

**Minutes
of the
28th Meeting of the Academic Council
held on
Tue 4th & Wed 5th April 2017
by VLC**



Bahria University Islamabad

Reference Designators & Terms used in this Document

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

Item Number	oonn , where oo = ordinal sequence of the Academic Council Meeting. nn = serial number of Item in that meeting. Example: Item 2213 means item No 13 taken up by the 22 nd ACM
Decision on New Item	oonn 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 Previous Item	o₂o₂(oonn) Example: Decision 22(1930) means Decision taken by the 22 nd 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: <ol style="list-style-type: none">Coordinate the actions taken by the Authorities, Entities, Officials, Persons, Units, Depts, Offices, etc listed against "Action".Report to the Council the progress on the matter, through periodic progress reports and at the meeting of the Council.Be overall responsible to the Competent Authority, and the Council, for the case/issue/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 th 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 & Abbreviations used in this Document

ACMROB	ACM Rules of Business
CE	Computer Engineering
CS	Computer Sciences
CSE	Computer & Software Engineering
Dept	Department
DIC	Director Islamabad Campus
DIPP	Director IPP
DKC	Director Karachi Campus
DLC	Director Lahore Campus
DNCMPR	Director NCMPR
DS	Dental Section BUMDC
EDC	Estimated Date of Completion
EE	Electrical Engineering
EES	Earth & Environmental Sciences
ES	Engineering Sciences
HCU	Head of the Constituent Unit (DG, or Director where no DG)
HNS	Humanities & Natural Sciences
HS	Health Sciences
HSS	Humanities & Social Sciences
iaw	in accordance with
ie	that is
IR	International Relations
MS	Management Sciences/Media Studies
MSS	Management & Social Sciences
SE	Software Engineering
Secy	Secretary to the Academic Council
wef	with effect from

**Minutes of the 28th Meeting of the Academic Council
held on Tue 4th & Wed 5th April 2017 by VLC**

Attendance

BUHO

<u>Present</u>		
1. Vice Adm (R) Tanveer Faiz HI(M)	Rector	In Chair
2. Rear Adm (R) Shahid Saeed HI(M)	Pro-Rector/DGIC	Member
3. Mohammad Ehsan Saeed	Dir Academics	Member & Secy
4. Cdre Muhammad Hisham SI(M)	Registrar	Member
5. Cdre (R) Farrukh Mahfooz SI(M)	DE	Member
6. Cdre (R) Naseem Anwar Khan SI(M)	DP&D	Member
7. Captain (R) Ahmad Farooq Butt PN	DA	Member
8. Surg Cdr (R) Hamidullah Arif	DHS	Member
9. Prof Dr Shehzad Khalid	Dir PGP	Member
10. Prof Dr M. Najam ul Islam	Dean (EES)	Member
11. Senior Assoc Prof Dr. Faisal Aftab	DRD/DORIC	Member
12. Senior Assoc Prof Mr Fazal Wahab	DQA	Member

In Attendance

13. Cdre (R) Habib Tariq SI(M)	DF
14. Cdre Zafar Mansoor Tipu SI(M)	DMPRC
15. Capt (R) Imtiaz Khan PN	DHR
16. Senior Assoc Prof Shahid Mustafa Haq	Director LDC
17. Capt (R) Munawwar Ahmad PN	Dy. Registrar (A & C)
18. Capt (R) Azhar Iqbal	Deputy Registrar (Academics)
19. Cdr (R) M Khaleeq Khan PN	SO (Coord)
20. Cdr (R) Abdul Ghaffar PN	DD Academics
21. Lt Cdr (R) Ameeruddin Zafar	ADREGS
22. Senior Assistant Prof Mr Rizwan Aamir	DDIT
23. Senior Assistant Prof Mr M Awais Mehmood	DDIO

BUIC

<u>Present</u>		
24. Cdre (R) Syed Hassan Mustafa SI(M)	Director	Member
25. Senior Prof Dr Tehseen Ullah Khan	HOD(E&ES)	Member
26. Associate Prof Dr Awais Majeed	Acting HOD(SE)	Member
27. Associate Prof Dr Faisal Bashir	HOD(CS)	Member
28. Associate Prof Mr Waheed Hussain	HOD(Media Studies)	Member
29. Associate Prof Dr Uzma Masroor	HOD(PP)	Member
30. Senior Asstt Prof Dr M Ali Saeed	HOD(MS)	Member
31. Senior Asstt Prof Dr Azhar Ahmed	HOD(H&SS)	Member
32. Assistant Prof Dr Khuram Shahzad	HOD(CE)	Member
33. Assistant Prof Dr Saleem Aslam	HOD(EE)	Member
34. Assistant Prof Mr Abdul Rauf Khatana	HOD(LAW)	Member

BUKC

<u>Present</u>		
35. Vice Adm (R) K G Hussain HI(M)	DG	Member (Day-2 only)
36. Cdre (R) Mohsin Hayat Malik TI(M) PN	Director	Member
37. Senior Prof Dr Mubarik Ali	HOD(E&ES)	Member
38. Senior Prof Dr Mustagis ur Rehman	HOD(MS)	Member
39. Senior Assoc Prof Mr Ishtiaq Ahmed	HOD(H&NS)	Member
40. Senior Assoc Prof Dr Haroon Rasheed	HOD(EE)	Member

41.	Associate Prof Dr Humera Farooq	HOD(CS)	Member
42.	Senior Asstt Prof Dr Sohaib Ahmed	HOD(C&SE)	Member
43.	Lecturer Mahe Darakhshan	HOD(Media Studies)	Member

In Attendance

44.	Senior Associate Prof Dr Amir Manzoor	Faculty Member
45.	Erum Shafiq	Manager QA

BULC

Present

46.	Cdre (R) M Amjad Zaman SI(M)	Director	Member
47.	Asstt Prof Dr Muhammad Ahmed	HOD(MS)	Member
48.	Asstt Prof Mr Farhan Saeed Sherazi	HOD(CS&IT)	Member

In Attendance

49.	Cdr (R) Faisal Shabbir T(BT)	Deputy Director
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BUMDC

Present

50.	Vice Adm (R) Tehseen Ullah Khan HI(M)	DG	Member
51.	Prof Dr Asadullah Khan	Principal & Dean HS	Member
52.	Prof Dr Ambreen Usmani	VP/HOD(Anatomy)	Member
53.	Prof Dr Shakeel Ahmed	HOD(Paediatrics)	Member
54.	Prof Dr Nasim Karim	HOD(Pharmacology)	Member
55.	Prof Dr Nighat Rukhsana	HOD(Physiology)	Member
56.	Pro Dr Hasan Ali	HOD(Biochemistry)	Member
57.	Prof Dr M Mohiuddin Alamgir	HOD(Pathology)	Member
58.	Prof Dr. Sameer Shahid Ameen	HOD(Eye)	Member
59.	Associate Prof Dr Kalsoom Fatima	Acting Principal (DS)	Member
60.	Prof Dr Wahab Bukh Kadri	HOD(Oral Medicine) DS	Member
61.	Prof Dr Mushtaq Ahmed	HOD(Periodontology) DS	Member
62.	Senior Assoc Prof Dr Khalid Aziz	Vice Principal DPT	Member

In Attendance

63.	Prof Dr Yamin Taj	Professor of Pathology
64.	Prof Dr Shazia Shakoor	Professor of Physiology
65.	Asstt Prof Dr Ijaz Hussain Zaidi	Professor of Pharmacology

NCMPR

Present

66.	Cdre Dr. M Ihsan Qadir SI(M)	Director	Member
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In Attendance

67.	Senior Lecturer Sadia Sheerazi	Programme Coordinator
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IPP

Present

68.	Prof Dr Zainab F. Zadeh	Director	Member
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Proceedings

Preliminaries

Commencement of the Meeting, Opening Remarks of the Chair and Meeting Schedule

1. With the quorum complete, the proceedings commenced at 10:00 hrs on both days, with recitation from the Holy Quran and continued till 18:00 hrs on Day-1 and 20:30 hrs on Day-2, with an hour-break for lunch and prayers each day.

2. In his opening remarks, the Chair underlined the importance of participation in the proceedings while staying focussed. He asked the Sponsors of various cases not to get disheartened if the Council did not approve them.

Confirmation of the Minutes of the 27th ACM

3. The Secretary apprised the Council that draft minutes of the 27th ACM were communicated to all members and non-member participants, for comments, on 15th Oct 2016. One honourable member raised four observations and pointed out one typo. The observations were compared with audio-video recording of the ACM; the minutes were found to be recorded accurately and truly. The member was accordingly responded to the same day. Subsequently, the draft minutes were processed on file and the approved minutes were then disseminated on 20th Oct. There had been no comments or observations on the approved minutes. The Minutes of the 27th ACM were, therefore, tabled for confirmation. All the houses on the VLC proposed/seconded/endorsed the minutes, upon which the Council confirmed the minutes of the 27th ACM.

Review Items

Item 2009: Commencement of Indigenous PG Programmes (MPhil & PhD) in Basic Health Sciences at BUMDC

Responsibility: DG BUMDC, DPGP

Decision of the 27th ACM

4. The Council resolved that:

- a. DDHS is to pursue with the PMDC the issuance of notification for starting PG programmes in BHS at the BUMDC.
- b. Dir PGP to be ready to send the case to HEC as soon PMDC notification is received.
- c. The BUMDC PG programmes shall be semester based.
- d. Dir PGP shall study the semester dynamics for the PG programmes at the BUMDC.
- e. There shall be two batches per year.

5. Progress is to be reported on all aspects.

Progress reported

6. **DHS.**

- a. Notification is to be issued by Ministry of Health Regulations to start PG Programs at BUMDC which is still pending due to some legal issue at their level. BU Legal Advisor is pursuing the case.
- b. The PG Programs shall be semester based and two batches shall be inducted per year, as decided by the Council.
- c. BU has also applied to HEC for permission to launch the MPhil Programs. Their response is awaited.
- d. In the meantime, after shortening of programme duration to two years, the syllabus of MPhil Programs at BUMDC has been revised and is attached as a separate document as Appendix 2009. The Council is requested to accord approval to the revised syllabus.

7. **DPGP.** Three cases for starting MPhil Programs - in Anatomy, Pathology and Pharmacology - were forwarded to HEC in Nov where they are currently under evaluation.

Discussion

8. DHS apprised the house that Ministry of Health was in confusion on issuance of notification as health issues became a provincial subject after the 18th amendment in the constitution, and that matter was likely to be taken up in the cabinet. On frequency of admissions, Principal BUMDC informed the Council that PMDC rules mandated admissions once a year only. The Chair showed concern that this restriction was not mentioned when this point was decided at the last ACM. There was also some discussion on who the regulatory body was – HEC or PMDC – and on the revised syllabus, TOS and Examination Rules. The Chair pended the decision on admission frequency and asked DQA and DPGP to visit BUMDC to ensure that the revised syllabi, TOS and Examination Rules were aligned with HEC's and BU's Academic Rules.

Decision 28(2009)

9. a. DPGP and DQA visit BUMDC to ensure that Examination Rule, TOS and Curricula of BUMDC's PG programmes in BHS are aligned with the HEC's and BU's Academic Rules.
b. Number of admissions per annum to be decided later.
c. NOC be pursued continuously with the HEC .
d. Progress to be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	a. DPGP & DQA c. Registrar b.d. Principal BUMDC	a. DPGP c. Registrar b.d. DG BUMDC
Statutory Documents affected:	NA	

Item 2234: Bahria University Lahore Campus – Progress Report

Responsibility: DLC

Decision of the 27th ACM

10. The Council resolved that:
- a. 5% relaxation to the admission criterion for BBA and BSIT programmes permitted for Spring 2017 admissions.
 - b. Progress on the Campus be reported.

Progress since the last ACM as reported by DLC

11. **Academics.**

- a. **BS Psychology.** Bahria Foundation has shown interest to construct 4th floor with steel structure, during the summer vacation and before Fall-2017. Approval is, therefore, requested to launch BS Psychology, which was held in abeyance vide ACM Decision 2624, in Fall-2017 or thereafter, subject to construction of the 4th floor.
- b. **PhD Management Sciences.** Not enough relevant faculty members to enable resubmission of the case to HEC. Hiring in process.
- c. **MS Supply Chain Management.** PhDs in Supply Chain are not available. Hiring in process.

12. **Admissions.**

- a. 5% Waiver in Admission Criteria for BSIT & BBA programmes in Spring 2017 was availed as follows:

Programme	No of students availed waiver	Total class strength	% age of students availing waiver
BSIT	11	28	39%
BBA	3	15	20%

- b. The waiver may be continued for Fall 2017 admissions.

13. **Civil Works.**

- a. Rent has been revised with a commitment by Bahria Foundation that construction of 4th Floor will be completed by Aug 17. Fresh lease agreement is recommended to be signed with Bahria Foundation, as requested vide BULC letter BULC/Gen/2017/77 dated 17 Feb 17.
- b. 50 kanals land has been purchased and another 50 kanals are being acquired for establishment of new campus at the Dream Gardens Society on the Defence Road. Shortlisting of consultant firm is in process at the BUHO.

Discussion

14. DLC briefed on the progress, reiterating the points and recommendations made in the progress report. He underscored the efficacy of waiver by stating that a good proportion of students – 65% in BSIT and 50% in BBA – who availed the admission waiver had scored a CGPA of 2.5 or above. Most of the speakers considered it pre-mature to start BS PP, which had been requested by BULC, and stressed the importance of upcoming accreditation visits. The Chair asked Dean EES to follow up on the Mock Audit to ensure that the deficiencies reported in the audit had been made good. The admission waiver was considered bona fide. The Council decided on the same lines.

Decision 28(2234)

- 15. a. 5% waiver in admission criterion for BBA and BSIT programmes approved for Fall 2017 admissions.
- b. BULC is to focus on forthcoming accreditation visits for BS(IT) & BS(CS) programmes and induction of more PhD faculty members.
- c. A team headed by Dean ES is to follow-up on the Mock Audit and ensure that deficiencies pointed out earlier have been made good.
- d. BS Professional Psychology not approved for the time being. The Campus is to stabilize first. Launch of programme will be considered subject to successful accreditation visit and construction of the 4th floor.
- e. Progress to be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	a.b.d.e. DLC c. Dean EES & DQA	a.b.d.e. DLC c. DQA
Statutory Documents affected:	NA	

Item 2302: MS Computer Engineering (Evening) at BUIC - Launch Proposal

Responsibility: DIC

Decision of the 27th ACM

16. Progress on the status of the programme to be reported till its maturity.

Progress reported by HOD(CE)IC

17. Efforts are continuously being made to strengthen the program through professional and personal linkages of Faculty of Engineering Sciences in general and through Faculty of Computer Engineering in particular.

18. Keeping in the view that most of the target audience (i.e. students to be enrolled) actively use social media e.g. Facebook, a departmental video has been prepared and shared on social media to promote the CE programs. Similarly, departmental desk was also setup to promote the programs on education expos.

19. Some improvement has been noticed, as in the current semester (Spring 2017), 11 students were admitted to the program, compared to 6 each in the previous two.

Discussion

20. HOD(CE)IC highlighted the points made in the progress report over which the Council expressed satisfaction and dropped the point.

Decision 28(2302)

21. Point dropped.

Item 2331: Reforming the Academic Audit system of BU

Responsibility: Dean M&SS

Decision of the 27th ACM

22. Point dropped except for the Faculty of Management Sciences. HODs MS shall put up progress on audit documentation to the Dean who shall put up a consolidated progress report to the Academic Council.

Progress reported by the Dean(M&SS)

23. In the light of mock audit for NBEAC, Action Plan 2 was developed and, after its approval by the Rector, the plan has been assigned to the faculty's team for preparation till 30th June.

24. BU Academic Audit Manual has also been revised and disseminated after its approval by the Rector.

Discussion

25. Dean MSS reiterated the points made in the progress report. DQA reported that the audit regime was being implemented rigorously. The Chair expressed satisfaction that the audit system was taking roots and that BUMDC was also being brought into the loop. With that the Chair decided to further streamline the system and keep the point on agenda for progress to be reported.

Decision 28(2331)

26. Point to remain on the agenda and progress be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	HODs MS	Dean MSS
Statutory Documents affected:	NA	

Secretary's Note

27. Since the item is confined to audit documentation and reporting in the Faculty of Management Sciences, as desired by Dean MSS in the 27th ACM, the title is changed to "Audit Documentation and Reporting in the Faculty of Management Sciences, Status of".

Item 2334: BBA and MBA Programmes - Reforms in the Course Outlines in line with the Heuristic method of Teaching and the corresponding Evaluation Techniques

Responsibility: Dean(M&SS)

Decision of the 27th ACM

28. Progress on the item be reported.

Progress reported by the Dean(M&SS)

29. Course outlines were reformed as per the ACM decision and Heuristic method of teaching was adopted in the entire curriculum especially in the SGP for the BBA program.

30. Flipped class teaching model is in second semester in the MS Depts at the BUIC and BUKC, on trial basis with a few courses. Detailed reports on the first semester's experience of flipped class was submitted to the Management asking for support to expand this method to the entire courses of the MBA program. The reports are attached as Appendix 2334 (page 59).

Discussion

31. HODs MS KC and IC went over the salient points of their reports on Flipped Classroom methodology, most of which were common in nature. The case proposal to extend the methodology across the MBA syllabi drew lot of comments. HOD MS IC linked it to the new MS building. DKC considered it a huge undertaking before which the issues of space and faculty's capacity building needed to be addressed. DLDC commented that the methodology was alien to Pakistan; he recommended a further training visit by Dr Rowland of Valparaiso University and consolidation of the Case Study method before the Flipped classroom. There was also a suggestion to increase the number of courses on this methodology gradually rather than go across the board in one go. The Chair asked the HODs to focus on the methodology and left determining the scope of the methodology at the discretion of the campuses.

Decision 28(2334)

32. HoDs are to focus on Flipped Classroom methodology. Increasing the scope of the methodology left at the discretion of the Campuses. Progress to be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	HODs MS	- DIC, DKC, DLC (Admin) - Dean MSS (Acad)
Statutory Documents affected: MBA Roadmaps		

Secretary's Note

33. In view of the proceedings, the item is retitled as "BBA & MBA programmes – Heuristic & Flipped Classroom Methods of Teaching & Evaluation".

Item 2432: MS Supply Chain Management at BUKC - Launch Proposal

Responsibility: Registrar

Decision of the 27th ACM

34. Progress on the case be reported.

Progress reported by Registrar

35. The case has been at the HEC since Nov 2015. The last query raised by HEC was answered in Oct. Despite repeated visits/requests, the case remains pending for issuance of NOC.

Discussion

36. DPGP, and later DQA, apprised the Council that the main reason for delay at the HEC was that HEC had clubbed BU's programmes together and asked to identify 2 PhDs against each MS programme. DKC informed that shortage of PhDs in the field persisted while HOD MS KC commented that PhDs with SCM as an elective were available. The chair directed to speed up the induction process and report progress at the next ACM.

Decision 28(2432)

37. Progress be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD MS KC	DKC
Statutory Documents affected: NA		

Item 2437: MS in Geology at BUKC – Launch Proposal

Responsibility: DKC

Decision of the 27th ACM

38. Progress on the case be reported.

Progress reported by DKC

39. MS Geology forecast was 5 students for Spring 2017. Three students applied in the program; one appeared in the test and passed. The programme could not be started due to less numbers.

Discussion

40. HOD EES KC attributed programme's unresponsiveness to the same programme being offered by the public sector universities, and added that BS GeoPhysics was the only successful programme in the EES Dept at BUKC. DKC refloated the idea of incentives for admissions. The Chair asked the Campus to cease offering MS Geology and concentrate instead on the BS and other MS level programmes. HOD EES KC made a last ditch effort to seek postponement of decision for one more semester but it was not acceded to.

