✓			✓		✓
<b>CLO4</b>	Improve practical skills in conducting discourse study projects. In this course students will also cover a number of themes in discourse studies, including discourse and cultural diversity, discourse and social	✓	✓				✓

	institutions, discourse and power, discourse and technology, etc.						
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### Teaching & Learning Methodology

Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.

- e. Respect & listen to the one who is talking.
- f. Present their ideas in a clear and articulate way.

teaching methodology will include:

- ❑ Lectures
- ❑ Articles / Case Studies? Scenario Analysis
- ❑ Discussions
- ❑ Group Project

### Textbook(s)

- Adam Jaworski and Nikolas Coupland (Eds.) *The Discourse Reader*  
2nd Edition (New York: Routledge, 2006)

### Reference Book(s)

PDFs

- Antaki, C., Billig, M., Edwards, D., & Potter, J. (2003) Discourse Analysis Means Doing Analysis: a Critique of Six Analytic Shortcomings. *Discourse Analysis Online*, 1, (1).  
[http://extra.shu.ac.uk/daol/articles/open/2002/002/antaki20020\\_02-paper.html](http://extra.shu.ac.uk/daol/articles/open/2002/002/antaki20020_02-paper.html)
- Angermuller, J. Maingueneau, D. and Wodak, R. (Eds.) *The Discourse Studies Reader* (Amsterdam: John Benjamins, 2014)
- Brown, G. and Yule, G. (1983) *Discourse Analysis*. Cambridge: Cambridge University Press.
- Cameron, D. (2001) *Working with Spoken Discourse*. London: Sage Publications
- Fairclough, N. (2001) *Language and Power*. London: Longman, 2nd edition.

### Magazine Articles/ Published Material/ Research Journals /Papers

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.

### Grading Policy

	Assessment Instruments	Percentage	
Quizzes		15%	
Assignments + project		20%	
Mid Term Exam		25%	
Final Exam		40%	

Week-wise Course Outline			
Week/ Session	Contents	Activities( Critical Thinking) Case Studies, Video Clips, Assignments, Research Papers, Presentations	Learning Objectives Addressed
<b>Week 1</b>	Introduction to Discourse Studies Definition and scope of discourse studies Key concepts and theoretical frameworks Overview of the course and	<b>(Handouts, Presentations, Homework)</b>	<b>CLO1,2,</b>

	expectations		
<b>Week 2</b>	Language and Power Power and ideology in discourse Critical discourse analysis Examples of power relations in different types of discourse	(Handouts, Presentations, Homework)	<b>CLO 1,2</b>
<b>Week 3</b>	Language and Identity The construction of identity through discourse The role of language in shaping social categories Analysis of personal narratives and autobiographical texts Language and Culture	(Handouts, Presentations, Homework)	<b>CLO 1,3</b>
<b>Week 4</b>	Language and Culture The relationship between language and culture Cross-cultural communication Analysis of intercultural communication in different contexts	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 5</b>	Discourse and Social Change The role of discourse in social change Examples of discourse-led social movements Strategies for challenging dominant discourses	(Handouts, Presentations, Homework)	<b>CLO 1, 3,4</b>
<b>Week 6</b>	Discourse and Gender Gender and language use Analysis of gendered discourse in media and popular culture Critiques of essentialist and binary views of gender	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 7</b>	Discourse and Race Race and language use Analysis of racialized discourse in media and politics Critiques of color-blindness and cultural appropriation	(Handouts, Presentations, Homework)	<b>CLO 1, 3,4</b>
<b>Week 8</b>	Discourse and Class Class and language use Analysis of classed discourse in media and everyday life Critiques of meritocracy and neoliberalism	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	Discourse and Institutions Discourse in institutional settings (e.g. education, healthcare, law) Analysis of power relations in	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>

	institutional discourse Critiques of institutional language norms and practices		
<b>Week 11</b>	Discourse and Media The role of media in shaping discourse Analysis of media representations and framing Critiques of media bias and propaganda	(Handouts, Presentations, Homework)	<b>CLO ,3,4</b>
<b>Week 12-13</b>	Discourse and Globalization Language and globalization Analysis of global English and language policy Critiques of linguistic imperialism and cultural homogenization	(Handouts, Presentations, Homework)	<b>CLO 1,3,4</b>
<b>Week 14</b>	Discourse and Technology The impact of technology on discourse Analysis of online communication and social media Critiques of digital divide and online harassment	(Handouts, Presentations, Homework)	<b>CLO 1,,3</b>
<b>Week 15</b>	Conclusion and Reflection Recap of course content and themes Student reflections on learning outcomes Future directions for discourse studies research and practice.	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 16</b>	<b>Revision</b>		
<b>Week 17</b>	<b>Final Examination</b>		

**COURSE OUTLINE OF CORPUS CLINGUISTICS.**

<b>Course Name</b>	Corpus Linguistics	<b>Prepared On</b>	30, March, 2023
<b>Course Code</b>	ENG 512		
<b>Credit Hours</b>	3	<b>Revised On</b>	
<b>Course Prereq. Code</b>			
<b>Course Type</b>	Core Course <input type="checkbox"/> Elective <input checked="" type="checkbox"/>		
<b>Programme</b>	MS Applied Linguistics <input checked="" type="checkbox"/>		
<b>Semester</b>	MS 2 (Eve)		
<b>Instructor:</b>			
<b>Course Description</b>			
Corpora, viz. electronic collections of spoken and written data, are playing an ever increasing role in a large number of applied linguistics areas. This course examines how applied linguistics has benefited from the use of corpora, in areas such as: language and its acquisition, language and assessment, language and instruction, language and society, language and technology, language and translation, language for specific purposes.			
<b>Programme Objectives (POs)</b>			
PO 1: Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics			
PO 2: Explore language acquisition and language teaching: Applied linguistics often focuses on language			

acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition

**PO 3: Conduct original research:** One of the primary objectives of an MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics

**PO 4: Apply linguistic theories and methods to real-world language issues:** The Programme aims to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.

#### **Programme Learning Outcome (PLOs)**

**PLO 1: Advanced knowledge of linguistic theory:** Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations

**PLO 2: Research skills:** Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers

**PLO 3: Language teaching skills:** Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods

**PLO 4: Communication skills:** Graduates may have developed advanced communication skills, including the ability to write and present research findings to academic audiences

**PLO 5: Career opportunities:** Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research

**PLO 6: Further academic pursuits:** Graduates may have the opportunity to pursue further academic study, such as a PhD in Applied Linguistics or a related field

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>					
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
<b>CLO1</b>	equip students with a critical understanding of what corpora are, and how they can be used to address a range of different linguistic research questions			✓		✓	
<b>CLO2</b>	familiarize students with a number of existing corpora, and enable them to comment on the appropriateness of using these corpora to tackle different kinds of research question	✓	✓				✓
<b>CLO3</b>	encourage students to think about situations in which they may want to design their own corpora, and provide them with the necessary skills and knowledge in order to do so	✓			✓		✓
<b>CLO4</b>	Compare and contrast theories, both in terms of philosophies and applications	✓		✓			✓

#### **Teaching & Learning Methodology**

Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.

- g. Respect & listen to the one who is talking.
- h. Present their ideas in a clear and articulate way. The

teaching methodology will include:

- Lectures

- ② Articles / Case Studies? Scenario Analysis
- ② Discussions
- ② Group Project

**Textbook(s)**

- Aijmer, K. 2009. Corpora and Language Teaching. Amsterdam: John Benjamins.
- Baker, P. 2006. Using Corpora in Discourse Analysis. London/New York: Continuum

**Reference Book(s)**

## PDFs

- Biber, D. Conrad, S. & Reppen, R. (1998) *Corpus Linguistics: investigating language structure and use*. Cambridge University Press.
- British and American English?' International Journal of Corpus Linguistics 17(3): 295-324.
- Hunston, S (2002) *Corpora in applied linguistics*. Cambridge: Cambridge University Press.

**Magazine Articles/ Published Material/ Research Journals /Papers**

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.

**Grading Policy**

	<b>Assessment Instruments</b>	<b>Percentage</b>	
	Quizzes	15%	
	Assignments + project	20%	
	Mid Term Exam	25%	
	Final Exam	40%	

**Week-wise Course Outline**

<b>Week/ Session</b>	<b>Contents</b>	<b>Activities( Critical Thinking)</b> Case Studies, Video Clips, Assignments, Research Papers, Presentations	<b>Learning Objectives Addressed</b>
<b>Week 1</b>	Introducing Corpus Linguistics	(Handouts, Presentations, Homework)	<b>CLO1,2,</b>
<b>Week 2</b>	Research Questions and Corpus Design	(Handouts, Presentations, Homework)	<b>CLO 1,2</b>
<b>Week 3</b>	Methods in Corpus Linguistics: interpreting concordance and beyond concordance	(Handouts, Presentations, Homework)	<b>CLO 1,3</b>
<b>Week 4</b>	Corpus annotation	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 5</b>	Linguistic annotation in corpus linguistics	(Handouts, Presentations, Homework)	<b>CLO 1, 3,4</b>
<b>Week 6-7</b>	Linguistic Annotation of Texts ("tagging")	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 8</b>	Corpus Software	(Handouts, Presentations, Homework)	<b>CLO 1, 3,4</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	Corpora and language teaching: issues of language description	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 11</b>	Exploring corpus tools	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>

<b>Week 12</b>	Application of corpora in applied linguistics	(Handouts, Presentations, Homework)	<b>CLO ,3,4</b>
<b>Week 13</b>	Quantitative Analysis of Corpora	(Handouts, Presentations, Homework)	<b>CLO 1,3,4</b>
<b>Week 14</b>	Corpus Linguistics and Language Teaching	(Handouts, Presentations, Homework)	<b>CLO 1,,3</b>
<b>Week 15</b>	Corpus Linguistics and Language Teaching	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 16</b>	<i>Revision</i>		
<b>Week 17</b>	<i>Final Examination</i>		

**COURSE OUTLINE OF LATEST TRENDS IN LINGUISTICS**

<b>Course Name</b>	Latest Trends in Linguistics	<b>Prepared On</b>	30, March, 2023
<b>Course Code</b>	ENG 513		
<b>Credit Hours</b>	3	<b>Revised On</b>	
<b>Course Prereq. Code</b>			
<b>Course Type</b>	Core Course <input type="checkbox"/> Elective <input checked="" type="checkbox"/>		
<b>Programme</b>	MS Applied Linguistics <input checked="" type="checkbox"/>		
<b>Semester</b>	MS 2 (Eve)		
<b>Instructor:</b>			

**Course Description**

Linguistics is rapidly evolving discipline in the present era. The in-depth study and explorations in the field has given rise to many sub-disciplines, both core and applied in nature. However, the process has not just stopped as newer trends in Linguistics are always in pipeline. This course familiarizes learners to four contemporary areas in Linguistics (currently, as new additions can be made in future) to keep their knowledge updated. It is about how language relates to law, both in terms of linguistic evidence and in terms of legal discourse. The module on Ecolinguistics is based on a wide range of approaches to the study of language in its ecological context. The segment of Computational Linguistics is based on the elementary theoretical frameworks and applications of computational linguistics. The fourth part introduces learners to the newly developed field of Cultural Linguistics, a multidisciplinary field of research that examines the complex relationship between language and cultural conceptualizations.

**Note for the teachers:** Since the nature of this course is to cover current as well as emerging trends in Linguistics; thus, teacher is at liberty to add new fields/ topics/ contents or change the above listed fields/ topics/ contents.

**Programme Objectives (POs)**

PO 1: Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics

PO 2: Explore language acquisition and language teaching: Applied linguistics often focuses on language acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition

PO 3: Conduct original research: One of the primary objectives of an MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics

PO 4: Apply linguistic theories and methods to real-world language issues: The Programme aims to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.

**Programme Learning Outcome (PLOs)**

PLO 1: Advanced knowledge of linguistic theory: Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations

PLO 2: Research skills: Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers

PLO 3: Language teaching skills: Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods

PLO 4: Communication skills: Graduates may have developed advanced communication skills,

including the ability to write and present research findings to academic audiences

PLO 5: Career opportunities: Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research

PLO 6: Further academic pursuits: Graduates may have the opportunity to pursue further academic study, such as a PhD in Applied Linguistics or a related field

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>					
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
<b>CLO1</b>	Understand the major trends and developments in the field of linguistics	✓	✓			✓	
<b>CLO2</b>	Critically evaluate and analyze linguistic research using appropriate theoretical frameworks and methodologies	✓		✓	✓		✓
<b>CLO3</b>	Apply linguistic theories and methods to analyze language data and address language issues	✓	✓			✓	✓
<b>CLO4</b>	Communicate effectively about linguistic topics through written and oral presentations.	✓	✓			✓	✓

#### **Teaching & Learning Methodology**

Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.

- i. Respect & listen to the one who is talking.
- j. Present their ideas in a clear and articulate way.

The teaching methodology will include:

- ❑ Lectures
- ❑ Articles / Case Studies? Scenario Analysis
- ❑ Discussions
- ❑ Group Project

#### **Textbook(s)**

- Archangeli, D. B., & Langendoen, D. T. (1997). Optimality theory: An overview (Vol. 1): Wiley-Blackwell.
- Boeckx, Cedric and Massimo Piattelli-Palmarini (2005) Language as a natural object, linguistics as a natural science. *Linguistic Review* 22: 447–466

#### **Reference Book(s)**

##### **Recommended Readings Forensic Linguistics**

- Coulthard, Malcolm and Johnson, Alison. (2007). *An Introduction to Forensic Linguistics: Language in Evidence*. Routledge.
- Olsson, John, (2004). *Forensic Linguistics: An Introduction to Language, Crime, and the Law* Olsson, John and Luchjenbroers, June. (2014). *Forensic Linguistics*. Bloomsbury.
- Shuy, Roger. (2014). *The Language of Murder Cases*. OUP.

##### **Computational Linguistics**

- Jurafsky, D. and J. H. Martin. (2008). *Speech and language processing: An Introduction to Natural Language Processing, Computational Linguistics, and Speech Recognition* (2nd Edition). Prentice-Hall.

**Ecolinguistics**

- Alexander, R. (2009) *Framing Discourse on the Environment: A Critical Discourse Approach*. London: Routledge.
- Carvalho, A. (2005) 'Representing the Politics of the Greenhouse Effect: Discursive Strategies in the British Media'. *Critical Discourse Studies*. 2(1): 1-29.
- Coupland, N. and Coupland, J. (1997) 'Bodies, Beaches and Burn-Times: 'Environmentalism' and its Discursive Competitors'. *Discourse and Society*. 8(1): 7-25.
- Goatly, A. (1996) 'Green Grammar and Grammatical Metaphor, or Language and the Myth of Power, or Metaphors we Die By'. *Journal of Pragmatics*. 25(4): 537-60.
- Fill, A. and Mühlhäuser, P. (Eds.) (2001) *The Ecolinguistics Reader: Language, Ecology and Environment*. London: Continuum.
- Fill, Alwin and P. Hermine (Eds.) (2007). *Sustaining Language: Essays in Applied Ecolinguistics*. Vienna: LIT Verlag.
- Harré, R., Brockmeier, J. and Mühlhäuser, P., (1999) *Greenspeak: A Study of Environmental Discourse*. London: Sage.
- Mühlhäuser, P. (2003) *Language of Environment, Environment of Language: A Course in Ecolinguistics*. London: Battlebridge.
- Pattenger, M. (2007) *The Social Construction of Climate Change: Power, Knowledge, Norms, Discourses*. Aldershot: Ashgate.

**Cultural Linguistics**

- Sharifian, F. (forthcoming). *Cultural Linguistics*. Monash University, Clayton
- Sharifian, F. (2010). Cultural conceptualizations in intercultural communication: A study of Aboriginal and non-Aboriginal Australians. *Journal of Pragmatics*, 42, 3367–3376.
- Sharifian, F. (2013). Cultural Linguistics and Intercultural Communication. In F. Sharifian & M. Jamarani (Eds.) *Language and Intercultural Communication in the New Era*. (pp. 60-80) Oxford: Routledge/Taylor and Francis.
- Sharifian, F. (2013). Globalization and developing metacultural competence in learning English as an International Language. *Multilingual Education*, 3 (7).
- Sharifian, F. (2014). Conceptual metaphor in intercultural communication between speakers of Aboriginal English and Australian English. In A. Musolff, and F. MacArthur (Eds.) *Metaphor and Intercultural Communication*. London: Bloomsbury Publishing

**Magazine Articles/ Published Material/ Research Journals /Papers**

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.

**Grading Policy**

<b>Assessment Instruments</b>	<b>Percentage</b>
Quizzes	15%
Assignments + project	20%
Mid Term Exam	25%
Final Exam	40%

**Week-wise Course Outline**

<b>Week/ Session</b>	<b>Contents</b>	<b>Activities( Critical Thinking)</b> Case Studies, Video Clips, Assignments, Research Papers, Presentations	<b>Learning Objectives Addressed</b>

<b>Week 1</b>	<ul style="list-style-type: none"> <li>• Forensic Linguistics</li> <li>• Introduction to Forensic Linguistics: language and the legal process and as evidence</li> <li>• Characteristics of legal language</li> <li>• Textual variation; plagiarism</li> </ul>	<b>(Handouts, Presentations, Homework)</b>	<b>CLO1,2,</b>
<b>Week 2</b>	<b>Forensic Texts &amp; Transcriptions</b> <ul style="list-style-type: none"> <li>• Forensic linguistics in practice</li> <li>• Linguistic power (in-balance) in the courts and in police investigations</li> </ul>	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 1,2,3</b>
<b>Week 3</b>	Eco-Linguistics <ul style="list-style-type: none"> <li>• Eco-linguistics: Introduction &amp; key terms in the field</li> <li>• Advertisements and advertisers -Consumerism – dominant discourses and our responses</li> </ul>	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 2,3</b>
<b>Week 4</b>	<b>Law and the environment</b> <ul style="list-style-type: none"> <li>• The people' – Public discourses of the environment – Activists and activities</li> <li>• Literary representations of environmental change</li> </ul>	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 1,2,3</b>
<b>Week 5</b>	<ul style="list-style-type: none"> <li>• Computational Linguistics</li> <li>• Computational Linguistics: Introduction</li> <li>• Computational Linguistic: Major theories</li> </ul>	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 1, 3,4</b>
<b>Week 6</b>	<ul style="list-style-type: none"> <li>• Some knowledge from Applied Computational Linguistics</li> <li>• Applications that use computational linguistics: machine translation, search, information extraction</li> </ul>	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 2,4</b>
<b>Week 7</b>	<ul style="list-style-type: none"> <li>• Cultural Linguistics</li> <li>• Introduction to Cultural Linguistics</li> <li>• Cultural schemas, metaphors and categories</li> </ul>	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 1, 3</b>
<b>Week 8</b>	<ul style="list-style-type: none"> <li>• Linguistic Structures in Pakistani Languages</li> <li>• Phonetics and Phonology</li> <li>• Morphology</li> <li>• Syntax</li> </ul>	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 1,3, 4</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		

<b>Week 10</b>	<b>Documentation of Pakistani Languages</b> <ul style="list-style-type: none"><li>• Language Documentation</li><li>• Endangered Pakistani Languages</li></ul>	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 3,4</b>
<b>Week 11-12</b>	<b>Corpus Linguistics: Corpus Development of Pakistani Languages</b> <ul style="list-style-type: none"><li>• Language in Mind and Brain</li><li>• Psycholinguistics</li><li>• Neurolinguistics</li><li>• Biolinguistics</li><li>• Cognitive linguistics</li><li>• Generative Phonology</li><li>• Generative Semantics</li></ul>	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 123,4</b>
<b>Week 13</b>	<b>Pakistani Society</b> <ul style="list-style-type: none"><li>• Pragmatics and Discourse Analysis</li><li>• Sociolinguistics</li><li>• Code switching</li><li>• Feminist Linguistics</li><li>• Forensic Linguistics</li><li>• Ethnolinguistics</li></ul>	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 3,4</b>
<b>Week 14</b>	<b>Pakistani Languages and Technology</b> <ul style="list-style-type: none"><li>• Computational Linguistics</li><li>• Machine Translation and</li><li>• Machine Assisted Translation</li></ul>	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 2,.3,4</b>
<b>Week 15</b>	<b>Presentations</b>	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 1,2,.3,4</b>
<b>Week 16</b>	<b>Revision</b>		
<b>Week 17</b>	<b>Final Examination</b>		

### COURSE OUTLINE OF ADVANCED STYLISTICS

<b>Course Name</b>	Advanced Stylistics	<b>Prepared On</b>	30, March, 2023	
<b>Course Code</b>	ENG 514			
<b>Credit Hours</b>	3			
<b>Course Prereq. Code</b>				
<b>Course Type</b>	Core Course <input type="checkbox"/> Elective <input checked="" type="checkbox"/>	<b>Revised On</b>		
<b>Programme</b>	MS Applied Linguistics <input checked="" type="checkbox"/>			
<b>Semester</b>	MS 2 (Eve)			
<b>Instructor:</b>				
<b>Course Description</b>				
The aim of the course is to study the features of distinctive varieties of language and to discover and describe the reasons for particular choices made by individual and social groups in their use of language. This course however, is an extension and should be seen in perspective with the similar course recommended earlier in the BS scheme.				

<b>Programme Objectives (POs)</b>						
PO 1: Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics						
PO 2: Explore language acquisition and language teaching: Applied linguistics often focuses on language acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition						
PO 3: Conduct original research: One of the primary objectives of an MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics						
PO 4: Apply linguistic theories and methods to real-world language issues: The Programme aims to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.						
<b>Programme Learning Outcome (PLOs)</b>						
PLO 1: Advanced knowledge of linguistic theory: Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations						
PLO 2: Research skills: Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers						
PLO 3: Language teaching skills: Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods						
PLO 4: Communication skills: Graduates may have developed advanced communication skills, including the ability to write and present research findings to academic audiences						
PLO 5: Career opportunities: Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research						
PLO 6: Further academic pursuits: Graduates may have the opportunity to pursue further academic study, such as a PhD in Applied Linguistics or a related field						

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>					
<b>S.NO.</b>		<b>PLO1</b>	<b>PLO2</b>	<b>PLO3</b>	<b>PLO4</b>	<b>PLO5</b>	<b>PLO6</b>
<b>CLO1</b>	Critically discuss concepts of style and different stylistic approaches	✓	✓			✓	
<b>CLO2</b>	Identify and discuss stylistic devices and their possible effects in various kinds of texts	✓			✓	✓	
<b>CLO3</b>	Analyze texts from a stylistic point of view		✓		✓		✓
<b>CLO4</b>	Study the features of distinctive varieties of language	✓				✓	✓
<b>Teaching &amp; Learning Methodology</b>							
Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.							
<ul style="list-style-type: none"> <li>k. Respect &amp; listen to the one who is talking.</li> <li>l. Present their ideas in a clear and articulate way. The</li> </ul>							

teaching methodology will include:

- Lectures
- Articles / Case Studies? Scenario Analysis
- Discussions
- Group Project

#### **Textbook(s)**

Crystal, D. and Davy, D. 1969. Investigating English Style. London: Longman.  
Fowler, R. 1996. Linguistic Criticism (2nd ed.). Oxford: Oxford University Press.

#### **Reference Book(s)**

- Halliday, M.A.K. 1990. Spoken and Written Language. Oxford: Oxford University Press
- Hoey, M. 2003. Textual Interaction. London: Routledge.
- Leech, Geoffrey and Short, Michael. 1986. Style in Fiction. London: Longman.
- Thomas, Jenny. 1995. Meaning in Interaction. London: Longman.
- Widdowson, Henry. 1992. Practical Stylistics. Oxford: Oxford University Press

#### **Magazine Articles/ Published Material/ Research Journals /Papers**

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.

#### **Grading Policy**

<b>Assessment Instruments</b>	<b>Percentage</b>
Quizzes	15%
Assignments + project	20%
Mid Term Exam	25%
Final Exam	40%

#### **Week-wise Course Outline**

<b>Week/ Session</b>	<b>Contents</b>	<b>Activities( Critical Thinking)</b> Case Studies, Video Clips, Assignments, Research Papers, Presentations	<b>Learning Objectives Addressed</b>
<b>Week 1</b>	Stylistics as a branch of linguistics	(Handouts, Presentations, Homework)	<b>CLO1,2,</b>
<b>Week 2</b>	Literary and non-literary stylistics	(Handouts, Presentations, Homework)	<b>CLO 1,2</b>
<b>Week 3</b>	Tools for stylistic analysis	(Handouts, Presentations, Homework)	<b>CLO 1,3</b>
<b>Week 4</b>	Deviation and parallelism	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 5</b>	Linguistic/ Semantic Oddities	(Handouts, Presentations, Homework)	<b>CLO 1, 3,4</b>
<b>Week 6</b>	Linguistic/ Semantic Oddities	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 7</b>	Style and Register	(Handouts, Presentations, Homework)	<b>CLO 1, 3,4</b>
<b>Week 8</b>	Scripted speech	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	Stylistic Analysis of a Variety of Written Texts	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 11</b>	Stylistic Analysis of a Variety of Spoken Texts	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 12</b>	Practical applications of Stylistics	(Handouts, Presentations, Homework)	<b>CLO ,3,4</b>
<b>Week 13</b>	Practical applications of Stylistics	(Handouts, Presentations, Homework)	<b>CLO 1,3,4</b>

<b>Week 14</b>	Practical applications of Stylistics	(Handouts, Presentations, Homework)	<b>CLO 1,,3</b>
<b>Week 15</b>	Practical applications of Stylistics	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 16</b>	<b>Revision</b>		
<b>Week 17</b>	<b><i>Final Examination</i></b>		

**COURSE OUTLINE OF LANGUAGE AND TECHNOLOGY**

<b>Course Name</b>	Language and Technology	<b>Prepared On</b>	30, March, 2023
<b>Course Code</b>	ENG 515		
<b>Credit Hours</b>	3		
<b>Course Prereq. Code</b>		<b>Revised On</b>	
<b>Course Type</b>	Core Course <input type="checkbox"/> Elective <input checked="" type="checkbox"/>		
<b>Programme</b>	MS Applied Linguistics <input checked="" type="checkbox"/>		
<b>Semester</b>	MS 2 (Eve)		
<b>Instructor:</b>			

**Course Description**

This course is multidisciplinary in nature and provides critical understanding for creative cross disciplinary research. The course provides opportunities to develop innovative scholarship based on increasingly complex, multidimensional, transdisciplinary and vibrant ideas in Language & emerging Technologies, Information Communication Technology, Social Media, Mobile Technologies, Digital Media Technologies and Digital Games, Human Computer Communication, hypertext, cybertext, digital games and cinema, digital narratives and Digi-socio-cultural dimensions of language usage.

This course focuses on a strong connection of 'technology' and 'language' and encourages critical understanding of impressions of technological progression in the field of linguistics and changing perspectives in language usage and language learning technologies due to a strong and exciting interface of language and technology.

**Programme Objectives (POs)**

PO 1: Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics

PO 2: Explore language acquisition and language teaching: Applied linguistics often focuses on language acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition

PO 3: Conduct original research: One of the primary objectives of an MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics

PO 4: Apply linguistic theories and methods to real-world language issues: The Programme aims to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.

**Programme Learning Outcome (PLOs)**

PLO 1: Advanced knowledge of linguistic theory: Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations

PLO 2: Research skills: Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers

PLO 3: Language teaching skills: Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods

PLO 4: Communication skills: Graduates may have developed advanced communication skills, including the ability to write and present research findings to academic audiences

PLO 5: Career opportunities: Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research

PLO 6: Further academic pursuits: Graduates may have the opportunity to pursue further academic

study, such as a PhD in Applied Linguistics or a related field
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<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>					
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
<b>CLO1</b>	To develop critical understanding of multidimensional perspectives of interface of technology and language		✓			✓	
<b>CLO2</b>	To develop understanding of the vital issues and concepts in the use of language in different forms and formats of digital technology		✓	✓			✓
<b>CLO3</b>	To critically analyze ICT tools, Digital Media, Mobile Technologies, Social Media on the Internet, virtual reality, digital games and Learning Technologies for language usage, language learning and teaching	✓	✓			✓	✓
<b>CLO4</b>	To critically evaluate various digital technologies for language usage in different forms, formats and language learning	✓	✓		✓	✓	✓

#### **Teaching & Learning Methodology**

Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.

- m. Respect & listen to the one who is talking.
- n. Present their ideas in a clear and articulate way.

The teaching methodology will include:

- ❑ Lectures
- ❑ Articles / Case Studies? Scenario Analysis
- ❑ Discussions
- ❑ Group Project

#### **Textbook(s)**

- Bell, Alice. (2010). *the Possible Worlds of Hypertext Fiction*. London: Palgrave Macmillan.
- Bodomo, Adams B. (2009). *Computer-Mediated Communication for Linguistics and Literacy Technology and Natural Language Education*. Hong Kong: University of Hong Kong Press.

#### **Reference Book(s)**

- Brave, Robert J. Blake. (2008). *New Digital Classroom Technology and Foreign Language Learning*. Washington: Georgetown University Press.
- Chapelle, Carol A. (2003). *English Language Learning and Technology*. Amsterdam: John Benjamins Publishing.
- Erneling, Christina E. (2010). *Towards Discursive Education Philosophy, Technology, and Modern Education*. Cambridge: CUP.
- Evans, Michael. (2009). *Foreign-Language Learning with Digital Technology Education and Digital Technology*. Cambridge: CUP.
- Landow, George P. (2006). *Hypertext 3.0 Critical Theory and New Media in an Era of Globalization*. Baltimore: Johns Hopkins University Press.
- Monroe, Barbara Jean. (2004). *Crossing the Digital Divide Race, Writing, and Technology in the Classroom Language and Literacy Series*. New York: Teachers College Press.

#### **Magazine Articles/ Published Material/ Research Journals /Papers**

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.