Decision 28(2437)

41. With immediate effect, MS Geology is not to be offered at the BUKC. Point dropped.

**Item 2449: FCPS & MCPS Programmes in Clinical Dental Sciences at BUMDC – Launch
Proposal**

Responsibility: DG BUMDC

Decision of the 27th ACM

42. Progress on the case be reported.

Progress reported by DHS

43. 1st Progress Report. PMDC inspection of BUMDC Dental Section for full recognition of BDS and House Job was conducted on 27th September 2016. The Recognition Certificate is still awaited from PMDC. Upon receipt of the same from PMDC, CPSP will be approached for re-inspection of college for accreditation of FCPS & MCPS programmes in Clinical Dental Sciences at the BUMDC Dental Section.

44. 2nd Progress Report.

- a. Deficiency of Teaching Staff. Required faculty as per departmental specialty not yet inducted due to non-availability of candidates as per PMDC criteria, despite being advertised twice.
- b. Supportive Staff. Deficiency has been made good.
- c. Departmental Libraries. Libraries have been established in each department.
- d. Number and Variety of Cases. Separate record is being maintained.

Discussion

45. Principal Dental Section BUMDC attributed the delay to PMDC's taking 5 months to decide on the inspection, after all the observations had been rectified. Detailed discussion followed on the roadmap the Dental Section had followed. It was agreed that it was not right to venture into FCPS and MCPS while the first batch was yet to graduate, and that the right approach was to stabilize the BDS programme first, then apply for the additional 25 seats and finally go for the FCPS and MCPS. The Chair asked the Dental Section to prepare for PMDC's re-inspection, pursue additional 25 seats and continue preparing for PG programmes. He asked the Dean HS to play an effective role in these pursuits. The Chair agreed to the Secy's suggestion to retitle the item as "BUMDC Dental Section – Progress Report".

Decision 28(2449)

- 46.
- a. Dental College is to prepare for re-inspection by PMDC; all previous observations are to be rectified before the inspection.
 - b. BUMDC is to pursue the additional 25 seats in BDS aggressively.
 - c. Dental Section is to continuously prepare for PG programmes.
 - d. Dean Health sciences is to play effective role in Dental Section's pursuit of the said objectives.
 - e. Progress be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	a.b.c.e. Principal Dental Section d. Dean Health Sciences	DG BUMDC
Statutory Documents affected:	NA	

Item 2452: Revamping Media Studies at the BUIC and BUKC

Responsibility: DIC, DKC, Dir P&D, HOD Media Studies IC

Decision of the 27th ACM

47. The Council resolved that:

- a. Depts of Media Studies BUIC and BUKC are to move together.
- b. Networking and domain requirements for the web TV to be hosted by IC be met.
- c. Licence for FM radio at the BUKC is to be applied for and processed by the HOD Media Studies IC.

Progress reported by DIC/HOD(Med Studies)IC

48. The Media Studies Depts. of BUIC & BUKC are in close contact with each other. MS Dept BUIC is taking BUKC in the loop on every major development. The Project Director (Current HOD) has also visited BUKC recently along with the Technical Head of Media House to provide both academic and technical support and to develop teams for BUTV at Karachi Campus. The Courses taught at both campuses are aligned with each other.

49. Work is underway on fulfilling the Networking and Domain requirements in consultation with DD (IT) BUHQ. Basic work has already been done.

50. For BUKC FM Campus Radio, copies of all relevant documents were provided to Media Studies Dept Karachi to apply for the license. PEMRA has regretted to provide FM Radio license on the basis of BUKC being part of the same organization, which has been granted a license already (BUIC). However, we will take up the issue again informing PEMRA that Karachi Campus is part of Bahria University but have a separate Department, which will require a separate FM station to cater to the academic requirements. A new application is to be forwarded by the DGKC.

Progress reported by Dir BUKC

51. BUKC has submitted FM radio licence case to PEMRA. However, the case was not approved on the grounds that they have already allocated one licence to the BUIC. The case will be re-submitted for review after launch of FM radio station at the BUIC.

Discussion

52. HOD Media Studies IC briefed the Council on the important points from the progress report, adding that the Frequency Allocation Board (FAB) preferred to licence commercial radios as opposed to public. The HOD was asked to look into alternative options in the web FM radio or licences in the name of CUs as other universities were doing. Functioning of BUTV and progress as a whole were considered satisfactory and the point dropped.

Decision 28(2452)

53. Point dropped.

Item 2511: MPhil Programmes - Change of MPhil Nomenclature to MS

Responsibility: Registrar

Decision of the 27th ACM

54. Progress be reported.

Progress reported by Registrar

55. The case is at HEC since Nov 15. Despite repeated visits/requests, the case remains pending at HEC for issuance of NOC.

Discussion

56. Registrar informed the house that the issue was being pursued actively at HEC and that, initially, curriculum was not aligned with the NCRC guidelines which was subsequently done. DPGP apprised the Council that, as with other MS programmes pending with the HEC, the main reason for delay was the clubbing together of BU's programmes and HEC's requirement to present/identify two PhDs against each MS programme. The Council decided to keep the point on the agenda for progress be reported.

Decision 28(2511)

57. Progress be reported.

Action Required	Action by & Responsibility of
Implementation of the Decision	Registrar
Statutory Documents affected: NA	

Item 2519: PhD in Management Sciences at BULC - Launch Proposal

Responsibility: DLC

Decision of the 27th ACM

58. Progress be reported.

Progress reported by DLC

59. There have not been enough and relevant PhD faculty members available to enable re-submission of the case to HEC. Hiring is in process.

Discussion

60. The point had already come under discussion under Item 2234; BULC was asked to continue efforts towards launch of the programme and report progress.

Decision 28(2519)

61. Progress be reported.

Action Required	Action by & Responsibility of
Implementation of the Decision	DLC
Statutory Documents affected: NA	

Item 2605: Pakistan Studies & Islamic Studies, Revised Curriculum of

Responsibility: Deans, HOD HSS IC

Decision of the 27th ACM

62. a. Revised curriculum of Pakistan Studies, as was presented to the 26th ACM, approved for implementation wef Spring 2017 batches. Point dropped from the agenda.
- b. Curriculum of Islamic Studies be reviewed further for possible simplification, by the HOD HSS IC; progress be reported.
- c. The course may continue to be taught under the new syllabus in the current (Fall 2016) semester.

Progress reported

63. **HOD(MS)KC.** Review of the course outline is under way.
64. **HOD(H&SS)IC.** Curriculum of Islamic Studies has been reviewed, and is placed at Appendage 2605 (page 66) for presentation to the 28th ACM.
65. **DLC.** Noted for Compliance.

Discussion

66. HOD(HSS)IC presented the revised curriculum as at Appendage 2605 (page 66). The Council approved the curriculum university-wide and dropped the point, as sufficiently reviewed, actioned and notified.

Decision 28(2605)

67. Curriculum for “Islamic Studies”, the core Bachelor level course, placed at Appendage 2605 (page 66), approved for university-wide implementation, with effect from Fall 2017 intakes. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	All HODs	All Deans
Statutory Documents affected:	Curricula of all BS level courses.	

Item 2611: MS Finance – Introduction of Islamic Banking and Finance as a Specialisation

Responsibility: Dean M&SS

Decision of the 27th ACM

68. Progress be reported on introduction of the specialisation at both BUIC and BUKC.

Progress reported

69. **Dean M&SS.** The specialization of Islamic Finance was offered to MS Finance intake in Spring 2017.
70. **HOD(MS)KC.** Could not make a class because of low strengths of students.
71. **HOD(MS)IC.** The specialization of Islamic Finance was offered to MS Finance intake in Spring 2017.

Discussion

72. Low interest notwithstanding, the Council decided to keep the specialisation on offer, and dropped the point.

Decision 28(2611)

73. Islamic Banking and Finance shall continue to be offered as a specialisation in MS Finance. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HODs MS	Dean MSS
Statutory Documents affected: Roadmap and Prospectus of MS Finance		

Item 2612: MS(IR) at BUIC – Launch Proposal

Responsibility: Registrar

Decision of the 27th ACM

74. The case be followed up expeditiously with the HEC and progress reported.

Progress reported by HOD(H&SS)IC

75. MS(IR) programme commenced Spring 2017. However, the programme roadmap requires a revision, as follows:

- a. HSS department has offered MS (IR) programme from Spring 2017 semester. The programme has been approved by the BU Academic Council and the HEC. According to the roadmap submitted at the time of approval, first semester comprises 3 courses of 4 credit hours each (a total of $3 \times 4 = 12$ credit hours) whereas, the second semester comprises 4 courses of 3 credit hours each (total credit hours =12).
- b. This roadmap was prepared in line with the guidelines on HEC's official website. However, during the accreditation process, the HEC expert opined that all the courses should be of 3 credit hours.
- c. It appears from discussion with the consultant (QAD) HEC and the subject expert that they may revise the road map to contain all courses of 3 credit hours only. It is further learnt that NDU has also revised its roadmap (from 4 credit courses to 3 credit courses) on the advice of HEC. Moreover, other departments at BU are also offering 3 credit hour courses for MS/MPhil classes.
- d. It is, therefore, recommended that the roadmap may be revised to comprise 4 courses of 3 credit hours each. The point has already been approved by Competent Authority on file, and is presented to the Council for ratification/*ex-post facto* approval.

76. The revised roadmap is placed at Appendage 2612 (page 70).

Discussion

77. HOD HSS IC presented salient points from the progress report. The Council ratified the revised syllabus and dropped the point.

Decision 28(2612)

78. Revised MS IR syllabus, placed at Appendage 2612 (page 70) and already approved on file, ratified. Point dropped.

Action Required	Action by & Responsibility of
Implementation of the Decision	HOD HSS IC
Statutory Documents affected: MS IR Roadmap	

Item 2613: MS(Information Security) at BUIC – Launch Proposal

Responsibility: Dean ES

Decision of the 27th ACM

79. MS Information Security, and its roadmap placed at Appendage 2613 approved for launch at the BUIC subject to NOC/approval from the HEC. Progress be reported.

Progress reported by HOD(CS)IC

80. The case is at the HEC. Queries raised by their subject experts have been answered.

Decision 28(2613)

81. The Council was informed that NOC from HEC had been received the day before. The Council asked for progress to be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD CS IC	DIC
Statutory Documents affected:	NA	

Item 2615: MS Mathematics at BUIC – Launch Proposal

Responsibility: DIC

Decision of the 27th ACM

82. MS Mathematics, as per roadmap at Appendage 2615 approved for BUIC as an evening programme, subject to NOC/approval from the HEC. Progress to be reported.

Progress reported by HOD(CS)IC

83. The case was submitted to HEC for obtaining NOC where it was reviewed by the subject experts. The subject experts raised some observations on the roadmap which have since been addressed and approved by the DBOS and FBOS. The revised roadmap, placed at Appendage 2615 (page 72) is presented to the ACM for approval prior despatch to the HEC.

Discussion

84. The Council was informed that NOC from HEC had been received the day before. HOD(CS)IC made a presentation highlighting the changes made in the roadmap; the roadmap is attached as 2615 (page 72). The Council ratified the revised roadmap and asked for progress to be reported.

Decision 28(2615)

85. Revised roadmap for MS Mathematics, placed at Appendage 2615 (page 72), ratified. Progress be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD CS IC	DKC
Statutory Documents affected: Roadmap for MS Mathematics		

Item 2616: MS Applied Mathematics at BUKC - Launch Proposal

Responsibility: DKC

Decision of the 27th ACM

86. MS Mathematics for BUKC to be re-tabled after induction of the second PhD faculty member.

Progress reported by DKC

87. The second PhD faculty member has joined BUKC on 17 February 2017 and, with that, all the pre-requisites to send the case to HEC for NOC have been completed. The working paper, feasibility study, programme roadmap and curriculum are placed at Appendage 2616 (page 86).

Discussion

88. HOD HNS KC presented salient points from the working paper, feasibility study and the roadmap, all placed at Appendage 2616 (page 86). Most speakers stressed that MS Mathematics at BUKC ought to be the same programme as the one at BUIC in which case the programme needed to be retitled as "MS Mathematics". There was some discussion on the parent department for this programme with most speakers suggesting that it ought to be CS Dept and not HNS as Humanities and Natural Sciences was a misnomer in itself. Agreeing to the proposals the Chair asked Dean EES to realign the proposal with BUIC's before the case was forwarded to HEC.

Decision 28(2616)

89. a. Programme retitled as "MS Mathematics" and to be run by the CS Dept, on the same lines as at BUIC.
- b. Before the case is forwarded to HEC, Dean EES is to align the programme curriculum and roadmap with the ones approved by HEC for BUIC.
- c. Progress be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	a.c. HOD CS KC b. Dean EES	a.c. DKC b. Dean EES
Statutory Documents affected: Curriculum and Roadmap, Course Code Handbook		

Item 2619: MS in HRM & Organizational Psychology at BUKC – Launch Proposal

Responsibility: Registrar

Item 2620: MS in Risk Management at BUKC - Launch Proposal

Responsibility: Registrar

Decisions of the 27th ACM

90. Cases be followed up expeditiously and progress reported.

Progress reported by Registrar

91. The cases were forwarded to HEC on 4 May 2016. HEC's last queries were answered in Oct. Despite repeated visits/requests, the subject cases are still pending at HEC for issuance of NOC.

Discussion

92. These two items were taken up together because of their identical status. As with other MS programmes pending with the HEC, DPGP apprised the Council that the main reason for delay at the HEC was that HEC had clubbed together BU's programmes and asked to identify two PhDs against each MS programme. The Council decided to keep the point on the agenda for progress be reported

Decision 28(2619)

Decision 28(2620)

93. Progress be reported.

Action Required	Action by & Responsibility of
Implementation of the Decision	Registrar
Statutory Documents affected: NA	

Item 2621: MS EE at BUKC in the Weekend Format – Launch Proposal

Responsibility: DKC

Decision of the 27th ACM

94. Progress to be reported.

Progress reported by DKC

95. The program was offered in Fall 2016 and Spring 2017 but attracted few applicants. Therefore, it could not be started. The University's central admission advertisements did not include the 'weekend' part in the final advertisement. It is recommended that we continue advertising the program and see what the response is in the Fall 2017 semester.

Discussion

96. HOD EE KC attributed low turnout for the programme to the students split between weekend and evening preferences and, perhaps, higher fee at BU. Responding to queries he added that Hamdard, MAJU and CBM were running the same programme in the weekend format with success and that faculty for Engg Management was difficult to come by. Dean EES observed that shifting to Weekend format was BUKC's own choice to attract on-the-job scholars. The Council decided to keep the point on the agenda for progress to be reported.

Decision 28(2621)

97. Progress be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD EE KC	DKC
Statutory Documents affected: NA		

Item 2622: MS Engineering Management at BUKC – Launch Proposal

Responsibility: DKC

Decision of the 27th ACM

98. Progress be reported.

Progress reported by DKC

99. The case could not be sent to HEC for want of relevant PhD Faculty Members. Head hunting continues and the case will be sent to HEC accordingly.

Discussion

100. Considering HOD EE KC's comment on difficulty in finding Engineering Management faculty, as part of discussion in the previous point, the Chair dropped the point.

Decision 28(2622)

101. Point dropped.

Item 2623: PhD Psychology at BUIC - Launch Proposal

Responsibility: DIC

Decision of the 27th ACM

102. Progress be reported.

Progress reported by HOD(PP)IC

103. First batch of 6 has been admitted and classes started. Books have been purchased and are available in library. Procurement of lab equipment is in process.

Discussion

104. HOD PP IC highlighted the requirement of internship for which a separate application was being written to PNS HAFEEZ. The Council considered the progress satisfactory and dropped the point.

Decision 28(2623)

105. Point dropped.

Item 2625: MS Supply Chain Management at BULC – Launch Proposal

Responsibility: DLC

Decision of the 27th ACM

106. Progress to be reported.

Progress reported by DLC

107. PhDs in Supply Chain are not available. Hiring is in process.

Discussion

108. The point had already come under discussion under Item 2234. In view of difficulties in finding PhD faculty, the Council dropped the point and asked BULC to report any development as part of the overall progress report (Item 2234). HODs MS KC and EES KC suggested that ground realities and difficulties in implementing HEC rules be taken up with the HEC. The Chair responded that HEC instructions needed to be complied so that our graduates did not suffer when it came to attestation of degrees by HEC.

Decision 28(2625)

109. Point dropped. Any development on the case be reported as part of the overall Progress Report on BULC in Item 2234.

Item 2637: Reduction of Semester Teaching Weeks to 15 and Introduction of Students Week for Co-Curricular Activities

Responsibility: DIC, DKC, DLC, DIPP & DNCMPR

Decision of the 27th ACM

110. A 3-day period immediately after the mid-term examinations shall be dedicated as the 'students week'. The efficacy of the concept shall be reviewed at the next Council meetings.

Progress reported

111. **DIC.** The first Students' Week was held in Fall 2016 semester from 15th to 17th Nov, 2016. It was a huge success based on the experience gained from this activity, recommendations were sent to BUHO. As per the direction of BUHO, Students' Week will now be conducted in every Fall Semester.

112. **DKC.** Bahria University Karachi Campus celebrated Students Week 2016 on 16-18 November 2016. Student's week was celebrated with objective to provide a platform to students as well as faculty to show their potential by participating in different activities. The main theme chosen for this event was 'Celebrating Diversity' in order to match it with the current atmosphere. BUKC witnessed a huge crowd of students enjoying themselves at different events. IPP-BUKC organized Mental Health Awareness Camp to provide counseling to the students. Sports Week was also inaugurated by former cricket player Mr Jalaluddin. Moreover, various co-curricular and social activities like Movie Mania, Live Music Sessions and Motor Show were organized which the students enjoyed thoroughly. Students from multiple departments actively took part in organizing and participating in the event, making of students week a huge success.

113. **DLC.** Complied.

114. **Dir IPP.** Decision Implemented.

115. **NCMPR.** Nil return.

Discussion

116. Expressing satisfaction over the progress, the Council dropped the point.

Decision 28(2637)

117. Point dropped.

Item 2639: Community Service - Integrating into Curriculum

Responsibility: DIC, DKC, DLC, DIPP, DNCMPR

Decision of the 27th ACM

118. The Council resolved that:

- a. CSP shall be carried out in semesters 3-6, spread over any number of semesters from one to four.
- b. CSP shall involve 40 hrs of dedicated fieldwork; report writing shall be exclusive to this 40-hr duration. Methodology for completion of 40 hrs CSP are left with the CUs in accordance with their local requirements.
- c. Externally issued CSP certificates shall not be accepted; only the certificates endorsed by the University's SSCs shall be accepted towards CSP.
- d. CSP data shall be maintained at the SSC and in the Dept.
- e. Department's Advisor Student Affairs shall act as the CSP Coordinator.
- f. Primary responsibility for students' CSP shall rest with the HOD.

119. Progress on implementing the new CSP rules is to be reported.

Progress reported

120. **DIC.** CSP is being carried out according to the decision of the Academic Council. CSP report has been implemented on students of Spring-2017 intake onwards.

121. **DKC.** Noted for compliance.

122. **DLC.** Being Complied.

123. **Dir IPP.** Decision Implemented

124. **NCMPR.** Nil return is submitted as NCMPR runs weekend programs only.

Discussion

125. Expressing satisfaction over the progress, the Council dropped the point.

Decision 28(2639)

126. Point dropped.

Item 2640: BBA Programme - Activity Based Assessment of the 'Oral Communication' Course

Responsibility: Dean M&SS

Decision of the 27th ACM

127. The Council resolved that the word "listening" shall be added to the Academic Council Decision 2640, and its scope extended to all Departments of Management Sciences; Academic Council Decision 2640 shall now read as:

"The 40-mark 'Activity-based Assessment' format for the final examination of 'Oral Communication' course of BBA, comprising mock interviews, listening, group presentations and group participation, approved for all Departments of Management Sciences with immediate effect."

128. Progress to be reported.

Progress reported

129. **Dean M&SS/HOD(MS)KC.** Amendment was fully adopted in the final examination of Oral Communication and Public Speaking in the Fall 2016 semester.

130. **HOD(MS)IC:** BBA students of BUIC studying Oral Communication went through Activity based assessment for Fall 2016 semester being taught by the HSS Department.

131. **DLC:** Implemented from Fall 2016.

Discussion

132. Expressing satisfaction over the progress, the Council dropped the point.

Decision 28(2640)

133. Point dropped.

Item 2643: Grooming Students, Framework for

Responsibility: Dean M&SS, Dean ES

Decision of the 27th ACM

134. Progress to be reported.

Progress reported

135. **Dean(ES):** A committee of the following members has been constituted to review/revise the Non-Core courses, in consultation with the BUKC and iaw the guidelines of the accreditation bodies, by 15th Mar:

- a. Dr. Khurram Shahzad - HoD - CE
- b. Dr. Aansa Rukya Saleem - AP - EES
- c. Dr. Raja M. Suleman - AP - SE
- d. Ms. Sabeen Arshad - Sr. Lec - CS
- e. Mr. Junaid Imtiaz - Sr. Lec. - EE

136. **HODMS(KC).**

- a. The process of student grooming program for the BBA and BS Psychology students at the Management Sciences departments and IPP has been initiated wef Fall 2016. HODs are taking measures accordingly.
- b. In this regard, elementary discussion with the Social Sciences department and Dean ES is underway.
- c. Students Career Services Manual has been prepared and submitted to the Competent Authority for approval.
- d. A report at the end of Fall 2016 semester has been prepared in which some recommendations have been given for further improvement.

Discussion

137. Dean EES presented a list of practices and the strategy adopted for grooming of the students highlighting that Faculty of Engineering Sciences was different from Management Sciences insofar as the student grooming methodology was concerned. Presentation is attached as Appendix 2643 (page 92). The Council decided to keep the point on the agenda.

Decision 28(2643)

138. Progress be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	HODs	Deans
Statutory Documents affected: NA		

Item 2646: Affiliation of N&H School PNS BAHADUR for Cat B Hydrographic Course

Responsibility: DNCMPMR

Decision of the 27th ACM

139. Progress be reported.

Progress reported

140. Affiliation to N&H school has not been approved for not conforming to HEC affiliation criteria vide BUHO letter No. RBU/369/1/547 dt 27 Dec 2016. Point may be dropped.

Discussion

141. The Council dropped the point in view of the developments reported.

Decision 28(2646)

142. Point dropped.

Item 2707: BS Economics Programme at BUIC – Launch Proposal

Responsibility: DIC

Decision of the 27th ACM

143. The Council resolved that:

- a. BS Economics approved in principle for launch at the BUIC wef Fall 2017.
- b. Infrastructure requirements for the programme be put up on file.
- c. Progress be reported.

Progress reported by HOD(MS)IC

144. Current infrastructure will be utilized by the MS Department BUIC by shifting 3.5 Years MBA to the evening to intake one section of BS Economics in Fall 2017.

Discussion

145. HOD MS IC informed the Council that 4 such programmes would be started in the new MS building while Dean MSS commented that such a programme would best be run under the Dept of Social Sciences. The Council decided to keep the point on agenda for progress to be reported.

Decision 28(2707)

146. Progress be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD MS IC	DKC
Statutory Documents affected:	NA	

Item 2709: MS Islamic Banking & Finance at BUIC – Launch Proposal

Responsibility: DIC

Item 2710: MS Marketing & Sales at BUIC – Launch Proposal

Responsibility: DIC

Decisions of the 27th ACM

147. MS Islamic Banking & Finance and MS Marketing & Sales approved for launch at the BUIC as an evening and weekend programmes wef Fall 2017, subject to NOCs/approval from the HEC. Progress be reported.

Progress reported by HOD(MS)IC

148. Both programmes waiting for HEC approval.

Discussion

149. The two items were taken up together in view of their identical status. HOD MS IC informed the Council that both the programmes were in queue and MS Marketing & Sales was last seen on the desk of DG Acad HEC. Responding to queries, he added that two MOUs for collaboration had been received from Mezan Bank while no such initiative was in hand viz Ahsan Trust. He was asked to bring State Bank of Pakistan on board.

Decision 28(2709)

150. Progress be reported with particular reference to collaboration with the Mezan Bank and the State Bank of Pakistan.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD MS IC	DIC
Statutory Documents affected:	NA	

Item 2712: PhD Software Engineering at BUKC – Launch Proposal

Responsibility: DKC

Decision of the 27th ACM

151. PhD Software Engineering approved for BUKC subject to NOC/approval from the HEC. Progress to be reported.

Progress reported by DKC

152. The case for PhD SE has been forwarded to HEC for approval. Hopefully, the program will be launched w.e.f Fall 2017.

Discussion

153. DPGP and DQA reported putting the programme on top priority at the HEC. Council asked for progress to be reported.

Decision 28(2712)

154. Progress be reported.

Action Required	Action by & Responsibility of
Implementation of the Decision	Registrar
Statutory Documents affected: NA	

Item 2713: PhD Program in Environmental Sciences at BUIC – Launch Proposal

Responsibility: DIC

Decision of the 27th ACM

155. PhD Environmental Sciences approved for launch at the BUIC subject to NOC/approval from the HEC. Progress be reported.

Progress reported by HOD(EES)IC

156. NOC/approval from HEC is still awaited.

Discussion

157. The Council asked for progress to be reported.

Decision 28(2713)

158. Progress be reported.

Action Required	Action by & Responsibility of
Implementation of the Decision	Registrar
Statutory Documents affected: NA	

Item 2718: MPhil Programmes - Aptitude Test

Responsibility: DG BUMDC

Decision of the 27th ACM

159. The Council resolved that:

- a. BUMDC is authorized to conduct admission tests for MPhil in Basic Health Sciences, following the University's recently promulgated policy.

- b. Dir PGP shall devise admission tests for MPhil in Basic Health Sciences at the BUMDC, in coordination with the BUMDC.
- c. Progress be reported.

Progress reported

160. **DHS.** BUMDC's PG committee has made the admission test; for Mathematics and English Language parts of the admission test, the committee has sought help from the BUKC where subject experts are available. Director PGP will be informed once the aptitude test is finalized.

161. **DPGP.** Admission tests for MPhil programs have been developed and can be conducted whenever the program is launched.

Discussion

162. Satisfied with the progress made, the Council dropped the point.

Decision 28(2718)

163. Point dropped as promulgated and actioned.

Item 2719: Distinguished Teacher Award, Policy for

Responsibility: DORIC, DG BUMDC

Decision of the 27th ACM

- 164. a. DORIC and DQA to put up simplified criteria for selection of distinguished teacher in one month.
- b. BUMDC is to devise its own criteria for selection of distinguished teacher in one month.

Progress reported

165. **Dir ORIC.** Implemented.

166. **DHS.** BUMDC has devised the following criteria for the award in question:

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a. <u>For Assistant, Associate & Full Professors</u> <ul style="list-style-type: none"> 1. Punctuality 2. Number of lecturers 3. Additional duties 4. Written feedback of the teachers by students 5. Number of publications per year 6. Total CME hours achieved from attending workshops and conferences outside BUMDC 7. Organizing departmental activities 8. Supervising postgraduate students 9. Funding of research projects 10. The ACR from Head of the CU. | b. <u>For Senior Lecturers and Lecturers</u> <ul style="list-style-type: none"> 1. Punctuality 2. Additional studies 3. Number of classes taken 4. Feedback from students 5. Number of publications per year 6. Organizing departmental activities 7. Introducing innovations 8. Maintaining Portfolio 9. Exam duties 10. The ACR report from concerned HOD |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Discussion

167. Satisfied with the progress reported by DORIC and DQA, the Chair dropped the point and asked BUMDC to process the case on file.

Decision 28(2719)

168. Point dropped. BUMDC to process case on file.

Action Required	Action by	Responsibility of
Implementation of the Decision	Principal BUMDC	DG BUMDC
Statutory Documents affected:	BUMDC Faculty Handbook	

Item 2721: BU Affiliation Document, Approval of

Responsibility: DE

Decision of the 27th ACM

169. The Affiliation Document be revisited to incorporate HEC's affiliation guidelines/rules, and delete information or instructions which are unnecessary or irrelevant for the purpose of affiliation. Revised draft be put up in two months.

Progress reported by DE

170. The draft was revised as directed; the revised draft was processed on file and approved by the Rector on 3rd Mar. The Council may ratify the document.

Discussion

171. DE briefed the Council on the changes made to the Affiliation Document as at Appendage 2721 (page 96). The Council ratified the document and dropped the point.

Decision 28(2721)

172. BU Affiliation Document, as placed at Appendage 2721 in the minutes of 27th, with the modifications processed and approved on file, ratified. Point dropped.

Item 2722: a. Doctor of Physical Therapy Program at BUMDC – Launch Proposal

b. College of Physical Therapy at BUKC, Establishment of

Responsibility: DG BUMDC

Decision of the 27th ACM

173. Doctor of Physical Therapy program approved for launch at the BUMDC wef Jan 2017. A principal be hired to establish and head the Physical Therapy Section of BUMDC.

Progress reported by DHS

174. Vice Principal and two faculty members have been inducted. The program has been launched at BUMDC w.e.f 15th Feb 2017. Initially, batches of 50 students have been planned which can subsequently be enhanced to 100. The first batch comprises 33 students. The program is based on six-month semesters.

175. Curriculum, TOS and Examination Rules for the program have been prepared and attached as Appendix 2722, as a separate document. The document is tabled before the Council for approval.

Discussion

176. The Council found deficiencies in the documentation provided and asked the Sponsor to make them good. Subsequently, the missing curriculum was provided and approved by the Council. As for Examination Rules and TOS, the Council formed a Committee of DE, DHS, Principal DPT Section and Dr Alamgir, to align the two documents with the Examination System and Academic Rules of BU. DAcad then raised the issue of nomenclature of the current DPT set-up, whether it was to be a Section like Medical and Dental Sections, or a College in which case it would need to be a separate CU of BU or a School within the BUMDC. Dean HS elaborated that as per PMDC rule, Medical, Dental and Physical Therapy ought to make separate colleges and that the word Section was not technically correct. DG BUMDC and DKC asked for deletion of reference to BUKC in the title. The Chair asked DG BUMDC to think about the organizational structure for BUMDC catering to both Physical Therapy and Nursing set-ups, and to the Secretary that organizational set-up would be taken up separately.

Decision 28(2722)

177. The Council resolved that:

- a. Curriculum for the DPT programme, as at Appendix 2722 to Minutes of the 28th ACM (separate document), approved.
- b. TOS and Examination Rules for the DPT programme entrusted to a committee headed by Director Examinations with the following members, for their alignment with the BU's Academic and Examination Rules:
 - (1) Director Health Sciences
- (2) Principal Physiotherapy Section BUMDC
 - (3) Dr Alamgir
- c. Organizational structure of BUMDC, taking into consideration the set-ups for Physical Therapy and Nursing, be taken up separately.
- d. Progress be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	b. Committee c. DG BUMDC a.d. Principal Physiotherapy Section	b. DE a.c.d. DG BUMDC
Statutory Documents affected: NA		

Secretary's Note

178. In view of the proceedings, the Item is retitled "Doctor of Physical Therapy – Progress Report".

Item 2723: BS Accounting & Finance Program - Mission, Objectives & Outcomes

Responsibility: Deans

Decision of the 27th ACM

179. The Council resolved that:

- a. Mission, Objectives and Outcomes of the ongoing programmes shall be presented at the respective FBOSs for approval by the Deans.
- b. Mission, Objectives and Outcomes shall be part of the new programme proposals when they are presented to the Academic Council for approval.

Progress reported

180. **Dean ES.** Implemented

181. **HOD(MS)BUKC.** Mission, objectives and outcomes of BS Accounting & Finance Program was presented in the FBOS meeting where those have been approved and forwarded as one of the agenda points for approval by the ACM. The approved vision, mission and objectives will be part of all new program proposals.

182. **Director Academics.** The “New Programme Proposal” template has been modified to include the new programme’s MOO. Taking it as an opportunity, the entire template has been relooked at and extensively revised, with input from Finance on the financial part; revised template is placed at Appendage 2723 (page 99).

Discussion

183. Dean MSS, with the help of a slide placed at Appendage 2723 (page 99), opined that though MOO for BS Accounting & Finance had been approved by the FBOS as decided in last ACM, it would be more acceptable to accreditation body if it were ratified by the Academic Council. After some discussion, the Council agreed that FBOS was also a statutory body of the University to which authority had been delegated to approve the MOO, and that Academic Council oversight was in any case built-in since MOO now formed part of the New Programme Proposal (Feasibility Study). The Council also approved the New Programme Proposal template and dropped the point.

Decision 28(2723)

184. New Programme Proposal template at Appendage 2723 (page 99) approved for immediate adoption. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	All HODs	All Deans
Statutory Documents affected:	NA	

Item 2725: MBA 2.0 - Enhancing Project/Thesis CH from 3 to 6

Responsibility: Dean M&SS

Decision of the 27th ACM

185. Dean M&SS and his team to revisit and reconcile the case. Reconciled case be re-presented via VLC in two months.

Progress reported by Dean(M&SS)

186. The 2-year MBA road map with 60 credit hours, as an amendment to the existing roadmap, has already been approved by the Rector.

Discussion

187. The Council ratified the revised 2-year 60 CR roadmap for MBA and dropped the point.

Decision 28(2725)

188. The revised 60 CR roadmap for MBA2.0, with Thesis CR increased to 6 from 3, ratified as approved on file. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HODs MS	Dean MSS
Statutory Documents affected: MBA2.0 Roadmap and Programme Prospectus		

New Items

Item 2801: MBBS & BDS Programmes – Increase in Weightage of Internal Assessment to 20% from 10%, with resulting Changes in Examination Rules and TOS

Sponsor: Dean Health Sciences

Referral Authority: FBOS HS

Summary of the Case

189. The case sought increase in weightage of Internal Assessment in the MBBS and BDS examinations, to 20% from the existing 10%. The increase in question affected Examination Rules and TOS which had been revised. The revised Examination Rules and the TOS were also presented for approval. Revised Examination Rules and the TOS are attached as Appendix 2801 as a separate document.

Discussion

190. Principal BUMDC informed the Council that the students had already been sensitized on the changes proposed and that they had appeared in the recently concluded 1st Module Exam with the clear understanding that they would be assessed according to the said changes and according to the new rules. There was substantial discussion on whether the changes could be applied retrospectively, and on status of the students who might have missed the 1st Module Exam. The College was asked to present data on such students. It was subsequently informed that only 30 students out of over 800 missed the 1st Module exam which was significantly less than the 100+ figure of the previous year. Upon this, the tripartite proposal was approved with effect from the 2016-2017 academic year. The College was asked to articulate academic changes clearly and well in advance, with a view to avoiding their retrospective application.

Decision 2801

191. With effect from the Academic Year 2016-17, following changes to the Examination System of BDS and MBBS shall apply:

- a. Weightage of Internal Assessment increased to 20% from the existing 10%.
- b. Following Examination Rules, shall supersede the Examination Rules passed by Academic Council vide its Decision 2647:
 - (1) *"The student must appear in all three modular examinations.*
 - (2) *The student must have 75% attendance in all the classes - clinical, practical and demonstrations - from the date of joining the College. In case of subjects which are spread over multiple years and examination is conducted in subsequent years, minimum attendance for the subject will be calculated from aggregate attendance of all such years. For example, minimum attendance required for Community Medicine will be 75% of the aggregate attendance of all the four years.*
 - (3) *A Repeater shall attend all classes and appear in all the modular examinations of subjects failed. Moreover, in order to appear in annual examinations, 75 % attendance in the failed subject(s) will be mandatory.*
 - (4) *The student must not have any major disciplinary action taken against him/her.*
 - (5) *The student will appear in the Supplementary Examination if Annual Examination was attempted and failed.*
 - (6) *Internal assessment shall contribute to 20% of the Final Total Score and the University examinations of each subject shall contribute 80%."*
- c. Revised TOS, as at Appendix 2801 (Separate document) approved and shall supersede the previous TOS.
- d. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	Principal BUMDC & Principal Dental Section BUMDC	DG BUMDC
Statutory Documents affected:	MBBS & BDS Roadmaps, their Prospectuses and BUMDC Academic & Examination Rules	

Item 2802: BSE Roadmap - Adjustment of Electives

Sponsor: HoD(SE) BUIC

Referral Authority: FBOS EES

Summary of the Case

192. The case sought following changes to the Electives in the roadmap of BSE programme:

S No	Course Code	Elective	Change
1	SEN-441	Mathematical Tools for SE	From the Supporting Electives list, shift to the List of SE Electives.
2	CEN-453	Real Time Systems	From the List of SE Electives, shift to Supporting Electives List
3	SEN-421	Semantic Web	Add to the List of SE Electives
4	SEN-456	Usability Engineering	
5	SEN-493	Multimedia Systems	Add to the Multimedia Domain
6	SEN-455	Knowledge Management	Add to the Information System Domain
7	CEN-453	Real Time Systems	To have a PREREQ Course in CSC 320 (Operating Systems)
8	GSC-445	Operation Research	To have a PREREQ Course in GSC 122 (Probability & Statistics)
9	SEN-459	Mobile & Pervasive Computing	To have NO PREREQ
10	As per Elective	SE Elective-II	Shift of from 5 th to 6 th semester
11	As per Elective	Supporting Elective	

193. Working paper is attached as Appendix 2802 (page 103).

Discussion

194. HOD(SE)IC explained that the changes had been prepared in consultation with the BUKC and under supervision of Dean EES. After a brief discussion, the Council approved the proposed changes to the programme roadmap wef Fall 2017 and dropped the point.

Decision 2802

195. Changes to BSE Roadmap, as outlined at para 192 and detailed at Appendix 2802 (page 103), approved for University-wide implementation, wef Fall 2017. Point dropped.

Action Required	Action by	Responsibility of
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Implementation of the Decision	HODs SE & CSE	Dean EES
Statutory Documents affected: BSE Roadmap, BSE Prospectus & Course Code Handbook		

Item 2803: LLB Programme - Addition of Electives

Sponsor: HOD(Law)

Referral Authority: FBOS M&SS

Summary of the Case

196. The case proposed addition of the following four electives to the LLB curriculum, to enhance the employment opportunities for the law graduates:

- a. Competition Laws (LLB-023)
- b. Parliamentary Studies (LLB-024)
- c. Air and Space Laws (LLB-025)
- d. Cyber Security Laws (LLB-026)

197. Details of the courses are attached as Appendix 2803 (page 107).

Discussion

198. Amplifying the proposal, HOD(Law)IC stated that the PBC allowed addition of electives and that the electives in question were market-oriented. After a brief discussion, the Council approved the proposal.

Decision 2803

199. Four electives – Competition Laws (LLB-023), Parliamentary Studies (LLB-024), Air and Space Laws (LLB-25) and Cyber Security Laws (LLB-26) – added to the roadmap of LLB programme, wef Fall 2017. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD(Law)IC	Dean MSS
Statutory Documents affected: LLB Roadmap, Prospectus & Course Code Handbook		

Item 2804: BBA Programme - Moving the “Research Methodology” Course to the 7th Semester

Sponsor: HOD(MS)KC

Referral Authority: FBOS M&SS

Summary of the Case

200. The case proposed moving the “Research Methodology (RMT 260)” course to the 7th semester from the 4th, to bring it closer to the MBA thesis stage and reduce the intervening gap, should the students enroll into MBA after BBA. The step was seen as improving the quality of MBA Thesis. Case working paper is attached as Appendix 2804 (page 113).

Discussion

201. Referring to the working paper at Appendage 2804 (page 113), HOD(MS)KC informed the Council that the movement of the “Research Methodology” course would in fact be its interchange with “Sociology” course. Further, the Council learnt, that the move would also encourage the BBA graduates, who would join such professional programmes as MSPM and MSSCM, to opt for thesis vice course work and benefit from the course.