<b>Grading Policy</b>			
	<b>Assessment Instruments</b>	<b>Percentage</b>	
	Quizzes	15%	
	Assignments + project	20%	
	Mid Term Exam	25%	
	Final Exam	40%	

<b>Week-wise Course Outline</b>			
<b>Week/ Session</b>	<b>Contents</b>	<b>Activities( Critical Thinking)</b> Case Studies, Video Clips, Assignments, Research Papers, Presentations	<b>Learning Objectives Addressed</b>
<b>Week 1</b>	Introduction to Language & Technology	(Handouts, Presentations, Homework)	<b>CLO1,3,</b>
<b>Week 2</b>	Human-Machine Communication	(Handouts, Presentations, Homework)	<b>CLO 1,2</b>
<b>Week 3</b>	Digital Text	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 4</b>	Hypertext	(Handouts, Presentations, Homework)	<b>CLO 1,3</b>
<b>Week 5</b>	CyberText	(Handouts, Presentations, Homework)	<b>CLO 1, 3,4</b>
<b>Week 6-7</b>	Interactive Texts	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 8</b>	Digital Media	(Handouts, Presentations, Homework)	<b>CLO 1, 3</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	Digital Gaming	(Handouts, Presentations, Homework)	<b>CLO 2,3, 4</b>
<b>Week 11</b>	Language and Social Media	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 12</b>	TELL (Technologically Enhanced Language Learning)	(Handouts, Presentations, Homework)	<b>CLO 1,3,4</b>
<b>Week 13</b>	m-learning (mobile learning)	(Handouts, Presentations, Homework)	<b>CLO 1,3,4</b>
<b>Week 14</b>	Flipped learning	(Handouts, Presentations, Homework)	<b>CLO 2,,3</b>
<b>Week 15</b>	Digital Visual Discourse	(Handouts, Presentations, Homework)	<b>CLO 2,4</b>
<b>Week 16</b>	<b>Revision</b>		
<b>Week 17</b>	<b>Final Examination</b>		

### **COURSE OUTLINE OF SYSTEMIC FUNCTIONAL LINGUISTICS**

<b>Course Name</b>	Systemic Functional Linguistics	<b>Prepared On</b>	30, March, 2023
<b>Course Code</b>	ENG 516		
<b>Credit Hours</b>	3		
<b>Course Prereq. Code</b>		<b>Revised On</b>	
<b>Course Type</b>	Core Course <input type="checkbox"/> Elective <input checked="" type="checkbox"/>		
<b>Programme</b>	MS Applied Linguistics <input checked="" type="checkbox"/>		
<b>Semester</b>	MS 2 (Eve)		
<b>Instructor:</b>			
<b>Course Description</b>			

The course is designed to enable the learners to understand the Systemic Functional Grammar and this mainstream approach towards linguistic studies. Furthermore, it is believed that the learners would develop a context based analytical approach to understand literary and non-literary texts.

### Programme Objectives (POs)

- PO 1:** Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics
- PO 2:** Explore language acquisition and language teaching: Applied linguistics often focuses on language acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition
- PO 3:** Conduct original research: One of the primary objectives of an MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics
- PO 4:** Apply linguistic theories and methods to real-world language issues: The Programme aims to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.

### Programme Learning Outcome (PLOs)

- PLO 1:** Advanced knowledge of linguistic theory: Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations
- PLO 2:** Research skills: Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers
- PLO 3:** Language teaching skills: Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods
- PLO 4:** Communication skills: Graduates may have developed advanced communication skills, including the ability to write and present research findings to academic audiences
- PLO 5:** Career opportunities: Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research
- PLO 6:** Further academic pursuits: Graduates may have the opportunity to pursue further academic study, such as a PhD in Applied Linguistics or a related field

Course Learning Outcomes		Programme Learning Outcomes					
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
<b>CLO1</b>	Understand SFL's concepts, methods, and applications.	✓	✓			✓	
<b>CLO2</b>	Analyze language use in different contexts using SFL.		✓	✓		✓	
<b>CLO3</b>	Evaluate linguistic features' communicative functions.	✓				✓	✓
<b>CLO4</b>	Apply SFL to language teaching contexts.		✓	✓		✓	

### Teaching & Learning Methodology

Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.

- o. Respect & listen to the one who is talking.
- p. Present their ideas in a clear and articulate way. The

teaching methodology will include:

- ❑ Lectures
- ❑ Articles / Case Studies? Scenario Analysis

- ☒ Discussions
- ☒ Group Project

**Textbook(s)**

- Caffarel, A., Martin, J. R., & Matthiessen, C. M. (Eds.). (2004). *Language typology: A functional perspective* (Vol. 253). John Benjamins Publishing.
- Eggins, S. (1994). *An Introduction to Systemic-Functional Linguistics*. London: Pinter.
- Fontaine, L. (2012). *Analysing English Grammar: A systemic functional introduction*. Cambridge University Press.

**Reference Book(s)**

- Halliday, M., Matthiessen, C. M., & Matthiessen, C. (2014). *An introduction to functional grammar*. Routledge.
- Halliday, M. A. K., & Matthiessen, C. M. (2013). *Halliday's introduction to functional grammar*. Routledge.
- Halliday, M. A. K., & Webster, J. J. (Eds.). (2009). *Bloomsbury Companion to Systemic Functional Linguistics*. A&C Black.
- Matthiessen, C. M., & Halliday, M. A. K. (2009). Systemic functional grammar: a first step into the theory.
- social relations and pragmatics research. *Journal of Pragmatics*, 20, 27-47.

**Magazine Articles/ Published Material/ Research Journals /Papers**

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.

**Grading Policy**

<b>Assessment Instruments</b>	<b>Percentage</b>
Quizzes	15%
Assignments + project	20%
Mid Term Exam	25%
Final Exam	40%

**Week-wise Course Outline**

<b>Week/ Session</b>	<b>Contents</b>	<b>Activities( Critical Thinking)</b> Case Studies, Video Clips, Assignments, Research Papers, Presentations	<b>Learning Objectives Addressed</b>
<b>Week 1</b>	Basic concepts in Firthian linguistics	<b>(Handouts, Presentations, Homework)</b>	<b>CLO1,3,</b>
<b>Week 2</b>	Critique and comparison with Chomsky's IGG	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 1,2,3</b>
<b>Week 3</b>	Language, context and function	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 2,4</b>
<b>Week 4</b>	Text in context of situation	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 2,3</b>
<b>Week 5</b>	The meta-functions of language	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 1, 3,4</b>
<b>Week 6</b>	Identifying clauses and clause constituents	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 2,4</b>
<b>Week 7</b>	The cline of dynamism		
<b>Week 8</b>	Application of SFL tools on variety of texts	<b>(Handouts, Presentations, Homework)</b>	<b>CLO 1,2, 3,4</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		

<b>Week 10</b>	SFL and Register Analysis	(Handouts, Presentations, Homework)	<b>CLO 1,3, 4</b>
<b>Week 11</b>	SFL and Text Analysis	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 12</b>	SFL and Critical Discourse Analysis	(Handouts, Presentations, Homework)	<b>CLO 123,4</b>
<b>Week 13</b>	SFL and Pragmatics	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 14</b>	Student Presentations	(Handouts, Presentations, Homework)	<b>CLO 1,2,.3,4</b>
<b>Week 15</b>	Student Presentations	(Handouts, Presentations, Homework)	<b>CLO 1,2,.3,4</b>
<b>Week 16</b>	<b>Revision</b>		
<b>Week 17</b>	<b><i>Final Examination</i></b>		

**COURSE OUTLINE OF CROSS-CULTURAL COMMUNICATION**

<b>Course Name</b>	Cross-Cultural Communication	<b>Prepared On</b>	30, March, 2023
<b>Course Code</b>	ENG 517		
<b>Credit Hours</b>	3		
<b>Course Prereq. Code</b>		<b>Revised On</b>	
<b>Course Type</b>	Core Course <input type="checkbox"/> Elective <input checked="" type="checkbox"/>		
<b>Programme</b>	MS Applied Linguistics <input checked="" type="checkbox"/>		
<b>Semester</b>	MS 2 (Eve)		
<b>Instructor:</b>			
<b>Course Description</b>			
The aim of this course is to foster an awareness and appreciation of cultural differences that exist among people belonging to diverse cultures. The awareness gained through this course can, in turn, increase intercultural communicative competence of learners.			
<b>Programme Objectives (POs)</b>			
PO 1: Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics			
PO 2: Explore language acquisition and language teaching: Applied linguistics often focuses on language acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition			
PO 3: Conduct original research: One of the primary objectives of an MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics			
PO 4: Apply linguistic theories and methods to real-world language issues: The Programme aims to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.			
<b>Programme Learning Outcome (PLOs)</b>			
PLO 1: Advanced knowledge of linguistic theory: Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations			
PLO 2: Research skills: Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers			
PLO 3: Language teaching skills: Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods			
PLO 4: Communication skills: Graduates may have developed advanced communication skills, including the ability to write and present research findings to academic audiences			
PLO 5: Career opportunities: Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research			
PLO 6: Further academic pursuits: Graduates may have the opportunity to pursue further academic study, such as a PhD in Applied Linguistics or a related field			

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>					
<b>S.NO.</b>		<b>PLO1</b>	<b>PLO2</b>	<b>PLO3</b>	<b>PLO4</b>	<b>PLO5</b>	<b>PLO6</b>
<b>CLO1</b>	Understand cultural differences and key dimensions that affect communication.	✓	✓			✓	

<b>CLO2</b>	Develop intercultural communication skills, including active listening and nonverbal communication.	✓		✓	✓		✓
<b>CLO3</b>	Analyze cross-cultural communication challenges and propose solutions.	✓	✓			✓	✓
<b>CLO4</b>	Apply cross-cultural communication knowledge to real-world situations and adapt communication styles to meet the needs of individuals from different cultures	✓	✓			✓	✓

**Teaching & Learning Methodology**

Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.

- q. Respect & listen to the one who is talking.
- r. Present their ideas in a clear and articulate way.

The teaching methodology will include:

- ❑ Lectures
- ❑ Articles / Case Studies? Scenario Analysis
- ❑ Discussions
- ❑ Group Project

**Textbook(s)**

- Chick, K. J. 1996. "Intercultural Communication." In McKay, L. S. and Hornberger, H. N. Eds. *Sociolinguistics and Language Teaching*. CUP
- Griffin, E. 2000. *A First Look at Communication Theory* (third edition). New York: McGraw Hill

**Reference Book(s)**

- Gumperz, J. and Roberts, C. 1980. *Developing Awareness Skills for Interethnic Communication*. Occasional Papers No: 12. Singapore: Seameo Regional Language Centre
- Hornberger, N. 1993. "Review of Cultural Communication and Intercultural Contact." In (D. Carbaugh, Ed.)*Language in Society*. 22. Pp. 300-304.
- Wolfson, N. 1992. "Intercultural Communication and the Analysis of Conversation." In R. K. Herbert.Ed. *Language and Society in Africa*.Pp.197-214. Johannesburg: University of the Witwaters and Press.

**Magazine Articles/ Published Material/ Research Journals /Papers**

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.

**Grading Policy**

Assessment Instruments	Percentage
Quizzes	15%
Assignments + project	20%
Mid Term Exam	25%
Final Exam	40%

**Week-wise Course Outline**

Week/ Session	Contents	Activities( Critical Thinking) Case Studies, Video Clips, Assignments, Research Papers, Presentations	Learning Objectives Addressed
<b>Week 1</b>	Introduction to Intercultural Communication	<b>(Handouts, Presentations, Homework)</b>	<b>CLO1,2,</b>

<b>Week 2</b>	Theoretical perspectives that help to explain interactions between members of different cultures.	(Handouts, Presentations, Homework)	<b>CLO 1,2,3</b>
<b>Week 3</b>	Current literature and prevailing concepts in the field of cross-cultural communication	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 4</b>	Principles to improve intercultural communication.	(Handouts, Presentations, Homework)	<b>CLO 1,2,3</b>
<b>Week 5</b>	Strategies to avoid communication breakdown among people of diverse cultures	(Handouts, Presentations, Homework)	<b>CLO 1, 3,4</b>
<b>Week 6-7</b>	Cultural diversity	(Handouts, Presentations, Homework)	<b>CLO 2,4</b>
<b>Week 8</b>	Influence of culture on communication	(Handouts, Presentations, Homework)	<b>CLO 1, 3</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	Barriers to Intercultural Communication	(Handouts, Presentations, Homework)	<b>CLO 1,3, 4</b>
<b>Week 11</b>	Sources of Intercultural Miscommunication	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 12</b>	Strategies to improve Intercultural Communication	(Handouts, Presentations, Homework)	<b>CLO 123,4</b>
<b>Week 13</b>	Cross-cultural adaptation	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 14</b>	Multicultural Collaboration	(Handouts, Presentations, Homework)	<b>CLO 2,.3,4</b>
<b>Week 15</b>	<b>Presentations</b>	(Handouts, Presentations, Homework)	<b>CLO 1,2,.3,4</b>
<b>Week 16</b>	<b>Revision</b>		
<b>Week 17</b>	<b>Final Examination</b>		

### COURSE OUTLINE OF LANGUAGE PROGRAMME MANAGEMENT

<b>Course Name</b>	Language Programme Management	<b>Prepared On</b>	30, March, 2023
<b>Course Code</b>	ENG 518		
<b>Credit Hours</b>	3	<b>Revised On</b>	
<b>Course Prereq. Code</b>			
<b>Course Type</b>	Core Course <input type="checkbox"/> Elective <input checked="" type="checkbox"/>		
<b>Programme</b>	MS Applied Linguistics <input checked="" type="checkbox"/>		
<b>Semester</b>	MS 2 (Eve)		
<b>Instructor:</b>			
<b>Course Description</b>			

This course is intended for foreign language teaching professionals who wish to take up management roles or develop their management skills in language teaching Programmes. It provides participants with the knowledge and skills they require for successful language Programme management in a variety of language teaching contexts. This introduces some of the issues that are faced by those who are responsible for organising or managing language teaching operations or related areas of practice. It examines the effects of organisational structure on organisational culture; leadership styles; human resource management; professional development and staff appraisal; project management; financial management; marketing; organisational communication; and managing for innovation.

### **Programme Objectives (POs)**

PO 1: Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics

PO 2: Explore language acquisition and language teaching: Applied linguistics often focuses on language acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition

PO 3: Conduct original research: One of the primary objectives of an MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics

PO 4: Apply linguistic theories and methods to real-world language issues: The Programme aims to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.

### **Programme Learning Outcome (PLOs)**

PLO 1: Advanced knowledge of linguistic theory: Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations

PLO 2: Research skills: Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers

PLO 3: Language teaching skills: Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods

PLO 4: Communication skills: Graduates may have developed advanced communication skills, including the ability to write and present research findings to academic audiences

PLO 5: Career opportunities: Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research

PLO 6: Further academic pursuits: Graduates may have the opportunity to pursue further academic study, such as a PhD in Applied Linguistics or a related field

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>					
<b>S.NO.</b>		<b>PLO1</b>	<b>PLO2</b>	<b>PLO3</b>	<b>PLO4</b>	<b>PLO5</b>	<b>PLO6</b>
<b>CLO1</b>	Develop effective language Programme curriculum: Students will learn how to design and implement effective language Programme curriculum, including issues related to language proficiency levels, course sequencing, and assessment	✓	✓			✓	
<b>CLO2</b>	Evaluate language Programme effectiveness: Students will learn how to evaluate language Programme effectiveness, including student learning outcomes, teaching methodology, and Programme sustainability	✓	✓	✓	\		✓

<b>CLO3</b>	Develop cross-cultural communication competencies: Students will develop cross-cultural communication competencies, including intercultural communication skills, global awareness, and sensitivity to cultural differences	✓	✓			✓	✓
<b>CLO4</b>	Engage in ongoing professional development: Students will engage in ongoing professional development opportunities to enhance their skills and knowledge in language Programme management, including networking, research, and continuing education opportunities.	✓	✓	✓		✓	✓

**Teaching & Learning Methodology**

Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.

- s. Respect & listen to the one who is talking.
- t. Present their ideas in a clear and articulate way.

The teaching methodology will include:

- Lectures
- Articles / Case Studies? Scenario Analysis
- Discussions
- Group Project

**Textbook(s)**

- Spolsky, B. (Ed.). (2012). *The Cambridge handbook of language policy*. Cambridge: Cambridge University Press.
- Brigham, E. F., & Houston, J. F. (2012). *Fundamentals of financial management*. Cengage Learning.

**Reference Book(s)**

- Eaton, S. E. (2010). *Global Trends in Language Learning in the 21st Century*.
- Eaton, S. E. (2010). *Formal, Non-Formal and Informal learning: The Case of Literacy, Essential Skills, and Language Learning in Canada*.
- Halliday, M. A. K. (2007). *Language and education* (Vol. 9). A&C Black.
- Lin, A., & Martin, P. W. (Eds.). (2005). *Decolonisation, globalisation: Language-in-education policy and practice* (Vol. 3). Multilingual Matters.
- Bolam, R. (2004). Educational administration, leadership and management. *Educational Management*, 2, 17.
- Okumbe, J. A. O. (1998). *Educational Management: Theory and Practice*. African Books Collective Ltd., The Jam Factory, 27 Park End Street, Oxford OX1 1HU, United Kingdom (paperback: ISBN- 9966-846-42-5,).

**Magazine Articles/ Published Material/ Research Journals /Papers**

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.

**Grading Policy**

	<b>Assessment Instruments</b>	<b>Percentage</b>	
	Quizzes	15%	
	Assignments + project	20%	
	Mid Term Exam	25%	
	Final Exam	40%	

<b>Week-wise Course Outline</b>			
<b>Week/ Session</b>	<b>Contents</b>	<b>Activities( Critical Thinking)</b> Case Studies, Video Clips, Assignments, Research Papers, Presentations	<b>Learning Objectives Addressed</b>
<b>Week 1</b>	Principles & Practices of Language Teaching	(Handouts, Presentations, Homework)	<b>CLO1,2,</b>
<b>Week 2</b>	Language Policies and documentation	(Handouts, Presentations, Homework)	<b>CLO 1,2,3</b>
<b>Week 3</b>	Language Project Design	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 4</b>	General Management	(Handouts, Presentations, Homework)	<b>CLO 1,2,3</b>
<b>Week 5-6</b>	Language Programme development and management	(Handouts, Presentations, Homework)	<b>CLO 1, 3,4</b>
<b>Week 7</b>	Language Programme Operations	(Handouts, Presentations, Homework)	<b>CLO 2,4</b>
<b>Week 8</b>	Language Teacher Education	(Handouts, Presentations, Homework)	<b>CLO 1, 3</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	Language Assessment and Testing Management	(Handouts, Presentations, Homework)	<b>CLO 1,3, 4</b>
<b>Week 11</b>	Finance Functions and budgeting in Educational Organization	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 12</b>	Marketing and Recruiting for Language Programmes	(Handouts, Presentations, Homework)	<b>CLO 1,3,4</b>
<b>Week 13</b>	Presentations	(Handouts, Presentations, Homework)	<b>CLO 1,2,.3,4</b>
<b>Week 14</b>	Presentations	(Handouts, Presentations, Homework)	<b>CLO 1,2,.3,4</b>
<b>Week 15</b>	Class Assignments	(Handouts, Presentations, Homework)	<b>CLO 1,2,.3,4</b>
<b>Week 16</b>	<b>Revision</b>		
<b>Week 17</b>	<b>Final Examination</b>		

### COURSE OUTLINE OF COGNITIVE LINGUISTICS

<b>Course Name</b>	Cognitive Linguistics		<b>Prepared On</b>	30, March, 2023		
<b>Course Code</b>	ENG 519					
<b>Credit Hours</b>	3					
<b>Course Prereq. Code</b>			<b>Revised On</b>			
<b>Course Type</b>	Core Course <input type="checkbox"/> Elective <input checked="" type="checkbox"/>					
<b>Programme</b>	MS Applied Linguistics <input checked="" type="checkbox"/>					
<b>Semester</b>	MS 2 (Eve)					
<b>Instructor:</b>						
<b>Course Description</b>						

Cognitive linguistics goes beyond the visible structure of language and investigates the considerably more complex backstage operations of cognition that create grammar, conceptualization, discourse, and thought itself. The theoretical insights of cognitive linguistics are based on extensive empirical observation in multiple contexts, and on experimental work in psychology and neuroscience. Results of cognitive linguistics, especially from metaphor theory and conceptual integration theory, have been applied to wide ranges of nonlinguistic phenomena.

The aim of the course is to familiarize the students with theoretical frameworks of Cognitive Linguistics required to carry out research in the field.

### **Programme Objectives (POs)**

PO 1: Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics

PO 2: Explore language acquisition and language teaching: Applied linguistics often focuses on language acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition

PO 3: Conduct original research: One of the primary objectives of an MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics

PO 4: Apply linguistic theories and methods to real-world language issues: The Programme aims to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.

### **Programme Learning Outcome (PLOs)**

PLO 1: Advanced knowledge of linguistic theory: Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations

PLO 2: Research skills: Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers

PLO 3: Language teaching skills: Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods

PLO 4: Communication skills: Graduates may have developed advanced communication skills, including the ability to write and present research findings to academic audiences

PLO 5: Career opportunities: Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research

PLO 6: Further academic pursuits: Graduates may have the opportunity to pursue further academic study, such as a PhD in Applied Linguistics or a related field

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>					
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
<b>CLO1</b>	Understand the key principles and theories of cognitive linguistics.	✓	✓			✓	
<b>CLO2</b>	Analyze language data using cognitive linguistic methods and frameworks		✓	✓			✓
<b>CLO3</b>	Evaluate and compare cognitive linguistic theories with other linguistic approaches	✓	✓		✓		✓
<b>CLO4</b>	Communicate effectively about cognitive linguistic topics through written and oral presentation.	✓	✓			✓	✓
<b>Teaching &amp; Learning Methodology</b>							
Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group							

discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.

- u. Respect & listen to the one who is talking.
- v. Present their ideas in a clear and articulate way. The

teaching methodology will include:

- Lectures
- Articles / Case Studies? Scenario Analysis
- Discussions
- Group Project

#### Textbook(s)

Croft, William & D. Alan Cruse. 2004. *Cognitive Linguistics*. (Cambridge Textbooks in Linguistics.) Cambridge: Cambridge University Press  
 Geeraerts, Dirk. 2006. *Cognitive Linguistics: Basic Readings*. Berlin: Mouton de Gruyter.

#### Reference Book(s)

- Matthews, Peter. 2005. *The Concise Dictionary of Linguistics* (Oxford Paperback Reference). New York: Oxford University Press.
- Evans, Vyvyan and Melanie Green. 2006. *Cognitive Linguistics: An Introduction*. Lawrence Erlbaum Associates. ISBN: 0805860142
- Evans, Vyvyan, Benjamin Bergen, & Jorg Zinken, editors. 2006. *The Cognitive Linguistics Reader* London: Equinox.
- Goldberg, Adele. 1994. *Constructions*. Chicago: University of Chicago Press.
- Lee, David. 2002. *Cognitive Linguistics: An Introduction*. New York: Oxford University Press.
- Ungerer, Friedrich & Hans-Jörg Schmid. 2006. *An Introduction to Cognitive Linguistics*. London: Longman.
- Taylor, John R. 2003. *Cognitive Grammar*. (Oxford Textbooks in Linguistics.) New York: Oxford University Press.

#### Magazine Articles/ Published Material/ Research Journals /Papers

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.

#### Grading Policy

	Assessment Instruments	Percentage	
	Quizzes	15%	
	Assignments + project	20%	
	Mid Term Exam	25%	
	Final Exam	40%	

#### Week-wise Course Outline

Week/ Session	Contents	Activities( Critical Thinking) Case Studies, Video Clips, Assignments, Research Papers, Presentations	Learning Objectives Addressed
Week 1	Origin of Cognitive Linguistics	(Handouts, Presentations, Homework)	CLO1,3,
Week 2	Cognitive Linguistics vs. Chomsky's Generative Grammar	(Handouts, Presentations, Homework)	CLO 1,2
Week 3	Construal	(Handouts, Presentations, Homework)	CLO 2,3
Week 4	Iconicity	(Handouts, Presentations, Homework)	CLO 1,3

<b>Week 5</b>	Landmarks and trajectory	(Handouts, Presentations, Homework)	<b>CLO 1, 3,4</b>
<b>Week 6-7</b>	Spatial Relationships and Image Schemata	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 8</b>	Conceptual Metaphors	(Handouts, Presentations, Homework)	<b>CLO 1, 3</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	Mental Spaces	(Handouts, Presentations, Homework)	<b>CLO 2,3, 4</b>
<b>Week 11</b>	Linguistic Structures and Meaning	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 12</b>	Language Acquisition and Processing	(Handouts, Presentations, Homework)	<b>CLO 1,3,4</b>
<b>Week 13</b>	Presentations	(Handouts, Presentations, Homework)	<b>CLO 1,3,4</b>
<b>Week 14</b>	Presentations	(Handouts, Presentations, Homework)	<b>CLO 2,,3</b>
<b>Week 15</b>	Practical applications of Cognitive Linguistics	(Handouts, Presentations, Homework)	<b>CLO 2,4</b>
<b>Week 16</b>	<b>Revision</b>		
<b>Week 17</b>	<b><i>Final Examination</i></b>		

**COURSE OUTLINE OF SOCIOLINGUISTICS**

<b>Course Name</b>	Sociolinguistics	<b>Prepared On</b>	30, March, 2023
<b>Course Code</b>	ENG 520		
<b>Credit Hours</b>	3		
<b>Course Prereq. Code</b>		<b>Revised On</b>	
<b>Course Type</b>	Core Course <input type="checkbox"/> Elective <input checked="" type="checkbox"/>		
<b>Programme</b>	MS Applied Linguistics <input checked="" type="checkbox"/>		
<b>Semester</b>	MS 2 (Eve)		
<b>Instructor:</b>			

**Course Description**

Sociolinguistics, which explores interrelationship between language and society, is both interesting and complicated. It helps in developing deeper understanding of society as well as language. This purpose of this course is to build on the knowledge and understanding of MPhil scholars that they come with. The outline includes almost all key issues which are deemed important in the field. It also includes some important nonlinguistic variables which are associated with language and its use. It examines language in relation to society, with particular reference to the linguistic situation in Pakistan and investigates the correlation between linguistic variables and non-linguistic variables such as gender, age and social class.

**Programme Objectives (POs)**

PO 1: Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics

PO 2: Explore language acquisition and language teaching: Applied linguistics often focuses on language acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition

PO 3: Conduct original research: One of the primary objectives of an MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics

PO 4: Apply linguistic theories and methods to real-world language issues: The Programme aims to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.

**Programme Learning Outcome (PLOs)**

PLO 1: Advanced knowledge of linguistic theory: Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations

PLO 2: Research skills: Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers

PLO 3: Language teaching skills: Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods

PLO 4: Communication skills: Graduates may have developed advanced communication skills, including the ability to write and present research findings to academic audiences

PLO 5: Career opportunities: Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research

PLO 6: Further academic pursuits: Graduates may have the opportunity to pursue further academic study, such as a PhD in Applied Linguistics or a related field

Course Learning Outcomes		Programme Learning Outcomes					
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CLO1	Understand the core concepts used in the field	✓	✓			✓	
CLO2	Reflect upon the crucial issues in Sociolinguistics with particular reference to the relationship between language and non-linguistic variables such as gender, social class, age, etc.		✓	✓			✓
CLO3	Develop an understanding of the current sociolinguistic situation in Pakistan	✓	✓			✓	✓
CLO4	Explore new vistas of research in the field with special reference to Pakistani context	✓	✓	✓		✓	✓
<b>Teaching &amp; Learning Methodology</b>							
Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students. w. Respect & listen to the one who is talking. x. Present their ideas in a clear and articulate way. The teaching methodology will include: <input checked="" type="checkbox"/> Lectures <input checked="" type="checkbox"/> Articles / Case Studies? Scenario Analysis <input checked="" type="checkbox"/> Discussions <input checked="" type="checkbox"/> Group Project							
<b>Textbook(s)</b>							
<ul style="list-style-type: none"> <li>Bell, Martin, J. (ed) (2010) <i>The Routledge Handbook of Sociolinguistics Around the World</i>. Routledge: New York</li> <li>Coupland, Nikolas and Jaworski, Adam. (1997). <i>Sociolinguistics: A Reader and Coursebook</i>. Great Britain: Palgrave</li> </ul>							
<b>Reference Book(s)</b>							
<ul style="list-style-type: none"> <li>Hudson, R. A. (1980). <i>Sociolinguistics</i>. Great Britain: Cambridge University Press.</li> <li>Llamas, <a href="#">Carmen</a>, <a href="#">Louise Mullany</a>, and <a href="#">Peter Stockwell</a>. (2007). <i>The Routledge Companion to Sociolinguistics</i>. New York: Routledge.</li> <li>Mesthrie, Rajend. (ed.). (2011). <i>The Cambridge Handbook of Sociolinguistics</i>. Cambridge: Cambridge University Press.</li> <li>Mesthrie, Rajend. et. al. (2009). <i>Introducing Sociolinguistics</i>. Edinburgh: Edinburgh University Press.</li> <li>Spencer Oatey, H. (1993). Conceptions of social relations and pragmatics research. <i>Journal of Pragmatics</i>, 20, 27-47.</li> </ul>							
<b>Magazine Articles/ Published Material/ Research Journals /Papers</b>							
Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.							