Decision 2804

202. In the BBA programme, proposal to interchange the “Research Methodology” (4th semester) course with the “Sociology” (7th semester) course approved for University-wide implementation, wef Fall 2017. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HODs MS	Dean MSS
Statutory Documents affected: BBA Roadmap & Prospectus		

Item 2805: BBA Roadmap - Option to select any Elective with 4xx Code taught in any UG Programme of the University

Sponsor: HOD(MS)IC

Referral Authority: FBOS M&SS

Summary of the Case

203. In an attempt to make the BBA electives more appealing to the students, the case proposed delimiting the existing BBA Electives List to include any elective with the 4xx code being offered in any UG programme of the University. The case further proposed to call these electives the ‘University Electives’ vice the current nomenclature ‘Electives’. Working paper on the subject is attached at Appendage 2805 (page 114).

Discussion

204. HOD MS IC presented a working paper on the subject attached at Appendage 2805 (page 114). A number of Council members, while underscoring the importance of inter-disciplinary electives and endorsing the proposal, provided useful inputs on capping the number of electives at 2, lowering the courses level to 300, opening the options to elect even a core course, introducing regulatory measures through consent of both the HODs and the need to conserve the specialization courses. With these modifications, the Council approved the proposal and dropped the point.

Decision 2805

205. With effect from Fall 2017, a BBA student, for the purpose of Elective-1 (7th semester and Elective-2 (8th semester), may opt for any bachelor level core or elective course, subject to the following conditions:

- a. There shall be no compromise on the 4 specialisation courses.
- b. Max two such courses may be opted for.
- c. Course level is to be at least 300.
- d. Approval of the parent and host HOD shall be necessary (host HOD, of the Dept where the course opted for is being run).
- e. Courses so opted for will be referred to as the ‘University Electives’.

Action Required	Action by	Responsibility of
Implementation of the Decision	HODs MS	Dean MSS
Statutory Documents affected: BU Academic Rules, BBA Roadmap & BBA Prospectus		

Item 2806: BBA & MBA Programmes – Addition of the Elective “Social Marketing”

Sponsor: HOD(MS)KC

Referral Authority: FBOS M&SS

Summary of the Case

206. With a view to getting “socially sensitized”, to fulfill one’s obligations to “Serve the Society”, the case proposed addition of an elective titled “Social Marketing (MKT 697)” in the BBA and MBA roadmaps. Working paper and the course outlines are attached as Appendage 2806 (page 115).

Discussion

207. The Council subscribed to the arguments advanced in favour of the elective by the Sponsor, based on the working paper at Appendage 2806 (page 115), and approved it.

Decision 2806

208. The elective “Social Marketing ”(MKT 697), with details at Appendage 2806 (page 115), approved for BBA and MBA programmes University-wide. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HODs MS	Dean MSS
Statutory Documents affected: Roadmaps and Prospectuses of BBA and MBA Programmes, Course Code Handbook		

Item 2807: MBA Weekend Programme in Trimester Format – Ratification of Roadmaps

Sponsor: HOD(MS)KC

Referral Authority: FBOS M&SS

Summary of the Case

209. The case tabled, for ratification, the roadmaps of the MBA weekend programme being conducted at the BUKC in the trimester format. The roadmaps, developed in three streams, are placed at Appendage 2807 (page 118).

Discussion

210. HOD(MS)KC with the help of slides placed at Appendage 2807 (page 118), reviewed the background, need and modalities of the case. To the Chair’s query on the sudden ratification requirement after years of running the programme, the Sponsor responded that the ratification was necessitated due to the revisions made to the MBA roadmaps last year. He was asked to chart out the changes in a proper presentation; the case was pended until then. Next day, the Sponsor presented the changes point-by-point on an Excel sheet whose images are attached at the end of Appendage 2807. The changes thus presented were finally approved for adoption with immediate effect and the point dropped.

Decision 2807

211. Revised MBA roadmaps, placed at Appendage 2807 (page 118), approved for the MBA programmes in the trimester format at the BUKC, with immediate effect. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD MS KC	Dean MSS
Statutory Documents affected:	MBA Roadmaps in Trimester Format	

Item 2808: BS Development Studies & BS Anthropology – addition of new Elective “Tourism and Development”

Sponsor: HOD HSS IC

Referral Authority: FBOS M&SS

Summary of the Case

212. The case proposed inclusion of an elective “Tourism and Development” in the curricula of BS Development Studies and BS Anthropology programmes. It was believed that the course would help the students gain an insight into the issues and themes surrounding Tourism and Development. Case working paper is attached at Appendage 2808 (page 122).

Discussion

213. HOS HSS IC presented the working paper at Appendage 2808 (page 122). Agreeing with rationale presented by the Sponsor, the Council approved the elective.

Decision 2808

214. The elective “Tourism and Development”, with details at Appendage 2808 (page 122) approved for the BS Development Studies and BS Anthropology programmes. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD HSS IC	Dean MSS
Statutory Documents affected:	BS Development Studies and BS Anthropology Roadmaps & Prospectuses, Course Code Handbook	

Item 2809: Earth & Environmental Sciences Programmes – Changes in Roadmaps & Curricula

Sponsor: HOD(EES)IC

Referral Authority: FBOS EES

Summary of the Case

215. Consequent to observations of the Academic Audit to align the departmental programmes with the HEC guidelines, and after consultation with the stakeholders, the Dept of EES(IC) proposed the following changes to its academic programmes:

- a. Reduction of MS Thesis CR to 6 from the current 12, and of MS programmes as a whole to 30 from 36.

b. Breakdown of lab-oriented courses into the 2+1 format (2 for theory and 1 for practicals).

c. Revision of Roadmaps & Curricula as at Appendage 2809 (page 127).

216. Case working paper is attached as Appendage 2809 (page 127).

Discussion

217. HOD(EES)IC briefed the Council on the changes which were fully endorsed by the HOD(EES)KC save a few typos. After a brief discussion, the Council approved the revised roadmaps for adoption University-wide wef Fall 2017, and dropped the point.

Decision 2809

218. Revised Roadmaps and Curricula of MS(EE), MS(Geology), MS(GeoPhysics), BS(Geology), BS(GeoPhysics) and BS(Environmental Sciences), placed at Appendage 2809 (page 127) approved for adoption University-wide wef Fall 2017. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HODs EES	Dean EES
Statutory Documents affected: Roadmaps, Curricula and Prospectuses of MS(EE), MS(Geology), MS(GeoPhysics), BS(Geology), BS(Environmental Sciences) & BS(GeoPhysics)		

Item 2810: MS EE Program - Addition of Electives

Sponsor: HOD EE IC

Referral Authority: FBOS EES

Summary of the Case

219. Taking due cognizance of the recent researches in Wireless Communication as well as Electrical Power domains, the case proposed addition of the following courses to the Electives List of the MS-EE program:

- a. EET-546 Radio and Microwave Engineering
- b. EET-768 Cognitive and Software Defined Radio
- c. EEP-780 EMS & SCADA

220. Working paper is attached as Appendage 2810 (page 141).

Discussion

221. HOD EE IC presented details of the Electives as at Appendage 2810 (page 141). The Council found the proposed electives pertinent for the MS(EE) programme, approved them and dropped the point.

Decision 2810

222. Three electives – Radio and Microwave Engineering (EET-546), Cognitive & Software Defined Radio (EET-768) and EMS & SCADA (EEP-780) - with details at Appendage 2810 (page 141), approved for the MS Electrical Engineering Program University-wide. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HODs EE	Dean EES

Item 2811: MS EE Thesis – Split into Thesis-1 and Thesis-2

Sponsor: HOD (EE) IC

Referral Authority: FBOS EES

Summary of the Case

223. The case proposed splitting the MS Electrical Engineering Thesis into two parts: Thesis-1 (from ‘Literature Review’ to ‘Proposal Defence’) in the 3rd semester, and Thesis-2 (Post-‘Proposal Defence’) in the 4th semester. Working paper is attached as Appendix 2811 (page 146).

Discussion

224. The Council noticed that the change was one of procedure and not substance. As such it ought to apply uniformly to theses of all MS programmes irrespective of the Faculty. Since an HERC sub-committee was already revising PG Rules, the sub-committee could look into the aspect of partitioning MS theses for the purpose of better definition, understanding and time management. The Council further agreed that any roadmap changes mandated by the sub-committee’s recommendations could be brought to the Academic Council.

Decision 2811

225. The proposal to split MS(EE) Thesis into Thesis-1 and Thesis-2 referred to the HERC sub-committee reviewing the PG Rules, for formulation of uniform rules for theses of all MS programmes. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HERC Sub-Committee reviewing PG Rules	DPGP
Statutory Documents affected: BU MS Rules		

Item 2812: MS Professional Psychology – Revision of Roadmap & Curriculum

Sponsor: Dir IPP/Dean PP

Referral Authority: FBOS PP

Summary of the Case

226. The roadmap of MS Professional Psychology worth 50 CR far exceeded the HEC’s CR guidelines for an MS programme. To harmonise the roadmap with the HEC’s guidelines (30-39 CR), the Faculty of Professional Psychology introduced the following changes in the roadmap/curriculum:

- a. Reduced 6 courses from 3 CR to 2 CR. 3 of these courses with ‘lab’ component split into ‘theory’ and ‘lab’ in the 1+1 format.
- b. Remaining 3-CR courses with lab components split into the ‘theory’ & ‘lab’ in the 2+1 format.
- c. Merged courses with common contents; 4 such courses merged into 2.
- d. Component of ‘Statistics’ added to the ‘Advanced Research Methodology’ course and the course re-titled as “Advanced Research Methodology and Statistics”.

227. These changes, reduced the Roadmap to 39 CR. The revised Roadmap and the case Working Paper are placed at Appendix 2812 (page 147) and the former was tabled for approval.

Discussion

228. Dean PP apprised the Council that changes in the Roadmap and Curriculum were made ‘smartly’ in that the content was kept intact; only courses titles, CR and formats were disturbed. She agreed with the suggestion that in the proposed course “Research Methodology and Statistics (CPY 651)”, the two constituents did not match and that it would need to be upgraded to 700 level so that PhD scholars could also benefit. With these modifications, the revised roadmap and curriculum were approved wef Fall 2017.

Decision 2812

229. MS professional Psychology revised roadmap and curriculum placed at Appendage 2812 (page 147) approved with the modification that the research methodology course “Research Methods and Statistics” (CPY 651) shall be retitled to “Research Methods” and upgraded to level 700 to benefit the prospective PhD students. Point dropped.

Action Required	Action by & Responsibility of
Implementation of the Decision	Dean PP
Statutory Documents affected:	Roadmap & Prospectus of MS Professional Psychology, Course Code Handbook

Item 2813: MS SCM – Changes in Roadmap/Course Codes

Sponsor: HOD(MS)IC

Referral Authority: FBOS

Summary of the Case

230. Roadmap of MS SCM was approved by the 24th ACM (Academic Council Decision 2432) and referred to the HEC for NOC for starting the programme. While according the NOC, the HEC had recommended that “the curriculum needs further enrichment and legal aspect may also be included.” The same was done, after discussing with the supply chain professionals; this involved changing the contents of few courses which necessitated changing their titles. While the MS-SCM Roadmap, Student’s Prospectus and MIS course offering to students were updated with the changes, the revised roadmap was not referred to the Academic Council for approval. As such, the Uniform Course Code Handbook, which is the basis of transcripts and which draws amendments from the Council decisions, remained on the original roadmap approved by the Council. Consequently, new course titles did not figure on the transcript.

231. The discrepancy was duly noted, and notified, by the Examinations Dept when faced with issuing transcripts to the graduating students in Jan this year. Due to urgency of issuing final transcripts to the graduating students, the case to amend transcripts according to the revised courses titles was moved on file and approved by the Rector. The revised roadmap was tabled before the Council for ratification. Case working paper and the revised roadmap are placed at Appendage 2813 (page 153).

Discussion

232. The Council ratified the changes in Roadmap and Course Codes and dropped the point.

Decision 2813

233. Revised Roadmap of MS Supply Change Management, placed at Appendage 2813 (page 153) ratified. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD MS IC	Dean MSS
Statutory Documents affected:	Roadmap & Prospectus of MS SCM, Course Code Handbook	

Item 2814: PhD Programmes in Engineering Sciences - Addition of IoT Specific Electives

Sponsor: HOD(EE)IC

Referral Authority: FBOS EES

Summary of the Case

234. The case proposed addition of the following 3 electives to the PhD programmes in Engineering Sciences to make the field of research in Internet of Things (IoT) more representative:

- a. Advanced Crypto-Analysis Models for IoTs (EEN-840)
- b. Security and Privacy for IoTs (EEN-841)
- c. Advanced Secure Communication (EET-740)

235. The working paper and courses contents are attached as Appendix 2814 (page 155).

Discussion

236. HOD(EE)IC presented the details of the courses as at Appendix 2814 (page 155). The proposal was found cogent, particularly in the wake of the recently held C-Code International Conference. The Council thus approved the electives along with their contents wef Fall 2017, and dropped the point.

Decision 2814

237. IoT-Specific Electives - "Advanced Crypto-Analysis Models for IoT (EEN-840), Security and Privacy for IoT (EEN-841) and Advanced Secure Communication (EET-740) - added to PhD Engineering Sciences Roadmap, wef Fall 2017. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HODs of Engg Faculty	Dean EES
Statutory Documents affected:	Electives Course List of PhD Engineering Sciences, Programmes Prospectuses & Course Code Handbook	

Item 2815: PhD Management Sciences - Availability of Level 700 and above MS/MPhil Courses

Sponsor: HOD(MS)IC

Referral Authority: FBOS M&SS

Summary of the Case

238. According to the Academic Rule 4.8, PhD scholars of the Engineering Faculty, as part of their Course Work, could enroll in any 700 or above courses offered in MS programmes of the faculty, if approved by the FRC. This case proposed extending the same provisions to the Faculty of Management Sciences and for the same reasons for which this provision was made for the Engineering Faculty. Working paper is attached as Appendix 2815 (page 158).

Discussion

239. The proposal received wide-ranging support. There was some discussion on the competent forum to approve the courses and finally it was decided to delegate it to the DRC from the FRC. The

Council agreed to the Dean MS's proposal that the request by a PhD scholar to avail a 700 or above MS/MPhil Programme be initiated by the Supervisor, recommended by the HOD and approved by the DRC. The Council also agreed to the Secretary's proposal to open this option to all the faculties and to promulgate it by simply deleting references to Engineering Faculty in the Academic Rule 4.8. With that, the Council disposed off the point.

Decision 2815

240. With immediate effect BU Academic Rule 4.8 stands amended as follows:
- All references to 'Engineering Faculty' and 'FRC' deleted, with grammatical changes as required.
 - 'MS' replaced with 'MS/MPhil'.
 - Following text added: "Request by a PhD Scholar to avail such a course shall be endorsed by the HOD and decided by the DRC".
241. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	All HODs	All Deans
Statutory Documents affected: BU Academic Rules, PhD Roadmaps & Prospectuses, PhD Rules		

Item 2816: BSc (Hons) in Allied Health Sciences at BUMDC - Launch Proposal

Sponsor: Dean Health Sciences

Referral Authority: FBOS HS

Summary of the Case

242. The case proposed launch of BSc (Hons) in Allied Health Sciences, in the following disciplines:
- Medical Laboratory Technology
 - Medical Imaging Technology
 - Emergency & Intensive Care Technology
 - Physiotherapy
 - Optometry & Orthopedics
 - Respiratory Therapy
 - Cardiac Perfusion Technology
 - Dental Technology
 - Occupational Therapy
 - Speech & Language Pathology
 - Operation Theatre Technology
 - Nutrition
 - Orthotic & Prosthetic Sciences
 - Audiology
 - Dental Surgery Assistant
 - Dental Radiology Assistant
 - Dental Hygienist Assistant

243. Case working paper is attached at Appendage 2816 (page 159). Feasibility Study (New Programme Proposal), Roadmap, Courses Objectives & Outlines, Study References and other details on each programme were reported to be under preparation.

Discussion

244. DHS quoted MDIR 46 which necessitated commencement of these programmes, in the following words "*Every Recognized medical institution shall, within ten years of its recognition, establish a nursing college and an institute for allied health professionals or paramedics*".

245. Dean Health Sciences referred to the "Inverted Pyramid" situation confronting the Health HR in the country, in which Doctors were exceeding the Nurses who were exceeding the Technicians, rather than other way around, which presented a strong rationale to start these programmes. The

Chair appreciated the initiative and asked the Sponsor to pick 3-4 doable programmes out of the presented list of 17 and bring them to the Council with complete documentation.

Decision 2816

246. 3-4 doable programmes be selected from the list at para 242 and be presented to the Council, with complete documentation, for approval. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	DHS & Principal BUMDC	DG BUMDC
Statutory Documents affected:	NA, for the time being.	

Item 2817: MBA Pharmaceutical and MBA Health Management, Merger of

Sponsor: HOD(MS)KC

Referral Authority: FBOS M&SS

Summary of the Case

247. Hybrid programmes helped students learn more disciplines in the same programme. Such programmes were increasingly finding their way into academic portfolios of international universities, mostly at the cost of Masters programmes.

248. Management Sciences Department, BUKC, had been offering separate MBA programmes in Pharmaceutical Management and Health Management, with student intake in each declining over the years, primarily losing to the three Medical Universities in Karachi which are offering the same programmes. After consultation with the industry professionals and all the Campuses, and endorsement by the CAC, it was proposed that the two programmes be merged into one, under the title "MBA Pharmaceutical and Health Management". Curriculum of the merged programme is attached at Appendage 2817 (page 160).

Discussion

249. HOD MS KC made a brief presentation based on the working paper attached as Appendage 2817 (page 160). This was the first of the three 'hybrid' programmes presented before the Council. This programme was made hybrid by merging the existing separate MBA programmes in Pharmaceutical and Health Management. A number of members expressed skepticism on the proposition that the merger would herald better inductions. Dean MSS responded that the reasons for low student turnout in the two constituent programmes would be mitigated in the merged programme. BUMDC informed the Council that such programmes were run only at those MDIs which had separate pharmaceuticals set-ups. After some more discussion on the subject, the Council approved the merger wef Fall 2017 inductions.

Decision 2817

250. MBA Pharmaceutical and MBA Health Management merged into a single programme to be titled "MBA Pharmaceutics and Health Management" wef Fall 2017 inductions. Progress to be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD(MS)BUKC	DKC

Secretary's Note

251. In view of the decision, item is retitled as "MBA Pharmaceutics and Health Management – Progress Report".

Item 2818: MBA Banking - Launch Proposal

Sponsor: HOD(MS)KC

Referral Authority: FBOS M&SS

Summary of the Case

252. MBA Banking was the second 'hybrid' programme on the table. The programme was intended to be launched in collaboration with the Institute of Bankers Pakistan (IBP). In addition to the MBA degree, MBA Banking graduates would receive the JAIBP certification (Junior Associate of the Institute of Bankers Pakistan) which would add to their employment prospects.

253. IBP's affiliation with the Chartered Institute of Bankers, Scotland, would lead to international recognition of the MBA degree/JAIBP certification. It would also contribute to diversification of the academic portfolio of the Faculty.

254. An MOU with the IBP was in process. Other terms and conditions of the envisaged collaboration will be as follows:

- a. BU would hire some faculty members from the IBP to teach specialized courses.
- b. IBP would promote the programme in the banking sector to help with student intake and faculty hiring.

255. Working paper on the subject is attached as Appendix 2818 (page 163).

Discussion

256. HOD MS KC made a brief presentation based on the working paper attached as Appendix 2818 (page 163). To a series of queries from the Members, he responded that IBP had demanded 8 core courses and 4 electives which had been included in the roadmap, that the programme could take any format from MBA 1.0 to MBA 3.5, that faculty was available, that it would be in the weekend format to benefit the services sector, and that MOU with the IBP would be preferable before the programme launch. HOD(MS)C referred to the FBOS decision which had approved MBA2.0 only, ruling out MBA1.5 and MBA3.5, for the former not meeting HEC's requirements and the latter easing out after the HEC's decision to discontinue BA/BSc. The Sponsor, however, opined that the BA/BSc graduate pool would stay in the foreseeable future and continue to seek admissions in MBA3.5. Eventually, the Council approved the case for MBA2.0 and MBA3.5 and asked BUKC to make all-out efforts to sign MOU with the IBP.