Grading Policy			
	Assessment Instruments	Percentage	
	Quizzes	15%	
	Assignments + project	20%	
	Mid Term Exam	25%	
	Final Exam	40%	

<b>Week-wise Course Outline</b>			
<b>Week/ Session</b>	<b>Contents</b>	<b>Activities( Critical Thinking)</b> Case Studies, Video Clips, Assignments, Research Papers, Presentations	<b>Learning Objectives Addressed</b>
<b>Week 1</b>	Sociolinguistics and Sociology of Linguistics	(Handouts, Presentations, Homework)	<b>CLO1,3,</b>
<b>Week 2</b>	Dialectology and Language Ideology	(Handouts, Presentations, Homework)	<b>CLO 1,2,3</b>
<b>Week 3</b>	Pidgin and Creole, Creolization and Decreolization	(Handouts, Presentations, Homework)	<b>CLO 2,4</b>
<b>Week 4</b>	Language Attitudes: Convergence, Divergence and Acts of Identity	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 5</b>	Language, Identity and Culture	(Handouts, Presentations, Homework)	<b>CLO 1, 3,4</b>
<b>Week 6</b>	Language and Power	(Handouts, Presentations, Homework)	<b>CLO 2,4</b>
<b>Week 7</b>	Problematization of Gender, Social Class, Age and Ethnicity		
<b>Week 8</b>	Quantitative Sociolinguistic Exploration of language in its social context through the methods of quantitative analysis of linguistic variation, including the Labovian and implicational models	(Handouts, Presentations, Homework)	<b>CLO 1,2, 3,4</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	Sociolinguistic Field Methods: Research Methods for Sociolinguistic Fieldwork including Interviewing, Observation, Survey Design and Experimental Work. Focus on Methodology, Planning and Implementation.	(Handouts, Presentations, Homework)	<b>CLO 1,3, 4</b>
<b>Week 11</b>	Language Diversity and Speech Communities, Bilingualism and Multilingualism, Dimensions, Manifestations and Effects of Bilingualism	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 12</b>	Language Maintenance, Language Decline, Language Shift and Language Death	(Handouts, Presentations, Homework)	<b>CLO 123,4</b>
<b>Week 13</b>	Language Revival, Language Cultivation	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 14</b>	Language Policy and Planning(LPP)	(Handouts, Presentations, Homework)	<b>CLO .3,4</b>
<b>Week 15</b>	LLP: how different nations view it.	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 16</b>	<b>Revision</b>		

<b>Week 17</b>	<b>Final Examination</b>
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## COURSE OUTLINE OF WORLD ENGLISHES

<b>Course Name</b>	World Englishes	<b>Prepared On</b>	30, March, 2023
<b>Course Code</b>	ENG 521		
<b>Credit Hours</b>	3	<b>Revised On</b>	
<b>Course Prereq. Code</b>			
<b>Course Type</b>	Core Course <input type="checkbox"/> Elective <input checked="" type="checkbox"/>		
<b>Programme</b>	MS Applied Linguistics <input checked="" type="checkbox"/>		
<b>Semester</b>	MS 2 (Eve)		
<b>Instructor:</b>			
<b>Course Description</b>			
<p>The English language now has more than one billion speakers worldwide. Many millions speak English as a native language; many more speak English as a second language, but most speak it as a foreign language. Yet, the English spoken by the largest group is considered distinct from the traditional “native” varieties of English. This course explores the historical, political, and socio-cultural issues associated with the globalization of Englishes, focusing on some of the structural differences of these varieties, but also on the ideological underpinnings of the debates about nativization/ indigenization, standardization, identity, and ownership.</p>			
<b>Programme Objectives (POs)</b>			
<p>PO 1: Develop a comprehensive understanding of linguistic theory: The Programme aims to provide students with a deep understanding of linguistic theory, including areas such as phonology, syntax, morphology, semantics, and pragmatics</p>			
<p>PO 2: Explore language acquisition and language teaching: Applied linguistics often focuses on language acquisition and language teaching, and the Programme aims to provide students with a solid understanding of the principles underlying effective language teaching methods and language acquisition</p>			
<p>PO 3: Conduct original research: One of the primary objectives of an MS Applied Linguistics Programme is to produce graduates who can conduct original research in the field. Students are expected to design and carry out original research projects, which may involve collecting and analyzing data to investigate specific research questions in applied linguistics</p>			
<p>PO 4: Apply linguistic theories and methods to real-world language issues: The Programme aims to equip students with the skills and knowledge necessary to apply linguistic theories and methods to real-world language issues, such as language policy, language planning, language revitalization, and language assessment. Graduates should be able to apply their knowledge to address language issues in diverse settings, including educational, social, cultural, and political contexts.</p>			
<b>Programme Learning Outcome (PLOs)</b>			
<p>PLO 1: Advanced knowledge of linguistic theory: Graduates of the Programme will have a strong understanding of linguistic theory and the ability to apply this knowledge to practical situations</p>			
<p>PLO 2: Research skills: Graduates will have developed advanced research skills, including the ability to design and conduct empirical studies, analyze data, and write academic papers</p>			
<p>PLO 3: Language teaching skills: Graduates may have gained skills in language teaching, including the ability to design effective language courses, develop appropriate materials, and use innovative teaching methods</p>			
<p>PLO 4: Communication skills: Graduates may have developed advanced communication skills, including the ability to write and present research findings to academic audiences</p>			
<p>PLO 5: Career opportunities: Graduates may be well-prepared for careers in a variety of fields, including language teaching, language technology development, and academic research</p>			
<p>PLO 6: Further academic pursuits: Graduates may have the opportunity to pursue further academic study, such as a PhD in Applied Linguistics or a related field</p>			

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>				
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5
<b>CLO1</b>	To demonstrate critical understanding of the concepts and theories regarding World Englishes and also of the main dimensions of language variation at the international level;	✓	✓			✓
<b>CLO2</b>	To develop an understanding of the causes behind the global spread of English and the implications regarding its use for native languages;		✓	✓		✓
<b>CLO3</b>	To show a sound understanding of the key sociolinguistic and cultural issues arising from the spread of English.	✓				✓
<b>CLO4</b>	the impact of globalization on language use and language policies, and its relationship with the spread of English as a global language.		✓	✓		✓
<b>Teaching &amp; Learning Methodology</b>						
Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.						
<p>y. Respect &amp; listen to the one who is talking.</p> <p>z. Present their ideas in a clear and articulate way.</p> <p>The teaching methodology will include:</p> <ul style="list-style-type: none"> <li>❑ Lectures</li> <li>❑ Articles / Case Studies? Scenario Analysis</li> <li>❑ Discussions</li> <li>❑ Group Project</li> </ul>						
<b>Textbook(s)</b>						
<ul style="list-style-type: none"> <li>• Jenkins, J. (2014). Global Englishes: A resource book for students. Routledge.</li> <li>• Jenkins, J. (2003). World Englishes: A resource book for students. Psychology Press.</li> </ul>						
<b>Reference Book(s)</b>						
<ul style="list-style-type: none"> <li>• Cheshire, J. (Ed.). (1991). English around the world: Sociolinguistic perspectives. Cambridge University Press.</li> <li>• Hickey, R. (Ed.). (2005). Legacies of colonial English: Studies in transported dialects. Cambridge University Press.</li> <li>• Kachru, Y., &amp; Nelson, C. L. (2006). World Englishes in Asian contexts (Vol. 1). Hong Kong University Press.</li> <li>• Kachru, B., Kachru, Y., &amp; Nelson, C. (Eds.). (2009). The handbook of world Englishes (Vol. 48). John Wiley &amp; Sons.</li> <li>• Kachru, B. B. (2006). The English language in the outer circle. World Englishes, 3, 241-255</li> </ul>						
<b>Magazine Articles/ Published Material/ Research Journals /Papers</b>						
Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.						

<b>Grading Policy</b>			
	<b>Assessment Instruments</b>	<b>Percentage</b>	
	Quizzes	15%	
	Assignments + project	20%	
	Mid Term Exam	25%	
	Final Exam	40%	

<b>Week-wise Course Outline</b>			
<b>Week/ Session</b>	<b>Contents</b>	<b>Activities( Critical Thinking)</b> Case Studies, Video Clips, Assignments, Research Papers, Presentations	<b>Learning Objectives Addressed</b>
<b>Week 1</b>	Standard English: RP	(Handouts, Presentations, Homework)	<b>CLO1,2,</b>
<b>Week 2</b>	British and American Englishes	(Handouts, Presentations, Homework)	<b>CLO 1,,3</b>
<b>Week 3</b>	Variation and change: accents, dialects and global Englishes	(Handouts, Presentations, Homework)	<b>CLO 2,3</b>
<b>Week 4</b>	Variation and change: accents, dialects and global Englishes	(Handouts, Presentations, Homework)	<b>CLO 1.2</b>
<b>Week 5</b>	Language contact	(Handouts, Presentations, Homework)	<b>CLO 1, 3,4</b>
<b>Week 6</b>	Standards and norms in global Englishes	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 7</b>	Current debates and issues in World English		
<b>Week 8</b>	Globalisation and global English(es)	(Handouts, Presentations, Homework)	<b>CLO 1,2, 3,4</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	The global use of English in education and its implications	(Handouts, Presentations, Homework)	<b>CLO 1,3, 4</b>
<b>Week 11</b>	The global use of English in education and its implications	(Handouts, Presentations, Homework)	<b>CLO 3,4</b>
<b>Week 12</b>	Multilingualism in Europe and English	(Handouts, Presentations, Homework)	<b>CLO 1,2,3,4</b>
<b>Week 13</b>	Global Multilingualism and English(es)	(Handouts, Presentations, Homework)	<b>CLO 1,3,4</b>
<b>Week 14</b>	Postcolonial Englishes	(Handouts, Presentations, Homework)	<b>CLO 1,2</b>
<b>Week 15</b>	Case studies: <ul style="list-style-type: none"> <li>• Singlish</li> <li>• Australian English (AusEng)</li> <li>• Canadian English (CanEng)</li> <li>• Pinglish (PakEng)</li> <li>• Inglish (IndEng)</li> <li>• Black Vernacular English (BEV)</li> </ul>	(Handouts, Presentations, Homework)	<b>CLO 1,2,.3,4</b>
<b>Week</b>	<b>Revision</b>		

<b>16</b>	
<b>Week 17</b>	<b>Final Examination</b>

### COURSE OUTLINE OF INTRODUCTION TO APPLIED LINGUISTICS

<b>Course Name</b>	Introduction to Applied Linguistics	<b>Prepared On</b>	16 August ,2021
<b>Course Code</b>	ENG -414		
<b>Credit Hours</b>	3	<b>Revised On</b>	
<b>Course Prereq. Code</b>			
<b>Course Type</b>	Core Course <input checked="" type="checkbox"/> Elective <input type="checkbox"/>		
<b>Programme</b>	BS		
<b>Semester</b>	8		
<b>Instructor:</b>			
<b>Course Description</b>			
<p>This course is a gateway to the field of applied linguistics. It will introduce students to different methods adopted throughout the tradition of language teaching to teach language at the same time probing into the approaches, linguistic or psychological, that backed them. The knowledge of this will prepare the students to cope with the other subjects. This course further aims at introducing fairly advanced ideas related to syllabus designing and implementation. It offers a review of dominant and competing syllabuses in the 20th century focusing especially on the milieu of their rise and the cause of their decay both. The theory will go in this course hand in hand with practice: the students will review different syllabus for applying the concepts they learn.</p>			
<b>Course Objectives:</b>			
<p>At the completion of the course students will be able to present and discuss psychological phenomena common to most learners of a second language, and bilingual individuals in particular processes and stages of language development; master a variety of language teaching methods and its application in ESL context; and demonstrate confidence and capacity to challenge professional practice, and undertake improvement-oriented enquiry and innovation.</p>			
<b>Programme Objectives (POs)</b>			
<p>PO 1: Build relationship with literature, language and society.      PO2: Apply modern theories.      PO 3: Inculcate transformational skills by using technology.      PO 4: Develop research and pedagogy      PO 5: Develop soft skills and produce lifelong learners.      PO 6: Instill moral and ethical values.</p>			
<b>Programme Learning Outcomes (PLOs) After completion of the degree, students will be</b>			
<p>PLO 1: to demonstrate the conventions of diverse textual genres (e.g. the non-fiction essay, poetry, autobiography, novel, memoir, films, plays, editorials and so forth) in their own work and to make world a better place.      PLO 2: to employ the literary and rhetorical methods and strategies in reading and writing of texts.      PLO 3: to build relationships between language and society in order to provide solutions to the social issues.      PLO 4: To apply modern theories in contrast with models with the social and behavioral sciences.      PLO 5: to equip students with the ability to analyze information sources in print and electronic media.      PLO 6: to enable students to develop critical thinking skills which will help them better express their thoughts, ideas, and beliefs.      PLO 7: to excel in research, textual criticism, analytical skills and pedagogical methods.</p>			

PLO 8: to enable students to improve their writing skills, presentation and public speaking skills and apply these professionally outside the classroom to become life-long learners.  
 PLO 9: to assist in developing their employability skills with effective use of moral and ethical values in the real world.

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>								
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9
CLO1	Present and discuss psychological phenomena common to most learners of a second language, and bilingual individuals in particular processes and stages of language development			✓		✓				
CLO2	Master a variety of language teaching methods and its application in ESL context							✓	✓	✓
CLO3	Demonstrate confidence and capacity to challenge professional practice, and undertake improvement-oriented enquiry and innovation									✓

#### **Teaching & Learning Methodology**

Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.

- aa. Respect & listen to the one who is talking.
- bb. Present their ideas in a clear and articulate way.

The teaching methodology will include:

- ❑ Lectures
- ❑ Articles / Case Studies? Scenario Analysis
- ❑ Discussions
- ❑ Group Project

#### **Textbook(s)**

Rodgers, N. S. M. P. (2021). An introduction to applied linguistics.

#### **Reference Book(s)**

- Brumfit, C. (ed.) (1986). The practice of communicative teaching. Oxford:Pergamon.
- Chomsky, N. (1959). A review of B. F. Skinner's Verbal Behaviour. In Krashen, S. D. (1982). Principles and practice in second language acquisition. New York: Pergamon

#### **Magazine Articles/ Published Material/ Research Journals /Papers**

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.

#### **Grading Policy**

	<b>Assessment Instruments</b>	<b>Percentage</b>	
	Quizzes	15%	
	Assignments + project	20%	
	Mid Term Exam	25%	
	Final Exam	40%	

#### **Week-wise Course Outline**

Week/ Session	Contents	Activities( Critical Thinking) Case Studies, Video Clips, Assignments, Research Papers, Presentations	Learning Objectives Addressed
Week 1	An overview of Applied Linguistics	(Handouts, Presentations, Homework)	<b>CLO1</b>
Week 2	Scope of Applied linguistics	(Handouts, Presentations, Homework)	<b>CLO1</b>
Week 3	Corpus linguistics	(Handouts, Presentations, Homework) Students' presentations	<b>CLO3</b>
Week 4	Second language acquisition	(Handouts, Presentations, Homework)	<b>CLO1,2</b>
Week 5	Learner Language	(Handouts, Presentations, Homework)	<b>CLO1,</b>
Week 6-7	Language and skills -listening	(Handouts, Presentations, Homework)	<b>CLO2,3</b>
Week 8	language and skills -speaking and pronunciation	(Handouts, Presentations, Homework)	<b>CLO2.3</b>
Week 9	<b>MIDTERM EXAM</b>		
Week 10	Language and skills -reading	(Handouts, Presentations)	<b>CLO2,3</b>
Week 11	Language and skills -writing	(Handouts, Cornerstones Case Study)	<b>CLO2,3</b>
Week 12	Assessment in ELT	(Handouts, Presentations) Students' presentations	<b>CLO2,3</b>
Week 13	Flipped Learning	(Handouts, Presentations) Students' presentations	<b>CLO2,3</b>
Week 14	Role of Applied Linguistics in HE	(Handouts, Presentations, Homework) Students' presentations	<b>CLO1,2,3</b>
Week 15	Technology in AL	(Handouts, Presentations, Homework) Students' presentations	<b>CLO1,3</b>
Week 16	<b>Revision</b>		
Week 17	<b>Final Examination</b>		

**COURSE OUTLINE OF INTRODUCTION TO PHONETICS AND PHONOLOGY**

Course Name	Introduction to Phonetics and Phonology	Prepared On	16 July,2021
Course Code	ENG – 112		
Credit Hours	3		
Course Prereq. Code			

<b>Course Type</b>	Elective	Core Course		
<b>Programme</b>	BS			
<b>Semester</b>	1			
<b>Instructor:</b>				
<b>Course Description</b>				
This course explores speech sounds as physical entities (phonetics) and linguistic units (phonology). In viewing sounds as physical elements, the focus is on articulatory description. In this part of the course, the goal is to learn to produce, transcribe, and describe in articulatory terms many of the sounds known to occur in human languages. In the next part of the course, the focus is on sounds as members of a particular linguistic system.				

#### **Programme Objectives (POs)**

PO 1: Build relationship with literature, language and society.

PO2: Apply modern theories.

PO 3: Inculcate transformational skills by using technology.

PO 4: Develop research and pedagogy

PO 5: Develop soft skills and produce lifelong learners.

PO 6: Instill moral and ethical values.

#### **Programme Learning Outcomes (PLOs) After completion of the degree, students will be**

PLO 1: to demonstrate the conventions of diverse textual genres (e.g. the non-fiction essay, poetry, autobiography, novel, memoir, films, plays, editorials and so forth) in their own work and to make world a better place.

PLO 2: to employ the literary and rhetorical methods and strategies in reading and writing of texts.

PLO 3: to build relationships between language and society in order to provide solutions to the social issues.

PLO 4: To apply modern theories in contrast with models with the social and behavioral sciences.

PLO 5: to equip students with the ability to analyze information sources in print and electronic media.

PLO 6: to enable students to develop critical thinking skills which will help them better express their thoughts, ideas, and beliefs.

PLO 7: to excel in research, textual criticism, analytical skills and pedagogical methods.

PLO 8: to enable students to improve their writing skills, presentation and public speaking skills and apply these professionally outside the classroom to become life-long learners.

PLO 9: to assist in developing their employability skills with effective use of moral and ethical values in the real world.

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>								
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9
<b>CLO1</b>	Understand and comprehend the basic insights into the sound system of English and of central analytic concepts in phonetics and phonology.	✓				✓				✓
<b>CLO2</b>	Be able to use this knowledge to analyse linguistic material.				✓			✓		✓
<b>CLO3</b>	Comprehend the relevant linguistics concepts and vocabulary.		✓					✓		✓
<b>CLO4</b>	Express themselves in correct Academic English.			✓				✓		✓

#### **Teaching & Learning Methodology**

Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according

to the course content which enables the instructor to evaluate the students.

cc. Respect & listen to the one who is talking.

dd. Present their ideas in a clear and articulate way. The teaching methodology will include:

- Lectures
- Articles / Case Studies? Scenario Analysis
- Discussions
- Group Project

#### Textbook(s)

- **Textbook(s) Core Text:** Roach, P. (2009). English Phonetics and Phonology: A Practical Course.4th Edition. Cambridge.

#### Reference Book(s)

PDFs

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#### Magazine Articles/ Published Material/ Research Journals /Papers

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.

#### Grading Policy

	Assessment Instruments	Percentage	
Quizzes		15%	
Assignments + project		20%	
Mid Term Exam		25%	
Final Exam		40%	

#### Week-wise Course Outline

Week/ Session	Contents	Activities( Critical Thinking) Case Studies, Video Clips, Assignments, Research Papers, Presentations	Learning Objectives Addressed
<b>Week 1</b>	. Basic definitions/ Introduction to Phonetics & Phonology ●Phonetics ●Articulatory, Auditory & Acoustic Phonetics ●Phonology ●Phoneme ●Vowels	(Handouts, Presentations, Homework)	<i>CLO1</i>
<b>Week 2</b>	Consonants ●Diphthongs ●Triphthongs ●Voicing ●Aspiration ●Minimal pairs ●Difference between Phonetics and Phonology	(Handouts, Presentations, Homework)	<i>CLO 1,2</i>
<b>Week 3</b>	Organs of Speech/ Stages in the production of speech Phonemes/ ●Consonants (place and manner of articulation)	(Handouts, Presentations, Homework)	<i>CLO 1,2</i>

	●Vowels (vowel trapezium/quadrilateral)		
<b>Week 4</b>	Monophthongs ●Diphthongs ●Triphthongs	(Handouts, Presentations, Homework)	CLO 1,3
<b>Week 5</b>	Rules ●Rules of Voicing ●Rules of /r/ ●Rules of /ŋ/	(Handouts, Presentations, Homework) Students' presentations	CLO 2,3
<b>Week 6</b>	Practice of phonemic transcription	(Handouts, Presentations, Homework)	CLO1,2,3
<b>Week 7</b>	Definitions ●Homophones ●Homographs	(Handouts, Presentations, Homework)	CLO1,2,3
<b>Week 8</b>	Homonyms Homophenes	(Handouts, Presentations)	CLO1,2,3
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	Fluency Devices ●Assimilation ●Elision	(Handouts, Cornerstones Case Study)	CLO 3,4,6
<b>Week 11</b>	●Weak forms/Strong forms ●linking	(Handouts, Presentations) Students' presentations	CLO 3,4,5
<b>Week 12</b>	Stress and Intonation		
<b>Week 13</b>	Teaching of pronunciation	(Handouts, Presentations) Students' presentations	CLO 1,2
<b>Week 14</b>	Practice of phonemic transcription Sense Properties and Stereotypes	(Handouts, Presentations, Homework) Students' presentations	CLO 2,4,9
<b>Week 15</b>	Presentation	(Handouts, Presentations, Homework) Students' presentations	CLO 2,4
<b>Week 16</b>	<b>Revision</b>		
<b>Week 17</b>	<b>Final Examination</b>		

**COURSE OUTLINE OF TEFEL-I**

<b>Course Name</b>	<b>TEFEL-I</b>		<b>Prepared On</b>	16 August,2021		
<b>Course Code</b>	ENG – 408					
<b>Credit Hours</b>	3					
<b>Course Prereq. Code</b>			<b>Revised On</b>	16 August 2021		
<b>Course Type</b>	Elective <input checked="" type="checkbox"/> Core Course					
<b>Programme</b>	BS <input checked="" type="checkbox"/>					
<b>Semester</b>	1					
<b>Instructor:</b>						
<b>Course Description</b>						
TEFL is also offered as a course that provides training and certification to individuals who want to become English language teachers. These courses can vary in length and format, but they typically cover a range of						

topics such as lesson planning, classroom management, teaching methodology, and language assessment. TEFL courses may also include teaching practice with real students to provide hands-on experience in the classroom. Upon completion of a TEFL course, individuals may receive a certification that allows them to teach English as a foreign language in schools or language centers around the world.

#### **Programme Objectives (POs)**

PO 1: Build relationship with literature, language and society.

PO2: Apply modern theories.

PO 3: Inculcate transformational skills by using technology.

PO 4: Develop research and pedagogy

PO 5: Develop soft skills and produce lifelong learners.

PO 6: Instill moral and ethical values.

#### **Programme Learning Outcomes (PLOs) After completion of the degree, students will be**

PLO 1: to demonstrate the conventions of diverse textual genres (e.g. the non-fiction essay, poetry, autobiography, novel, memoir, films, plays, editorials and so forth) in their own work and to make world a better place.

PLO 2: to employ the literary and rhetorical methods and strategies in reading and writing of texts.

PLO 3: to build relationships between language and society in order to provide solutions to the social issues.

PLO 4: To apply modern theories in contrast with models with the social and behavioral sciences.

PLO 5: to equip students with the ability to analyze information sources in print and electronic media.

PLO 6: to enable students to develop critical thinking skills which will help them better express their thoughts, ideas, and beliefs.

PLO 7: to excel in research, textual criticism, analytical skills and pedagogical methods.

PLO 8: to enable students to improve their writing skills, presentation and public speaking skills and apply these professionally outside the classroom to become life-long learners.

PLO 9: to assist in developing their employability skills with effective use of moral and ethical values in the real world.

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>								
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9
CLO1	Demonstrate a general understanding of, and familiarity with the world of teaching English as a Foreign Language				✓			✓		✓
CLO2	Help understand general terminology, the profession's qualifications, further training options and career opportunities.		✓					✓		✓
CLO3	Demonstrate a good grasp and a basic understanding of the communicative approach to teach English as a Foreign Language.			✓				✓		✓

#### **Teaching & Learning Methodology**

Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.

ee. Respect & listen to the one who is talking.

ff. Present their ideas in a clear and articulate way. The

teaching methodology will include:

❑ Lectures

❑ Articles / Case Studies? Scenario Analysis

<ul style="list-style-type: none"> <li>❑ Discussions</li> <li>❑ Group Project</li> </ul>			
<b>Textbook(s)</b>			
<ul style="list-style-type: none"> <li>• The Practice of English Language Teaching by Jeremy Harmer</li> </ul>			
<b>Reference Book(s)</b>			
PDFs			
<ul style="list-style-type: none"> <li>• How Languages are Learned (Oxford Handbooks for Language Teachers) by Patsy M. Lightbown</li> </ul>			
<b>Magazine Articles/ Published Material/ Research Journals /Papers</b>			
Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.			
<b>Grading Policy</b>			
	<b>Assessment Instruments</b>	<b>Percentage</b>	
	Quizzes	15%	
	Assignments + project	20%	
	Mid Term Exam	25%	
	Final Exam	40%	
<b>Week-wise Course Outline</b>			
Week/ Session	Contents	Activities( Critical Thinking) Case Studies, Video Clips, Assignments, Research Papers, Presentations	Learning Objectives Addressed
<b>Week 1</b>	Basic definitions/ <ul style="list-style-type: none"> <li>• Marianne Celce-Murcia</li> <li>• Popular Methodology by Jeremy Harmer</li> <li>• Difference between Technique, Method, &amp; Approach</li> </ul>	(Handouts, Presentations, Homework)	<b>CLO1,2,3</b>
<b>Week 2</b>	<b>Role of a Teacher</b> <p>Teachers</p> <ul style="list-style-type: none"> <li>• Describing good teachers</li> <li>• Who teachers are in class</li> <li>• Rapport</li> <li>• Teacher tasks</li> <li>• Teacher skills</li> <li>• Teacher knowledge</li> <li>• Art or science?</li> </ul>	(Handouts, Presentations, Homework)	<b>CLO1,2,3,9,10</b>
<b>Week 3</b>	<b>Learners</b> <ul style="list-style-type: none"> <li>• Reasons for learning</li> <li>• Different contexts for learning</li> <li>• Learner differences</li> <li>• The importance of student motivation</li> <li>• Responsibility for learning</li> </ul>	(Handouts, Presentations, Homework)	<b>CLO2,4,5,7,10</b>
<b>Week 4</b>	<ul style="list-style-type: none"> <li>• <b>Managing the classroom</b> <ul style="list-style-type: none"> <li>• Classroom management</li> <li>• The teacher in the classroom</li> <li>• Using the voice</li> </ul> </li> </ul>	(Handouts, Presentations, Homework)	<b>CLO2,4,5,7,9,10</b>

	<ul style="list-style-type: none"> <li>• Talking to students</li> <li>• Giving instructions</li> </ul>		
<b>Week 5</b>	<b>Describing learning and teaching</b> <ul style="list-style-type: none"> <li>• Children and language</li> <li>• Acquisition and learning</li> <li>• Different times, different methods</li> <li>• Elements for successful language learning (ESA)</li> <li>• ESA lesson sequences</li> <li>• ESA and planning</li> </ul>	(Handouts, Presentations, Homework) Students' presentations	<b>CLO2,4,5,7,9,10</b>
<b>Week 6-7</b>	<ul style="list-style-type: none"> <li>• <b>Teaching reading</b> <ul style="list-style-type: none"> <li>• Reasons for reading           <ul style="list-style-type: none"> <li>• Different kinds of reading</li> <li>• Reading levels</li> <li>• Reading skills</li> <li>• Reading principles</li> <li>• Reading sequences</li> <li>• More reading suggestions</li> <li>• Encouraging students to read extensively</li> </ul> </li> </ul> </li> </ul>	(Handouts, Presentations, Homework)	<b>CLO1,2,4,5</b>
<b>Week 8</b>	<b>Teaching writing</b> <ul style="list-style-type: none"> <li>• Reasons for teaching writing</li> <li>• Writing issues</li> <li>• Writing sequences</li> <li>• More writing suggestions</li> <li>• Correcting written work</li> <li>• Handwriting</li> </ul>	(Handouts, Presentations, Homework)	<b>CLO2,4,5,9</b>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	<b>Teaching speaking</b> <ul style="list-style-type: none"> <li>• Reasons for teaching speaking</li> <li>• Speaking sequences</li> <li>• Discussion</li> <li>• More speaking suggestions</li> <li>• Correcting speaking</li> <li>• What teachers do during a speaking activity</li> </ul>	(Handouts, Cornerstones Case Study)	<b>CLO1,2,3,4,7</b>
<b>Week 11</b>	<b>Teaching listening</b> <ul style="list-style-type: none"> <li>• Reasons for listening</li> <li>• Different kinds of listening</li> <li>• Listening levels</li> <li>• Listening skills</li> <li>• Listening principles</li> <li>• Listening sequences</li> <li>• More listening suggestions</li> <li>• Audio and video</li> </ul>	(Handouts, Presentations) Students' presentations	<b>CLO1,2,3,4,6</b>

<b>Week 12</b>	<b>Using course books</b> <ul style="list-style-type: none"><li>• Options for course book use</li><li>• Adding, adapting and replacing</li><li>• Reasons for (and against) course book use</li><li>• Choosing course books</li></ul>		<b>CLO 2,3,5,6,9</b>
<b>Week 13</b>	<b>Planning lessons</b> <ul style="list-style-type: none"><li>• Reasons for planning</li><li>• A proposal for action</li><li>• Lesson shapes</li><li>• Planning questions</li><li>• Plan formats</li><li>• Planning a sequence of lessons</li><li>• After the lesson (and before the next)</li></ul>	(Handouts, Presentations) Students' presentations	<b>CLO 1,3,5,9</b>
<b>Week 14</b>	<b>Testing</b>  Reasons for testing students <ul style="list-style-type: none"><li>• Good tests</li><li>• Test types</li><li>• Marking tests</li><li>• Designing tests</li></ul>	(Handouts, Presentations, Homework) Students' presentations	<b>CLO 1,3, 5,9,</b>
<b>Week 15</b>	<b>What If?</b> <ul style="list-style-type: none"><li>• What if students are all at different levels?</li><li>• What if the class is very big?</li><li>• What if students keep using their own language?</li><li>• What if students don't do homework?</li><li>• What if students are uncooperative?</li><li>• What if students don't want to talk?</li><li>• What if students don't understand the audio track?</li><li>• What if some students finish before everybody else?</li></ul>	(Handouts, Presentations, Homework) Students' presentations	<b>PLO1,2,4,5</b>
<b>Week 16</b>	<b><i>Revision</i></b>		
<b>Week 17</b>	<b><i>Final Examination</i></b>		

**COURSE OUTLINE OF SEMANTICS**

<b>Course Name</b>	<b>Semantics</b>		<b>Prepared On</b>	16 July,2021		
<b>Course Code</b>	ENG – 210					
<b>Credit Hours</b>	3					
<b>Course Prereq. Code</b>			<b>Revised On</b>	18 <sup>th</sup> November 2021		
<b>Course Type</b>	Elective <input checked="" type="checkbox"/> Core Course					
<b>Programme</b>	BS <input checked="" type="checkbox"/>					
<b>Semester</b>	1					
<b>Instructor:</b>						
<b>Course Description</b>						
This three hour credit course introduces students to the basic principles of modern linguistic semantics						

and explains how languages organize and express meaning through words, parts of words, sentences, and discourse. It is meant for advanced undergraduate students in linguistics who are competent in syntax and syntactic analysis. The aim is to span the gap between semantic theory and practice by getting students to think for themselves and to develop strong practical skills with confidence and conviction. Students learn semantics by working with real data. Emphasis is on sentence semantics with extensive exercises on thematic roles and situation types using semantic categories such as situation types, tense, aspect, and voice.

#### **Programme Objectives (POs)**

**PO 1:** Build relationship with literature, language and society.

**PO2:** Apply modern theories.

**PO 3:** Inculcate transformational skills by using technology.

**PO 4:** Develop research and pedagogy

**PO 5:** Develop soft skills and produce lifelong learners.

**PO 6:** Instill moral and ethical values.

#### **Programme Learning Outcomes (PLOs) After completion of the degree, students will be**

**PLO 1:** to demonstrate the conventions of diverse textual genres (e.g. the non-fiction essay, poetry, autobiography, novel, memoir, films, plays, editorials and so forth) in their own work and to make world a better place.

**PLO 2:** to employ the literary and rhetorical methods and strategies in reading and writing of texts.

**PLO 3:** to build relationships between language and society in order to provide solutions to the social issues.

**PLO 4:** To apply modern theories in contrast with models with the social and behavioral sciences.

**PLO 5:** to equip students with the ability to analyze information sources in print and electronic media.

**PLO 6:** to enable students to develop critical thinking skills which will help them better express their thoughts, ideas, and beliefs.

**PLO 7:** to excel in research, textual criticism, analytical skills and pedagogical methods.

**PLO 8:** to enable students to improve their writing skills, presentation and public speaking skills and apply these professionally outside the classroom to become life-long learners.

**PLO 9:** to assist in developing their employability skills with effective use of moral and ethical values in the real world.

<b>Course Learning Outcomes</b>		<b>Programme Learning Outcomes</b>								
S.NO.		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9
<b>CLO1</b>	Define the technical terms required to describe meaning.	✓	✓			✓				✓
<b>CLO2</b>	Apply modern semantic and pragmatic theories.		✓		✓			✓		✓
<b>CLO3</b>	Identify sense relations between words including hyponymy, polysemy, synonymy, and antonymy.		✓					✓		✓
<b>CLO4</b>	Describe concepts by using sets of necessary and sufficient conditions, and prototypes.	✓		✓				✓		✓

#### **Teaching & Learning Methodology**

Heuristic style of teaching is followed to make classes as heuristic as possible. This is achieved by group discussions, practicing activities, collaboration and teamwork. Students are given assignments on regular

basis which enables them to study independently and in groups. Testing is done through quizzes according to the course content which enables the instructor to evaluate the students.

gg. Respect & listen to the one who is talking.

hh. Present their ideas in a clear and articulate way. The teaching methodology will include:

- Lectures
- Articles / Case Studies? Scenario Analysis
- Discussions
- Group Project

#### Textbook(s)

- **Semantics a course book (second edition) by James R. Hurford, Bredban Heasley, and Michael B. Smith**

#### Reference Book(s)

PDFs

#### Magazine Articles/ Published Material/ Research Journals /Papers

Students will be provided with updated/latest Journal articles/working papers/ conference proceedings for relevant topic as extra reading.

#### Grading Policy

	Assessment Instruments	Percentage	
Quizzes		15%	
Assignments + project		20%	
Mid Term Exam		25%	
Final Exam		40%	

#### Week-wise Course Outline

Week/ Session	Contents	Activities( Critical Thinking) Case Studies, Video Clips, Assignments, Research Papers, Presentations	Learning Objectives Addressed
<b>Week 1</b>	Introduction Unit 1. Basic Ideas in Semantics	(Handouts, Presentations, Homework)	<i>CLO1</i>
<b>Week 2</b>	About Semantics 2. Theory	(Handouts, Presentations, Homework)	<i>CLO 1,2</i>
<b>Week 3</b>	Unit 2 1.Sentence, Utterances 2. Propositions	(Handouts, Presentations, Homework)	<i>CLO 1,2</i>
<b>Week 4</b>	Unit 3 1.Reference and Sense	(Handouts, Presentations, Homework)	<i>CLO 1,3</i>
<b>Week 5</b>	Unit 4 1.Referring Expressions 2. An Opaque Context	(Handouts, Presentations, Homework)  Students' presentations	<i>CLO 2,3</i>
<b>Week 6</b>	Unit 5 Predicates	(Handouts, Presentations, Homework)	<i>CLO1,2,3</i>
<b>Week 7</b>	Unit 6 Predicates, Referring Expressions Universe of Discourse	(Handouts, Presentations, Homework)	<i>CLO1,2,3</i>

<b>Week 8</b>	Unit 7 Deixis and Definiteness	(Handouts, Presentations)	<i>CLO1,2,3</i>
<b>Week 9</b>	<b>MIDTERM EXAM</b>		
<b>Week 10</b>	Unit 7 Deixis and Definiteness	(Handouts, Cornerstones Case Study)	<i>CLO 3,4,6</i>
<b>Week 11</b>	Unit 8 Words and Things Extensions and Prototypes	(Handouts, Presentations) Students' presentations	<i>CLO 3,4,5</i>
<b>Week 12</b>	Unit 8 Words and Things		
<b>Week 13</b>	Unit 9 ....to Sense Sense Properties and Stereotypes	(Handouts, Presentations) Students' presentations	<i>CLO 1,2</i>
<b>Week 14</b>	Unit 9 ....to Sense Sense Properties and Stereotypes	(Handouts, Presentations, Homework) Students' presentations	<i>CLO 2,4,9</i>
<b>Week 15</b>	Unit 10 Sense Relations Identity and Similarity of Sense	(Handouts, Presentations, Homework) Students' presentations	<i>CLO 2,4</i>
<b>Week 16</b>	<i>Presentation/ Revision</i>		
<b>Week 17</b>	<i>Final Examination</i>		

**LAUNCHING OF ASSOCIATE DEGREE IN COMPUTER SCIENCE****NEW PROGRAMME PROPOSAL**

<b>A. ACADEMIC DETAILS</b>	
1	<b>Faculty/Department:</b> Faculty of Engineering Sciences / Department of Computer Sciences
2	<b>Title of the Programme:</b> Associate Degree Programme in Computer Science
3	<p><b>Mission of the Programme:</b></p> <p>The mission of the Associate degree Programme in Computer Science is to provide students with a strong foundation in computer science theory and practical skills, preparing them for entry-level positions in the field of information technology or for transfer to a four-year degree Programme in computer science or a related field.</p> <p>The Programme aims to cultivate critical thinking, problem-solving, and communication skills in students, allowing them to design, implement, and maintain computer-based systems that meet user requirements and industry standards.</p> <p>The Programme also aims to expose students to emerging technologies and trends in the field of computer science, preparing them to adapt to a constantly evolving technological landscape.</p> <p>Through a combination of theoretical and hands-on coursework, the Programme seeks to equip students with the technical, analytical, and professional skills necessary to succeed in a variety of computer science-related careers. The Programme also aims to instill a commitment to ethical behavior, social responsibility, and lifelong learning in its graduates.</p>
4	<p><b>Objectives of the Programme:</b></p> <p>The key objectives of the ADP (CS) Programme include the following.</p> <ol style="list-style-type: none"> <li>Provide students with a strong foundation in computer science theory and practical skills</li> <li>Prepare students for entry-level positions in the field of information technology</li> <li>Prepare students for transfer to a four-year degree Programme in computer science or a related field</li> <li>Cultivate critical thinking, problem-solving, and communication skills in students</li> <li>Develop students' ability to design, implement, and maintain computer-based systems that meet user requirements and industry standards</li> <li>Expose students to emerging technologies and trends in the field of computer science</li> <li>Equip students with the technical, analytical, and professional skills necessary to succeed in a variety of computer science-related careers</li> <li>Instill a commitment to ethical behavior, social responsibility, and lifelong learning in graduates</li> </ol>
5	<p><b>Outcomes of the Programme:</b></p> <ol style="list-style-type: none"> <li>Demonstrate a strong foundation in computer science theory and practical skills</li> <li>Possess the knowledge and skills necessary to succeed in entry-level positions in the field of information technology</li> <li>Meet the requirements for transfer to a four-year degree Programme in computer science or a related field</li> <li>Exhibit critical thinking, problem-solving, and communication skills</li> <li>Design, implement, and maintain computer-based systems that meet user requirements and industry standards</li> <li>Adapt to emerging technologies and trends in the field of computer science</li> <li>Succeed in a variety of computer science-related careers</li> </ol>

	<p>8. Behave ethically and demonstrate social responsibility in their professional and personal lives</p> <p>9. Continue learning and developing their skills throughout their careers.</p>
6	<p><b>Rationale for the Programme:</b></p> <ul style="list-style-type: none"> <li>The field of computer science is constantly evolving and growing, with increasing demand for skilled professionals in a variety of industries.</li> <li>The Programme provides students with a strong foundation in computer science theory and practical skills, preparing them for success in a variety of computer science-related careers.</li> <li>An Associate degree in Computer Science can be an affordable and accessible way for students to begin their education in computer science and gain the skills necessary to enter the workforce or transfer to a four-year degree Programme.</li> <li>The Programme emphasizes critical thinking, problem-solving, and communication skills, which are essential for success in any field.</li> <li>The Programme exposes students to emerging technologies and trends in the field of computer science, preparing them to adapt to a constantly evolving technological landscape.</li> <li>The Programme instills a commitment to ethical behavior, social responsibility, and lifelong learning in its graduates, preparing them to be responsible and engaged members of their communities.</li> <li>The Programme is designed to meet the needs of students with diverse backgrounds and learning styles, providing them with the support and resources necessary to achieve their goals.</li> </ul>
7	<p><b>Brief Description of the Programme:</b></p> <p>ADP (CS) is a 2-year full-time evening Programme. It is comprised of 4 semesters with 72 Credit Hours</p>
8	<b>Duration:</b> 2 Years, 4 Semesters
9	<b>Venue(s): On Site/Off Site/Both On &amp; Off Site (Tick one; if Off Site, give details)</b> On Site
10	<b>Programme Scheduling Format: Morning/Evening/Weekend (tick one)</b> <b>Semester/Annual/ (tick one)</b>
11	<b>Proposed Date of Commencement: Fall 2023</b>
12	<b>Mode of Study/Examination: Semester, Full Time, Evening</b>
13	<b>Additional Faculty Member(s) Required: As per HEC Requirements</b> Nil
14	<b>Additional Skilled-Worker(s) Required: (Indicate if there is a requirement for additional Skilled Staff, fulltime/part-time, along with their qualifications/skill sets.)</b> Nil
15	<b>Additional Classroom(s) required: (The requirement is to include the number of classrooms and their capacities.)</b> Nil
16	<b>Additional Requirement for Laboratories: (The requirement is to include the number of laboratories, their equipment and their capacities.)</b> Nil
17	<b>Additional Requirement for Books, Subscriptions, Memberships to Online Research Sites/ Repositories:</b> Nil
18	<p><b>Minimum Qualification for Admission:</b></p> <p>Minimum 50% marks in Intermediate/12 years schooling/A- Level (HSSC) or Equivalent with Mathematics are required for admission in Associate Degree Computing. The students with pre-medical background at intermediate level have to pass deficiency courses of Mathematics (06 credits) in first two semesters</p> <p>*Equivalency certificate by IBCC will be required in case of education from some other country or system.</p>

19	<b>Admission Eligibility Criteria: (to be aligned with accreditation/regulatory bodies)</b> <ul style="list-style-type: none"> <li>• Minimum 50% marks in Intermediate/12 years schooling/A- Level (HSSC) or Equivalent with Mathematics are required for admission in Associate Degree Computing. *Equivalency certificate by IBCC will be required in case of education from some other country or system.</li> <li>• The students who have not studied Mathematics at intermediate level have to pass deficiency courses of Mathematics (06 credits) in first two semesters.</li> <li>• A minimum 2.0 CGPA (Cumulative Grade Point Average) on a scale of 4.0 is required for award of AD Computing degree.</li> <li>• The candidates with AD Computing Degrees are eligible for admission in 5th Semester of BS Computing Programmes. Such students shall complete the deficiency courses of General Education (if any) during 5th to 8th Semester.</li> <li>• The candidates who acquired ADP Computing Degrees prior to the admission criteria (as stated above) are also eligible for admission in 5th Semester of BS Computing Programmes. Such students shall complete the deficiency courses of General Education (if any) during 5th to 8th Semester</li> </ul>
20	<b>Additional/Different Examination Requirement</b> <i>(Indicate if there will be any examination requirement, additional to or different from the BU Academic Rules or Examination Policy in vogue).</i> Applicants must provide HEC verification of all academic certificates / degrees. Nil

21	<b>Number of Admissions Expected for First Intake:</b> 40
22	<b>Number of Admissions Planned/Expected for Subsequent Intakes:</b> 40
23	<b>Referred by:</b> (delete which is inapplicable) <b>FBOS:</b> (Indicate the FBOS meeting reference and Item No) <b>Competent Authority:</b> (Indicate the File No & date; reproduce the decision)
24	<b>Complete Plan of Studies, inclusive of complete Roadmap:</b> (Attach as Annex 'B')
25	<b>Course Outlines, Descriptions, Pre-Requisites &amp; Readings (Compulsory &amp; Recommended)</b> (Attach as Annex 'C')

**B. FINANCIAL DETAILS**

1	<b>Source of Funding:</b> <ul style="list-style-type: none"> <li>• BU: Fully/Partially:</li> <li>• Public Sector (B1): Fully/Partially (provide complete details; attach MOU, agreement etc.)</li> <li>• NNGO (B1): Fully/Partially (provide complete details; attach MOU, agreement etc.)</li> <li>• INGO (B1): Fully/Partially (provide complete details; attach MOU, agreement etc.)</li> <li>• UN/IGO (B1): Fully/Partially (provide complete details; attach MOU, agreement etc.)</li> </ul>													
2	<b>Degree Duration:</b>	<b>Annual or Semester System:</b> Annual 2 Number of Years Semester: 4 Number of Semester												
<b>Total Number of Credit Hours: 72</b>														
3	<b>Expected fee to be charged based on Cost &amp; Benefits Analysis:</b> (show working) Per annum fee:                                   or     Fee rate per credit hour: <b>4200</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;"><b>Credit Hours</b></td><td style="padding: 2px;"><b>18 (Avg. per year)</b></td></tr> <tr> <td style="padding: 2px;"><b>Rate Per Credit Hours Tuition Fee</b></td><td style="padding: 2px;"><b>4200</b></td></tr> <tr> <td style="padding: 2px;"><b>Tuition Fee Per Semester</b></td><td style="padding: 2px;"><b>75,600</b></td></tr> <tr> <td style="padding: 2px;"><b>Admission Fee (One Time)</b></td><td style="padding: 2px;"><b>15,000</b></td></tr> <tr> <td style="padding: 2px;"><b>Caution Money (Refundable)</b></td><td style="padding: 2px;"><b>10,000</b></td></tr> <tr> <td style="padding: 2px;"><b>Degree Fee (One Time) *</b></td><td style="padding: 2px;"><b>5,000</b></td></tr> </table>		<b>Credit Hours</b>	<b>18 (Avg. per year)</b>	<b>Rate Per Credit Hours Tuition Fee</b>	<b>4200</b>	<b>Tuition Fee Per Semester</b>	<b>75,600</b>	<b>Admission Fee (One Time)</b>	<b>15,000</b>	<b>Caution Money (Refundable)</b>	<b>10,000</b>	<b>Degree Fee (One Time) *</b>	<b>5,000</b>
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Total Programme Cost = Rs. 110,600 + Rs. 80,600 *3 <b>Total Programme Cost (BULC proposed) = Rs. 352,400 (@Rs. 4200/cr. hr.)</b>																	
4	<p><b>Expected Number of students for 1<sup>st</sup> &amp; 2<sup>nd</sup> Intakes: 80 i.e., 40 students each</b></p> <p>Student Strength in 1<sup>st</sup> Semester = 40</p> <p>Student Strength in 2<sup>nd</sup> Semester = 40 (new intake) + 40 (carry-on from 1<sup>st</sup> semester)</p> <p>120 student tuition fees shall be collected by BULC</p>																
5	<p><b>Expected Earning from first two Intakes (B5):</b></p> <p>Expected earnings from first two intakes at the end of 1 years shall be: Rs. 8.6 M</p>																
6	<p><b>Expected Earning for the Next Five Years (B6): (show working)</b></p> <table border="1"> <thead> <tr> <th>Year</th><th>Earnings (Million)</th></tr> </thead> <tbody> <tr><td>1</td><td>7.84</td></tr> <tr><td>2</td><td>13.89</td></tr> <tr><td>3</td><td>14.59</td></tr> <tr><td>4</td><td>15.32</td></tr> <tr><td>5</td><td>16.08</td></tr> </tbody> </table>	Year	Earnings (Million)	1	7.84	2	13.89	3	14.59	4	15.32	5	16.08				
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7	<p><b>Total Estimated Salaries of all Additional Human Resources per annum (B7): (Show working)</b></p> <table border="1"> <thead> <tr> <th>Year</th><th>Expense (Million)</th></tr> </thead> <tbody> <tr><td>1</td><td>1.95</td></tr> <tr><td>2</td><td>5.39</td></tr> <tr><td>3</td><td>5.65</td></tr> <tr><td>4</td><td>5.94</td></tr> <tr><td>5</td><td>6.23</td></tr> </tbody> </table> <p>The Programme shall be started without hiring permanent faculty member (FM). The visiting FM shall be engaged from either BULC or from outside on a fixed payment of Rs. 100,000 /course for 3 cr. hr (Rs. 2083/contact hr), Rs. 75,000/course for 2 cr. hr. (Rs. 2343/contact hr), Rs. 40,000/course for 1 cr. hr. (Rs. 2500/contact hr), Rs. 75,000/lab for 3 contact hour lab (Rs. 1562/contact hr) and Rs. 140,000/lab for 6 contact hour lab (Rs. 1458/contact hr). The restriction on PFM to teach 1 visiting course per semester is proposed to lifted for running the Programme in surplus from the conception. The salaries are subject to increase @5%/year in relation to the increase in tuition fee.</p>	Year	Expense (Million)	1	1.95	2	5.39	3	5.65	4	5.94	5	6.23				
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8	<b>Cost of Additional Laboratory Equipment/Tools (B8): (show working) Nil</b>																
9	<b>Cost of Additional Classrooms (B9): (Include furniture, technical aids etc) Nil</b>																

10	<b>Cost of Additional Books, Subscription &amp; Memberships to on-line Sites/Repositories (B10): (show details) Nil</b>												
11	<b>Off-Site rental Expenses and Cost of other Fixtures (B11): (Show details) Nil</b>												
12	<p><b>Miscellaneous Expenses required for Starting the Programme (B12):</b> -- Advertisement: Rs. 80,000</p> <ul style="list-style-type: none"> <li>- Printing &amp; Stationery: Nil</li> <li>- Admin Cost : Rs. 320,000 (40,000 each in a semester overtime to MQA, Audit &amp; Accounts officer and System Engr.)</li> <li>- Any other, Lab Staff: Rs. 200,000 (100,000 in a semester overtime to lab &amp; exam staff)</li> </ul> <p><b>Total : Rs. 600,000 with 5% annual increase</b></p>												
	<p><b>Annual Recurring Expenditures in Subsequent Years (B13):</b></p> <table border="1"> <thead> <tr> <th></th> <th>Expenses (In Millions)</th> </tr> </thead> <tbody> <tr> <td>- First Year</td> <td>0.60</td> </tr> <tr> <td>- Second Year</td> <td>0.63</td> </tr> <tr> <td>- Third Year</td> <td>0.66</td> </tr> <tr> <td>- Fourth Year</td> <td>0.69</td> </tr> <tr> <td>- Fifth Year</td> <td>0.73</td> </tr> </tbody> </table>		Expenses (In Millions)	- First Year	0.60	- Second Year	0.63	- Third Year	0.66	- Fourth Year	0.69	- Fifth Year	0.73
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14	<p><b>Total Cost of the Programme (B14): Rs. 2.55 M</b></p> <table border="1"> <thead> <tr> <th>Year</th> <th>Cost (Million)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2.55</td> </tr> <tr> <td>2</td> <td>6.02</td> </tr> <tr> <td>3</td> <td>6.32</td> </tr> <tr> <td>4</td> <td>6.63</td> </tr> <tr> <td>5</td> <td>6.96</td> </tr> </tbody> </table>	Year	Cost (Million)	1	2.55	2	6.02	3	6.32	4	6.63	5	6.96
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16	<b>Net Earnings in First Year (B16): Rs. Rs. 5.29 M</b>												
17	<p><b>Projected Annual Gross Earning in Subsequent Years (B 17):</b></p> <table border="1"> <thead> <tr> <th></th> <th>Gross Earning (Fee in Millions)</th> </tr> </thead> <tbody> <tr> <td>First Year</td> <td>5.29</td> </tr> <tr> <td>Second Year</td> <td>7.87</td> </tr> <tr> <td>Third Year</td> <td>8.27</td> </tr> <tr> <td>Fourth Year</td> <td>8.69</td> </tr> <tr> <td>Fifth Year</td> <td>9.12</td> </tr> </tbody> </table>		Gross Earning (Fee in Millions)	First Year	5.29	Second Year	7.87	Third Year	8.27	Fourth Year	8.69	Fifth Year	9.12
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<b>Projected Annual Net Earning in Subsequent Years:</b>				
	<b>Gross Earning (Fee in Millions)</b>	<b>Expenses (In Millions)</b>	<b>Net Earning (In Millions)</b>	
<b>First Year</b>	<b>7.84</b>	<b>2.55</b>	<b>5.29</b>	
<b>Second Year</b>	<b>13.89</b>	<b>6.02</b>	<b>7.87</b>	
<b>Third Year</b>	<b>14.59</b>	<b>6.32</b>	<b>8.27</b>	
<b>Fourth Year</b>	<b>15.32</b>	<b>6.63</b>	<b>8.69</b>	
<b>Fifth Year</b>	<b>16.08</b>	<b>6.96</b>	<b>9.12</b>	

### **NEW/REVISED ROADMAPS & COURSE CODES**

Campus: Lahore  
 Department: Computer Sciences  
 Programme Title: Associate Degree Programme in Computer Science  
 Programme Level: Undergraduate  
 Total Duration of Programme: 2 years  
 Total Number of semesters: 4  
 Total Credit Hours: 72

Students will be required to complete the following courses to obtain Associate Degree in Computer Science

#### **Generic Structure for Computing Disciplines:**

<b>Areas</b>	<b>Credit Hours</b>	<b>Courses</b>
Computing Core	34	10
Elective	14	5
Mathematics & Supporting Courses	3	1
General Education Requirement	21	8
<b>Totals</b>	<b>72</b>	<b>24</b>

#### **Semester-1**

<b>Sr.No.</b>	<b>Pre-requisite Course Code</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hours</b>	<b>Theory</b>	<b>Lab (if any)</b>
1	CSC 113		Computer Programming	Core	4 (3-3)	
2	CSC 114		Introduction to Information & Communication Technology	GER	3 (2-3)	
3	GSC 110		QR 1 (Calculus &	GER	3 (3-0)	

			Analytical Geometry)			
4	GSC 221		QR 2 (Discrete Mathematics)	GER	3 (3-0)	
5	ENG 106		Functional English	GER	3 (3-0)	
6	ISL 101		Islamic Studies	GER	2 (2-0)	
<b>Total Credit Hours in Semester-1</b>			<b>18</b>			

**Semester-2**

Sr.No.	Pre-requisite Course Code	Course Code	Course Title	Credit Hours	Theory	Lab (if any)
7	CSC 210		Object Oriented Programming	Core	4 (3-3)	
8	CSC 220		Database Management Systems	Core	4 (3-3)	
9	CEN 122		Digital Design	Core	3 (2-3)	
10	HSS 320		Technical Writing & Presentation Skills	EN	3 (3-0)	
11	GSC 121		Linear Algebra	Maths	3 (3-0)	
<b>Total Credit Hours in Semester-2</b>			<b>17</b>			

**Semester-3**

Sr.No.	Pre-requisite Course Code	Course Code	Course Title	Credit Hours	Theory	Lab (if any)
12	CSC 221		Data Structures & Algorithm	Core	4 (3-3)	
13	CSC 407		Information Security	Core	3 (3-0)	
14	CSC 411		Artificial Intelligence	Core	3 (2-3)	
15	ADC 234		Computer Networks	Core	3 (2-3)	
16	SEN 220		Software Engineering	Core	3 (3-0)	
17	CEN 323		Computer Organization & Assembly Language	Core	3 (2-3)	
<b>Total Credit Hours in Semester-3</b>			<b>19</b>			

**Semester-4**

Sr.No.	Pre-requisite Course Code	Course Code	Course Title	Credit Hours	Theory	Lab (if any)
18	ADL 470		Elective 1 (Advanced Database Lab)	Domain Elective	2 (0-6)	
19	ADC 226		Elective 2 (Web Systems & Technologies)	Domain Elective	3 (1-6)	
20	ADC 341		Elective 3 (Mobile Application Development)	Domain Elective	3 (1-6)	
21	ADC 319		Elective 4 (Game	Domain	3 (1-6)	

			Development Lab)	Elective		
22	ADC 411		Elective 5 (Cyber Security Lab)	Domain Elective	3 (1-6)	
23	PAK 101		Pakistan Studies/Ideology & Constitution of Pakistan	GER	2 (2-0)	
24	HSS 423		Entrepreneurship	GER	2 (2-0)	
<b>Total Credit Hours in Semester-4</b>			<b>18</b>			
<b>Total Credit Hours</b>			<b>72</b>			

### **Core Course**

ADC 234 Computer Networks (2 credit hours)

ADL 234 Computer Networks Lab (1 credit hour)

### **Course Description**

#### **ADC 234 Computer Networks**

This course provides an introduction to computer networks, with a special focus on the Internet architecture and protocols. Topics include layered network architectures, addressing, naming, forwarding, routing, communication reliability, the client-server model, web and email protocols. Besides the theoretical foundations, students acquire practical experience by Programming reduced versions of real Internet protocols.

### **List of Electives**

ADC 226 Web Systems & Technologies (1 credit hour)

ADL 226 Web Systems & Technologies Lab (2 credit hours)

ADC 341 Mobile Application Development (1 credit hour)

ADL 341 Mobile Application Development Lab (2 credit hours)

ADC 319 Game Development (1 credit hour)

ADL 319 Game Development Lab (2 credit hours)

ADC 411 Cyber Security (1 credit hour)

ADL 411 Cyber Security Lab (2 credit hours)

ADC 487 Introduction to Data Science (1 credit hour)

ADL 487 Introduction to Data Science Lab (2 credit hours)

ADC 202 Advanced Programming (1 credit hour)

ADL 202 Advanced Programming Lab (2 credit hours)

ADL 470 Advanced Database Lab (2 credit hours)

ADL 408 System & Network Security Lab (2 credit hours)

### **Course Descriptions**

#### **ADC 226 Web Systems & Technologies**

This course provides an introduction to the Web Engineering. It aims to introduce the methods and techniques used in Web-based system development. In contrast to traditional Software Engineering efforts, Web Engineering methods and techniques must incorporate unique aspects of the problem domain such as: document-oriented delivery, fine-grained lifecycles, user-centric development, client-server legacy system integration and diverse end user skill levels. This course draws upon previous Programming and computing experience to develop practical web development and maintenance skills. This course is intended for students with knowledge of both Internet communication concepts and an introductory Programming knowledge (Java & JavaScript).

#### **ADC 341 Mobile Application Development**

Mobile Application Development Platform; HTML5 for Mobiles; Android OS: Architecture, Framework and Application Development; iOS: Architecture, Framework; Application Development with Windows Mobile; Eclipse; Fragments; Calling Built-in Applications using Intents; Displaying Notifications; Components of a Screen; Adapting to Display Orientation; Managing Changes to Screen Orientation; Utilizing the Action Bar; Creating the User Interface; Listening for UI Notifications; Views; User Preferences; Persisting Data; Sharing Data; Sending SMS Messages; Getting Feedback; Sending Email; Displaying Maps; Consuming Web Services Using HTTP; Web Services: Accessing and Creating; Threading; Publishing, Android Applications; Deployment on App Stores; Mobile Programming Languages; Challenges with Mobility and Wireless Communication; Location-aware Applications; Performance/Power Tradeoffs; Mobile Platform Constraints; Emerging Technologies.

### **ADC 319 Game Development**

The purpose of the course is to teach students about the overall process of game development. Computer games can be played today on a number of platforms. The course will equip students with the latest techniques using Unity and accompanying tools to develop quality games for PC, Mobile and Console platform.

### **ADC 411 Cyber Security**

This course provides students an introduction to common cyber security threats, vulnerabilities, and risks related to web applications, networks, software and mobile applications. The course provides basic concepts and terminology used in the information and cyber security fields. Moreover, it will also enable students to differentiate between the various forms of malware and how they affect computers and networks.