Decision 2818

257. MBA Banking approved for launch at the BUKC, in the 2.0 & 3.5 weekend formats, wef Fall 2017. BUKC to make all efforts to sign an MOU with the IBP before the programme launch. Progress to be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD(MS)KC	DKC
Statutory Documents affected: Programmes Roadmaps, Prospectuses, Course Code Handbook		

Item 2819: MBA Technology Management – Launch Proposal

Sponsor: HOD(MS)KC

Referral Authority: FBOS M&SS

Summary of the Case

258. MBA Technology Management was the third hybrid programme on the table which was proposed to be launched based on the following rationale:

- a. A large number of Engineering and Computing Sciences graduates aspired to obtain management education, to help them qualify for management jobs.
- b. No university in Karachi was offering the said programme.
- c. The programme would add diversity to the portfolio of MBA programmes.
- d. The programme would help graduates step into high-level positions in technology companies.

259. Working paper and the programme curriculum area attached as Appendage 2819 (page 168).

Discussion

260. This was the third hybrid programme tabled by BUKC. HOD MS KC made a brief presentation based on the working paper attached as Appendage 2819 (page 168). He stressed that the BU, being the 1st mover of the programme, would not require any marketing. The discussion, however, turned to the very basic structure of the programme i.e. whether it would be an autonomous degree or just another major in MBA, and pros and cons of each. It was feared that other MS programmes, like in Engineering and Project Management, would be affected. The Sponsor thought otherwise arguing that the MBA Market was not affected by MS Programmes. He highlighted that the programme was designed by merging Business Administration, Technology and Management, for the sole benefit of Engineers who otherwise shied away from MBA. HOD(CS&IT)LC suggested that MS was in own field while MBA was cross-field. HOD(CS)IC was of the view that the Engineers would prefer MS Engineering Management to MBA Technology Management. DLDC suggested that the university might transition gradually from courses to majors to a full-fledged degree programme.

261. Since the programme raised more questions than offered answers, and the programme roadmap did not accompany the proposal, the Chair pended the case to be presented at the next ACM with better clarity and all queries answered.

Decision 2819

262. MBA Technology Management pended, to be presented at the next ACM with clarity, all aspects looked into and complete documentation. Point dropped.

Action Required	Action by & Responsibility of
Implementation of the Decision	HOD MS KC
Statutory Documents affected: NA	

Item 2820: PhD Mathematics at BUIC – Launch Proposal

Sponsor: HOD(CS)IC

Referral Authority: FBOS EES

Summary of the Case

263. The case proposed launch of PhD Mathematics at the BUIC. Working Paper and the Programme Feasibility Study in the form of New Programme Proposal is attached as Appendage 2820 (page 171).

Discussion

264. HOD(CS)IC presented the Working Paper and the New Programme Proposal, as attached as Appendage 2820 (page 171). Responding to a question, Dr Ramzan informed the Council that the QAU, the epi-center of PhD programmes, had a quota in PhD Mathematics, which would enable BU to target 30 or so candidates over and above the QAU quota. DPGP informed the house that the Mathematics faculty was already producing 30% of BU's research output. The Chair floated the idea of a separate Department of Mathematics which was supported by all those who presented their comments. The programme was approved, and the Department approved in principle, both wef Spring 2018.

Decision 2820

265. The Council resolved that:

- a. PhD Mathematics approved for launch at BUIC wef Spring 2018, subject to NOC from the HEC
- b. A Department of Mathematics at BUIC, under the Faculty of Engineering Sciences, approved in principle, wef Spring 2018.
- c. Progress to be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	a. HOD(CS)IC b. Dr Ramzan	a. Registrar b. DIC
Statutory Documents affected: NA		

Item 2821: PhD in Law at BUIC – Launch Proposal

Sponsor: HOD(Law)

Referral Authority: FBOS M&SS

Summary of the Case

266. Pursuant to the ACM Decision 27(2517), the case proposed launch of PhD Law at the BUIC. The programme is considered to have potential. Proposed roadmap for the programme is attached as Appendage 2821 (page 188).

Discussion

267. HOD(LAW)IC presented the working paper, new program proposed and the roadmap placed at Appendage 2821 (page 188). To a query he replied that for the time being, NOC from PBC was required but HEC and PBC had reached an understanding that the latter would not regulate LLM and PhD Law programmes. He also agreed to include 7XX level LLM courses in the curriculum. With that, the programme was approved.

Decision 2821

268. PhD in Law approved for launch at BUIC wef Spring 2018 subject to NOC from HEC and, if required, from PBC.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD(LAW)IC	Registrar
Statutory Documents affected: NA		

Item 2822: Engineering Sciences Bachelor Level Courses – Permission to Register in Summer Session

Sponsor: HOD(EE)KC

Referral Authority: Decision on File BU/AD/76/S-17/PC

Summary of the Case

269. According to Academic Rules, in the summer session, a student could not register for a new course. The case sought exception to this rule on the following grounds:

- a. Engineering courses were offered once in an academic year; a missed course meant a loss of complete academic year.
- b. Problem became acute when the missed course was a pre-requisite for another course.
- c. The exception was not liable to be misused as the grading would be capped at 'B'.

270. Students taking courses in the summer session made themselves ineligible for honours and awards. The case did not, however, seek this exception meaning thereby that the said honours and awards ineligibility would also apply to these students.

271. Case working paper is attached as Appendage 2822 (page 196).

Discussion

272. HOD(EE)KC presented the case. He argued that even under the new HEC Rules, the provision of "Deficiency Courses" could be made use of to register for new courses in the Summer session. Dean ES opined that drop-outs were increasing due to absence of such a provision. The Chair agreed with the Secretary's suggestion to link the case to the recommendations of the Committee under DAcad reviewing HEC's new Acad Rules, which were expected by 30th May.

Decision 2822

273. Case linked to the recommendations of the DAcad's Committee reviewing HEC's new Academic Rules.

Action Required	Action by	Responsibility of
Implementation of the Decision	DAcad, DE	DAcad
Statutory Documents affected: NA, for the time being		

Item 2823: Examinations Retake Policy, Review of

Sponsor: HOD(CE)IC

Referral Authority: FBOS EES

Summary of the Case

274. The case proposed following changes to the Examinations Retake policy:

- a. Affected students be permitted to retake examination 2-3 days after discharge from hospitalization/burial of the family member (as the case may be) to allow for recuperation/recovery from grief etc.

- b. Grandparents might be included in the definition of "immediate family members" for the purpose of examinations retake.
- c. Departmental recommendation on post-hospitalisation recuperation might be given due consideration.

Discussion

275. HOD(CE)IC made a presentation based on the Case Working Paper, attached as Appendage 2823 (page 197) and his recommendations received strong support from all speakers; the comments are summarised:

- a. Genuine cases suffering.
- b. Policy being abused as hospitalisation certificate could be purchased.
- c. Abuse of retake policy was a management failure.
- d. Abusers be punished rather than genuine cases.
- e. Retake policy be relaxed but retake be made tougher.
- f. Current policy biased against students
- g. No retake restriction at LUMS
- h. Let DGs/Directors decide retake cases.
- i. Students with fractured hands and female students on family way being forced to sit in the exam.
- j. Grandparents make a strong family bond in our culture.

276. The Chair reviewed the reasons for adopting the policy in vogue. He, nonetheless, agreed to including grandparents in the definition of immediate family members and to authorise DGs (Directors where no DG) to decide retake cases. However, be directed, the retake exams would be held on the same day, as notified by the campus management.

Decision 2823

277. With immediate effect, Retake Examination Policy, amended as follows:

- a. 'Grandparents' included in the definition of 'Immediate Family Members'.
- b. Retake applications shall be decided by the HCUs (DGs, or Director where no DG), on case-to-case basis.
- c. Retake Examination shall be held on the same day as notified by the management.

Action Required	Action by	Responsibility of
Implementation of the Decision	ALL CUs	Heads of CUs
Statutory Documents affected:		BU Acad Rules, Student Handbook and Faculty Handbook

Item 2824: Freezing a Semester by Unregistered Students

Sponsor: DAcad

Referral Authority: Decision on File

Summary of the Case

278. Academic Rule 3.11 dealt with ‘Freezing of Semester’, in detail. A practice was observed where a student, who did not register for any course, applied for a semester freeze after 15 days of semester commencement, was asked to pay full semester fee to stay enrolled, but was denied the opportunity to attend classes. Ostensibly, this was justified on the grounds that a student who had registered for any courses was not be refunded any fee if the freeze was applied for after 15 days of semester commencement, iaw Acad Rule 3.11.1.2. And if such a student did not freeze the semester, his admission was cancelled and on rejoining, he paid the semester fee for the absented semester, semester fee for the new semester and the admission fee.

279. There was an ethical dimension to the issue - it was not right for the University to charge semester fee (ie tuition fees) but deny the student classes, late registering notwithstanding. In this respect, following options were presented to the Council for consideration:

- a. Follow the “cancel enrollment” rule strictly, and not to accept a “freeze semester” request from unregistered students after the deadline (15 days after the semester start).
- b. If the “freeze semester” request from an unregistered student was accepted and semester fee charged, the student might be permitted to attend classes if he/she so wished. However, this would be tantamount to allowing belated registrations, and would defeat the purpose of timely registrations.
- c. Accept the “freeze semester” request from unregistered students any time during the semester, but neither charge the semester fee nor allow the student to take classes. The student might, however, be fined an amount which would be significantly less than the semester fee.

Discussion

280. Director Academics presented the three options to address the issue. After a fair amount of discussion, option ‘C’ was agreed, setting the fine equivalent to the admission fee. However, when it came to enactment of rule, there was difference of opinion among the members on the wording and number of clauses. With the discussion leading to nowhere, the Council authorised DAcad to enact a suitable rule.

281. Immediately after the meeting, DAcad framed a rule and circulated it amongst the Directors of CUs and the Deans. After their inputs, the following rule was finalised, processed on file and approved:

“Freezing of Semester by Unregistered Students”

1. *A student who does not register for any course by the due date, nor freezes the semester within 15 days of the semester start, shall be deemed to be absent and shall have his enrolment suspended. Enrolment of such a student may be restored by the Director of the CU upon receiving an application from the student, and subject to the following conditions:*
 - a. *Application duly recommended by the HOD;*
 - b. *The student having sufficient number of semesters available to complete the programme without getting time-barred; and*
 - c. *Payment of fine equal to the current admission fee for the programme.*
2. *Upon restoration of enrolment, such a student will be deemed to have frozen the semester in question and will rejoin his/her programme in the next semester.*
3. *If an absent student continues to remain absent for the entire semester, or for an ‘x’ number of semesters, then the same procedure for restoration of enrolment will be followed as in paras ‘1’ and ‘2’, with one exception: If the restoration request is received within the registration period, the student will rejoin the programme in the same semester.”*

Decision 2824

282. With immediate effect, the rule titled "Freezing of Semester by Unregistered Students", enunciated as at para 281, shall apply to unregistered students who wish to freeze a semester after 15 days of semester start. Point dropped

Action Required	Action by	Responsibility of
Implementation of the Decision	Director of CUs	HCUs
Statutory Documents affected: BU Academic Rules, Students Handbook and Faculty Handbook		

Item 2825: MBBS & BDS Programmes - Revised Nomenclature for Annual Examinations

Sponsor: Dean Health Sciences

Referral Authority: FBOS HS

Summary of the Case

283. PMDC had changed the nomenclature of the Annual Examinations for the MBBS programmes, as follows:

S No	Names of MBBS Professional Examinations		To be conducted
	Existing	Revised	
1	MBBS 1 st Professional part I Examination	MBBS 1 st Professional examination	At the end of 1 st academic year
2	MBBS 1 st Professional part II Examination	MBBS 2 nd Professional examination	At the end of 2 nd academic year
3	MBBS 2 nd Professional Examination	MBBS 3 rd Professional examination	At the end of 3 rd Academic year
4	MBBS 3 rd Professional Examination	MBBS 4 th Professional examination	At the end of 4 th academic year
5	MBBS Final Professional Examination	MBBS Final Professional Examination	At the end of 5 th academic year

284. De facto, there was no change in respect of BDS programmes; however, examination regimes of both BDS and MBBS stood in synch now:

S No	Names of BDS Professional Examinations		To be conducted
	Existing	Revised	
1	BDS 1 st Professional Examination	Same	At the end of 1 st academic year
2	BDS 2 nd Professional Examination		At the end of 2 nd academic year
3	BDS 3 rd Professional Examination		At the end of 3 rd Academic year
4	BDS Final Professional Examination		At the end of 4 th academic year

285. The changes were tabled for adoption with immediate effect.

Discussion

286. DHS presented the case. After a brief discussion, the Council approved adoption of the new nomenclature with immediate effect, and dropped the point.

Decision 2825

287. PMDC's new nomenclature for MBBS and BDS examinations, as outlined at paras 283 and 284, approved for adoption with immediate effect.

Action Required	Action by	Responsibility of
Implementation of the Decision	Principal BUMDC	DG BUMDC
Statutory Documents affected: MBBS and BDS Roadmaps and Examination Rules		

Item 2826: 'Drop' Rules – Review of

Sponsor: HOD(MS)IC, DKC, DPGP

Referral Authority: FBOS M&SS Decisions on Files

Summary of the Case

288. This case was tabled by HOD MS IC, DKC and DPGP simultaneously, albeit for different reasons, as apparent from the ensuing paras. Working papers and presentations are attached as Appendix 2826 (page 197).

289. HOD(MS)IC.

- a. Case. Students of short duration MS programmes were Dropping in the last semester, at the verge of completing their program which was neither in the interest of the University nor the students.
- b. Recommendations.
 - (1) Dropped students be allowed to seek Re-Admission in the Same Program, with TOC but only in courses with a Minimum Specified Grade.
 - (2) Time lapsed be counted thus ensuring the Integrity of Maximum Degree Duration.

290. DKC.

- a. Case.
 - (1) A student Dropped in Fall Semester lost a further semester due to dynamics of the Admission Calendar.
 - (2) A student Dropped in 1st Semester, due to a circumstance beyond control, lost the chance to Repeat or change the program.
 - (3) There were parental concerns on loss of time and money.
- b. Recommendations. 1st Semester Dropouts be given an Opportunity to Repeat the Semester, or the Option to Change the Program without Entry Test.

291. DPGP.

- a. Case. In PhD programmes, chance of Dropping in the 1st Semester was high for failing to score the minimum 2.5 GPA which was considered a high bar to scale, and due to job compulsions.
- b. Recommendation. 1st Semester Drop rule might not apply to PG Programmes.

Discussion

292. After presentations by the sponsor, the case drew a mix of comments, both in support and against the proposals. Supporting arguments cited ground realities and those against referred to quality and standards. Since the tripartite proposals lacked a common thread while each had implications for the other, the discussion seemed to go nowhere. Upon which, the Secretary informed the house that this subject was also a part of HEC's new Academic Rules and it might be prudent to await the recommendations of D Acad's Committee reviewing the said rules. The suggestion was agreed to and the case pended.

Decision 2826

293. Review of 'Drop Rules' pended till the recommendations of D Acad's Committee reviewing the HEC's new Acad Rules. Case to be taken up at the next ACM.

Action Required	Action by	Responsibility of
Implementation of the Decision	DAcad, DE	DAcad
Statutory Documents affected:	NA, for the time being	

Item 2827: Shifting MS Finance at BUIC from Evening to Weekend Session

Sponsor: HOD MS IC

Referral Authority: FBOS M&SS

Summary of the Case

294. The case proposed shifting the MS Finance programme from the evening to the weekend sessions, just as other MS programmes of the Management Sciences Dept of BUIC were. By this move, to be effective from Fall 2017, a greater intake was anticipated as more on-the-job professionals were likely to find it convenient and get interested. Case working paper is attached as Appendix 2827 (page 200).

Discussion

295. HOD MS IC reiterated the rationale behind the shift. The Council found merit in the proposal and approved it for both BUIC and BUKC (for the latter at the request of the latter).

Decision 2827

296. MS Finance programme approved to be shifted from Evening to the Weekend format, wef Fall 2017 inductions at the BUIC and BUKC. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HODs MS BUIC & BUKC	- Dean MSS (Acad) - DIC, DKC (Admin)
Statutory Documents affected:	Programme Timetables	

Item 2828: Minimum Class Strength

Sponsor: D Acad

Referral Authority: Decision on File

Summary of the Case

297. BU Academic Rules put the minimum class strength in any course at 10, but only indirectly as part of Academic Rule 3.7.1 on ‘Repeating a Course’ and Academic Rule 3.15 on ‘Schedule Adjustment’. Experience had it that this implicit reference to an important academic rule led to administrative confusion at the time of admissions. There was, therefore, a need to enact an explicit Academic Rule on Minimum Class Strength, which was proposed as follows:

“3.24. Minimum Class Strength

3.24.1. The minimum class strength for any course shall be 10. Any shortfall shall be referred to the Rector, with full justification, for approval. There shall be no ‘additional-fee-for-each-shortfall’ practice to be followed.

3.24.2. For PG programmes, proper Feasibility and Cost Benefit Analysis are to be carried out before launching them. Admissions to PG programmes falling short of the break-even figure shall be considered on case-to-case basis, keeping the interests of the University in view.”

298. Proposed Clause 3.24.2 was actually a decision on File FBU/451 dated 20 June 2013 which was subsequently notified vide Registrar notification 11/2013 dt 12 July 2013.

299. The proposed rule was tabled for approval.

Discussion

300. Director Academics presented the case. Dean EES and few other members opined that the minima should apply to initial batch strength and not the course strength, and that the University was obliged to provide the stream courses even if the strength was below ten. In equal measure if not more was the viewpoint that the draft rule thus presented catered to all situations including the University’s obligations to provide stream/specialisation courses even if their strength was below 10. Further, seeking Rector’s approval was only a regulatory and monitoring measure to see how the programme was doing so that unsuccessful programmes could be eased out. Winding up the discussion, the Chair ruled that the draft rule was reflective of what was being actually practised and, therefore, merited approval.

Decision 2828

301. A new academic rule on “Minimum Class Strength”, as enunciated at para 297, to be inserted into the BU Academic Rules.

Action Required	Action by	Responsibility of
Implementation of the Rule	All HODs	All HCUs
Statutory Documents affected: BU Academic Rules, Students Handbook, Faculty Handbook		

Item 2829: Rules of Business for Academic Council Meetings (ACROB)

Sponsor: DAcad

Referral Authority: Decision on File

Summary of the Case

302. High-level meetings are conducted according to Rules of Business (ROB) enacted by the body which holds the meeting. Higher the level of meeting/body, greater the importance of the ROB. The case presented draft ROB for meetings of the Academic Council, attached as Appendix 2829 (page 201). The rules addressed the following aspects of Academic Council meetings:

- | | |
|---------------------------------|--------------------------------------------------------|
| a. Preamble | i. Confirmation of the Minutes of the Previous Meeting |
| b. Definitions | m. Review of Action Items from the Previous Meeting |
| c. Schedule & Venue of Meetings | n. New Items |

- d. Chairmanship & Secretaryship
- e. Present
- f. In Attendance
- g. Quorum
- h. Leave of Absence
- i. Typical Meeting Timeline
- j. Agenda
- k. Order of Business
- o. Conduct of Discussion
- p. Decision Making
- q. Recording and Issue of Minutes
- r. Follow Up on Decisions
- s. Downstream Effect of Decisions
- t. Additional Rules for VLC meetings
- u. Reference Designators for Documentation
- v. Admin & Logistics

303. The draft was sent to all members of the Council, as well as those non-members who attended the Council meetings “in attendance”, for any comments, observations or suggestions. Four members accorded full endorsement to the draft while one considered the rules one too many but did not specify which ones. He also proposed including ‘ratification’ of academic decisions taken between the meetings. The proposal was considered cogent and was added to the draft as article 9.3. Further, “inaccuracy in recording the decision on an item” was also added as one of the reasons/ occasions for raising point of order, at art 14.4.f.

304. Consequently, the draft was tabled for approval and adoption. On adoption, these rules, which would double as SOPs, would obviate the requirement of generating a mass of communication in the run-up to the Academic Council meetings.

Discussion

305. DAcad/Secretary presented the case summary and asked each house on the VLC for any comments. DGKC pointed out that the ACMROB were the same as the HERC ROB on which comments had already been given in the HERCM held the previous week. As observations at the HERCM became the observations at the ACM, the DAcad presented a transcript of the comments in question, with ‘HERC’ replaced with ‘AC’, and responded point-by-point. In his response, DAcad drew on corporate practices, HRM principles and teachings, and the University’s own BOGM Rules of Business. The comments from BUKC and DAcad’s response are placed as Supplement to Appendage 2029 (page 208). With the comments fully addressed and the document endorsed by the houses, the Chair appreciated the work and approved the ACMROB.

306. Subsequently, a separate clause on “Leave of Absence” was added, being an important aspect of high-level meetings, after due processing and approval on file.

Decision 2829

307. Rule of Business for Academic Council Meeting (ACMROB) placed at Appendage 2829 (page 201) approved for adoption with immediate effect. Point dropped.

Action Required	Action by & Responsibility of
Implementation of the Decision	a. All Members of the Council b. All non-Members who attend the Council Meetings “in attendance”
Statutory Documents Introduced: ACMROB	

Item 2830: Course Load - Reduction of one Course for PhD Faculty Members

Sponsor: HOD(MS)IC

Referral Authority: FBOS M&SS

Summary of the Case

308. With a view to improving research output, the case proposed reduction of one course, from 4 to 3, in the course load of PhD faculty members, subject to the following conditions:

- a. At least one research article per academic year be published in any Impact Factor (JCR) ISI Indexed journal, or W/X/Y category HEC journal. The academic year shall deem to start with the Spring semester and end with the Fall semester.
- b. PhD faculty members availing the exemption shall forfeit teaching any course as a visiting faculty member.
- c. Exemption shall be on year-to-year basis.
- d. PhD faculty members availing exemption but non-compliant with conditions 'a' and 'b' shall become ineligible for exemption the next year.
- e. PhD faculty members shall have the option to either take the package or leave it.

309. The case asked the Depts to carry out a Cost Benefit Analysis of the proposal including settling the would-be status of the PhD faculty members who were already availing exemptions by virtue of their appointments. The financial effect of the proposal was Rs 240,000 per annum per PhD faculty member availing the one-course exemption, or induction of one new faculty member for every 4 PhD faculty members availing the one-course exemption. The case working paper is attached as Appendage 2830 (page 211).

Discussion

310. HOD(MS)IC presented the working paper at Appendage 2830 (page 211). The proposal found no support. Rather one member considered it discriminatory against non-PhD faculty members. The other objections included non-acceptance of the proposed restriction on teaching as the VFM and the heavy financial effect. With no supporting comment coming forth, the Chair ruled against the proposal.

Decision 2830

311. The proposal to reduce course load of PhD faculty member, from 4 to 3, subject to conditions listed in the case summary, to help them devote more time to research, not approved. Point dropped.

Item 2831: BBA & MBA Programmes – Trans-Campus (BUIC-BUKC) Full Board Internships with Stipends and Travel Grant for Top Female Achievers

Sponsor: HOD(MS)IC

Referral Authority: FBOS M&SS

Summary of the Case

312. BBA and MBA programmes are roadmapped with a 6-week, uncredited but compulsory, internship. The case floated the idea of making the University responsible for arranging internship for the top-performing female students from each BBA and MBA batch. The internship package was to be as follows:

- a. Internship to be trans-campus between BUIC and BUKC. .
- b. Air travel to the other Campus to be provided by the University (parent Campus).
- c. Lodging to be in the Campus Girls Hostel.
- d. Meals to be full board.
- e. Stipend to be @ Rs 5,000 per week.

313. Selection criterion was to be based on the 6th semester CGPA (for BBA) and the 2nd semester CGPA (for MBA). Case working paper is attached as Appendage 2831 (page 212).

Discussion

314. HOD(MS)IC presented the paper at Appendage 2831 (page 212). A number of members raised objections such as inadmissibility of air travel to students, proposal being gender-specific, heavy financial effect, possible unwillingness of top students to seek internship at locations other than where they intended to seek jobs etc. The Chair considered the proposal impracticable and ruled against its approval.

Decision 2831

315. Proposal asking the University to arrange trans-campus internships with Full Board stay stipend and Air Travel, to top female achievers in BBA and MBA programmes not approved. Point dropped.

Item 2832: Collaboration with ABE, UK, for Joint Programmes

Sponsor: HOD(MS)IC

Referral Authority: FBOS M&SS

Summary of the Case

316. The case floated the idea of collaboration with ABE, UK, an international academic body that offered international diplomas and certificates. Diplomas were to be based on roadmaps which were 1-2 semesters long, and certificates on a single course (just one was available then - the “Business Start Up”). ‘Exemptions’ could be awarded for courses which were common between the ABE and the parent university roadmaps. The case did not specify the tuition and registration fee(s) but referred to a ‘Qualification Fee’ which was to be £450 for the Diploma and £100 for the Certificate. The ABE programmes, prepared by international academics, were considered comprehensive, advanced and rich in activity-based learning. Case working paper is placed at Appendage 2832 (page 213).

Discussion

317. The International Officer presented the paper at Appendage 2832 (page 213), highlighting that BU’s Entrepreneurship course could get the ABE certification for “Business Start-Up” course. Virtually all the speakers supported the idea upon which the Council resolved to approve collaboration with ABE but under a proper agreement.

Decision 2832

318. Collaboration with ABE UK, under a proper agreement approved. Progress to be reported.

Action Required	Action by	Responsibility of
Implementation of the Decision	IO	HOD MS IC
Statutory Documents affected:	NA	

Item 2833: Students Exchange Programme with Izmir University of Economics, and Istanbul Kemerburgaz University, SOP for

Sponsor: DDFCP

Referral Authority: Decision on File

Summary of the Case

319. The University had recently signed MOUs on students exchange with two universities from Turkey: Izmir University of Economics and Istanbul Kemerburgaz University. SOPs on various aspects of the exchange programme were processed, and approved, on file. The SOPs, attached as Appendage 2833 (page 216), were tabled for ratification.

Discussion

320. The International Officer made a presentation on the two SOPs placed at Appendix 2833 (page 216). HOD(SE)IC commented that PEC did not support international credit transfers to which the Sponsor responded that it had already been agreed between HEC and PEC that this would not be the case because it was counter-productive to collaboration with international universities. With that the Council ratified the two SOPs.

Decision 2833

321. SOPs for Students Exchange Programme with Izmir University of Economics and Istanbul Kemerburgaz University, placed at Appendix 2833 (page 216), ratified. Point dropped.

Action Required	Action by & Responsibility of
Implementation of the Decision	IO
Statutory Documents affected: NA	

Item 2834: PhD Media Studies at BUIC – Launch Proposal

Sponsor: HOD

Referral Authority:

Summary of the Case

322. The proposal was tabled with the following rationale:

- a. Extreme shortage of, and demand for, trained and highly educated HR in the Media Industry.
- b. AIOU and IIU offering PhD Media Studies with heavy response and a modicum intake.

323. Courses Outlines, Roadmaps and Feasibility Study were reported to be under preparation.

Discussion

324. HOD Media Studies IC basically introduced the programme through a brief presentation placed at Appendix 2834 (page 223), stating that documentation associated with New Programme Proposal was being prepared. Responding to queries he added that there was no additional requirement for infrastructure, labs or faculty members. The Council asked the Sponsor to prepare all the documentation and present the case to the Special ACM which would be convened for the same purpose.

Decision 2834

325. PhD Media Studies be presented at a Special ACM, complete with all documentation. Point dropped for the time being.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD Media Studies IC	DIC
Statutory Documents affected: NA		

Item 2835: PhD Programmes – Fee Structure for Scholars exceeding Regular Duration of Programme

Sponsor: DPGP

Referral Authority: Decision on File

Summary of the Case

326. PhD programs have a duration of 3-6 yrs, extendable to 8. Overall, a PhD scholar's total tuition fee is for the programme CR, which is 54, irrespective of the time taken to complete the program. This fee modality was based on the AC Decision 2219 which read:

"PhD Candidates shall not be charged extra fee during the research phase even if it extends beyond normal time frame with stays with the time bar limit."

327. Though a substantial financial burden on the University, this policy was necessitated for the following reasons:

- a. University's various limitations (these had since been mitigated with increase in PhD admissions, PhD programmes and availability of Level 700 and above MS/MPhil courses for a PhD scholar).
- b. Extended research period due to its complexity, or lack of commitment/research aptitude on part of the Scholar.

328. Based on comparative arrangements at other HEIs, the said policy was recommended to be modified, as follows:

"After 4 years into the PhD programme, in addition to the registration fee for any pending courses, the scholar be charged following additional tuition fee, to be called Extension Fee, per semester:

Year into PhD Program	Extension Fee (per semester)
5 th	Rs 10,000
6 th	Rs 15,000
7 th & 8 th	Rs 20,000

329. Case working paper is attached as Appendage 2835 (page 223).

Discussion

330. DPGP made a presentation based on the working paper placed Appendage 2835 (page 223). The working paper drew comparison with other universities, underscoring that the objective behind the proposal was to bring seriousness to PhD scholars to complete their programme. The proposal found little favour with the Council. Most of the speakers considered the proposal to be potentially counter-productive. There was also some discussion on its applicability, if approved. It was agreed that if applied prospectively, which should be the case, it would come into effect after 4 years when the Extension Fee amount would have devalued significantly anyway. And if applied retrospectively, it might not go down well with the enrolled scholars. Seeing that the proposal was finding no support, the Chair pended it, for the time being.

Decision 2835

331. Proposal to introduce Extension Fee into PhD programmes beyond the fourth year pended. Point dropped.

Action Required	Action by & Responsibility of
Implementation of the Decision	DPGP
Statutory Documents affected:	NA

Item 2836: MBA 1.5 Evening/Weekend at BULC – Launch Proposal

Sponsor:

Referral Authority:

Summary of the Case

332. MBA 1.5 is a logical programme for any academic institution running the BBA, to absorb these BBA graduates who wish to continue their business education to MBA level.

Discussion

333. HOD(MS)LC presented the case for the subject programme [presentation is placed at Appendage 2836 (page 227)] highlighting that the programme would attract own BBA graduates as well as from other institutions. The Council was, however, skeptical if the programme would make the minimum strength figure. However, after some discussion, the Council approved the proposal and asked the Sponsor to report progress as part of Item 2234.

Decision 2836

334. MBA 1.5 Evening/weekend approved for launch at BULC wef Fall 2017. Programme progress to be reported as part of Item 2234. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD MS LC	DLC
Statutory Documents affected:	MBA1.5 Roadmap & Prospectus	

Item 2837: BBA Programme – Inclusion of a Foreign Language in Curriculum

Sponsor: HOS MS KC

Referral Authority: FBOS

Summary of the Case

335. With the geography of international higher education shifting to the non-English speaking countries, it is important to pre-learn the language of the host country. Therefore, there is a need to include a foreign language elective Chinese in particular in curriculum of BBA. The case was tabled with this premise.

Discussion

336. HOD(MS)KC made a brief presentation which is attached as Appendage 2837 (page 229). He apprised the Council that the Director of the local Confucius Centre had offered to provide the language teachers. The Council also learnt that foreign language was already provisioned in the syllabus of BS SE. The Chair ruled that the proposal required further study as a 48 contact-hour course was unlikely to yield the desired results and that possibility of degree programmes in different languages might be looked into.

Decision 2837

337. The case requires further study. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	HOD MS KC	Dean MSS
Statutory Documents affected:	NA	

Additional Points

338. DGKC requested the Chair for a new programme proposal – MS Media & Communication at BUKC – to be presented which was granted.

Item 2838: MS Media and Communication at BUKC – Launch Proposal

Sponsor: HOD Media Studies

Referral Authority: DGKC

Summary of the Case

339. Nil

Discussion

340. HOD Media Studies KC made a fast-paced presentation for launching the subject programme; presentation is attached as Appendix 2838 (page 230). The Council observed that there was a need to scrutinise the roadmap for which HOD Media Studies IC and DPGP were tasked. The Council asked the Sponsor to bring the item when BUIC would present the case for PhD Media Studies (Item 2834) in a special ACM

Decision 2838

341. The Council resolved that:

- a. HOD Media Studies IC and DPGP to scrutinise the roadmap of the proposed MS Media and Communication programme, ensuring its alignment with MS Media Studies of BUIC.
- b. Case pended, to be tabled with PhD Media Studies at a Special ACM.
- c. Point dropped.

Action Required	Action by	Responsibility of
Implementation of the Decision	DPGP & HOD Media Studies IC	DPGP
Statutory Documents affected:	NA	

342. DGIC observed that with the Deans getting into the academic loop, the campuses were getting out of loop. After some discussion, the Chair directed that minutes of FBOSS be copied to the HCUs, Directors of CUs, Registrar and Director Academics.

Decision 2839

343. With immediate effect, minutes of the FBOSS shall be copied to the HCUs, Directors of CUs, Registrar and Director Academics.

Action Required	Action by & Responsibility of
Implementation of the Decision	Dean MSS, Dean EES, Dean PP & Dean HS
Statutory Documents affected:	BU Statutes

Closing the Meeting

344. The Secretary drew the attention of the house towards the following key dates of the academic calendar and actions required thereof:

4th Jul 2017: 1st Progress Report on the Action Items of the 28th ACM

4th Sep 2017: - 2nd Progress Report on the Action Items of the 28th ACM

- Agenda Items for the 29th ACM

3rd & 4th Oct 2017: 29th ACM

345. In his closing remarks, the Chair thanked the house for participation in the proceeding and made the following points:

- a. Importance of implementation of Rules.
- b. Faculty/Department to be informed of ACM Decisions forthwith.
- c. Items be complete and well prepared for ACM; all homework be done before presenting the case to the Council.
- d. Appreciation for BUKC and BUMDC for taking lot of initiatives.
- e. BULC to be continued to be treated as a project.
- f. Special ACM to be held in about a month.

346. Wishing all participants well, the Chair brought the meeting to a close at about 20:30 hrs on 5th April 2017.

25th April 2017

M Ehsan Saeed
Secy to the Academic Council

**Progress Report on Flipped Class Teaching as Pilot Project
Fall 2016**

Part 1 - BUKC

**Submitted To: The Dean MS & SS (BU)
From: HOD-MS (BUKC)
December 15, 2016.**

1. Introduction

After approval from the competent authority Flipped Class Model has been initiated at the Management Science Department, Karachi Campus in Fall 2016 as pilot project. Progress report of the project is furnished as under.

Generally speaking, flip class teaching is based on the andragogical philosophy of teaching and learning. This is student centric and activity based teaching/learning model and technology becomes important medium in course delivery and evaluation. For the pilot project, courses and volunteer faculty members were identified. Following five courses of MBA program (morning) were identified in this semester to teach keeping in mind the suitability of the courses for the flipped class model:

- Strategic Management
- Corporate Leadership
- Human Resource Management
- Entrepreneurship
- Contemporary Issues in Business

The above courses, consisting 50+ students in each class, were allocated to five permanent faculty members as given in table 1.1. HOD-MS taught one course and also acted as coordinator of the courses in order to have first hand progress information and also act as bridge between the Dean MS&SS, Director (BUKC) and faculty members.

**Table 1.1
Course Allocations**

Srl no.	Courses	Faculty
1	Strategic Management	Dr. Mustaghis-ur-Rahman
2	Corporate Leadership	Mr. Naveed M. Khan
3	Contemporary Issues in Business	Mr. Mansoor Zakir
4	Entrepreneurship	Mr. Essa Khan
5	Human Resource Management	Mr. Saad Ahmed

2. Achievement and Course Delivery

Flip class model teaching is a new concept in Pakistani perspective as perhaps no university other than BU has adopted this model so far. At this stage BU has taken a lead in adopting a new concept which will make BU a first mover in the field of academics.

Courses have been delivered by the faculty members in 15 classes smoothly. In these classes 12 quizzes were taken, class activities on some of the lessons were supervised, individual and team assignments were given to students by the faculty members. An improvised team style sitting arrangement was made in the class and each team was allocated computers with mounted LCD terminals.

Despite, many areas of further improvement identified in the process of concept implementation, beyond any doubt, this initiative of BU/BUKC is an achievement.

3. Gap

In the preceding semester, though classes are finished and course concluded smoothly certain gaps have been identified between the required standard and actual delivery of the courses which are being given in table 3.1:

Table 3.1
Required Standard and Actual Delivery

Srl no	Activities/process	Actual Delivery	Reason
1	Course Outline on flip class model	Partially compliant	Lack of training of faculty members and their conceptual clarity
2	Each class starts with quiz.	Fully compliant	
3	Reading material mentioned in the outlines are given in advance to read	Partially compliant	due to non-availability of portal Soft/hard copies were given
4	Pre-recorded video lecture through portal	Not at all	Video recording facilities and Portal is not available due to IT department's limitation.
5	Assignments should be checked, corrected and evaluated through portal	Not at all	Portal is not available due to IT department's limitation
6	Activities are outlined and undertaken by the students in the class	Partially compliant (Case studies and group works but no other activities was done)	Lack of training or conceptual clarity
7	A course folder should be prepared as evidence of the above activities	Fully	

3.1. Gap Analysis

Though, there are various model of flip class teaching, common aspects recommended by the experts of this field are the typical lecture and homework elements of a course are reversed. Short video lectures are viewed by students at home before the class session, while in-class time is devoted to exercises, projects, or discussions. The video lecture is often seen as the key ingredient in the flipped approach, such lectures being either created by the instructor and posted online or selected from an online repository. While a prerecorded lecture could certainly be a podcast or other audio format, the ease with which video can be accessed and viewed today has made it so ubiquitous that the flipped model has come to be identified with it. The notion of a flipped classroom draws on such concepts as active learning, student management, hybrid course design, and course podcasting. The value of a flipped class is in the repurposing of class time into a workshop where students can inquire about lecture content, test their skills in applying knowledge, and interact with one another in hands-on activities. During class sessions, instructors function as coaches or advisors, encouraging students in individual inquiry and collaborative effort.

The requirements highlighted above, in fact, differentiate flip class teaching to the traditional teachings at the university level. The hall mark of this differentiation is that most of the teaching part is through IT support in terms of portal and other communication medium.

Against the above requirement, at BUKC, we have been provided with a class room which is still in developing phase. So far, room is equipped with the improvised seating arrangement, wall mounted LCD terminals connected with computers. However, in concrete terms due to the absence of the following supports/infrastructure, program is short of moderately compliant:

- a. Portal for flip class
- b. Flip class training to concerned faculty members
- c. Moodle accounts for faculty
- d. Moodle accounts for students
- e. Moodle training to faculty
- f. UPS for classroom
- g. Server upgradations
- h. Class size of 25 to 30 students
- i. Course load for the teacher

4. Faculty's Resolve

On the faculty side, based on the learning from the last semester, there is a resolve that further improvement will be brought by undertaking the following:

- a. Course outlines revision and improvement
- b. Pre-test and post evaluation
- c. Outcome based grids
- d. More use of technology

5. Recommendation

In the light of the above gap analysis, in order to be moderately complaint flip class model teaching at BUKC, following support is needed further:

- a. Developing portal for flip class
- b. Flip class training by the experts to concerned faculty members (5)
- c. Moodle accounts for each faculty members
- d. Moodle accounts for each student of flip class
- e. Moodle training to faculty members
- f. Classroom should be provided with UPS to absorb the disconnection with the KESC lines
- g. Need to enhance the capacity of our server bearing software
- h. Class size should be of 25 to 30 students maximum
- i. Course load for the teacher should be reduced as flip class has extensive administrative works in teaching

6. Conclusion

Generally, projects have multiple bottom lines which are seen as the level of their success. Flipped class model teaching project at the BU also have four bottom lines for measuring the success, such as: just start, partial complaints, fully complaints and effective complaints. At the end of fall semester 2016, now we can claim that the concept of flip class teaching method has been introduced and we are very close to partial complaints. In this semester, our faculty members as self starter are helping by themselves without any formal training and required support/infrastructure at BUKC, they are sharing their experiences of one semester among themselves.