### **ADC 487 Introduction to Data Science**

Data Science is the study of the generalizable extraction of knowledge from data. Being a data scientist requires an integrated skill set spanning mathematics, statistics, machine learning, databases and other branches of computer science along with a good understanding of the craft of problem formulation to engineer effective solutions. The aim of this course is to: Introduce students to this rapidly growing field and equip them with some of its basic principles and tools as well as its general mindset. Explain the significance of exploratory data analysis in data science. Identify common approaches used for Feature Generation as well as Feature Selection. Programming language Python has been proposed for the practical work of this course and inclusion of KNIME and Microsoft Power BI for data analytics and data visualization

### **ADC 202 Advanced Programming**

The students will gain exposure to and experience of superior levels of productivity with modern computing technologies. The course will help to utilize the incredible power of component oriented and distributed computing to create effective, scalable, maintainable, and adaptable applications to solve an extremely wide range of problems.

### **Bahria University, Lahore Campus**

**Programme Title:** ADP (CS)

**Admission Eligibility Criteria:**

12 years of education minimum 50%.

**Programme Objectives:**

The key objectives of the ADP(CS) Programme include the following.

1. Two years degree Programme in computer science attracts the participants who are seeking a fast track entry into the work force, planning to continue to four years degree Programme, or exploring different specializations in order to clarify their careers goals.

2. The primary objectives of two years degree Programme in computer science are to let the participants not only learn the theoretical and mathematical foundations of computing and scientific principles underlying computing and information technology but also enable them to maintain the existing computer networks, systems and databases.

**Programme Learning Outcomes:**

1. **Knowledge and Understanding:** Demonstrate a strong foundation in computer science theory, including Programming concepts, algorithms, data structures, software engineering, and database systems.
2. **Technical Skills:** Apply technical skills to design, implement, and maintain computer-based systems that meet user requirements and industry standards.
3. **Critical Thinking:** Analyze problems and apply critical thinking skills to identify, formulate, and solve problems using appropriate computer science concepts and techniques.
4. **Communication:** Communicate effectively with technical and non-technical audiences through written, oral, and visual means.
5. **Emerging Technologies:** Stay informed about emerging technologies and trends in the field of computer science and apply them to practical problems.
6. **Professionalism:** Understand and apply ethical, legal, and social issues related to the use of computer technology and demonstrate professionalism and social responsibility in their work.
7. **Lifelong Learning:** Continue learning and developing their skills throughout their careers, including pursuing further education, engaging in professional development, and staying informed about emerging technologies and trends.
8. **Collaboration:** Work collaboratively with others in a team environment, including effectively communicating with team members, resolving conflicts, and sharing responsibility for achieving common goals.
9. **Adaptability:** Adapt to changing technologies and work environments and demonstrate flexibility and creativity in problem-solving.
10. **Transfer:** Transfer credits earned in the Programme to a four-year degree Programme in computer science or a related field.

**Appendage 4340**

**NEW PROGRAMME PROPOSAL**

**BS (BUSINESS ANALYTICS)**

<b>C. ACADEMIC DETAILS</b>	
26	<b>Faculty/Department:</b> Business Studies, BUKC
27	<b>Name of the Programme:</b> BS (Business Analytics)
28	<b>Mission of the Programme:</b> The mission of a Business Analytics Bachelor's Programme is to provide students with the knowledge and skills necessary to analyze data and make data-driven decisions in a business context and to equip students with the knowledge and skills necessary to become effective data analysts and decision-makers in a business context, while also fostering an understanding of the ethical and social implications of data analysis.
29	<b>Objectives of the Programme:</b> The objective of the Programme is to provide students with a strong foundation in business analytics principles and practices, including financial technology, marketing analytics, and expert decision-making systems and tools through developing students' quantitative and analytical skills, including critical thinking, statistics and predictive modeling and

	<p>to enable them to extract insights from data and make informed business decisions by introducing various tools and technologies used in data analytics, such as Programming languages, data visualization tools, and database management systems. Lastly, it aims to foster an understanding of ethical and social implications of data analysis and decision-making, including issues related to privacy, security, and bias, and to prepare students for successful careers in business analytics or related fields, by providing them with opportunities for hands-on learning, internships, and networking with professionals in the field.</p>
30	<p><b>Mapping Knowledge, Understanding, Skills &amp; Attitude of the Programme:</b></p> <p><b>Knowledge:</b></p> <ol style="list-style-type: none"> <li>1. Tools and technologies used in data analytics, such as Programming languages, data visualization tools, and database management systems.</li> <li>2. Business principles and practices, including accounting, finance, marketing, and management.</li> <li>3. Statistics and data analysis techniques, including hypothesis testing, regression analysis, and machine learning algorithms.</li> <li>4. Ethical and social implications of data analysis and decision-making, including issues related to privacy, security, and bias.</li> <li>5. Types of data and data sources, including structured and unstructured data, big data, and data from social media and other sources.</li> </ol> <p><b>Understanding:</b></p> <ol style="list-style-type: none"> <li>1. How to analyze and interpret data to solve business problems and make data-driven decisions.</li> <li>2. The importance of collaboration and effective communication skills in a business context.</li> <li>3. The impact of ethical and social considerations on data analysis and decision-making.</li> <li>4. The role of technology in data analytics, and how to use tools and technologies to extract insights from data.</li> <li>5. The value of hands-on learning opportunities to apply knowledge and skills in real-world settings.</li> </ol> <p><b>Skills:</b></p> <ol style="list-style-type: none"> <li>1. Critical thinking and problem-solving skills, including the ability to identify and frame business problems and develop appropriate solutions using data analysis techniques.</li> <li>2. Data analysis and modeling skills, including the ability to clean, preprocess, and transform data, and apply statistical and machine learning algorithms to extract insights and make predictions.</li> <li>3. Communication and collaboration skills, including the ability to present data and insights to different audiences, and work effectively in a team environment.</li> <li>4. Technical skills, including proficiency in Programming languages such as Python or R, and data visualization tools such as Tableau or Power BI</li> <li>5. Research and project management skills, including the ability to plan, execute, and present research projects and consulting engagements.</li> </ol> <p><b>Attitudes:</b></p> <ol style="list-style-type: none"> <li>1. A curiosity and passion for data analytics and its potential to solve complex business problems.</li> <li>2. An ethical and responsible approach to data analysis and decision-making, including a commitment to privacy, security, and avoiding bias.</li> <li>3. A growth mindset and willingness to learn and adapt to new technologies and methods in data analytics.</li> <li>4. A commitment to collaboration and teamwork, and a willingness to engage with diverse perspectives and backgrounds.</li> <li>5. A dedication to lifelong learning and professional development, and a desire to stay up to date with the latest trends and best practices in data analytics.</li> </ol>

31	<p><b>Programme Goals and Learning Outcomes:</b> This Programme works towards achieving following learning outcomes:</p> <p><b>Programme Goal 1:</b> Develop students' critical thinking and problem-solving skills, as well as their ability to analyze and interpret data.</p> <p><b>PLO1:</b> Apply critical thinking and problem-solving skills to analyze business problems and identify appropriate solutions using data analysis techniques.</p> <p><b>PLO2:</b> Evaluate the quality and reliability of data sources and use appropriate methods to clean, preprocess, and transform data for analysis.</p> <p><b>Programme Goal 2:</b> Provide students with a solid understanding of business principles and practices, including accounting, finance, marketing, and management, and how these relate to data analysis and decision-making.</p> <p><b>PLO3:</b> Analyze and interpret financial statements and performance metrics to evaluate the financial health of a company.</p> <p><b>PLO4:</b> Apply marketing concepts and principles to design and implement data-driven marketing campaigns.</p> <p><b>Programme Goal 3:</b> Foster students' ability to communicate effectively and collaborate with others in a business context, both verbally and in writing.</p> <p><b>PLO5:</b> Develop effective communication skills, including the ability to present data and insights to different audiences in a clear and concise manner.</p> <p><b>PLO6:</b> Collaborate with others in a team environment to design and implement a data analytics project, including planning, execution, and presentation of results.</p> <p><b>Programme Goal 4:</b> Introduce students to various tools and technologies used in data analytics, such as Programming languages, data visualization tools, and database management systems.</p> <p><b>PLO7:</b> Use Programming languages such as Python or R to perform data analysis and develop predictive models.</p> <p><b>PLO8:</b> Create interactive data visualizations using tools such as Tableau or Power BI to communicate insights effectively.</p> <p><b>Programme Goal 5:</b> Expose students to various types of data and data sources, including structured and unstructured data, big data, and data from social media and other sources.</p> <p><b>PLO9:</b> Analyze and interpret unstructured data, such as text or audio data, using natural language processing techniques.</p> <p><b>PLO10:</b> Apply big data technologies, such as Hadoop or Spark, to process and analyze large volumes of data efficiently.</p> <p><b>Programme Goal 6:</b> Develop students' understanding of ethical and social implications of data analysis and decision-making, including issues related to privacy, security, and bias.</p> <p><b>PLO11:</b> Identify and assess ethical considerations and potential biases in data collection, analysis, and interpretation.</p> <p><b>PLO12:</b> Develop solutions to mitigate ethical and social issues related to data analysis and decision-making.</p> <p><b>Programme Goal 7:</b> Provide students with hands-on learning opportunities, such as internships, case studies, and research projects, to apply their knowledge and skills in real-world settings.</p> <p><b>PLO13:</b> Apply data analytics techniques to solve real-world business problems through internships or consulting projects with industry partners.</p> <p><b>PLO14:</b> Conduct research on a specific topic related to business analytics and present findings to an audience of industry professionals.</p> <p><b>Programme Goal 8:</b> Prepare students for successful careers in business analytics or related fields, by providing them with career development resources, networking opportunities, and connections to professionals in the field.</p> <p><b>PLO 15:</b> Develop a personal career plan that aligns with their skills, interests, and career goals in the field of business analytics.</p> <p><b>PLO 16:</b> Build a professional network through participation in industry events, professional</p>
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	associations, and alumni networks, and use these connections to identify career opportunities.
32	<p><b>Rationale for the Programme:</b></p> <p>The rationale for having a Business Analytics Programme is rooted in the growing importance of data analytics in today's business world. With the rise of big data and advancements in technology, organizations are generating vast amounts of data that can be used to drive decision-making and gain a competitive advantage. Business Analytics is a field that combines business knowledge, statistical analysis, and technology skills to help organizations make sense of this data and use it to inform strategic decisions. Thus, the rationale for having a Business Analytics Programme is to equip students with the skills and knowledge they need to succeed in a data-driven business environment. By providing a strong foundation in statistical analysis, technology, and business principles, graduates of a Business Analytics Programme can be well-prepared for a range of roles in industries such as finance, healthcare, marketing, and technology.</p>
33	<p><b>Scope of the Programme:</b> The scope of a Business Analytics Programme is quite broad, as the demand for skilled professionals who can analyze and interpret data is growing rapidly across a range of industries. Graduates of a Business Analytics Programme can pursue careers in fields such as finance, healthcare, marketing, and technology, among others. They may work for large corporations, small businesses, government agencies, or non-profit organizations.</p> <p>The scope of a Business Analytics Programme is also influenced by the rapid pace of technological change and innovation in the field. As new tools and techniques for data analysis and management continue to emerge, graduates of a Business Analytics Programme will need to stay up to date with the latest trends and best practices to remain competitive in the job market. The scope of the Programme is thus dynamic and constantly evolving, reflecting the changing needs of the business world.</p>
34	<p><b>Comparative Analysis of the Programme:</b> There are several universities in Pakistan offering Business Analytics Programmes at the undergraduate and graduate levels. Some of the universities that are offering Business Analytics Programmes at the time include:</p> <ol style="list-style-type: none"> <li>1. Lahore University of Management Sciences (LUMS)- MS (Accounting &amp; Analytics)</li> <li>2. Institute of Business Administration (IBA), Karachi -MS (Data Science)</li> <li>3. FAST – BS (Business Analytics)</li> <li>4. FAST (Lahore) – MS (Business Analytics)</li> <li>5. Karachi School for Business &amp; Leadership (KSBL)- MS (Business Analytics)</li> <li>6. Institute of Business Management- BS (Data Science)</li> <li>7. DHA SUFFA University – BS Business Analytics &amp; Programming</li> <li>8. Iqra University- BS Analytics</li> <li>9. COMSATS University -BS (Data Science), BS (Artificial Intelligence)</li> <li>9. International Islamic University -BS (Business Analytics)</li> <li>10. Sir Syed Case Institute of Technology, Islamabad – BS (Business Analytics)</li> </ol> <p>Comparatively, universities with both business and computer science departments are well-positioned to offer a successful business analytics Programme because they can leverage the strengths and expertise of both departments. Business analytics requires a combination of</p>

	<p>business knowledge and technical skills. The business department can provide the necessary business context, including an understanding of organizational processes, markets, and customer behavior. Meanwhile, the computer science department can provide the technical skills required for data management, data analysis, and data visualization. Furthermore, business analytics is a multidisciplinary field that requires collaboration between individuals with different backgrounds and expertise. Universities that have both business and computer science departments can facilitate such collaboration by encouraging interdisciplinary research and teaching, providing opportunities for students to work on cross-disciplinary projects, and hosting events that bring together students and faculty from different departments. In addition, universities with both business and computer science departments are more likely to have access to the latest technology and tools required for business analytics, such as big data platforms, machine learning algorithms, and data visualization software.</p> <p>Overall, universities with both business and computer science departments can successfully run a business analytics Programme because they can offer a comprehensive, multidisciplinary curriculum that combines business knowledge with technical skills and fosters collaboration and innovation across disciplines.</p>
35	<p><b>Brief Description of the Programme:</b> The Business Analytics Programme is designed to equip students with the skills and knowledge they need to succeed in a data-driven business environment. Through a combination of coursework and hands-on learning experiences, students learn how to use statistical analysis, machine learning algorithms, and technology tools to extract insights from data and make data-driven decisions. The Programme also emphasizes the importance of collaboration and effective communication skills in a business context, as well as ethical and social considerations related to data analysis and decision-making. Graduates of the Programme are well-prepared for a range of roles in industries such as finance, healthcare, marketing, and technology. It is a four years' degree Programme for students who have passed higher secondary / equivalent schooling / examination under HEC rules.</p>
36	<p><b>Career Prospects:</b> Graduates of a Business Analytics Programme can pursue a wide range of careers in fields such as finance, healthcare, marketing, and technology. Some of the specific roles that may be available to graduates of the Programme include:</p> <ol style="list-style-type: none"> <li><b>Data Analyst:</b> Data analysts are responsible for collecting and analyzing large datasets to identify trends and patterns and make data-driven decisions. They often work in finance, marketing, or healthcare.</li> <li><b>Business Analyst:</b> Business analysts use data analysis to help businesses improve their operations, reduce costs, and increase profits. They may work in a variety of industries, including retail, manufacturing, and technology.</li> <li><b>Data Scientist:</b> Data scientists use statistical analysis and machine learning techniques to develop predictive models and make data-driven decisions. They may work in a range of industries, including finance, healthcare, and technology.</li> <li><b>Marketing Analyst:</b> Marketing analysts use data analysis to identify customer preferences and behavior, and to develop targeted marketing strategies. They may work in advertising agencies, market research firms, or within companies' marketing departments.</li> <li><b>Financial Analyst:</b> Financial analysts use data analysis to help companies make investment decisions, manage risk, and analyze financial performance. They may work in a variety of industries, including banking, insurance, and asset management.</li> <li><b>Consultant:</b> Consultants use data analysis to help businesses improve their operations, reduce costs, and increase profits. They may work for consulting firms, or as independent contractors.</li> </ol> <p>Overall, graduates of a Business Analytics Programme can pursue a diverse range of careers in industries that value data-driven decision-making and insights. The demand for skilled professionals in this field is expected to continue to grow in the coming years.</p>
37	<p><b>Duration:</b> 4 Years</p>

38	<b>Venue(s): On Site/Off Site/Both On &amp; Off Site</b> ( <i>tick one/strike-through the ones not applicable; if Off Site, give details</i> )  Bahria University Karachi, Islamabad and Lahore Campuses under the Departments of Management Sciences / Business Studies.
39	<b>Programme Scheduling Format:</b> <ul style="list-style-type: none"><li>• <b>Morning/Evening/Weekend</b> (<i>tick one/strike-through the ones not applicable</i>): Morning</li><li>• <b>Bi-Semester/Trimester/Semester Summer Session/Annual/Bi-Annual</b> (<i>tick one/strike-through the ones not applicable</i>): Bi-Semester</li></ul>
40	<b>Proposed Date of Commencement:</b> Fall 2023
41	<b>Mode of Study/Examination:</b> As per BU Examination Rules
42	<b>Additional Faculty Member(s) Required:</b> ( <i>Indicate if there is a requirement for additional faculty members, fulltime/visiting, along with qualifications.</i> ) 1 <sup>st</sup> and 2 <sup>nd</sup> Years' requirement.  Regular: 2 (MPhil / MS)  Visiting: 4 (MPhil / MS)
43	<b>Additional Skilled-Worker(s) Required:</b> ( <i>Indicate if there is a requirement for additional Skilled Staff, fulltime/part-time, along with their qualifications/skill sets.</i> ): Nil
44	<b>Additional Classroom(s) required:</b> ( <i>The requirement is to include the number of classrooms and their capacities.</i> ) <ul style="list-style-type: none"><li>▪ First Semester: 1</li><li>▪ Additional one classroom with the start of every semester till 8<sup>th</sup> semester.</li></ul>
45	<b>Additional Requirement for Laboratories:</b> ( <i>The requirement is to include the number of laboratories, their equipment and their capacities.</i> )  Two computer labs will be required.
46	<b>Additional Requirement for Books, Subscriptions, Memberships to Online Research Sites/ Repositories:</b> Following books are required: - <ul style="list-style-type: none"><li>▪ Existing stock of books partially meets the requirement. Digital library access also supplements the existing stock.</li><li>▪ About 100 more books would be required on contemporary thought process by different writers on Business Analytics.</li></ul>
47	<b>Minimum Entry Level:</b> HSSC / Equivalent with 50% Marks
48	<b>Admission Criteria:</b> As per BU Rules for BBA / A&F Programme
49	<b>Additional/Different Examination Requirement</b> <i>(Indicate if there will be any examination requirement, additional to or different from the BU Academic Rules or Examination Policy in vogue).</i> Nil
50	<b>Number of Admissions Expected for First Intake:</b> 20
51	<b>Number of Admissions Planned/Expected for Subsequent Intakes:</b> 20-25 / semester, this is minimum, we expect more students with awareness from 3 <sup>rd</sup> semester onwards.
52	<b>FBOS:</b> ( <i>Indicate the FBOS meeting reference and Item No</i> ):

	<b>Competent Authority:</b> (Indicate the File No & date; reproduce the decision):
53	<b>Complete Plan of Studies, inclusive of complete Roadmap:</b> (Attach as Annex 'A')
54	<b>Course Outlines, Descriptions, Pre-Requisites &amp; Readings (Compulsory &amp; Recommended)</b> (Attach as Annex 'B')

<b>B. FINANCIAL DETAILS</b>								
1	<b>Source of Funding:</b> BU Fully							
2	<b>Degree Duration:</b> 4 years <b>Annual or Semester System:</b> Semester							
3		<b>Students</b>			<b>Fee per student</b>		<b>Total Fee</b>	
	<b>Semester</b>	<b>Fresh</b>	<b>Existing</b>	<b>Total</b>	<b>Fresh</b>	<b>Existing</b>	<b>Fresh</b>	<b>Existing</b>
	Spring 2023	0	0	20	105,480		2,109,600	0
	Fall 2023	20	20	40	105,480	69,480	2,109,600	1389600
	Spring 2024	25	40	65	105,480	69,480	2,637,000	2779200
	Fall 2024	25	65	90	105,480	69,480	2,637,000	4516200
	Spring 2025	25	90	115	105,480	69,480	2,637,000	6253200
	Fall 2026	30	175	205	105,480	69,482	3,164,400	12159350
	* Rs. 3860/- per credit hour and 18 credit hours per semester (Total 135 credit hours)							
	* For first semester: Rs. 21000 (Admission fee), Rs. 5000 (Miscellaneous) and Rs. 10000 (Security Deposit - Refundable) shall be applicable.							
4	<b>Expected Number of students for 1<sup>st</sup> &amp; 2<sup>nd</sup> Intakes:</b> 40 students							
5	<b>Expected Earning from first two Intakes (B5):</b> Rs. 3,499,200							
		<b>Students</b>			<b>Fee per student</b>		<b>Total Fee</b>	
	<b>Semester</b>	<b>Fresh</b>	<b>Existing</b>	<b>Total</b>	<b>Fresh</b>	<b>Existing</b>	<b>Fresh</b>	<b>Existing</b>
	Spring 2023	0	0	20	105,480		2,109,600	0
	Fall 2023	20	20	40	105,480	69,480	2,109,600	1389600
	<b>Total first year revenue</b>							
6	<b>Expected Earnings for the Next Three Years (B6):</b>							
		<b>Students</b>			<b>Fee per student</b>		<b>Total Fee</b>	
	<b>Semester</b>	<b>Fresh</b>	<b>Existing</b>	<b>Total</b>	<b>Fresh</b>	<b>Existing</b>	<b>Fresh</b>	<b>Existing</b>
	Spring 2024	25	40	65	105,480	69,480	2,637,000	2779200
	Fall 2024	25	65	90	105,480	69,480	2,637,000	4516200
	Spring 2025	25	90	115	105,480	69,480	2,637,000	6253200
	Fall 2026	30	175	205	105,480	69,482	3,164,400	12159350
7	<b>Total Estimated Salaries of all Additional Human Resources per annum (B7):</b>							
		<b>Posts</b>	<b>Qualification</b>			<b>Per Semester Salary (6 months)</b>		
	<b>Semester</b>	<b>Regular FM</b>	<b>PhD</b>	<b>MS</b>				
	Spring 2023	0	0	0		633600		
	Fall 2023	0	0	0		1267200		
	Spring 2024	0	0	0		1900800		
	Fall 2024	0	0	0		2534400		
	Spring 2025	0	0	0		3,168,000		

	Fall 2025	0	0	0	3,801,600
	Spring 2026	0	0	0	4,435,200
	Fall 2026	0	0	0	5,068,800
Per hour rate 2200, Per course credit hours 48, Total courses per semester 6, <b>Per semester expense 633,600, Annual Salary (63360+1267200 = 19,00,800)</b>					
8	<b>Cost of Additional Laboratory Equipment/Tools (B8):</b>	N/A			
9	<b>Cost of Additional Classrooms (B9):</b>	N/A			
10	<b>Cost of Additional Books, Subscription &amp; Memberships to on-line Sites/Repositories (B10):</b> Year 2: Rs. 100,000/-				
1	<b>Off-Site rental Expenses and Cost of other Fixtures (B11):</b>	N/A			
1	<b>Miscellaneous Expenses required for Starting the Programme (B12):</b> Advertisement: Rs. 105,000/- Printing & Stationery: Rs. 52,500/- Admin Cost: Nil Outreach visit: Rs. 52,500/-, Maintenance Rs. 200,000, Utilities Rs. 105,000, Total: Rs. 515,000/- Working: Every expenses will be increased with 10% inflation. 2nd Semester Working: Every expenses will be increased with 10% inflation				
1	<b>Annual Recurring Expenditures in Subsequent Years (B13):</b> Salaries: Rs. 1,900,800 (per annum) Advertisement: Rs. 105,000/- Printing & Stationery: Rs. 52,500/- Admin Cost: Nil Outreach visit: Rs. 52,500/-, Maintenance Rs. 200,000, Utilities Rs. 105,000,				
1	<b>Total Cost of the Programme (B14):</b> [Add B(7) to B(12)] Rs. 2,415, 800/-				
4					
1	<b>Net Cost of the Programme (B15):</b> [Subtract B(1) from B(14)] Rs.-/-				
5					
1	<b>Net Earnings in First Year (B16):</b> [Subtract B(15) from B(5)] Rs. 31,93,000/-				
6					

**Roadmap: BS (Business Analytics)  
Business Studies, BUKC**

<b>Semester-I</b>							
<b>Sr. No.</b>	<b>Pre-requisite Course Code</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hours</b>	<b>Theory</b>	<b>Lab (If any)</b>	
1		ENG-105	Functional English 1	3	3		
2		QTM-101	Business Maths I	3	3		
3		BA-101	Business Economics I	3	3		
4		MIS-161	IT in Business	3	2	1	
5		MGT-111	Principles of Management	3	3		
6		BA-102	Introduction to Technology Management	3	3		
<b>Total Credit Hours in Semester - I : 18 credit hours</b>							
<b>Semester-II</b>							
<b>Sr. No.</b>	<b>Pre-requisite Course Code</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hours</b>	<b>Theory</b>	<b>Lab (If any)</b>	
7	ENG-105	ENG -106	Functional English - II	3	3		
8	QTM-101	QTM-120	Business Maths II (Calculus)	3	3		
9		QTM-110	Business Statistics	3	3		

10		ISL-201/SOC-360	Islamic Socio Economic Studies/Ethics	3	3	
11		BA-103	Programming Fundamentals	3	2	1
12	MIS-161	BA-104	Fundamentals of Business Analytics	3	2	1

**Total Credit Hours in Semester - II : 18 credit hours**

<b>Semester-III</b>						
<b>Sr. No.</b>	<b>Pre-requisite Course Code</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hours</b>	<b>Theory</b>	<b>Lab (If any)</b>
13	BA-101	BA -201	Business Economics II	3	3	
14	QTM-120	GSC 121	Linear Algebra	3	3	
15		MKT-110	Principles of Marketing	3	3	
16		ACC-110	Accounting for Business Analytics	3	3	
17		BA-202	Data Structure and Business Application	3	2	1
18		PSY-101/HSS-402	Introduction to Psychology/Sociology	3	3	

**Total Credit Hours in Semester - III : 18 credit hours**

<b>Semester-IV</b>						
<b>Sr. No.</b>	<b>Pre-requisite Course Code</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hours</b>	<b>Theory</b>	<b>Lab (If any)</b>
19	MGT-111	HRM -353	Human Resource Management	3	3	
20	ACC-110	FIN-201	Fundamentals of Finance	3	3	
21	QTM-110	QTM -205	Statistical Interference and Quantitative Research	3	2	1
22		CSC 419	Fundamentals of Machine Learning	3	2	1
23		BA-203	Database Management System	3	2	1
24		HSS-403	Pakistan and Geo-politics Studies	3	3	

**Total Credit Hours in Semester - IV : 18 credit hours**

<b>Semester-V</b>						
<b>Sr. No.</b>	<b>Pre-requisite Course Code</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hours</b>	<b>Theory</b>	<b>Lab (If any)</b>
25	MGT-111	MGT-626	Project Management	3	3	
26		CSC 452	Business Data and Text Mining	3	2	1
27		MGT-363	Entrepreneurship	3	3	
28		BA-301	E-Commerce	3	2	1
29		BA-302	Web Application Development	3	2	1
30		BA-303	Digital Analytics	3	2	1

**Total Credit Hours in Semester - V : 18 credit hours**

<b>Semester-VI</b>						
<b>Sr. No.</b>	<b>Pre-requisite Course Code</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Credit Hours</b>	<b>Theory</b>	<b>Lab (If any)</b>
31		RMT-240	Research Methods and Techniques	3	3	
32		SCM 306	Fundamentals of Operations and Supply Chain Management	3	3	
33		BA-304	Decision Science for Business	3	2	1
34		SOC - 212	Critical and Logical Thinking	3	3	
35		CSC 412	Artificial Intelligence	3	2	1
36		CLE 401	Foreign Language (Chinese Language)	3	3	

**Total Credit Hours in Semester - VI : 18 credit hours**

Semester-VII							
Sr. No.	Pre-requisite Course Code	Course Code	Course Title		Credit Hours	Theory	Lab (If any)
37		BA-401	Legal and Ethical Issues in Business Analytics		3	3	
38		BA-402	Predictive Analysis		3	2	1
39		BA-403	Capstone Project I		3	2	1
40			Elective -I		3	2	1
41			Elective -III		3	2	1
<b>Total Credit Hours in Semester - VII : 15 credit hours</b>							
Semester-VIII							
Sr. No.	Pre-requisite Course Code	Course Code	Course Title		Credit Hours	Theory	Lab (If any)
42		BA-404	Information Security and System Auditing		3	2	1
43		BA-405	Data Management and Visualization		3	2	1
44		BA-406	Capstone Project II		3	2	1
45			Elective -III		3	2	1
46			Elective -IV		3	2	1
<b>Total Credit Hours in Semester - VIII : 15 credit hours</b>							
<b>Total Credit Hours in Programme</b>					138	116	22
All semesters are of 18 credit hours							
Total credit hours in Programme are 138.							
BA stands for Business Analytics							

SR. #	COURSE CODE	COURSE TITLE	CR. HRS	SUGGESTED BY EXAMS DTE.	Remarks
1	ENG-105	Functional English 1	3	ENG 101 has been proposed for the same course title vide Appendage 4318 to draft minutes of 43 <sup>rd</sup> ACM. The same may be considered for adoption.	Course code is accepted as per suggestion.
2	QTM-101	Business Mathematics I	3	QTM 101 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 106 on CCHB 2022	The course code and course title already exist in BBA Programme therefore the same code and course title has been proposed for BS Business Analytics.
3	BA-101	Business Economics I	3	Proposed new course code 'BSB 101'	Suggestion Accepted (BSB 101)
4	MIS-161	IT in Business	3	MIS 161 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 50 on CCHB 2022	The course code and course title already exist in BBA Programme therefore the same code and course

					title has been proposed for BS Business Analytics.
5	MGT-111	Principles of Management	3	MGT 111 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 54 on CCHB 2022	The course code and course title already exist in BBA Programme therefore the same code and course title has been proposed for BS Business Analytics.
6	BA-102	Introduction to Technology Management	3	Proposed new course code 'BSB 102'	Suggestion Accepted
7	QTM-120	Business Mathematics II	3	QTM 102 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 41 on CCHB 2022	Course code (QTM 102) is accepted as per suggestion.
8	QTM-110	Business Statistics	3	QTM 110 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 41 on CCHB 2022	The course code and course title already exist in BBA Programme therefore the same code and course title has been proposed for BS Business Analytics.
9	BA-104	Fundamentals of Business Analytics	3	Proposed new course code 'BSB 103'	Suggestion Accepted
10	BA -201	Business Economics II	3	Proposed new course code 'BSB 201'	Suggestion Accepted
11	MKT-110	Principles of Marketing	3	MKT 110 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 54 on CCHB 2022	The course code and course title already exist in BBA Programme therefore the same code and course title has been proposed for BS Business Analytics.
12	ACC-110	Accounting for Business Analytics	3	Proposed new course code 'BSB 202'	Suggestion Accepted
13	BA-202	Data Structure and Business Application	3	Proposed new course code 'BSB 203'	Suggestion Accepted
14	HRM -353	Human Resource Management	3	HRM 353 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 61 on	The course code and course title already exist in BBA Programme

				CCHB 2022	therefore the same code and course title has been proposed for BS Business Analytics.
15	FIN-201	Fundamentals of Finance	3	FIN 201 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 61 on CCHB 2022	The course code and course title already exist in BBA Programme therefore the same code and course title has been proposed for BS Business Analytics.
16	QTM -205	Statistical Interference and Quantitative Research	3	QTM 205 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 57 on CCHB 2022	The course code and course title already exist in BBA Programme therefore the same code and course title has been proposed for BS Business Analytics.
17	BA-203	Database Management	3	RGS 206 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 30 on CCHB 2022	A new course code of BSB-204 is proposed for this course as the course cannot be mapped with the same contents template in geo Sciences.
18	HSS-403	Pakistan and Geo-politics Studies	3	Proposed new course code 'BSB 401'	Suggestion Accepted
19	MGT-626	Project Management and Evaluation	3	MGT 626 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 54 on CCHB 2022	MGT 401 course code is proposed as the same course code and title is used by BS (E&F) Programme as per 32nd ACM
20	CSC 452	Business Data and Text Mining	3	Proposed new course code 'BSB 401'	Suggestion Accepted
21	MGT-363	Entrepreneurship	3	MGT 363 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 45 on CCHB 2022	The course code and course title already exist in BBA Programme therefore the same code and course title has been proposed for BS Business Analytics.

22	BA-301	E-Commerce	3	ITB 471 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 13 on CCHB 2022	MIS 460 course code is proposed as the same course code and title is used by BBA Programme.
23	BA-302	Web Application Development	3	MIS 672 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 59 on CCHB 2022	A new course code and title may be adopted as BSB 302 "Web Development".
24	BA-303	Digital Analytics	3	MKT 605 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 43 on CCHB 2022	The course title can be changed as Digital Marketing Analytics with a new course code BSB 303.
25	RMT-240	Research Methods and Techniques	3	RMT 240 already allocated to the same course title vide 26 <sup>TH</sup> ACM and page # 55 on CCHB 2022	The course code and course title already exist in BBA Programme therefore the same code and course title has been proposed for BS Business Analytics.
26	SCM 306	Fundamentals of Operations and Supply Chain Management	3	Proposed new course code 'BSB 402'	Suggestion Accepted
27	BA-304	Decision Science for Business	3	Proposed new course code 'BSB 403'	Suggestion Accepted
28	SOC - 212	Critical and Logical Thinking	3	Proposed new course code 'BSB 404'	Suggestion Accepted
29	BA-401	Legal and Ethical Issues in Business Analytics	3	Proposed new course code 'BSB 405'	Suggestion Accepted
30	BA-402	Predictive Analysis	3	Proposed new course code 'BSB 406'	Suggestion Accepted
31	BA-404	Information Security and System Auditing	3	Proposed new course code 'BSB 407'	Suggestion Accepted
32	BA-405	Data Management and Visualization	3	Proposed new course code 'BSB 408'	Suggestion Accepted

**BS (BUSINESS ANALYTICS)****COURSES DESCRIPTIONS****Functional English I**

The purpose of this course is to develop the English-language proficiency of prospective elementary school teachers and to help them become confident in reading, writing, speaking, and listening to the English language. Instead of teaching grammar in isolation and only at sentence level, this course is based on developing the language abilities of Student Teachers through an integrated approach that provides opportunities to develop their listening, speaking, reading, and writing skills. With a focus on social interaction, the course draws specific attention to the accurate use of structures, improvement of pronunciation, and development of active vocabulary in descriptive, narrative, and instructional texts.

**Course Contents:**

Parts of speech and use of articles

Sentence structure, active and passive voice

Analysis of phrase, clause and sentence structure

Transitive and intransitive verbs

**Learning Outcomes:**

After having completed this course successfully, participants will be able to:

Practice correct English in speaking and writing.

Comply even complex English language texts.

Show sound vocabulary and skills to use English in professional life.

**Reference Material:**

P. C. Wren & H. Martin "High School English Grammar & Composition"

Colin W. Davis & Andrew J. Watts New Expressway For English 1 (New Edition)

**Business Mathematics**

It is designed to introduce the basic mathematical skills needed to understand, analyses, and solve mathematical problems encountered in business and finance, and in investment decision making. There are no prerequisites for MATH 244; however, students are expected to be able to perform the basic arithmetic operations—addition, subtraction, multiplication and division -with ease, and to have some familiarity with fractions, with algebraic operations, and with some basic mathematical principles.

**Course Contents:**

It will cover Mathematical Operations, Basic Algebra, Ratios, Proportions, and Percentages, Marketing Mathematics, Applications of Linear Equations, Data Analysis and Statistics, Principles of Simple Interest, Principles of Compound Interest, Annuities, Loans and Mortgages, Bonds and Sinking Funds & Investment Decisions.

**Learning Outcomes:**

After having completed this course successfully, participants will be able to:

Demonstrate mastery of mathematical notions that are foundational in business mathematics, including functions, linear systems and their solutions.

Use ratio, proportion and percent in the solution of business problems.

Solve business problems involving commercial discount, markup and markdown

**Reference Material:**

Business Mathematics & Statistics, Prof. Miraj Din Mirza (2004)

Jerome, F. Ernest, and Tracy Worswick. Business Mathematics in Canada, 9th Edition. Toronto, ON: McGraw-Hill Ryerson, 2017.

## **Business Economics**

It is an introductory course that teaches the fundamentals of microeconomics. This course introduces microeconomic concepts and analysis, supply and demand analysis, theories of the firm and individual behavior, competition and monopoly, and welfare economics. Students will also be introduced to the use of microeconomic applications to address problems in current economic policy throughout the semester.

**Course Contents:**

- Consumer behavior
- Theory of the firm
- Competitive market equilibrium
- Monopoly
- Factor markets
- General equilibrium theory
- Welfare economics

**Learning Outcomes:**

After having completed this course successfully, participants will be able to:

- Describe fundamental economic theories, models and concepts like economic scarcity and resource allocation
- Understand how price elasticity and income elasticity impact demand, and survey the forms of government intervention used to influence supply
- Recognize the significance of consumer choice in economics, and examine theories explaining consumer preference and decision making
- Assess the impact of budget lines, normal and superior goods, the rate of transformation, and other factors on supply and demand
- Consider how an assessment of fixed, variable, and total costs is used to make short-run production decisions; differentiate these costs from those associated with long-run production

**Reference Material:**

Perloff, Jeffrey M. *Microeconomics*. 5th ed. Addison Wesley, 2008.

## **IT in Business**

This course is appropriate for any student interested in using computer applications in an academic, professional, or personal setting. It provides an introduction to word processing, electronic spreadsheet, and database management software for Decision Making.

**Course Contents:**

- Word processing software
- Presentation software
- Spreadsheet software
- Improving productivity using IT

**Learning Outcomes:**

After having completed this course successfully, participants will be able to:

- Demonstrate knowledge of basic system software and application software;
- Identify and apply the steps involved in analyzing Information Technology (IT) solutions;
- Make and/or modify files appropriately through the use of office productivity tools: word processor, spreadsheet, presentation, and database.

**Reference Material:**

Introduction to information technology by V. Rajaraman

## **Principles of Management**

Students examine a basic framework for understanding the role and functions of management and an explanation for the principles, concepts and techniques that can be used in carrying out these functions.

### **Course Contents:**

The four key management functions: planning, organizing, leading and controlling

Organization design and evolution; managing change and innovation

Leadership, supervision, teams and conflict management

### **Learning Outcomes:**

After having completed this course successfully, participants will be able to:

Examine management principles and concepts as they apply to business situations.

Classify the steps of problem solving and decision making in organizations.

Recognize challenges in the accomplishment of good managerial performance.

Illustrate how business ethics and social responsibility apply to organizations.

### **Reference Material:**

Management (Recommended Book), Robbins & Mary (11th ed)

## **Introduction to Technology Management**

This course provides an introduction to the principles and practices of technology management, covering topics such as technology strategy, technology innovation, technology adoption, and technology governance. Technology is often seen as the engine of economic growth. Technology management is therefore an important function within any organization. Technology is present over the whole lifecycle of innovation projects and its activities. The typical technology management activities are Identification, Selection, Acquisition, Learning, Exploitation and Protection. Organizations should be able to master this portfolio of technology management activities to be competitive, especially in a technology and innovation environment. The module therefore addresses themes such as Technology Intelligence and Scanning, Technology Forecasting, Emerging Technologies, Technological capability assessment and development, R&D Management, Technology Transfer, Technology Planning, and Road mapping and Technology Protection.

### **Course Contents:**

Importance of technology management in today's fast-paced and constantly evolving business environment.

Foster a culture of innovation, identify new product and service opportunities, and develop effective processes for prototyping, testing, and scaling new technologies.

Emerging Technologies latest trends and technologies in the field of technology management, including artificial intelligence, blockchain, and the Internet of Things.

Project Management: Students will learn how to effectively manage technology projects, including project planning, resource allocation, risk management, and project evaluation

Ethical and social implications of technology, including privacy, security, and digital divide issues.

Technology Adoption assess the impact of technology on organizational processes and structures, manage change and resistance, and ensure that technology investments deliver measurable benefits.

### **Learning Outcomes:**

After having completed this course successfully, participants will be able to:

To assess the range, scope, and complexity of the phenomena, issues, and problems related to technology management of interdisciplinary, inter-organizational projects/systems

To discuss various problems where particular managerial decisions need to be taken such as technology acquisition and transfer

How to reduce new product development time and costs;

- To use a range of tools used in technology creation, search, assessment, selection, implementation, utilization, and strategy;
- To describe the primary tasks and decisions that are required to turn a technological innovation into a sound business opportunity;
- To assess how to integrate engineering and business knowledge in running business successfully.

#### **Reference Material:**

Scott Shane (Editor) The Handbook of Technology and Innovation Management  
 Managing Technology and Innovation Edited by: Robert M. Verburg, J. Roland Ortt & Willemijn M. Dicke Publisher: Routledge-Taylor & Francis Group ISBN: 10: 415-36229-6 or 13: 9-78-0-415-36229 2006.

### **Functional English II**

Functional English Level 2 is designed for intermediate-level English language learners who wish to improve their English language skills for everyday use. The course focuses on building students' vocabulary, grammar, and communication skills through various exercises and activities. The course also aims to develop critical thinking, reading, and writing skills necessary for academic and professional success.

#### **Learning Outcomes**

- Upon completion of this course, students will be able to:
- Communicate effectively in English in a range of everyday situations
- Use a wide range of vocabulary in both spoken and written communication
- Demonstrate a solid understanding of English grammar and syntax
- Read and comprehend a variety of texts, including news articles, short stories, and academic texts
- Write clear and concise paragraphs and essays on a variety of topics
- Demonstrate an awareness of cultural differences and norms in English-speaking countries

#### **Course Contents**

- Vocabulary building and review
- Review of English grammar, including verb tenses, adjectives, and adverbs
- Reading comprehension strategies
- Writing paragraphs and essays
- Speaking and listening skills in everyday situations
- Cultural awareness and sensitivity

#### **Reference Reading Materials**

- "The Oxford Essential Dictionary of English" by Oxford Dictionaries
- "The Grammar Bible" by Michael Strumpf and Auriel Douglas
- "Reading and Writing in English" by Catherine E. Kean
- "English for Everyone: Level 2, Beginner Course Book" by DK
- "Culture Shock! United States: A Guide to Customs and Etiquette" by Esther Wanning

### **Business Math-II (Calculus)**

#### **Course Description:**

Business Math Level 2 (Calculus) is designed for students who have a good understanding of basic mathematical concepts and wish to develop their knowledge of calculus for business applications. The course covers fundamental concepts such as derivatives and integrals, as well as applications of calculus in business and economics. The course also emphasizes problem-solving skills, critical thinking, and mathematical reasoning.

#### **Learning Outcomes**

- Upon completion of this course, students will be able to:
- Understand the concepts of derivatives and integrals and their applications in business and economics
- Use calculus to analyze and solve problems in business and economics

Interpret and apply mathematical formulas and concepts in real-world situations  
 Demonstrate problem-solving skills through mathematical reasoning and critical thinking  
 Use appropriate technology and software to perform calculations and solve problems

### **Course Contents**

Functions and their derivatives  
 Techniques of differentiation  
 Applications of differentiation in business and economics  
 Integrals and their applications  
 Techniques of integration  
 Applications of integration in business and economics  
 Differential equations and their applications  
 Optimization and its applications in business and economics

### **Reference Reading Materials**

"Calculus for Business, Economics, Life Sciences, and Social Sciences" by Raymond A. Barnett, Michael R. Ziegler, and Karl E. Byleen  
 "Calculus: An Intuitive and Physical Approach" by Morris Kline  
 "Business Calculus" by Dale Hoffman and Gerald Bradley  
 "Applied Calculus for Business, Economics, and the Social and Life Sciences" by Laurence Hoffmann and Gerald Bradley  
 "Calculus and Its Applications" by Marvin L. Bittinger, David J. Ellenbogen, and Scott Surgent

## **Business Statistics**

### **Course Description:**

Business Statistics is designed for students who wish to learn statistical methods for business decision-making. The course covers fundamental concepts such as probability, sampling, hypothesis testing, regression analysis, and time series analysis. The course also emphasizes the use of statistical software for data analysis, interpretation, and visualization.

### **Learning Outcomes**

Upon completion of this course, students will be able to:

Understand the basic principles of statistical methods and their applications in business decision-making  
 Collect, organize, and analyze data using statistical software  
 Interpret and communicate statistical results to support business decision-making  
 Demonstrate problem-solving skills through statistical reasoning and critical thinking  
 Use appropriate statistical techniques to make predictions and forecasts

### **Course Contents**

Introduction to statistical methods  
 Descriptive statistics and data visualization  
 Probability and probability distributions  
 Sampling and sampling distributions  
 Estimation and hypothesis testing  
 Regression analysis and correlation  
 Time series analysis and forecasting  
 Non-parametric statistics

### **Reference Reading Materials**

"Business Statistics: A First Course" by David M. Levine, Kathryn A. Szabat, and David F. Stephan  
 "Statistics for Business and Economics" by Paul Newbold, William L. Carlson, and Betty Thorne  
 "Statistics for Management and Economics" by Gerald Keller  
 "Applied Statistics for Business and Economics" by Allen Webster  
 "Practical Statistics for Business and Economics" by Andrew Siegel

## **Islamic Socio-Economic Studies/Ethics**

### **Course Description:**

This course provides an overview of Islamic socio-economic studies and ethics, examining how Islam approaches issues related to economics, finance, business, and society. The course explores the values and principles that underlie Islamic economics and examines their practical applications in contemporary societies.

### **Learning Outcomes**

By the end of the course, students will be able to:

Understand the foundations and principles of Islamic socio-economic studies and ethics.

Analyze the role of Islamic economics in contemporary societies.

Evaluate the ethical implications of Islamic economics in business and finance.

Apply the principles of Islamic economics to practical socio-economic problems.

### **Course Contents**

Definition and scope of Islamic socio-economic studies

Historical development of Islamic economics

Basic principles of Islamic economics

Comparison with other economic systems

Overview of Islamic finance and banking

Prohibition of interest and alternative financial instruments

Islamic banking operations and products

Issues and challenges in Islamic finance and banking

Overview of Islamic business ethics

The role of ethics in business

Ethics in the context of Islamic business

Case studies of ethical issues in Islamic business

The concept of social welfare in Islam

Zakat and other forms of Islamic charity

Waqf and its role in social welfare

Contemporary applications of Islamic social welfare

Overview of Islamic economic development

Principles and strategies of Islamic economic development

Islamic microfinance and its role in economic development

Challenges and opportunities in Islamic economic development

### **Reference Reading Material**

Khan, M. Fahim. (2016). *Islamic Banking and Finance: Concepts, Principles, Practice*. Edward Elgar Publishing.

Chapra, M. Umer. (2000). *The Future of Economics: An Islamic Perspective*. The Islamic Foundation.

Kamali, Mohammad Hashim. (2008). *Principles of Islamic Jurisprudence*. The Islamic Texts Society.

Rahman, Fazlur. (1999). *Islam and Modernity: Transformation of an Intellectual Tradition*. University of Chicago Press.

Siddiqi, Muhammad Nejatullah. (2006). *Issues in Islamic Banking and Finance: Islamic Economics, Banking and Finance, Investments, Takaful and Financial Planning*. Islamic Book Trust.

## Programming Fundamentals

### **Course Description:**

This course provides an introduction to Programming fundamentals, covering the basics of computer Programming concepts and principles. The course aims to help students develop fundamental Programming skills, including problem-solving, algorithm design, and implementation, using a Programming language such as Python or Java.

### **Learning Outcomes:**

By the end of the course, students will be able to:

Understand the fundamental principles of computer Programming

Design and implement algorithms to solve simple problems

Use Programming concepts such as variables, data types, loops, and functions

Write and debug simple Programmes

Use Programming tools and resources to enhance their coding skills

### **Course Contents**

Module 1: Introduction to Programming

Introduction to Programming concepts

Overview of Programming languages

Setting up a Programming environment

Basic syntax and semantics of a Programming language

Module 2: Programming Basics

Variables and data types

Input and output operations

Control structures: decision-making and loops

Basic data structures: arrays, lists, and tuples

Module 3: Functions and Modules

Defining and using functions

Modular Programming

Libraries and modules

Introduction to object-oriented Programming

Module 4: File Handling and Exception Handling

Reading and writing files

Exception handling

Debugging techniques

Module 5: Advanced Topics

Recursion and recursive functions

Sorting and searching algorithms

Graphical User Interfaces (GUI) Programming

Web development basics

### **Reference Reading Material:**

Zelle, J. M. Python Programming: An Introduction to Computer Science

Savitch, W. J. Java: An Introduction to Problem Solving and Programming

Lutz, M. Learning Python

Horton, I. Beginning Python: From Novice to Professional

VanderPlas, J. Python Data Science Handbook: Essential Tools for Working with Data

## Fundamentals of Business Analytics

**Course Description:**

This course provides an introduction to the fundamentals of business analytics, including data collection, data analysis, and data visualization techniques. The course aims to help students understand how to use data to solve business problems and make data-driven decisions.

**Learning Outcomes:**

By the end of the course, students will be able to:

- Understand the role of business analytics in decision-making
- Collect, manage, and analyze data using statistical techniques
- Use data visualization tools to communicate insights and findings
- Apply business analytics techniques to solve business problems
- Understand the ethical considerations of data analysis

**Course Contents:**

- Introduction to Business Analytics
- Introduction to business analytics and its importance
- Data types, sources, and formats
- Data collection and management techniques
- Data Analysis Techniques
- Descriptive statistics
- Inferential statistics and hypothesis testing
- Regression analysis and correlation
- Data Visualization
- Principles of data visualization
- Common visualization tools and techniques
- Dashboard design and development
- Applications of Business Analytics
- Marketing analytics
- Financial analytics
- Operations analytics
- Human resources analytics
- Ethics and Data Privacy
- Ethical considerations in data collection and analysis
- Legal frameworks for data privacy and protection
- Best practices for ethical data management

**Reference Reading Material:**

- Sharda, R., Delen, D., & Turban, E. (2020). *Business Intelligence and Analytics: Systems for Decision Support* (11th edition). Pearson Education Limited.
- Provost, F., & Fawcett, T. (2013). *Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking*. O'Reilly Media, Inc.
- Cokins, G. (2019). *Predictive Business Analytics: Forward-Looking Capabilities to Improve Business Performance*. Wiley.
- Evans, J. R. (2020). *Business Analytics* (3rd edition). Pearson Education Limited.
- Wickham, H. (2016). *ggplot2: Elegant Graphics for Data Analysis*. Springer International Publishing.

## Business Economics II

**Course Description:**

This course provides an in-depth study of micro and macroeconomic concepts, focusing on their applications in the business world. The course aims to help students develop a critical understanding of economic theory and its relevance to business decision-making.

**Learning Outcomes:**

By the end of the course, students will be able to:

Understand the basic principles of micro and macroeconomics

Apply economic concepts to analyze business problems

Evaluate the impact of government policies on business operations

Analyze market structures and their implications for businesses

Understand the role of international trade in the global economy

**Course Contents:**

Microeconomic Concepts

Supply and demand analysis

Production and cost analysis

Market structures: perfect competition, monopoly, oligopoly, and monopolistic competition

Pricing strategies and tactics

Macroeconomic Concepts

Aggregate demand and supply analysis

Business cycles and economic growth

Monetary and fiscal policies

International trade and exchange rates

Managerial Economics

Decision-making under uncertainty

Cost-benefit analysis

Game theory and strategic decision-making

Risk management and insurance

Government Policies and Business Environment

Government regulation and its impact on business operations

Public goods and externalities

Taxation policies and their effects on business decisions

Environmental regulations and sustainability

International Business Environment

Globalization and its impact on business operations

International trade and its importance for businesses

Exchange rate fluctuations and their effects on international trade

International business strategy and entry modes

**Reference Reading Material:**

Mankiw, N. G. (2018). Principles of Microeconomics (8th edition). Cengage Learning.

Samuelson, P. A., & Nordhaus, W. D. (2017). Economics (20th edition). McGraw-Hill Education.

Salvatore, D. (2018). Managerial Economics in a Global Economy (8th edition). Oxford University Press.

Hill, C. W. L., & Hult, G. T. M. (2019). International Business: Competing in the Global Marketplace (12th edition). McGraw-Hill Education.

Pugel, T. A. (2016). International Economics (16th edition). McGraw-Hill Education.

**Linear Algebra****Course Description:**

This course provides an introduction to the basic concepts of linear algebra, including vectors, matrices, and systems of linear equations, determinants, and eigenvalues. The course aims to help students develop a solid understanding of linear algebra and its applications in various fields such as engineering, physics, computer science, and economics.

**Learning Outcomes:**

By the end of the course, students will be able to:

Understand the fundamental concepts of linear algebra

Apply matrix operations to solve systems of linear equations

Analyze linear transformations and their properties

Compute determinants and eigenvalues of matrices

Apply linear algebra concepts to real-world problems

**Course Contents:**

Vectors and Matrices

Vector spaces and subspaces

Linear combinations and span of vectors

Matrix operations: addition, multiplication, and inversion

Linear transformations and their properties

Systems of Linear Equations

Gaussian elimination and row reduction

Reduced row echelon form

Homogeneous and non-homogeneous systems of linear equations

Matrix inversion and its applications

Determinants and Eigenvalues

Properties and computation of determinants

Cramer's rule and its applications

Eigenvectors and eigenvalues

Diagonalization of matrices

Applications of Linear Algebra

Linear regression and curve fitting

Principal component analysis

Fourier series and transforms

Optimization problems

Advanced Topics

Orthogonality and inner product spaces

Singular value decomposition

Markov chains and their applications

Graph theory and network analysis

**Reference Reading Material:**

Lay, D. C., Lay, S. R., & McDonald, J. (2015). Linear Algebra and Its Applications (5th edition). Pearson.

Strang, G. (2016). Introduction to Linear Algebra (5th edition). Wellesley-Cambridge Press.

Anton, H., & Rorres, C. (2010). Elementary Linear Algebra with Applications (10th edition). John Wiley & Sons.

Hill, R., & Kolman, B. (2011). Elementary Linear Algebra (9th edition). Pearson.

Meyer, C. D. (2000). Matrix Analysis and Applied Linear Algebra. Society for Industrial and Applied Mathematics.

## Principles of Marketing

**Course Description:**

This course provides an overview of the principles and practices of marketing, including market research, product development, promotion, pricing, and distribution. The course aims to help students develop a solid understanding of marketing and its importance in creating and delivering value to customers.

**Learning Outcomes:**

By the end of the course, students will be able to:

Understand the basic principles of marketing

Conduct market research and analyze consumer behavior

Develop and execute marketing strategies

Evaluate the effectiveness of marketing campaigns  
 Understand the ethical and social responsibility issues in marketing

**Course Contents:**

- : Introduction to Marketing
- Definition and scope of marketing
- The marketing concept and customer value
- Marketing mix and the 4Ps
- Market Research and Consumer Behavior
- Market research methods and techniques
- Data analysis and interpretation
- Consumer behavior and decision-making process
- Segmentation, targeting, and positioning
- Product Development and Branding
- Product development process
- Product life cycle and its stages
- Branding and brand equity
- Packaging, labeling, and warranties
- Promotion and Communication
- Advertising and public relations
- Sales promotion and personal selling
- Digital marketing and social media
- Integrated marketing communication
- Pricing and Distribution
- Pricing strategies and tactics
- Price elasticity and demand
- Channel of distribution and logistics
- Retailing and e-commerce

**Reference Reading Material:**

- Kotler, P., & Armstrong, G. (2017). Principles of Marketing (17th edition). Pearson.
- Lamb, C. W., Hair, J. F., & McDaniel, C. (2019). Essentials of Marketing (8th edition). Cengage Learning.
- Ferrell, O. C., Hartline, M. D., & Lucas, G. H. (2019). Marketing Strategy (7th edition). Cengage Learning.
- Solomon, M. R., Marshall, G. W., & Stuart, E. W. (2019). Marketing: Real People, Real Choices (10th edition). Pearson.
- Belch, G. E., & Belch, M. A. (2018). Advertising and Promotion: An Integrated Marketing Communications Perspective (11th edition). McGraw-Hill Education.

### Principles of Accounting

**Course Description:**

This course provides an introduction to the principles and practices of accounting, including financial statements, recording transactions, analyzing financial data, and budgeting. The course aims to help students develop a solid understanding of accounting and its role in business decision-making.

**Learning Outcomes:**

By the end of the course, students will be able to:

- Understand the basic principles and concepts of accounting
- Record and analyze business transactions
- Prepare and interpret financial statements
- Apply accounting information for decision-making
- Understand the ethical and social responsibility issues in accounting

**Course Contents:**

Introduction to Accounting  
 Definition and scope of accounting  
 Accounting principles and concepts  
 Accounting equation and its components  
 Types of business organizations  
 Recording Transactions  
 The accounting cycle and double-entry system  
 Journal entries and posting to ledger accounts  
 Trial balance and adjusting entries  
 Closing entries and the post-closing trial balance  
 Financial Statements  
 Income statement and its components  
 Statement of retained earnings  
 Balance sheet and its components  
 Cash flow statement and its importance  
 Analysis of Financial Data  
 Ratio analysis and its significance  
 Horizontal and vertical analysis  
 Trend analysis and forecasting  
 Interpretation of financial statements  
 Budgeting and Managerial Accounting  
 Budgeting process and types of budgets  
 Variance analysis and control  
 Cost-volume-profit analysis  
 Managerial accounting and decision-making

**Reference Reading Material:**

Weygandt, J. J., Kimmel, P. D., & Kieso, D. E. (2018). *Financial Accounting: Tools for Business Decision-Making* (8th edition).

**Data Structure and Business Applications****Course Description:**

This course provides an overview of data structures and their applications in business. Students will learn how to organize and manipulate data effectively for various business applications, such as data analysis, data mining, and data visualization. The course will cover topics such as arrays, linked lists, trees, graphs, and hashing, and their applications in business. Students will also learn about algorithm design and analysis techniques to solve business problems.

**Learning Outcomes:**

By the end of this course, students will be able to:  
 Understand the fundamental concepts of data structures and their applications in business  
 Analyze business problems and select appropriate data structures to solve them  
 Implement data structures and algorithms using Programming languages  
 Evaluate the efficiency and correctness of algorithms  
 Use data structures to store and manipulate data for business applications, such as data analysis, data mining, and data visualization

**Course Contents:**

Introduction to Data Structures and Algorithms  
 Overview of data structures and algorithms  
 Time and space complexity analysis  
 Introduction to algorithm design techniques  
 Arrays and Linked Lists

Array implementation and operations  
Singly and doubly linked list implementation and operations  
Applications of arrays and linked lists in business  
Binary tree implementation and operations  
Binary search tree implementation and operations  
Balanced search trees  
Applications of trees in business  
Graphs  
Graph implementation and operations  
Graph traversal algorithms  
Shortest path algorithms  
Hash table implementation and operations  
Collision resolution techniques  
Applications of hashing in business  
Algorithm Design and Analysis  
Divide and conquer algorithms  
Greedy algorithms  
Dynamic Programming algorithms  
Backtracking algorithms  
Applications of algorithm design techniques in business  
Business Applications of Data Structures and Algorithms  
Data analysis using data structures and algorithms  
Data mining using data structures and algorithms  
Data visualization using data structures and algorithms  
Applications of data structures and algorithms in business intelligence

**Reference Reading Material:**

Data Structures and Algorithms in Python by Michael T. Goodrich, Roberto Tamassia, and Michael H. Goldwasser  
Introduction to Algorithms, Third Edition by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein  
Data Structures and Algorithm Analysis in C++, Fourth Edition by Mark Allen Weiss  
The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling by Ralph Kimball and Margy Ross  
Data Mining: Concepts and Techniques, Third Edition by Jiawei Han, Micheline Kamber, and Jian Pei  
Visualizing Data: Exploring and Explaining Data with the Processing Environment by Ben Fry

**Introduction to Psychology**

**Course Description:**

This course provides an introduction to the basic principles and concepts of psychology. It covers topics such as the history of psychology, research methods, perception, learning, motivation, emotion, personality, social psychology, and abnormal psychology. The course also includes critical thinking and problem-solving exercises to help students apply their knowledge to real-life situations.