As HOD-MS and leader of the flipped class teaching team, there is a consolation for me that at least the journey has begun with petty steps and the trajectory is being explored. In the next semester, it is hoped that management and faculty both would strive to fill the gaps identified above.

I am concluding with the hope that chosen faculty will further put efforts in making this project a success with the required support by the Management for being fully compliant flipped class model at BU in Spring 2017.

7. Embarking on the Next Semester

Flipped class teaching course will be continuing with the same subjects and faculty members in Spring 2017. It is expected that the faculty members, with some experiences, will be embarking on next semester to apply flipped class teaching methodology. For the positive results, above mentioned

recommendation may be provided. For the purpose, recommended items with performance centers and timelines are given below in table 7.1.

Table 7.1
Recommendation for the next semester

Srl no	Activities	Source/place	Timeline
1	Developing portal for flip class	In house, IT department (BUKC)	January 20, 2017
2	Moodle accounts for each faculty members	In house, IT department (BUKC)	January 20, 2017
3	Classroom should be provided with UPS to absorb the disconnection with the KESC lines	In house, IT department (BUKC)	January 20, 2017
4	Course outline revision	In house, Management department (BUKC)	January 30, 2017
5	Pre-test and post evaluation material development	In house, Management department (BUKC)	January 30, 2017
6	Moodle training to faculty members	In house, IT department (BUKC)	January 30, 2017
7	Outcome based grids	In house, Management department (BUKC)	January 30, 2017
8	One more class rooms prepared	In house, Management department (BUKC)	February 5, 2017
9	Flip class training by the experts to concerned faculty members (5)	In house, IT department (BUKC) and Other Institutions	February 5, 2017
10	Need to enhance the capacity of our server bearing software	In house, IT department (BUKC)	February 5, 2017
11	Class size should be of 25 to 30 students maximum	In house, MS department (BUKC)	February 5, 2017
12	Course load for the teacher should be reduced as flip class has extensive administrative works in teaching	In house, MS department (BUKC)	February 5, 2017
13	Moodle accounts for each student of flip class.	In house, IT department (BUKC)	February 10, 2017

Part 2 - BUIC

Objectives of Flipped Classroom

The flipped classroom is a pedagogical model in which the typical lecture and homework elements of a course are reversed. The notion of a flipped classroom draws on such concepts as active learning, student engagement, hybrid course design, and course podcasting. The value of a flipped class is in the repurposing of class time into a workshop where students can inquire about lecture content, test their skills in applying knowledge, and interact with one another in hands-on activities. During classroom sessions, instructors function as coaches or advisors, encouraging students in individual inquiry and collaborative effort. Due to its effectiveness, this methodology is widely accepted by international universities worldwide. Management sciences department (MS) at BUIC decided to run few courses of MBA and BBA on flipped classroom methodology as pilot project. Faculty members volunteered to adopt this methodology in senior classes of BBA & MBA programs. This report summarizes the volunteer work of MS faculty, who was part of the experiment. Here is the list of faculty members along with courses and classes.

Courses	Classes	11	Instructors
Strategic Management	MBA VIA and IV D	2	Prof. M I Ramay
Negotiation and Conflict Management	BBA VIIA and VIIIB	2	Qurat-ul-ain
Project Management	MBA IVB and IVD	2	Zahid Majeed
Services Marketing	MBA VIM and IIIN	2	Muzammal Sobban
Cases In Marketing	MBA IVM and IV N	2	Umar Chaudhary
Performance Management	MBA VIA	1	Amna Yameen

Classroom Methodology Used

Case studies, role-plays, activities, discussions, games, presentations, video/audio reviews, article discussions

Pre-Class Work Designed

The flip class methodology is heavily dependent on pre-class work. The professors used following tools/resources to design pre-class work:

- Chapter topic
- Case study
- Presentations
- Video lectures
- Details of what was expected in terms of class delivery and activities to be covered
- Talking Points
- Insights
- Background Research/Insights
- Case Notes/Structured Assignments

In Class Activities Designed

The inclass activities were designed using a three-phase model: Pre-class assessment, challenge-based learning and closure.

Pre-Class Assessment

- Assessment was carried out using written, oral, and game based quizzes. Normally 15-20 minutes of the class were devoted to pre-class assessments.
- Rolling Summary Quiz.
- Syndicate Discussion.

Challenge Based Learning

Usually 4 to 5 small activities are carried out in a time span of 2 hours. To create a challenge based learning environment in the class, the faculty used following methods:

- Peer based learning, where students were encouraged to use a different response to their own reasoning and explain the reasons that support the same to learn from each other.
- Short presentations, individually and group based, using flip charts and multimedia.
- Questions from the chapter for group discussion and short presentations.
- Videos on similar or different topics were shared and discussed in the class.
- Role-plays and case studies were used to build on the theoretical concepts.

Closure

- Classes were concluded by highlighting the learning outcomes of the current session and by providing students with materials for the next class. Also, few minutes were reserved for Q&A related to any questions or ambiguities that students might have had from that day's session.

Student Reactions to the Model

Following student reactions have been captured regarding the flip class methodology:

- Their first reaction was "Why this experiment was done on us"?
- Students were a little confused in the first week, but liked it afterwards. Especially the students who did O/A level had a view that this is more or less similar to the methodology used during O/A level.
- They were happy to find the freedom and autonomy given, but at the same time a little worried about the added responsibility.

- Students claimed that this methodology was more fun and participative.

Things That Went Well

- More interactive classes and better learning.
- In depth study of the topic.
- Practice of difficult concepts in a better manner.
- Few difficult topics that were usually confusing were actually understood better due to flipped classes.
- More productive discussions and focused Q&A sessions.
- Better attention given to students on individual basis.
- Several visits to library to search download HBR articles and cases.
- Able to identify weak students and to work with them timely to understand their issues.
- After the first week of semester, students shifted from their comfort zone of receiving/attending a lecture to a more self-controlled and responsible individual.
- Investigative assignments were carried out for the first time by the class.
- Students started to take the responsibility of their own learning and gained unique ideas/expression.

Things That Didn't Go Well

- Issues of class décor, lack of infrastructure, audio system, computers, internet, power points and furniture.
 - Only round tables were placed in the class after the mid of semester – but tables placed are oversized and there is no space left for teacher to move around in the class.
- Lack of access to teaching resources, most of the faculty members managed resources at their own expense. University needs to have access of following databases.
 - EBSCO Host
 - Web of Science
 - WAARC
 - Case Center
- Non availability of flip charts and discussion boards for different groups.
- Non availability of materials for designing in class games such as flash cards, board magnets, and non-magnetic white boards.
- The classrooms were not equipped for Flipped Classes which translates to:
 - Obstructive Seating Arrangement
 - Inadequate computing ability/Limited internet connectivity.
- Complete absence of audio equipment i.e. Audio/video recording arrangements of teachers self-lectures not available.
- The workload for the faculty was unmanageable and disturbed work life balance.
- Supplies for the class activities were not provided in time or not provided at all and there were a lot of bureaucratic disablements to get them.
- Video recording facility was not there.

Things to Do Differently

- Teaching course load certainly is not justified for this kind of model as this model has doubled the faculty work load and teachers have to spent more time to prepare for the class, in preparing quizzes, taking quizzes, checking and giving feedback in every class, search for appropriate material, design additional activities that can grasp the concept with an interactive and creative appeal etc. Course load of teachers teaching using this methodology be reduced to half of the traditional teaching model.
- Classroom must have permanent sound system, upgraded computers, smart screens on all walls so that students see the lectures, power point slides and videos on screens right in front of them.
- Complete audio/video recording arrangements of teachers self-lectures be made available in flip class.
- University needs to have access of following databases for flip class teachers.
 - EBSCO Host
 - Web of Science

- WAARC
- Case Center
- For essay based assessments faculty members must be provided with individual turnitinuk.com accounts to effectively grade assessments.
- Flip charts and discussion boards for different groups be furnished with interactive touch boards for instructive and interactive workstations for students.
- Materials for designing in class games such as flash cards, board magnets, and non-magnetic white boards.
- An Assistant is must who would help into maintaining the quality of work/teaching and in balancing teacher's efforts.
- Current formative and summative assessment division of marks be changed to match with flip model.
- Selected teachers be sent to universities for on the job training where this methodology is in practice.
- Replacement of midterm and final papers with project/essay to align with the objective of flip classroom learning.

Proposed Road map of Islamic Studies

WK #	Proposed Roadmap
1	Introduction to Quranic Studies <ul style="list-style-type: none"> a. Basic Concepts of Quran b. History of Quran c. Uloom-ul –Quran
2	Basic Quranic Teachings of Faith related to Surah Baqarah Verse 284-286 And Verses of Surah Al-Mumanoon Related to Characteristics of faithful (Verse No-1-11)
3	Faith on the Day of Judgment with Verses of Surah Al-Hashar (18,19,20) Related to Day of Judgment
4	Seerat of Holy Prophet (S.A.W)-I <ul style="list-style-type: none"> d. Important Lessons Derived from the life of Holy Prophet in Makkah e. Basic Quranic Teachings of Adab-e-Nabi relate to Surah Al-Ahzab
5	Seerat of Holy Prophet (S.A.W) –II <ul style="list-style-type: none"> a. Important Lessons Derived from the life of Holy Prophet in Madina b. Quranic Teachings of Adab Al-Nabi related to Surah Al Hujrat Verse 1-3
6	Introduction to Hadith <ul style="list-style-type: none"> a. Basic Concepts of Hadith b. History of Hadith c. Kinds of Hadith d. Sunnah & Hadith e. Legal Position of Hadith
7	Political System of Islam <ul style="list-style-type: none"> a. Basic Concepts of Islamic Political System b. Islamic Concept of Sovereignty c. Basic Institutions of Govt. in Islam d. Comparison between Khilfat and Democracy e. Description in the light of Hadith
8	Introduction to Islamic Law & Jurisprudence <ul style="list-style-type: none"> a. Basic Concepts of Islamic Law & Jurisprudence b. History & Importance of Islamic Law & Jurisprudence c. Sources of Islamic Law & Jurisprudence d. Nature of Differences in Islamic Law
9	Mid Term Exam
10	Islamic Culture & Civilization <ul style="list-style-type: none"> a. Basic Concepts of Islamic Culture & Civilization b. Characteristics of Islamic Culture & Civilization c. Islamic Culture & Civilization and Contemporary Issues
11	Islam & Science <ul style="list-style-type: none"> a. Basic Concepts of Islam & Science b. Contributions of Muslims in the Development of Science c. Quran & Science d. Hadith & Science

12	Islamic Economic System-I <ul style="list-style-type: none"> a. Basic Concepts of Islamic Economic System b. Means of Distribution of wealth in Islamic Economics c. Islamic Concept of Riba
13	Islamic Economic System-II <ul style="list-style-type: none"> a. Islamic Banking & Finance b. Quranic verses of Surah Furqan c. In the light of Hadith
14	Social System of Islam-I <ul style="list-style-type: none"> a. Basic Concepts of Social System of Islam b. Elements of Family c. Human Rights in Islam
15	Social System of Islam-II <ul style="list-style-type: none"> a. Ethical Values of Islam b. With Verses of Surah Hujrat 4-18 c. And description in the light of Hadith
16	Relations with Non-Muslims <ul style="list-style-type: none"> a. In the light of Quran b. In the Light of Hadith

Current Road map of Islamic studies

ISLAMIC STUDIES (Compulsory)

Objectives

This course is aims to enhance understanding of the students regarding Islamic Civilization and improve their skill to perform prayers and other worships. It will also enhance the skill of the students for understanding of issues related to faith and religious life.

Weeks	Topic
1	Introduction to Quranic Studies <ul style="list-style-type: none"> a. Basic Concepts of Quran b. History of Quran c. Uloom-ul -Quran
2	Study of Selected Text of Holly Quran <ul style="list-style-type: none"> a. Verses of Surah Al-Baqra Related to Faith (Verse No-284-286) b. Verses of Surah Al-Hujrat Related to Adab Al-Nabi (Verse No-1-18) c. Verses of Surah Al-Mumanoon Related to Characteristics of faithful (Verse No-1-11) d. Verses of Surah al-Furqan Related to Social Ethics (Verse No.63-77) e. Verses of Surah Al-Inam Related to Ihkam(Verse No-152-154)
3	Study of Selected Text of Holy Quran <ul style="list-style-type: none"> a. Verses of Surah Al-Ihzab Related to Adab al-Nabi (Verse o.6,21,40,56,57,58.) b. Verses of Surah Al-Hashar (18,19,20) Related to thinking, Day of Judgment c. Verses of Surah Al-Saf Related to Tafakar,Tadabar (Verse No-1,14)
4	Seerat of Holy Prophet (S.A.W) I <ul style="list-style-type: none"> a. Life of Muhammad Bin Abdullah (Before Prophet Hood) b. Life of Holy Prophet (S.A.W) in Makkah c. Important Lessons Derived from the life of Holy Prophet in Makkah
5	Seerat of Holy Prophet (S.A.W) II <ul style="list-style-type: none"> a. Life of Holy Prophet (S.A.W) in Madina b. Important Events of Life Holy Prophet in Madina c. Important Lessons Derived from the life of Holy Prophet in Madina
6	Introduction to Sunnah <ul style="list-style-type: none"> a. Basic Concepts of Hadith

	<ul style="list-style-type: none"> b. History of Hadith c. Kinds of Hadith d. Uloom –ul-Hadith e. Sunnah & Hadith f. Legal Position of Sunnah
7	Selected Study from Text of Hadith
8	<ul style="list-style-type: none"> Introduction to Islamic Law & Jurisprudence a. Basic Concepts of Islamic Law & Jurisprudence b. History & Importance of Islamic Law & Jurisprudence c. Sources of Islamic Law & Jurisprudence d. Nature of Differences in Islamic Law e. Islam and Sectarianism
9	<ul style="list-style-type: none"> Islamic Culture & Civilization a. Basic Concepts of Islamic Culture & Civilization b. Historical Development of Islamic Culture & Civilization c. Characteristics of Islamic Culture & Civilization d. Islamic Culture & Civilization and Contemporary Issues
10	<ul style="list-style-type: none"> Islam & Science a. Basic Concepts of Islam & Science b. Contributions of Muslims in the Development of Science c. Quranic & Science
11	<ul style="list-style-type: none"> Islamic Economic System a. Basic Concepts of Islamic Economic System b. Means of Distribution of wealth in Islamic Economics c. Islamic Concept of Riba d. Islamic Ways of Trade & Commerce
12	<ul style="list-style-type: none"> Political System of Islam a. Basic Concepts of Islamic Political System b. Islamic Concept of Sovereignty c. Basic Institutions of Govt. in Islam
13	<ul style="list-style-type: none"> Islamic History a. Period of Khlaft-E-Rashida b. Period of Ummayyads c. Period of Abbasids
14	<ul style="list-style-type: none"> Social System of Islam a. Basic Concepts of Social System of Islam b. Elements of Family c. Ethical Values of Islam
15	<ul style="list-style-type: none"> Relations with Non-Muslims a. In the light of Quran b. In the Light of Hadith
16	REVISION

RECOMMENDED READINGS

1. Ahmad, H. (1993). *Principles of Islamic Jurisprudence*. Islamabad: Islamic Research Institute, International Islamic University.
2. Bhatia, H.S. (1989). *Studies in Islamic Law, Religion and Society*. New Dehli: Deep & Deep Publications.
3. Hameedullah, Muhammad. (1953). *Muslim Conduct of Stat*. Islamabad: IRI.
4. Hameedullah, Muhammad. (1957). *Introduction to Islam*. Islamabad: IRI.

5. Hameedullah, Muhammad. (1993). *Emergence of Islam*. Islamabad: IRI.
6. Hussan, H. (2007). *An Introduction to the Study of Islamic Law*. Islamabad: leaf Publication.
7. Mir, W. (1982). *Muslim Jurisprudence and the Quranic Law of Crimes*. Islamic Book Service.
8. Zia ulHaq, Muhammad. (2001). *Introduction to Al Sharia Al Islamia*. Islamabad: Allama Iqbal Open University.

Review of MS (IR) Roadmap, H&SS, BUIC**Background:**

HSS department has offered MS (IR) programme from spring 2017 semester. The programme has been approved by the BU Academic Council and the HEC. According to the roadmap submitted at the time of approval, first semester comprises 3 courses of 4 credit hours each (a total of $3 \times 4 = 12$ credit hours) whereas, the second semester comprises 4 courses of 3 credit hours each (total credit hours = 12). It may be noted that this roadmap was prepared in line with guidelines on HEC's official website. However, during the accreditation process the HEC/expert opined that all the courses should be of 3 credit hours.

It appears from discussion with the consultant (QAD) HEC and the higher subject expert that they may revise the road map to contain all courses of 3 credit hours only. HOD Peace and Conflict department at NDU informed me that they had to change their road map (from 4 credit courses to 3 credit courses) on the advice of HEC. Furthermore, it is learnt that other departments at BU are also offering 3 credit hours courses for MS/MPhil classes.

Conclusion:

Since it was a point pertaining to policy of the HEC and recommendation was to get aligned with it, the members agreed to take it to the ACM for its approval. Suggested course outline is attached.

Recommendation:

It is, therefore, recommended that the roadmap may be revised to comprise 4 courses of 3 credit hours each.

Roadmap for M.S. International Relations

Semester	Credit Hours
1 (First Years)	12 (Course Work)
2 (First Years)	12 (Course Work)
3 & 4 (Second Year)	6 (Thesis)

Semester 1 – First Year

Course Code	Course Title	Credit Hours
IRS - 501	International Relations: Advanced theory and Practice	03
IRS - 502	Advanced Research Methodology	03
IRS - 503	Seminar on Contemporary Regional and Global Issues	03
IRS - 524	Foreign Policy Analysis	03
	Total Semester Credit Hours	12

Semester 2 – First Year

Course Code	Course Title	Credit Hours
1	Optional - I	03
2	Optional - II	03
3	Optional - III	03
4	Optional - IV	03
	Total Semester Credit Hours	12

Total course work credit hours:24

Semester 3& 4 - Second Year

Course Code	Course Title	Credit Hours
1	Thesis Writing & Defence	06

Total research work credit hours:06

Total Degree Credit Hours: 24 (Course work)+ 06 (Research work)= 30 Credit Hours

Subject: Revised Roadmap – MS (Mathematics) Program**1. Background to the Case**

In response to MS (Mathematics) NOC application to HEC following observations were raised by subject experts of HEC.

1. CGPA should be greater than 2.5 before Thesis (after 24 credit course work).
2. Thesis defense and viva voce must be conducted by one external examiner and one internal examiner.
3. At least three books should be recommended in each course.
4. List of core courses should be extended.