**Learning Outcomes:**

By the end of this course, students will be able to:  
Understand the history and major theories of psychology  
Identify and explain the basic principles of human behavior and mental processes  
Apply research methods to analyze psychological phenomena  
Recognize and analyze psychological problems and disorders  
Apply critical thinking and problem-solving skills to real-life situations

**Course Contents:**

Introduction to Psychology  
 Definition of psychology  
 History of psychology  
 Major schools of thought in psychology  
 Research methods in psychology  
 Biological Foundations of Behavior  
 Neurons and the nervous system  
 Endocrine system and hormones  
 Brain structures and functions  
 Genetics and behavior  
 Perception  
 Sensation and perception  
 Vision and hearing  
 Gestalt principles  
 Learning and Memory  
 Classical conditioning  
 Operant conditioning  
 Observational learning  
 Memory processes  
 Motivation and Emotion  
 Theories of motivation  
 Biological and social factors in motivation  
 Theories of emotion  
 Cultural and individual differences in emotion  
 Personality  
 Theories of personality  
 Trait theories  
 Psychodynamic theories

**Reference Reading Material:**

Psychology, 11th Edition by David G. Myers  
 Introduction to Psychology, 11th Edition by James W. Kalat  
 Psychology: Themes and Variations, 10th Edition by Wayne Weiten  
 Social Psychology, 14th Edition by David Myers and Jean Twenge  
 Abnormal Psychology, 17th Edition by James N. Butcher, Susan Mineka, and Jill M. Hooley  
 Research Methods in Psychology, 10th Edition by John J. Shaughnessy, Eugene B. Zechmeister, and Jeanne S. Zechmeister

**Human Resource Management****Course Description:**

Human Resource Management (HRM) is a field of study and practice that focuses on managing the people within an organization. HRM professionals are responsible for attracting, developing, and retaining a talented and engaged workforce that can help the organization achieve its goals. HRM covers a wide range of topics, including recruitment and selection, training and development, performance management, compensation and benefits, employee relations, and legal and ethical issues.

In an HRM course, students will typically learn about the theory and practice of HRM, as well as the key competencies and skills required to be an effective HR professional. They will explore the different functions of HRM and how they fit into the overall strategy of the organization. They will also learn about the legal and ethical considerations that guide HRM decision-making, and how to apply these principles in practice.

In addition, HRM courses emphasize the importance of communication and collaboration within organizations. Students will learn how to work effectively with other departments and stakeholders, as well as how to build and maintain positive relationships with employees. They will also learn about the role of HRM in fostering a diverse and inclusive workplace culture.

Overall, HRM courses is designed to provide students with a deep understanding of the challenges and opportunities involved in managing people in organizations, and to prepare them for careers in HRM or related fields.

**Contents:**

- Introduction to HRM
- Strategic HRM
- Performance Management
- Employee Relations
- Legal and Ethical Issues in HRM
- Global HRM
- HR Metrics and Analytics
- Future of HRM

**Learning Outcomes:**

Upon completing a course in Human Resource Management (HRM), students should be able to:

**Understand the role of HRM in organizations:** Students should have a basic understanding of the role of HRM in organizations, including its strategic importance, its relationship to other functions of the organization, and its role in supporting organizational goals.

**Understand key HRM functions and processes:** Students should be familiar with the key functions and processes of HRM, including recruitment and selection, training and development, performance management, compensation and benefits, and employee relations.

**Analyze and solve HRM problems:** Students should be able to analyze HRM problems and develop solutions, using critical thinking and problem-solving skills, and applying HRM principles and best practices.

**Communicate effectively:** Students should be able to communicate effectively with others in the organization, including employees, managers, and other stakeholders, using a variety of communication channels and strategies.

**Understand legal and ethical issues in HRM:** Students should be aware of the legal and ethical issues in HRM, including compliance with labor laws and regulations, diversity and inclusion, and ethical considerations in HRM decision-making.

**Understand HRM in a global context:** Students should be familiar with the challenges and opportunities of HRM in a global context, including cultural differences, international labor laws and regulations, and global talent management.

Overall, the learning outcomes of HRM should enable students to understand the key functions and processes of HRM, to analyze and solve HRM problems, to communicate effectively with others in the organization, to be aware of legal and ethical issues in HRM, and to be familiar with the challenges and opportunities of HRM in a global context.

**Recommended Books:**

**Human Resource Management by Gary Dessler:** This is a comprehensive and well-regarded textbook that covers all the major topics in HRM, from strategic planning and recruitment to employee training and development.

**The Essential HR Handbook: A Quick and Handy Resource for Any Manager or HR Professional by Sharon Armstrong and Barbara Mitchell:** This is a practical and easy-to-read guidebook that provides advice and strategies for dealing with common HR challenges.

## Financial Accounting

**Course Description:**

Financial Accounting is a course that introduces students to the principles and practices of accounting used in the preparation and interpretation of financial statements for external users. The course covers the basic concepts and tools of financial accounting, including the accounting cycle, accounting systems and controls, financial statement preparation, and analysis of financial statements.

The course typically includes topics such as the recording and processing of accounting transactions, the use of accounting standards and principles, the preparation of financial statements, the interpretation and analysis of financial statements, and the identification and evaluation of accounting issues and problems.

Upon completion of the course, students should have a basic understanding of the principles and practices of financial accounting and be able to prepare, interpret, and analyze financial statements for external users. The course is relevant for students pursuing careers in accounting, finance, and related fields, as well as those interested in business and management more broadly.

**Contents:**

Introduction to Financial Accounting:

Basic financial statements: balance sheet, income statement, and cash flow statement

Accounting Transactions and the Accounting Cycle:

Assets, Liabilities, and Equity:

Revenue and Expenses:

Financial Statement Analysis:

Ethics and Professional Responsibilities in Accounting:

Fraud and financial statement misrepresentation

**Learning Outcomes:**

Upon completing a course in financial accounting, students should be able to:

Understand the principles and practices of financial accounting: Students should be familiar with the basic concepts, principles, and practices of financial accounting, including the accounting cycle, financial statement preparation, and the use of accounting standards and principles.

Prepare financial statements: Students should be able to prepare basic financial statements, including the balance sheet, income statement, and statement of cash flows, in accordance with generally accepted accounting principles (GAAP).

Interpret and analyze financial statements: Students should be able to analyze financial statements to understand a company's financial position, performance, and cash flows, and to identify key trends and issues.

Apply accounting concepts and tools: Students should be able to apply accounting concepts and tools to real-world situations, such as analyzing financial ratios, evaluating accounting issues and problems, and making decisions based on financial information.

Understand the role of financial accounting in business: Students should understand the role of financial accounting in business, including how financial statements are used by external stakeholders such as investors, creditors, and regulators.

Communicate financial information effectively: Students should be able to communicate financial information effectively to both financial and non-financial stakeholders, including through written and oral presentations.

Overall, the learning outcomes of financial accounting should enable students to understand and apply the principles and practices of financial accounting, to prepare and analyze financial statements, and to communicate financial information effectively to various stakeholders.

**Recommended Books:**

Financial Accounting: Tools for Business Decision Making by Paul D. Kimmel, Jerry J. Weygandt, and Donald E. Kieso: This textbook provides a comprehensive and user-friendly introduction to financial accounting, with a focus on real-world examples and decision-making tools.

Financial Accounting and Reporting by Barry Elliott and Jamie Elliott: This book covers all the major topics in financial accounting, with a strong emphasis on international financial reporting standards (IFRS) and their practical application.

### Statistical Inference and Quantitative Research

**Course Description:**

Statistical Inference and Quantitative Research is a course that introduces students to statistical methods and their applications in quantitative research. This course covers the basic concepts of statistical inference, including probability distributions, hypothesis testing, confidence intervals, and statistical significance. It also covers the principles and practices of quantitative research, including research design, data collection, data analysis, and interpretation of results.

The course typically includes topics such as review of descriptive statistics, probability theory, statistical inference, regression analysis, and analysis of variance. Students will learn how to use statistical software to analyze data and how to interpret statistical results in the context of research questions.

Upon completion of the course, students should have a basic understanding of statistical methods and their applications in quantitative research, be able to apply statistical techniques to analyze data, and interpret and communicate statistical results in a meaningful way. The course is relevant for students pursuing careers in research, data analysis, and related fields, as well as those interested in pursuing graduate studies in social sciences or business.

**Contents:**

- Introduction to Statistical Inference
- Probability and probability distributions
- Sampling distributions and the central limit theorem
- Point estimates and confidence intervals
- Hypothesis testing and p-values
- Statistical Inference for One Population
- Statistical Inference for Two Populations
- Analysis of Variance
- ANOVA assumptions and diagnostics
- Regression Analysis

**Learning Outcomes:**

Upon completing a course in Statistical Inference and Quantitative Research, students should be able to:

**Understand statistical concepts and methods:** Students should have a basic understanding of statistical concepts and methods, including probability theory, hypothesis testing, confidence intervals, regression analysis, and analysis of variance.

**Apply statistical methods to data:** Students should be able to apply statistical methods to analyze data, using appropriate statistical software and techniques.

**Interpret statistical results:** Students should be able to interpret statistical results in the context of research questions and communicate statistical findings in a clear and meaningful way.

**Design and conduct quantitative research:** Students should be able to design and conduct quantitative research, including research design, data collection, data analysis, and interpretation of results.

**Evaluate the quality of quantitative research:** Students should be able to evaluate the quality of quantitative research, including the validity and reliability of research measures and the appropriateness of statistical methods used.

Overall, the learning outcomes of Statistical Inference and Quantitative Research should enable students to understand and apply statistical methods to analyze data, design and conduct quantitative research, and interpret and communicate statistical results in a meaningful way.

**Recommended Books:**

Statistics for Business and Economics by Paul Newbold, William L. Carlson, and Betty Thorne: This textbook provides a comprehensive introduction to statistical inference and quantitative research, with a focus on real-world applications in business and economics.

Introduction to Probability and Statistics by William Mendenhall, Robert Beaver, and Barbara M. Beaver: This book provides a rigorous and accessible introduction to statistical inference and probability theory, with a focus on understanding the underlying concepts and methods.

**Fundamentals of Machine Learning**

**Course Description:**

Fundamentals of Machine Learning is an introductory course that covers the basic concepts, techniques, and applications of machine learning. The course is designed for students with little or no prior knowledge of machine learning or Programming.

Throughout the course, students will gain hands-on experience with machine learning algorithms and tools by working on Programming assignments and projects. By the end of the course, students should have a solid understanding of the basic concepts and techniques of machine learning and be able to apply them to solve real-world problems.

**Contents:**

Introduction to Machine Learning

Overview of machine learning and its applications

Types of machine learning: supervised, unsupervised, and reinforcement learning

Machine learning pipeline: data collection, data preprocessing, model selection, model training, and evaluation

Python for Machine Learning

Introduction to Python and its scientific libraries (NumPy, Pandas, Matplotlib)

Data preprocessing with Python

Basic machine learning algorithms using scikit-learn

Supervised Learning Algorithms

Linear regression and logistic regression

Decision trees and random forests

Support vector machines (SVMs)

Artificial neural networks (ANNs)

Unsupervised Learning Algorithms

Clustering algorithms (k-means, hierarchical clustering)

Dimensionality reduction techniques (PCA, t-SNE)

Model Selection and Evaluation

Model selection techniques (hold-out, cross-validation)

Evaluation metrics for classification and regression tasks

Hyper parameter tuning techniques

Deep Learning Fundamentals

Introduction to deep learning

Basics of neural networks and deep learning models

Recurrent neural networks (RNNs) for natural language processing (NLP)

Applications of Machine Learning

Practical applications of machine learning in various domains, such as healthcare, finance, and social media

**Learning Outcomes:**

Upon completion of a course in Fundamentals of Machine Learning, students should be able to:

Understand the basics of machine learning:

Define machine learning and its various types

Understand the machine learning pipeline and the importance of data preprocessing

Develop proficiency in Python for machine learning:

Use Python libraries such as NumPy, Pandas, and Matplotlib for data manipulation and visualization

Implement basic machine learning algorithms using scikit-learn

Apply supervised learning algorithms:

Implement linear regression, logistic regression, decision trees, random forests, support vector machines, and artificial neural networks for classification and regression tasks

Apply unsupervised learning algorithms:

Implement clustering algorithms and dimensionality reduction techniques for data exploration

Evaluate machine learning models:

Understand the different techniques for model selection and evaluation

Apply evaluation metrics for classification and regression tasks

Understand deep learning fundamentals:

Understand the basics of deep learning models such as neural networks, convolutional neural networks, and recurrent neural networks

Apply machine learning to real-world applications:

Apply machine learning algorithms to practical applications in various domains such as healthcare, finance, and social media

Understand ethical and social implications of machine learning:

Understand ethical and social implications of machine learning, such as privacy, bias, and discrimination

Overall, the learning outcomes of Fundamentals of Machine Learning should enable students to understand and apply the basic concepts and techniques of machine learning to solve real-world problems, and understand the ethical and social implications of this technology.

#### **Recommended Books:**

Here are some recommended books for Fundamentals of Machine Learning:

"Python Machine Learning" by Sebastian Raschka and Vahid Mirjalili: This book provides a comprehensive introduction to machine learning with Python, covering topics such as data preprocessing, supervised and unsupervised learning algorithms, model selection, and deep learning.

"Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow" by Aurélien Géron: This book is a practical guide to machine learning with Python, covering topics such as data preparation, linear regression, decision trees, support vector machines, and neural networks.

"Pattern Recognition and Machine Learning" by Christopher M. Bishop: This book is a comprehensive introduction to machine learning, covering topics such as Bayesian probability, linear regression, clustering, and neural networks.

"Introduction to Machine Learning with Python" by Andreas C. Müller and Sarah Guido: This book is a beginner-friendly introduction to machine learning with Python, covering topics such as data preprocessing, model selection, and deep learning.

"Deep Learning" by Ian Goodfellow, Yoshua Bengio, and Aaron Courville: This book provides a comprehensive introduction to deep learning, covering topics such as neural networks, convolutional neural networks, and recurrent neural networks.

## **Data Based Management System**

#### **Course Description:**

A Database Management System (DBMS) is a software system that allows users to store, organize, retrieve, and manipulate data efficiently and effectively. The main purpose of a DBMS is

to provide a structured approach to data management that ensures the accuracy, consistency, and security of data.

Throughout the course, students will have the opportunity to practice their skills through hands-on exercises and projects using real-world data. By the end of the course, students should have a solid understanding of DBMS concepts and be able to design, implement, and administer a database system.

### **Contents:**

Introduction to DBMS

Data modeling

Structured Query Language (SQL)

Relational database management system (RDBMS)

Non-relational database management system (NoSQL)

Database administration

Data warehousing and business intelligence (BI)

Big data and cloud computing

Emerging trends in DBMS

### **Learning Outcomes:**

Understand the fundamental concepts and features of DBMS, including data modeling, database design, RDBMS and NoSQL databases.

Design and implement a database schema that conforms to a given specification and uses best practices for data integrity and security.

Identify the strengths and limitations of different types of DBMS, such as RDBMS and NoSQL databases, and select the appropriate technology for a given scenario.

Perform common tasks in database administration, such as managing user accounts, configuring security settings, and performing backups and restores.

Understand the concepts and architecture of data warehousing and business intelligence, and use BI tools to visualize and report data.

Understand the challenges and opportunities presented by big data and cloud computing, and use appropriate technologies to manage and analyze large volumes of data.

Analyze emerging trends in DBMS, such as IoT, blockchain, and AI/ML, and assess their potential impact on data management and business innovation.

Overall, the goal of a DBMS course is to provide students with a solid foundation in data management concepts, tools, and techniques, and to equip them with the skills and knowledge needed to design, implement, and manage effective data-based solutions.

### **Recommended Books:**

"Database Systems: The Complete Book" by Hector Garcia-Molina, Jeffrey D. Ullman, and Jennifer Widom. This is a comprehensive textbook that covers all aspects of DBMS, from conceptual design to implementation and administration. It includes numerous examples and exercises, as well as discussions of advanced topics such as distributed databases and data mining.

"Fundamentals of Database Systems" by Ramez Elmasri and Shamkant B. Navathe. This is another popular textbook that covers the fundamental concepts of DBMS, including data modeling, normalization, SQL, and database administration. It includes many examples and case studies, and is designed for students with little or no prior knowledge of DBMS.

## **Pakistan and Geo Political Studies**

### **Course Description:**

Pakistan and Geo Political Studies is a multidisciplinary course that explores the political, economic, social, and cultural dynamics of Pakistan, as well as its relationships with other countries and global powers. The course provides an in-depth understanding of Pakistan's history, politics, foreign policy, and international relations, and aims to equip students with the

critical skills and knowledge necessary to analyze and evaluate contemporary issues and challenges facing Pakistan.

The course begins with an overview of the historical and cultural context of Pakistan, including the formation of the country, the role of Islam in society, and the impact of colonialism. It then delves into the political and economic structures of Pakistan, including its system of government, the role of the military, and its economic challenges.

The course also covers Pakistan's relationships with its neighbors, including India, Afghanistan, and Iran, as well as its strategic relationships with China and the United States. It examines the role of Pakistan in regional and global politics, including its membership in organizations such as the United Nations, the South Asian Association for Regional Cooperation (SAARC), and the Organization of Islamic Cooperation (OIC).

Finally, the course considers the current challenges facing Pakistan, including terrorism, sectarianism, poverty, and political instability. Students will be encouraged to develop their own critical perspectives on these issues and to engage in informed and nuanced discussions with their peers.

Throughout the course, students will be expected to read a variety of texts, including academic articles, news reports, and primary sources, and to participate in class discussions, debates, and group projects. The course will also make use of multimedia resources, including documentaries and podcasts, to deepen students' understanding of the topics covered. Throughout the course, students will be encouraged to analyze and critically evaluate Pakistan's foreign policy, internal dynamics, and its position in the global context. The course may include guest lectures by experts in the field, documentaries, and class discussions. By the end of the course, students should have a deeper understanding of Pakistan's geo-political position and its internal dynamics, and be able to assess the country's opportunities and challenges in the future.

### **Contents:**

Introduction to Pakistan

Geography and demographics

Historical context

Political and social structures

Pakistan's Foreign Policy

Foreign policy challenges and opportunities

Relations with neighboring countries

Relations with global powers

Pakistan and the Muslim World

Relations with Muslim-majority countries

Role of Pakistan in the Organization of Islamic Cooperation (OIC)

Geo-Political Dynamics of South Asia

India-Pakistan relations and conflicts

Afghanistan and the Afghan-Pakistan relations

China-Pakistan Economic Corridor and its geostrategic implications

Pakistan's Internal Security Challenges

Terrorism and extremism

Ethnic and sectarian violence

Role of military and law enforcement agencies in maintaining internal security

Pakistan's Economy and Development

Economic growth and development challenges

Agriculture and industry sectors

Energy and infrastructure projects

Pakistan's Nuclear Programme

Historical development and rationale

Deterrence and arms control

International non-proliferation efforts

Pakistan's Culture and Society

Ethnic and linguistic diversity

Religious and cultural traditions

Contemporary social issues

**Learning Outcomes:**

Upon completion of Pakistan and Geo Political Studies, students will be able to:

Demonstrate a comprehensive understanding of the historical, political, economic, and cultural dynamics of Pakistan, including its social, religious, and linguistic diversity.

Analyze the role of Pakistan in regional and global politics, including its relationships with neighboring countries, major powers, and international organizations.

Evaluate the impact of colonialism, partition, and the Cold War on Pakistan's political and economic development.

Critically assess Pakistan's foreign policy and its strategic interests in the region and beyond.

Understand the complexities of Pakistan's security challenges, including terrorism, sectarianism, and separatism, and analyze the responses of the government and civil society.

Develop critical thinking skills and the ability to analyze complex information and arguments from diverse perspectives.

Communicate effectively in oral and written form, and engage in informed and respectful dialogue with others on sensitive and controversial topics.

Cultivate an awareness of cultural diversity and an appreciation for the rich history and cultural traditions of Pakistan.

Apply the knowledge and skills gained from the course to engage in meaningful civic participation and to contribute to the development of Pakistan and the global community.

**Recommended Books:**

"Pakistan: A Hard Country" by Anatol Lieven - This book provides an in-depth look at Pakistan's political, social, and economic challenges and the complex relationship between the state and society.

"Pakistan on the Brink: The Future of America, Pakistan, and Afghanistan" by Ahmed Rashid - This book provides an analysis of the geopolitical landscape of Pakistan, Afghanistan, and the United States, and the impact of the War on Terror on the region.

"Pakistan: A New History" by Ian Talbot - This book provides a comprehensive overview of Pakistan's history, from its pre-partition era to the present day.

**5<sup>th</sup> Semester**  
**Project Management**

This course provides an overview of project management and the essential tools needed to deliver successful projects on time and on budget. Topics includes the fundamental principles of project management including: project initiation, project definition, creation of work breakdown structures, scheduling using Gantt charts and network diagrams, risk management, budgeting and controlling resources, quality assurance, auditing and project termination.

**Course Contents:**

Scope Management

Project Constraints

Schedule Management Techniques

Resource Allocation Methods

Project Monitor and Control Methods

Cost Management

Risk Management

Project Charters

Project Communication Plans

Project Implementation Plan

Project Status Reports

**Learning Outcomes:**

On completion of the course students would be able to:

Describe project management and its key elements, including: project stakeholders, project management knowledge areas, tools and techniques, and success factors.

Create a work breakdown structure with the related organizational and cost control structures.

Use Critical Path Method (CPM), Programme Evaluation Review Techniques (PERT) and Gantt project control tools.

Analyze and solve simple resource levelling problems.

Understand risk and risk management techniques.

Develop a project implementation plan for a simple project.

**Reference Material:**

A Guide to the Project Management Body of Knowledge (PMBOK® Guide) Fifth Edition by Project Management Institute

**Business Data and Text Mining**

Business data and text mining is a course that focuses on the use of data mining and text mining techniques in the context of business with an understanding of the role of data and text mining in business decision-making. The course covers both the theoretical foundations of these techniques and their practical application to real-world business problems.

This course will cover the major techniques for Business data analysis techniques for collecting, analyzing, and reporting useful information to gain better insights and practical implementation of mining and analyzing text data to discover interesting patterns, extract useful knowledge, and support decision making, with an emphasis on statistical approaches that can be generally applied to arbitrary text data in any natural language with no or minimum human effort

**Course Contents**

Basics of Data and Text Mining key concepts and techniques in data and text mining, including data preprocessing, feature selection, classification, clustering, and association rule mining.

Data Collection and Preparation

Exploratory Data Analysis and use of data visualization and descriptive statistics to explore data and identify patterns.

Text mining techniques for analyzing and extracting information from unstructured text data, including sentiment analysis, topic modeling, and named entity recognition.

Predictive Analytics techniques such as regression analysis, decision trees, and neural networks

Evaluation of Results for accuracy, precision, recall

**Learning Outcomes:**

After having completed this course successfully, participants will be able to:

Develop and deploy dashboards to collect data-backed insights

Interpret key business data sets

Deliver insights on potential areas of growth, optimization, and improvements

Support business intelligence strategies with quantitative analysis

Work cross-departmentally on data-driven strategies that improve business processes and decision-making

Understanding that how data and text mining can be applied in various business contexts, such as marketing, customer relationship management, fraud detection, and supply chain management.

**Reference Material:**

Thomas W. Miller Data and Text Mining: A Business Applications Approach

*Gordon S. Linoff & Michael J. A. Berry* Data Mining Techniques: For Marketing, Sales, and Customer Relationship Management

*Foster Provost & Tom Fawcett* Data Science for Business: What you need to know about data mining and data-analytic thinking

### Entrepreneurship

This course introduces students to the theory of entrepreneurship and its practical implementation. It focuses on different stages related to the entrepreneurial process, including business model innovation, monetization, small business management as well as strategies that improve performance of new business ventures. Centered on a mixture of theoretical exploration as well as case studies of real-world examples and guest lectures, students will develop an understanding of successes, opportunities and risks of entrepreneurship. Students will also develop skills in written business communication and oral presentations that allow students to integrate entrepreneurship concepts and interact with business experts.

#### **Course Contents:**

- Entrepreneurial Thinking
- Innovation Management
- Opportunity Spotting
- Opportunity Evaluation
- Industry and Market Research
- Strategy and Business Models
- Financial Forecasting
- Business Plans
- Entrepreneurial Finance
- New Venture Creation

#### **Learning Outcomes:**

After having completed this course successfully, participants will be able to:

Understand the context, concepts, theories and process of entrepreneurship

Develop entrepreneurial opportunities & recognize the entrepreneurial potential within yourself, whether you want to start your own business or act as an entrepreneur within an existing organization

Identify entrepreneurial opportunities and assess these opportunities

Research and determine the viability or feasibility of new business concepts

#### **Reference Material:**

Timmons, J. A., Gillin, L. M., Burshtein, S. L., & Spinelli, S. (2011). New venture creation. Entrepreneurship for the 21st century - A Pacific Rim perspective.

Osterwalder, A. & Pigneur, Y. (2010). Business model generation. Wiley

### E-Commerce

This course challenges students to explore the realities and implications of ecommerce from a marketer's perspective. Business-to-consumer (B2C) and business-to-business (B2B) e-commerce markets are examined. The growth of the Internet continues to have a tremendous influence on business. Companies and organizations of all types and sizes are rethinking their strategies and how they run their operations. The course introduces students to a wide range of electronic commerce issues for marketers, as a foundation for continual learning in the dynamic e-commerce environment.

#### **Course Contents:**

- Product Hunting
- Product Sourcing & Importing
- Setting up Shopify Store

Optimizing Shopify settings  
Product page set up  
Social Media set up  
Facebook ads  
Conversion ads best practices, branding  
Logistics and payments.

**Reference Material:**

Laudon, K. C., & Traver, C. G. (2017). E-commerce 2017: Business, technology, society (Thirteenth Edition). Pearson. • Manzoor, A. (2010). E-Commerce: An Introduction. Amir Manzoor.

**Web Application Development**

This course will give students the basic background, terminology and fundamental concepts that student need to understand in order to build modern full stack web applications. A full stack web developer is familiar with each "layer" of the software technologies involved in a web application, including data modeling and database technologies, the web server environment and middleware components, network protocols, the user interface and basic visual design and user interaction concepts.

**Course outline:**

Understanding Website Design  
Creating a Webpage in Dreamweaver  
Styling the Content  
Adding Navigation and Pages  
Creating a Flexible "Responsive" Layout  
Adding Media  
Creating a Contact Form  
Testing and Uploading  
Building Your Own Website Using This Model

**Learning Outcome:**

After having completed this course successfully, participants will be able to:  
Create web pages using industry standard web development software;  
Apply syntax rules of HTML and CSS;  
Insert images and videos into a web page using industry standard web development software;  
Create web pages with tables, forms, styles and style sheets (CSS) using industry standard web development software;  
Create a fully developed website;  
Create interactive web forms using industry standard web development software;

**Reference Material:**

**Digital Analytics**

This course examines the strategic use of analytics for digital marketing. The course focuses on measuring and analyzing online analytics and how analytic insights and intelligence can be reported and used to inform marketing strategies. Different types of online data are explored, with emphasis on learning relevant tools and platforms. This course also explores different ways analytics can be communicated, so management can understand digital analytics' strategic and organizational impact.

**Course Contents:**

The evolution of digital marketing analytics and web intelligence  
Using digital analytics to understand consumers  
Relevant tools and platforms that collect, track, and/or assess marketing or consumer data

Application of analytics in campaigns, web/search, digital advertising, social media, mobile, and/or site optimization

Setting up digital marketing analytics for an organization to align with marketing goals

Evaluation of online data and insight generation pertaining to key metrics and performance indicators (KPIs), return on investment (ROI), and marketing strategies

Reporting, communication, and visualization of digital analytics

Marketing automation as it pertains to digital analytics

Strategizing with digital marketing analytics

**Learning Outcomes:**

After having completed this course successfully, participants will be able to:

Understand the basics of web analytics tools and techniques, such as tracking codes, cookies, and tags, and how to implement them on a website or mobile app.

Understands how to collect and analyze data from various digital channels, including social media, email marketing, search engine optimization, and online advertising.

Exploring different metrics and key performance indicators (KPIs) used to measure the effectiveness of digital marketing campaigns, such as click-through rates, conversion rates, bounce rates, and return on investment (ROI).

Examine how to use data visualization tools and techniques to present data effectively, including dashboards, charts, and graphs.

Understand how to use data to optimize digital marketing strategies and improve website or app performance, including A/B testing, segmentation, and personalization.

**Reference Material:**

Sponder, M. and Khan, G.F. *Digital Analytics for Marketing*, Latest edition. Routledge

**6<sup>th</sup> Semester**  
**Research Methods and Techniques**

**Course Description:** This course provides an overview of research methods and techniques used in social science research. Students will learn how to design research studies, collect and analyze data, and present findings using appropriate statistical and qualitative techniques. The course covers topics such as research design, sampling techniques, data collection methods, data analysis, and ethical considerations in research.

**Learning Outcomes:**

By the end of this course, students will be able to:

Understand the basic principles and concepts of research methods

Design research studies using appropriate methods and techniques

Collect and analyze data using statistical and qualitative techniques

Interpret and present research findings effectively

Understand the ethical considerations in research

**Course Contents:**

Introduction to Research Methods

Definition and importance of research

Types of research methods

Steps in the research process

Research Design

Variables and hypotheses

Experimental and non-experimental designs

Quasi-experimental designs

Observational designs

Sampling Techniques

Probability and non-probability sampling

Sample size determination

Sampling methods in quantitative and qualitative research

Data Collection Methods

Questionnaires and surveys

Interviews

Observation

Secondary data sources

Data Analysis

Descriptive and inferential statistics

Statistical software for data analysis

Qualitative data analysis methods

Content analysis

Presenting Research Findings

Writing research reports

Creating visual presentations

Communicating research findings to different audiences

Ethical Considerations in Research

Ethics in research

Informed consent and confidentiality

Deception and debriefing

Ethical considerations in data collection and analysis

**Reference Reading Material:**

Research Methods in Psychology, 10th Edition by John J. Shaughnessy, Eugene B. Zechmeister, and Jeanne S. Zechmeister

Social Research Methods: Qualitative and Quantitative Approaches, 8th Edition by W. Lawrence Neuman

Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 5th Edition by John W. Creswell

Basic Research Methods for Librarians, 6th Edition by Lynn Silipigni Connaway and Ronald R. Powell

Doing Social Research: A Global Context, 2nd Edition by Claire Wagner and Barbara Kawulich

**Fundamentals of Operations and Supply Chain Management**

**Course Description:** This course introduces students to the principles and practices of operations and supply chain management. It covers topics such as forecasting, capacity planning, quality management, inventory management, supply chain design, and logistics management. The course also emphasizes the importance of effective communication and collaboration among all stakeholders in the supply chain.

**Learning Outcomes:**

By the end of this course, students will be able to:

Understand the basic principles and concepts of operations and supply chain management

Analyze and evaluate different operations and supply chain management strategies

Identify and solve common problems in operations and supply chain management

Apply critical thinking and problem-solving skills to real-life situations

Collaborate effectively with stakeholders in the supply chain

**Course Contents:**

Introduction to Operations and Supply Chain Management

Definition and importance of operations and supply chain management

Role of operations and supply chain management in business success

Key challenges and opportunities in operations and supply chain management

Forecasting and Capacity Planning

Types of forecasting methods

Capacity planning techniques  
 Factors affecting forecasting and capacity planning  
 Quality Management  
 Definition of quality  
 Quality control and assurance techniques  
 Total quality management  
 Inventory Management  
 Inventory control systems  
 Strategic alliances and partnerships  
 Vendor selection and management  
 Logistics Management  
 Transportation and distribution management  
 Warehouse and inventory management  
 Reverse logistics  
**Operations and Supply Chain Management in Practice**  
 Case studies of successful operations and supply chain management  
 Common problems and challenges in operations and supply chain management  
 Effective communication and collaboration in the supply chain

**Reference Reading Material:**

Operations Management, 13th Edition by William J. Stevenson  
 Introduction to Operations and Supply Chain Management, 5th Edition by Cecil Bozarth and Robert Handfield  
 Supply Chain Management: Strategy, Planning, and Operation, 7th Edition by Sunil Chopra and Peter Meindl  
 Fundamentals of Logistics Management, 2nd Edition by Douglas M. Lambert and James R. Stock  
 Global Supply Chain Management, 3rd Edition by John T. Mentzer, Matthew B. Myers, and Theodore P. Stank  
 Managing Quality: Integrating the Supply Chain, 6th Edition by S. Thomas Foster

**Financial Technology (Fintech)**

**Course Description:** This course introduces students to the emerging field of financial technology or fintech. It covers topics such as digital payments, blockchain technology, peer-to-peer lending, robo-advisors, and cryptocurrencies. The course also explores the regulatory and ethical considerations associated with fintech.

**Learning Outcomes:**

By the end of this course, students will be able to:  
 Understand the basic principles and concepts of fintech  
 Analyze and evaluate different fintech solutions and their impact on the financial industry  
 Identify and solve common problems in fintech implementation  
 Apply critical thinking and problem-solving skills to real-life fintech scenarios  
 Understand the regulatory and ethical considerations associated with fintech

**Course Contents:**

Introduction to Fintech  
 Definition and importance of fintech  
 Evolution of fintech  
 Key challenges and opportunities in fintech  
 Digital Payments  
 Types of digital payment systems  
 Mobile payments and digital wallets  
 Cryptocurrencies and blockchain technology  
 Peer-to-Peer Lending

Definition and features of peer-to-peer lending  
Benefits and risks of peer-to-peer lending  
Regulatory and ethical considerations in peer-to-peer lending  
Robo-Advisors  
Definition and features of robo-advisors  
Advantages and limitations of robo-advisors  
Regulatory and ethical considerations in robo-advisory services  
Blockchain Technology  
Definition and features of blockchain technology  
Applications of blockchain technology in fintech  
Regulatory and ethical considerations in blockchain technology  
Cryptocurrencies  
Definition and features of cryptocurrencies  
Types of cryptocurrencies  
Risks and benefits of cryptocurrencies  
Fintech and the Future of Finance  
Trends and innovations in fintech  
Challenges and opportunities in fintech implementation  
Future prospects of fintech in the financial industry

**Reference Reading Material:**

Fintech: Financial Technology and Modern Finance in the 21st Century, 1st Edition by Jefferies and Aitken  
The Fintech Book: The Financial Technology Handbook for Investors, Entrepreneurs and Visionaries, 1st Edition by Susanne Chishti and Janos Barberis  
Blockchain Basics: A Non-Technical Introduction in 25 Steps, 1st Edition by Daniel Drescher  
The Basics of Bitcoins and Blockchains, 1st Edition by Antony Lewis  
Financial Technology: Course Notes, 1st Edition by Tim Weithers  
The Future of FinTech: Integrating Finance and Technology in Financial Services, 1st Edition by Bernardo Nicoletti

**Critical and Logical Thinking**

**Course Description:** This course introduces students to the basic principles and techniques of critical and logical thinking. It covers topics such as argument analysis, reasoning, problem-solving, decision-making, and creativity. The course also explores the practical applications of critical and logical thinking in various fields, such as business, science, and social sciences.

**Learning Outcomes:**

By the end of this course, students will be able to:

Identify and evaluate arguments  
Apply critical thinking skills to analyze and solve problems  
Make informed and ethical decisions  
Apply logical thinking skills to enhance creativity  
Understand the practical applications of critical and logical thinking in various fields

**Course Contents:**

Introduction to Critical and Logical Thinking  
Definition and importance of critical and logical thinking  
Basic principles and techniques of critical and logical thinking  
Relationship between critical and logical thinking  
Argument Analysis  
Identifying premises and conclusions  
Evaluating the strength and validity of arguments  
Identifying common fallacies in reasoning

Reasoning and Problem-Solving

Types of reasoning

Identifying and defining problems

Developing problem-solving strategies

Decision-Making

Types of decision-making

Decision-making models

Ethical considerations in decision-making

Creativity and Logical Thinking

Definition and importance of creativity

Techniques for enhancing creativity

Relationship between creativity and logical thinking

Critical and Logical Thinking in Business

Practical applications of critical and logical thinking in business

Analyzing business problems and making informed decisions

Evaluating business proposals and projects

Critical and Logical Thinking in Science and Social Sciences

Practical applications of critical and logical thinking in science and social sciences

Evaluating scientific research and findings

Analyzing social issues and making informed decisions

#### **Reference Reading Material:**

Thinking, Fast and Slow, 1st Edition by Daniel Kahneman

How to Read a Book, 1st Edition by Mortimer J. Adler and Charles Van Doren

The Art of Reasoning, 4th Edition by David Kelley

Thinking Critically, 11th Edition by John Chaffee

Logical Self-Defense, 1st Edition by Ralph H. Johnson and J. Anthony Blair

Critical Thinking: An Introduction, 2nd Edition by Alec Fisher

### **Artificial Intelligence**

**Course Description:** This course provides an introduction to the theory and application of artificial intelligence. The course covers topics such as machine learning, natural language processing, computer vision, and robotics. The course also explores the ethical and societal implications of artificial intelligence.

#### **Learning Outcomes:**

By the end of this course, students will be able to:

Understand the basic principles and techniques of artificial intelligence

Apply machine learning algorithms to solve problems

Implement natural language processing and computer vision techniques

Design and implement robotics systems

Analyze the ethical and societal implications of artificial intelligence

#### **Course Contents:**

Introduction to Artificial Intelligence

Definition and importance of artificial intelligence

Historical overview of artificial intelligence

Types of artificial intelligence

Machine Learning

Introduction to supervised and unsupervised learning

Types of machine learning algorithms

Implementing machine learning algorithms

Natural Language Processing

Introduction to natural language processing

Techniques for natural language processing  
Implementing natural language processing techniques  
Computer Vision  
Introduction to computer vision  
Techniques for computer vision  
Implementing computer vision techniques  
Robotics  
Introduction to robotics  
Types of robots  
Designing and implementing robotics systems  
Ethical and Societal Implications of Artificial Intelligence

**Reference Reading Material:**

Artificial Intelligence: A Modern Approach, 3rd Edition by Stuart Russell and Peter Norvig  
Machine Learning Yearning by Andrew Ng  
Natural Language Processing with Python, 1st Edition by Steven Bird, Ewan Klein, and Edward Loper  
Computer Vision: Algorithms and Applications, 1st Edition by Richard Szeliski  
Robotics, Vision and Control: Fundamental Algorithms in MATLAB, 1st Edition by Peter Corke  
Robot Ethics 2.0: From Autonomous Cars to Artificial Intelligence, 1st Edition by Patrick Lin, Keith Abney, and Ryan Jenkins.

**Foreign Language (Chinese)**

**Course Description:** This course provides an introduction to the Chinese language, covering both spoken and written Chinese. Students will learn the basics of pronunciation, grammar, vocabulary, and Chinese characters. The course also introduces Chinese culture and customs.

**Learning Outcomes:**

By the end of this course, students will be able to:  
Understand and speak basic Chinese sentences and phrases  
Recognize and write basic Chinese characters  
Understand and apply basic Chinese grammar rules  
Understand and appreciate Chinese culture and customs  
Communicate effectively in basic Chinese conversation

**Course Contents:**

Introduction to Chinese Language  
Overview of Chinese language and its importance  
Differences between Mandarin and other dialects  
Introduction to Chinese pronunciation  
Chinese Grammar  
Basic Chinese grammar rules and structures  
Basic Chinese sentence patterns  
Basic Chinese vocabulary  
Chinese Characters  
Introduction to Chinese characters and stroke order  
Basic Chinese characters and their meanings  
Writing Chinese characters  
Chinese Culture and Customs  
Introduction to Chinese culture and customs  
Chinese social etiquette  
Chinese festivals and traditions  
Basic Chinese Conversation

Basic Chinese conversation skills  
 Common Chinese phrases and expressions  
 Role-playing and conversation practice

**Reference Reading Material:**

Integrated Chinese, Level 1 Part 1, 4th Edition by Yuehua Liu, Tao-chung Yao, Nyan-Ping Bi, Liangyan Ge, and Yaohua Shi  
 Chinese for Beginners: Mastering Conversational Chinese (Audio CD Included) by Yi Ren and Xiayuan Liang  
 Basic Patterns of Chinese Grammar: A Student's Guide to Correct Structures and Common Errors by Qin Xue Herzberg and Larry Herzberg  
 Reading and Writing Chinese: Third Edition, HSK All Levels (2,349 Chinese Characters and 5,000+ Compounds) by William McNaughton and Jiageng Fan  
 Chinese Culture: The Customs, Traditions, and Way of Life in China by Jerry Gray  
 Practical Chinese Reader, Book 1 (revised edition) by Beijing Language and Culture University Press

**7<sup>th</sup> Semester**  
**Legal and Ethical Issues in Business Analytics**

**Course Description:**

This course provides an overview of the legal and ethical issues involved in the use of business analytics. It examines the ethical dilemmas surrounding the collection, use, and distribution of data, as well as the legal framework that governs the use of this information. The course also explores the potential impact of business analytics on society and the economy.

The objectives of this course are to understand the ethical considerations involved in the collection and use of data, analyze the legal framework governing the use of data, to evaluate the potential impact of business analytics on society and the economy and to develop strategies for addressing ethical and legal challenges in the use of business analytics

**Contents:**

- Introduction to Legal and Ethical Issues in Business Analytics
- Introduction to the course and the importance of legal and ethical considerations in business analytics
- Overview of legal frameworks and ethical principles that apply to business analytics
- Data Privacy and Security
  - Overview of data privacy laws and regulations
  - Understanding data breaches and how to prevent them
  - Best practices for data protection and security
- Intellectual Property Rights
  - Overview of intellectual property laws and regulations
  - Copyright, patent, and trademark law
  - Fair use and the public domain
- Ethics in Business Analytics
  - Overview of ethical principles and decision-making frameworks
  - Ethical issues related to data collection, analysis, and use
  - Ethical implications of data-driven decision-making
- Social and Ethical Implications of Business Analytics
  - Understanding the impact of business analytics on society
  - Evaluating the ethical implications of data-driven decision-making
  - Balancing business interests with social responsibility
- Case Studies in Legal and Ethical Issues in Business Analytics
- Analysis of real-world case studies
- Discussion of legal and ethical considerations in each case

Identifying best practices and strategies for addressing legal and ethical challenges

**Learning Outcomes:**

Upon completion of the course, students should be able to:

Understand the legal and ethical frameworks that underpin data collection, analysis, and use in the context of business analytics.

Analyze the legal and ethical considerations involved in business analytics, including data privacy, data security, and intellectual property rights.

Evaluate the social and ethical implications of data-driven decision-making and the impact of business analytics on society.

Develop strategies for addressing legal and ethical challenges in business analytics.

Apply ethical principles and decision-making frameworks to real-world case studies.

Identify best practices for data protection, security, and ethical decision-making in business analytics.

**Recommended Books:**

"The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power" by Shoshana Zuboff

"Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy" by Cathy O'Neil

"Ethics of Big Data: Balancing Risk and Innovation" by Kord Davis and Doug Patterson

"Data Ethics: The New Competitive Advantage" by Gry Hasselbalch and Pernille Tranberg

"Ethical Reasoning in Big Data: An Exploratory Analysis" by Jeff Collmann

"The Ethical Algorithm: The Science of Socially Aware Algorithm Design" by Michael Kearns and Aaron Roth

"The Future of Privacy: Privacy in an Age of New Technologies" by Pablo Molina and Luciano Floridi

## Predictive Analysis

**Course Description:**

This course on predictive analysis aims to provide students with a comprehensive understanding of the key principles and techniques used in predictive analysis. Students will learn how to use data to make predictions, identify patterns, and develop models that can be used to forecast future trends.

The course will cover topics such as data exploration, data preprocessing, feature engineering, model selection, and evaluation. Students will also learn how to use popular predictive modeling techniques such as linear regression, logistic regression, decision trees, random forests, and neural networks.

Throughout the course, students will be exposed to real-world datasets and case studies to help them apply their knowledge to practical situations.

Upon completion of the course, students will have a solid foundation in predictive analysis and be able to apply their knowledge to various industries and domains, including finance, healthcare, marketing, and more. They will also be equipped with the skills to critically evaluate predictive models and communicate their findings effectively to stakeholders.

**Contents:**

Introduction to Predictive Analysis

Definition of Predictive Analysis

Applications and Use Cases

Overview of Data Science Process

Data Exploration and Preprocessing

Data Cleaning and Formatting

Missing Value Imputation

Outlier Detection and Treatment

Data Visualization  
 Feature Engineering  
 Feature Extraction and Selection  
 Feature Scaling and Normalization  
 Encoding Categorical Variables  
 Feature Transformation and Dimensionality Reduction  
 Model Selection and Evaluation  
 Supervised vs Unsupervised Learning  
 Evaluation Metrics for Classification and Regression  
 Overfitting and Underfitting  
 Cross-validation Techniques  
 Linear Regression  
 Simple Linear Regression  
 Multiple Linear Regression  
 Regularization Techniques  
 Logistic Regression  
 Binary Logistic Regression  
 Multinomial Logistic Regression  
 Regularization Techniques  
 Decision Trees and Random Forests  
 Basics of Decision Trees  
 Ensembles and Random Forests  
 Hyper parameter Tuning  
 Time Series Analysis  
 Time Series Concepts and Terminology  
 ARIMA and SARIMA Models  
 Exponential Smoothing Models  
 Case Studies and Projects  
 Applying Predictive Analysis Techniques to Real-World Problems  
 Working with Industry-Relevant Datasets  
 Developing and Evaluating Predictive Models  
 Communicating Results Effectively

**Learning Outcomes:**

Upon completion of a course on predictive analysis, learners can expect to achieve the following learning outcomes:

Understand the fundamental principles and concepts of predictive analysis, including supervised and unsupervised learning, model selection, evaluation, and regularization.

Develop a solid understanding of the data science process, including data preprocessing, feature engineering, model selection, and evaluation.

Learn how to explore and visualize data, and apply statistical methods to preprocess and clean data, and derive insights from it.

Develop the ability to select and apply appropriate predictive models, such as linear regression, logistic regression, decision trees, random forests, neural networks, and time series models, to solve real-world problems.

Evaluate the performance of predictive models using appropriate evaluation metrics, cross-validation techniques, and regularization methods.

Develop the ability to communicate effectively with stakeholders, including presenting and visualizing results, explaining the modeling process, and making recommendations based on the results.

Acquire practical experience in applying predictive analysis techniques to real-world problems and datasets.

Develop a critical and analytical mindset that enables them to evaluate the appropriateness of different predictive models and methods for different problems and datasets.

#### **Recommended Books:**

"Python for Data Analysis" by Wes McKinney: This book is an excellent resource for anyone interested in learning how to use Python for data analysis and predictive modeling. It covers topics such as data manipulation, data cleaning, data visualization, and machine learning algorithms in Python.

"Applied Predictive Modeling" by Max Kuhn and Kjell Johnson: This book provides a practical approach to predictive modeling, covering topics such as data preprocessing, feature engineering, model selection, and evaluation. It includes examples and case studies using R.

"Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow" by Aurélien Géron: This book provides a comprehensive introduction to machine learning and deep learning, with a focus on practical applications. It covers topics such as classification, regression, clustering, and neural networks using Python libraries such as scikit-learn, Keras, and TensorFlow.

"Data Mining: Practical Machine Learning Tools and Techniques" by Ian H. Witten, Eibe Frank, and Mark A. Hall: This book covers a broad range of topics related to data mining and machine learning, including data preprocessing, classification, regression, clustering, and association analysis. It provides examples and case studies using the Weka data mining software.

"Forecasting: Principles and Practice" by Rob J Hyndman and George Athanasopoulos: This book focuses on time series analysis and forecasting, covering topics such as exploratory data analysis, ARIMA models, exponential smoothing, and state space models. It includes practical examples using R.

These books provide a solid foundation in predictive analysis and are highly recommended for anyone interested in learning about this field.

### **8<sup>th</sup> Semester** **Information Security and system Auditing**

#### **Course Description:**

Information Security and System Auditing is a course that provides an in-depth understanding of the concepts and practices of information security, risk management, and system auditing. The course covers various topics related to the design, implementation, and evaluation of information security controls, including security policies, access controls, encryption, network security, and incident response. The course also provides an overview of system auditing, including the planning and execution of audit activities, risk assessment, and reporting.

Upon completion of this course, learners should be able to evaluate the information security risks and implement appropriate controls to mitigate those risks. They should also be able to plan, execute, and report on system audit activities. Furthermore, they will develop critical thinking skills to analyze complex information security and auditing problems, and effectively communicate their findings and recommendations to stakeholders.

#### **Contents:**

Introduction to Information Security and System Auditing

Definition and importance of information security and system auditing

Security frameworks, standards, and best practices

Risk Management and Security Policies

Risk assessment and management

Security policies, procedures, and guidelines

Security awareness and training

Access Controls and Encryption

Access controls, authentication, and authorization

Encryption and cryptography

Public Key Infrastructure (PKI)

## Network Security

Network security concepts and technologies

Firewalls, IDS/IPS, and VPNs

Wireless security

Incident Response and Business Continuity

Incident response planning and management

Business continuity planning and disaster recovery

System Auditing and Compliance

Overview of system auditing

Audit planning and execution

Risk assessment and compliance reporting

Case Studies and Best Practices

Real-world examples of information security and system auditing practices

Best practices and lessons learned

## **Learning Outcomes:**

Upon completion of a course on Information Security and System Auditing, learners can expect to achieve the following learning outcomes:

Develop an understanding of the concepts and principles of information security and system auditing, including their importance, key terminology, and related frameworks, standards, and best practices.

Acquire practical skills in information security risk assessment, management, and mitigation, including the development of security policies, procedures, and guidelines.

Learn about various access control mechanisms, including authentication, authorization, and encryption, and how to apply them to protect information assets.

Acquire knowledge of network security technologies and concepts, including firewalls, IDS/IPS, and VPNs, and how to implement them to protect networks.

Develop the ability to plan, execute, and report on system audit activities, including risk assessment, audit planning, and compliance reporting.

Develop an understanding of the incident response and business continuity planning process, and the ability to develop and implement incident response and business continuity plans.

Acquire practical experience in analyzing complex information security and auditing problems, and effectively communicate findings and recommendations to stakeholders.

Develop an understanding of the ethical and legal issues related to information security and system auditing, including data privacy, confidentiality, and security.

## **Recommended Books:**

"CISSP All-in-One Exam Guide, Eighth Edition" by Shon Harris and Fernando Maymi - This book is a comprehensive guide to the Certified Information Systems Security Professional (CISSP) certification exam and covers a wide range of topics related to information security and system auditing.

"Information Security: Principles and Practices, Second Edition" by Mark Stamp - This book provides an overview of the fundamental principles and practices of information security, including risk management, access control, cryptography, network security, and system auditing.

"Network Security and Cryptography: A Self-Teaching Guide" by Forouzan and Mukhopadhyay - This book provides a comprehensive introduction to network security and cryptography, including basic concepts, principles, and techniques.

"Auditing and GRC Automation in SAP" by Maxim Chuprunov - This book provides practical guidance on how to plan and execute auditing activities in SAP environments, including risk assessment, audit planning, execution, and reporting.

"The Practice of Network Security Monitoring: Understanding Incident Detection and Response" by Richard Bejtlich - This book provides a comprehensive guide to network security monitoring, including incident detection, response, and forensic analysis.

"CISA: Certified Information Systems Auditor Study Guide" by David L. Cannon - This book provides a comprehensive guide to the Certified Information Systems Auditor (CISA) certification exam and covers various topics related to system auditing, including audit planning, execution, and reporting.

These books are highly recommended for anyone interested in learning more about Information Security and System Auditing.

### **Decision Science for Business**

#### **Course Description:**

Decision Science for Business is a course that explores the application of analytical and quantitative techniques to solve complex business problems. The course covers various aspects of decision-making processes and provides students with the tools and methods to analyze and make decisions using data-driven approaches.

The course will cover topics such as probability theory, statistical inference, decision analysis, optimization, and simulation. Students will learn how to apply these techniques to real-world problems in different industries such as finance, marketing, operations, and supply chain management.

Throughout the course, students will also develop critical thinking and problem-solving skills by working on case studies and hands-on projects. The course aims to equip students with a solid foundation in decision-making and problem-solving techniques that can be applied in various business settings.

By the end of the course, students will have a deep understanding of decision science principles and will be able to apply them to real-world business problems. They will also be proficient in using various analytical and quantitative tools such as Excel, R, and Python. The course is ideal for students who want to pursue careers in data analytics, business consulting, operations management, or any other field that requires strong analytical skills.

#### **Contents:**

Introduction to Decision Science

Overview of Decision Science and its applications in business

The decision-making process

Introduction to probability theory

Data Analysis and Visualization

Descriptive statistics

Data visualization techniques

Correlation and regression analysis

Probability Theory and Statistical Inference

Probability distributions

Sampling distributions

Hypothesis testing

Confidence intervals

Decision Analysis

Decision trees

Utility theory

Risk analysis

Sensitivity analysis

Optimization

Linear Programming

Integer Programming

Nonlinear Programming

Network optimization

Simulation

Monte Carlo simulation  
 Discrete event simulation  
 Queuing theory  
 Simulation optimization  
 Applications of Decision Science  
 Finance and investment analysis  
 Marketing and customer analytics  
 Operations and supply chain management  
 Risk management and insurance  
 Project Work

Hands-on project work applying decision science tools and techniques to real-world business problems

**Learning Outcomes:**

Upon completion of the Decision Science for Business course, students should be able to:

Understand the concepts of decision-making and the decision-making process in a business environment.

Use analytical and quantitative techniques to solve complex business problems.

Apply probability theory and statistical inference to data analysis and decision-making.

Analyze and optimize decision-making processes using decision analysis and optimization techniques.

Design and conduct simulations to model and analyze complex business scenarios.

Interpret and communicate the results of data analysis and simulation models to different stakeholders.

Apply decision science principles to solve real-world business problems in different industries, such as finance, marketing, operations, and supply chain management.

Work effectively in teams to develop and present solutions to business problems using decision science techniques.

Use analytical and quantitative tools such as Excel, R, and Python to analyze data and make informed decisions.

Develop critical thinking and problem-solving skills to make effective decisions in complex business environments.

**Recommended Books:**

Here are some recommended books for Decision Science for Business:

"Data Smart: Using Data Science to Transform Information into Insight" by John W. Foreman - This book provides a practical guide to data analysis and decision-making using Excel, R, and other tools.

"An Introduction to Management Science: Quantitative Approaches to Decision Making" by David R. Anderson, Dennis J. Sweeney, and Thomas A. Williams - This book is a comprehensive introduction to quantitative methods for decision-making, including linear Programming, network analysis, and decision analysis.

"Decision Analysis for Management Judgment" by Paul Goodwin and George Wright - This book provides a practical guide to decision-making using decision analysis techniques, including decision trees, influence diagrams, and probabilistic forecasting.

"Optimization Modeling with Spreadsheets" by Kenneth R. Baker - This book provides a practical introduction to optimization modeling using Excel, including linear Programming, integer Programming, and network optimization.

"Simulation Modeling and Analysis" by Averill M. Law and W. David Kelton - This book is a comprehensive introduction to simulation modeling and analysis, including discrete event simulation, continuous simulation, and simulation optimization.

## Data Management and Visualization

**Course Description:**

Data Management and Visualization is a course that focuses on the fundamental principles and techniques of managing and visualizing data for effective decision-making. The course covers various aspects of data management and visualization, including data modeling, database design, data storage, data cleaning, data integration, and data visualization.

The course begins by introducing students to the basic concepts of data management, including data types, data structures, and data management systems. Students will learn how to design and implement relational databases using SQL and other tools. They will also learn how to manage data using different approaches, including data warehousing, data mining, and big data analytics.

The course also covers data visualization techniques, including charts, graphs, and other visual representations of data. Students will learn how to use visualization tools such as Tableau, Power BI, and D3.js to create effective data visualizations that communicate insights and trends from complex datasets.

Throughout the course, students will develop critical thinking and problem-solving skills by working on case studies and hands-on projects. The course aims to equip students with a solid foundation in data management and visualization that can be applied in various fields, including business, healthcare, finance, and government.

By the end of the course, students will have a deep understanding of data management and visualization principles and will be able to apply them to real-world problems. They will also be proficient in using various data management and visualization tools, including SQL, Tableau, and Power BI. The course is ideal for students who want to pursue careers in data analytics, business intelligence, or any other field that requires strong data management and visualization skills.

**Contents:**

- Introduction to Data Management
- Basic concepts of data management
- Data types and data structures
- Introduction to data management systems
- Relational Databases and SQL
- Relational database design and normalization
- SQL fundamentals
- Database administration and management
- Data Storage and Retrieval
- File organization and access methods
- Indexing and query optimization
- Big data storage and retrieval
- Data Cleaning and Integration
- Data cleaning and preprocessing techniques
- Data integration and data transformation
- Extract, Transform, Load (ETL) tools and techniques
- Data Warehousing and Business Intelligence
- Data warehousing concepts and architecture
- Dimensional modeling and OLAP
- Business Intelligence and data analytics
- Data Mining and Machine Learning
- Data mining techniques and algorithms
- Clustering and classification
- Introduction to machine learning
- Data Visualization Principles and Techniques
- Data visualization principles and best practices
- Visualization techniques using charts, graphs, and other visual representations

Introduction to visualization tools such as Tableau and Power BI

Advanced Data Visualization

Advanced visualization techniques using D3.js and other libraries

Interactive visualization design and implementation

Visual storytelling and communication

**Learning Outcomes:**

Upon completion of the Data Management and Visualization course, students should be able to:

Understand the fundamental principles of data management and visualization, including data modeling, database design, data storage, data cleaning, data integration, and data visualization.

Analyze and manipulate data using SQL and other data management tools.

Design and implement relational databases and data warehousing solutions.

Apply data mining and big data analytics techniques to extract insights from complex datasets.

Visualize data using various charts, graphs, and other visual representations.

Use visualization tools such as Tableau, Power BI, and D3.js to create effective data visualizations.

Interpret and communicate insights and trends from complex datasets using data visualizations.

Develop critical thinking and problem-solving skills by working on case studies and hands-on projects.

Apply data management and visualization principles to real-world problems in various fields, including business, healthcare, finance, and government.

Collaborate effectively in teams to develop and present solutions to data management and visualization problems.

**Recommended Books:**

"Data Management and Visualization Using Python" by Aniket Sule: This book covers data management and visualization using Python, with a focus on Pandas, Matplotlib, and Seaborn libraries.

"Data Management and Visualization Using R" by Yanchang Zhao: This book covers data management and visualization using R, with a focus on the Tidyverse and ggplot2 packages.

"Data Science for Business: What You Need to Know about Data Mining and Data-Analytic Thinking" by Foster Provost and Tom Fawcett: This book provides an overview of data science concepts, including data management and visualization, and how they can be applied to business problems.

"The Visual Display of Quantitative Information" by Edward Tufte: This book is a classic in data visualization, and provides principles for creating effective visual representations of data.

"Data Visualization Made Simple" by Kristen Sosulski: This book provides an introduction to data visualization principles and techniques, and covers popular visualization tools such as Tableau, Power BI, and D3.js.

"Fundamentals of Database Systems" by Ramez Elmasri and Shamkant Navathe: This book provides a comprehensive introduction to database systems, including data modeling, database design, and query optimization.

"Data Warehousing in the Real World: A Practical Guide for Building Decision Support Systems" by Sam Anahory and Dennis Murray: This book provides a practical guide to data warehousing, including design and implementation of data warehouses, data integration, and data mining.

These books can provide a solid foundation for learning data management and visualization principles and techniques, and are suitable for students and professionals alike