2. Core Courses

Mathematical Techniques
 Functional Analysis
 Partial Differential Equations
 Riemannian Geometry
 ODEs and Computational Linear Algebra
 Group Theory
 Advanced Mathematical Physics
 Integral Equations

4 core courses to be studied
 during MS Mathematics

3. Previous Roadmap

Semester 1		
Course Code	Course Title	Credit Hours
ESC-701	Research methodology	03
MT-710	Advanced Partial Differential Equations	03
MT-712	Mathematical Techniques for Boundary Value Problems	03
	Total	09
Semester 2		
Course Code	Course Title	Credit Hours
MT-711	Advanced Functional Analysis	03
MT-	Elective I	03
MT-	Elective II	03
	Total	09
Semester 3		
Course Code	Course Title	Credit Hours
MT-	Elective III	03
MT-	Thesis /Elective IV	03
	Total	06

Revised Roadmap

Semester 1		
Course Code	Course Title	Credit Hours
MAT-	Core I	03
MAT-	Core II	03
MAT-	Core III	03
	Total	09
Semester 2		
Course Code	Course Title	Credit Hours
MAT-	Core IV	03
ESC-701	Research Methodology	03
MAT-	Elective I	03
	Total	09
Semester 3		
Course Code	Course Title	Credit Hours
MAT-	Elective II	03
MAT-	Thesis	03
	Total	06

Semester 4			Semester 4		
Course Code	Course Title	Credit Hours	Course Code	Course Title	Credit Hours
MAT-	Elective V	03	MAT-	Elective III	03
MAT-	Thesis II /Elective VI	03	MAT-	Thesis	03
	Total	06		Total	06

4. Addition of New Core Courses

- MAT-727 Riemannian Geometry
 MAT-728 ODEs and Computational Linear Algebra
 MAT-729 Advanced Mathematical Physics
 MAT-511 Integral Equations and Applications (Moved from Elective to Core)
 MAT-610 Mathematical Techniques for Boundary Value Problems (Moved from Elective to Core)

5. Addition of New Elective Courses

- MAT-512 Spectral Theory in Hilbert Spaces
 MAT-730 Numerical Optimization
 MAT-731 Introductory Cryptography
 MAT-732 Probability Models and Applications
 MAT-733 Advanced Modern Algebra with Applications
 MAT-734 Spectral Methods in Fluid Dynamics
 MAT-735 Simple Linear Regression Models
 MAT-736 Lattice Boltzmann Method
 MAT-737 Fluid Dynamics

6. Revised Core Course

S. No	Course Code	Course Title	Credit Hours
1	MAT-710	Advanced Partial Differential Equations	03
2	MAT-711	Advanced Functional Analysis	03
3	MAT-713	Advanced Group Theory	03
4	MAT-610	Mathematical Techniques for Boundary Value Problems	03
5	MAT-511	Integral Equations and Applications	03
6	MAT-727	Riemannian Geometry	03
7	MAT-728	ODEs and Computational Linear Algebra	03
8	MAT-729	Advanced Mathematical Physics	03

MS (Mathematics) - COMPLETE PLAN OF STUDY

Semester 1

Course Code	Course Code	Course Code
MAT-	Core-I	03
MAT-	Core-II	03
MAT-	Core-III	03
	Total	09

Semester 2

Course Code	Course Title	Credit Hours
MAT-	Core-IV	03
ESC-	Research Methodology (University requirement)	03
MAT-	Elective I	03
	Total	09

Semester 3

Course Code	Course Title	Credit Hours
MAT-	Elective-II	03

MAT-	Thesis	03
	Total	06

Semester 4

Course Code	Course Title	Credit Hours
MAT-	Elective – III	03
MAT-	Thesis	03
	Total	06
TOTAL CREDIT HOURS		30

List of Core Courses

S. No	Course Code	Course Title	Credit Hours
1	MAT-710	Advanced Partial Differential Equations	03
2	MAT-711	Advanced Functional Analysis	03
3	MAT-713	Advanced Group Theory	03
4	MAT-610	Mathematical Techniques for Boundary Value Problems	03
5	MAT-511	Integral Equations and Applications	03
6	MAT-727	Riemannian Geometry	03
7	MAT-728	ODEs and Computational Linear Algebra	03
8	MAT-729	Advanced Mathematical Physics	03

University Requirement Course

1	ESC-501	Research Methodology	03
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List of Elective Courses

1	MAT-500	Thesis	06
2	MAT-510	Fluids Dynamics-I	03
3	MAT-512	Fixed Point Theory	03
4	MAT-513	Number Theory	03
5	MAT-514	Spectral Theory in Hilbert Spaces	03
6	MAT-611	Topological Vector Spaces	03
7	MAT-712	Numerical Solution of Partial differential Equations	03
8	MAT-714	Non-Newtonian Fluid	03
9	MAT-715	Perturbation Methods	03
10	MAT-716	Finite Element Method	03
11	MAT-717	Near Rings	03
12	MAT-718	Fuzzy Logic/Fuzzy Algebra	03
13	MAT-719	Advanced Ring Theory	03
14	MAT-720	Topological Algebras	03
15	MAT-721	Commutative Semigroup Rings	03
16	MAT-722	General Relativity	03
17	MAT-723	Advanced Analytical Dynamics	03
18	MAT-724	Heat and Mass Transfer	03
19	MAT-730	Numerical Optimization	03
20	MAT-731	Advanced Cryptography	03
21	MAT-732	Probability Models and Applications	03
22	MAT-733	Advanced Modern Algebra with Applications	03
23	MAT-734	Spectral Methods in Fluid Dynamics	03
24	MAT-735	Simple Linear Regression Models	03
25	MAT-736	Lattice Boltzmann Method	03
26	MAT-737	Fluids Dynamics-II	03

COURSE OUTLINES

ESC-501 Research Methodology

Introduction to research, Qualitative and quantitative research, The scientific method of research, Choosing a research problem, Choosing a research advisor, Literature review Conducting and writing, Formulating Design/Methodology, Information Gathering and date collection, Data representation, Analysis and interpretation, Writing research proposal, Ethics of research-Plagiarism and Intellectual property rights, Organizing and managing conferences and workshops, Writing research papers/Reviewing research papers, Planning and developing scientific presentation, Writing thesis/dissertation.

Recommended Books

1. C. R. Kothari, Research Methodology: Methods and Techniques, New Age International Limited Publishers, (2013)
2. Louis Cohen, Lawrence Manion, Keith Morrison, Research Methods in Education, Routledge, (2000)
3. Anselm L. Strauss, Basics of qualitative research, (1990)

MAT-510 Fluids Dynamics-I

Some examples of viscous flow phenomena, properties of fluids, types of flow, boundary conditions, equation of continuity, the Navier-Stokes equations, the energy equation, boundary condition, orthogonal coordinate system, dimensionless parameters, velocity considerations, two dimensional considerations, and the stream functions. Couette flows, Poiseuille flows, unsteady duct flows, similarity solutions, some exact analytical solutions from the papers. Introduction; laminar boundary layer equations, similarity solutions, two-dimensional solutions, thermal boundary layer, Some exposure will also be given from the recent literature appearing in the journal.

Recommended Books

1. F.M.White, Viscous fluid flow, McGraw Hill inc., 1991.
2. H.Schlichting and K.Gertsen, Boundary layer theory, Springer, 1991.
3. P.A.Davidson, An introduction to magnetohydrodynamics, Cambridge University Press, 2001.

MAT-512 Fixed Point Theory

Review of fixed points, fixed point iteration procedure, fixed point formulation typical functional equations. Picard iteration, Banach's fixed point theorem, Banach's contraction principle, non-expansive mappings, sequential approximation techniques for non-expansive mappings, Properties of fixed point sets and minimal set, Multivalued mappings, Brouwer's fixed point theorem, theorem of Edelstein. Quasi-non-expansive operators, generalized contractions, Krasnoselski iteration, non-expansive operators in Hilbert spaces, strictly pseudo-contractive operators, Lipschitzian and generalized pseudo-contractive operators.

Recommended Books

1. Topics in Metric Fixed Point Theory by K. Goebel and W.A. Kirk, Cambridge University Press, 1990.
2. Fixed Point Theory by J. Dugundji and A.Granas, Polish Scientific Publishers, Warszawa, 1982.
3. Fixed Point Theory by V.I. Istratescu, D. Reidel Publication Company, 1981.

MAT-513 Number Theory

Divisibility: Divisors; Bezeout's identity; LCM, Linear Diophantine equations. Prime Numbers: Prime numbers and prime-power factorizations; Distribution of primes; Primality-testing and factorization. Congruencies: Modular arithmetic; linear congruence; an extension of chineses Remainder Theorem; The arithmetic's of Z_p ; solving congruencies mod ($,e$). Euler's Function: Units; Euler's function. The Group of Units: The group U_n ; Primitive roots; The group U_n , n is power of odd prime and n is power of 2. Quadratic Residues: Quadratic congruencies; The group of quadratic residues; The Legendre symbol, Quadratic reciprocity. Arithmetic Functions: Definition and examples; perfect numbers; The Modius Inversion formula. The Riemann Zeta Function: Random integers, Dirichlet series, Euler products, Sums of two Squares; The Gaussian integers; Sums of three Squares; Sums of four Squares. Fermat's Last Theorem: The problem; Pythagorean Theorem; Pythagorean

triples; the case n=4; Odd prime exponents.

Recommended Books

1. Gareth A. Jones and J. Mary Jones, Elementary Number Theory, Springer-Varlog, London Limited (1998).
2. Melvyn B. Nathanson, Methods in Number Theory, Springer-Verlog, New York, Inc. (2000).
3. A.N. Parshin and I. R. Shafarevich, Number Theory I, Fundamental Problems, Ideas and Theories, Springer-Verlag, Berlin Heidelberg, (1995).

MAT-514 Spectral Theory in Hilbert Spaces

Spectral analysis of unitary and self-adjoint operators: resolution of the identity, integral representations. The Caley transform. Spectral types, commutative operators. Rings of bounded self-adjoint operators and their examples. Spectra of specific operators on infinite dimensional spaces, especially operators on Hilbert spaces, Noncommutative k-theory, and the classification of simple C*-algebras

Recommended Books

1. Theory of linear operators: Vol. II by Akhiezer and Clazman., Frederick Ungar Publishing Co., 1963.
2. Theory of Differential Operators by Naimark, M., George Harrapand Co., 1967.
3. Introduction to Spectral Theory in Hilbert Spaces by G. Helberg, Dover Publications, 2008.

MAT-611 Topological Vector Spaces

Vector spaces: Balanced sets, absorbent sets, convex sets, linear functionals, linear manifolds, sublinear functionals and extension of linear functionals. Topological vector spaces: Definitions and general properties, product spaces and quotient spaces, bounded and totally bounded sets, convex sets and compact sets in topological vector spaces, closed hyperplanes and separation of convex sets, complete topological vector spaces, metrizable topological vector spaces, normed vector spaces, normable topological vector spaces and finite dimensional spaces. Locally convex spaces: General properties, subspaces, product spaces, quotient spaces, convex and compact sets in locally convex spaces, bornological spaces, barreled spaces, spaces of continuous functions, spaces of indefinitely differentiable function, the notion of distribution, nuclear spaces, montal spaces, Schwartz spaces, (DF)-spaces and Silva spaces.

Recommended Books

1. Robertson, A.P. and Robertson, W., Topological Vector Spaces, Cambridge University Press, 1966.
2. Cristescu, R., Topological Vector Spaces, Noordhoff International Publishing, Netherlands, 1977.
3. Treves, F., Topological Vector Spaces, Distributions and Kernels Academic Press New York, 1967.
4. Horvath, J., Topological Vector Spaces, Addison-Wesley, 1966.

MAT-710 Advanced Partial Differential Equations

Cauchy's problems for linear second order equations in n-independent variables, Cauchy Kowalewski theorem, characteristic surfaces, adjoint operations, bi-characteristics spherical and cylindrical waves, heat equation, wave equation, Laplace equation, maximum-minimum principle, integral transforms. Fourier series and Transforms for solution to partial differential equations, Green's function to the solution of boundary value problems. Both analytic and numerical methods will be explained to obtain the solution of hyperbolic, parabolic and elliptic partial differential equations.

Recommended Books

1. Introduction to Partial Differential Equations and Boundary Value problems by R. Dennemyer, published by McGraw-Hill Book Company, 1968.
2. Techniques in Partial Differential Equations by C. R. Chester, published by McGraw-Hill Book Company, 1971.

3. Advanced Topics in Computational Partial Differential Equations by H. P. Lengtangen and A. Treito, 2003.

MAT-711 Advanced Functional Analysis

The Hahn-Banach theorem, principle of uniform boundedness, open mapping theorem, closed graph theorem, Weak topologies and the Banach-Alouglu theorem, extreme points and the Klein-Milman theorem, the dual and bidual spaces, reflexive spaces, compact operators, Spectrum and eigenvalues of an operator, elementary spectral theory.

Recommended Books:

1. Kreyszinger, E., Introductory Functional Analysis and Applications, John Wiley, 1973.
2. Taylor, A.E., and Lay, D.C., Introduction of Functional Analysis, John Wiley, 1979.
3. Heuser, H.G., Functional Analysis, John Wiley, 1982.
4. Groetsch, C.W., Elements of Applicable Functional Analysis, Marcel Dekker, 1980.

MAT-712 Numerical Solution of Partial Differential Equations

Parabolic equations: finite-difference representation for parabolic equation, classical explicit method, Richardson explicit method, Crank-Nicolson implicit method, Weighted average approximation method, DuFort-Frankel method, Keller box method, Parabolic Equations: Explicit finite difference approximation, implicit method; Derivative boundary conditions, the local truncation error; Stability analysis, Finite difference methods on rectangular grids in two space dimensions. Finite element method for parabolic equations in one and two space dimensions. Hyperbolic Equations: Analytic solution of linear and quasi-linear equations; Finite difference methods on rectangular mesh for first order equation, Reduction of first order equation to a system of ordinary differential equation; Second order quasi-linear hyperbolic equations; Finite difference method on a rectangular mesh for second order equations; Simultaneous first order equations and stability analysis. Elliptic Equation: Finite difference in polar coordinates; Formulae for derivative near curved boundaries; Improvement of the accuracy of solution; Finite element method for elliptic problems in one and two space dimensions.

Recommended Books

1. G.D. Smith, Numerical Solution of Partial Differential Equations: Finite Difference Methods, Oxford University Press, 1986.
2. J.W. Thomas, Numerical Partial Differential Equations, Springer-Verlag New York, Inc., 1995.
3. G. A. Evans, J. Blackledge, P. Yardley, Numerical Methods for Partial Differential Equations, Springer Berlin Heidelberg, 1999
4. Johnson, Numerical Solution of Partial Differential Equations by the Finite Element Method, Dover, 2009.

MAT-713 Advanced Group Theory

Actions of Groups, Permutation representation, Equivalence of actions, Regular representation, Cosets spaces, Linear groups and vector spaces, Affine group and affine spaces, Transitivity and orbits, Partition of G-spaces into orbits, Orbits as conjugacy class Computation of orbits, The classification of transitive G-spaces Catalogue of all transitive G-spaces up to G-isomorphism, One-one correspondence between the right coset of $G\alpha$ and the G-orbit, G-isomorphism between coset spaces and conjugation in G, Simplicity of A_5 , Frobenius-Burnside lemma, Examples of morphisms, G-invariance, Relationship between morphisms and congruences, Order preserving one-one correspondences between congruences on Ω and subgroups H of G that contain the stabilizer $G\alpha$, The alternating groups, Linear groups, Projective groups, Möbius groups, Orthogonal groups, unitary groups, Cauchy's theorem, P-groups, Sylow P-subgroups, Sylow theorems, Simplicity of A_n when $n > 5$.

Recommended Books

1. J.S. Rose, A Course on Group Theory, Cambridge University Press, 1978.
2. H. Wielandt, Finite Permutation Groups. Academic Press, 1964.
3. J.B. Fraleigh, A Course in Algebra, Addison-Wesley 1982.

MAT-714 Non-Newtonian Fluid

Newtonian versus non-Newtonian behavior, review of Newtonian fluid dynamics, elementary constitutive equations and their use in solving fluid dynamics problems, Nonlinear viscoelastic constitutive equations and their use in solving fluid dynamics problems, modelling and solution of flow problems using different constitutive equations for non-Newtonian fluid, modeling of viscoelastic fluid models and to determine their solution, modeling of power law fluid models and to determine their solution, review of some basic articles related to non-Newtonian fluid model for one and two dimensional flow.

Recommended Books

1. Dynamics of Polymeric Liquids by R. D. Bird, R. C. Armstrong, and O. Hassager, Vol. 1, Fluid Mechanics, 2nd ed., John Wiley & Sons, New York, 1987.
2. Rheology and non-Newtonian flow by J. Harris, Longman, London.
3. F. Irgens, Rheology and Non-Newtonian Fluids, (2013).
4. H. Bellout and F. Bloom, Incompressible Bipolar and Non-Newtonian Viscous Fluid Flow (Advances in Mathematical Fluid Mechanics)

MAT-715 Perturbation Methods

Parameter perturbation, coordinate perturbations, order symbols and gauge functions, asymptotic series and expansions, asymptotic expansion of intergrals, integration by parts, Laplace's method and Watson's lemma, method of stationary phase and method of steepest descent. Straightforward expansions and sources of nonuniformity, the Duffing equation, small Reynolds number flow past a sphere, small parameter multiplying the highest derivative, the method of strained coordinates, the Lindstedt – Poincare' methods, renormalization method, variation of parameters and method of averaging examples. Method of Multiple scales with examples, Approximate Solution of Linear differential Equations Approximate Solution of Nonlinear Differential Equations Perturbation Series Regular and Singular Prturbation Theory Perturbation methods for Linear Eigenvalue problems Asymptotic Matching Boundary Layer Theory Mathematical Structure of Boundary Layer: Inner, Outer, and Intermediate Limits Higher-Order Boundary Layer Theory distinguished Limits and Boundary Layers of Thickness.

Recommended Books

1. Perturbation methods by Nayfeh, A.H., John Wiley & Sons, 2000.
2. Problems in Perturbation by Nayfeh, A.H., John Wiley & Sons, 1985.
3. Mark H. Holmes, Introduction to Perturbation Methods (Texts in Applied Mathematics), (2012),
4. E. J. Hinch, Perturbation Methods (Cambridge Texts in Applied Mathematics), (1991)

MAT-716 Finite Element Method

Incompressible fluid mechanics, reminder on finite element in the coercive frameworks (Lax- Milgram, Sobolev spaces, Lagrangian finite elements), why the coercive framework is not sufficient in many applications, Continuous case, inf-sup condition, Application to Stokes problem, link with optimization under constraints, saddle point problems, Convergence analysis, algebraic aspects, Uzawa algorithm, Conditioning, Fortin lemma. Analysis of P1-bubble-P1 finite element, other examples of finite elements, the advection diffusion case.

Recommended Books

1. Quarteroni and A. Valli (1997). Numerical Approximation of Partial Differential Equations. Springer-Verlag.
2. A. Ern and J.-L. Guermond (2004). Theory and Practice of Finite Elements. Springer-Verlag.

3. Olek C Zienkiewicz (Author), Robert L Taylor (Author), J.Z. Zhu, The Finite Element Method: Its Basis and Fundamentals, Seventh Edition 7th Edition,
4. Reddy, J An Introduction to the Finite Element Method (McGraw-Hill Mechanical Engineering), (2005)

MAT-717 Near Rings

Near Rings, Ideals of Near-rings, Isomorphism Theorems, Near Rings on finite groups, Near-ring modules, Isomorphism theorem for R-modules, R-series of modules, Jorden-Holder- Schrier Theorem, Type of Representations, Primitive near-rings R-centralizers, Density theorem, Radicals of near-rings. Distributively generated near-rings, ideals isomorphism theorems, Free d.g. near rings, Representations of d.g. near-rings, Types of representations, upper and lower faithful d.g. near rings, Endomorphism near-rings of groups.

Recommended Books

1. Pilz, G., Near Rings, North Holland
2. Bhavanari Satyanarayana, Near Rings, Fuzzy Ideals, and Graph Theory, (2013)
3. Mikhail Chebotar, Rings and Nearrings (De Gruyter Proceedings in Mathematics) (2007)

MAT-718 Fuzzy Logic/Fuzzy Algebra

Introduction, the Concept of Fuzziness: Examples; Mathematical Modeling; Operations of fuzzy sets; Fuzziness as uncertainty, Algebra of Fuzzy Sets: Boolean algebra and lattices; Equivalence relations and partitions; Composing mappings; Alpha-cuts; Images of alpha-level sets; Operations on fuzzy sets. Fuzzy Relations: Definition and examples; Binary Fuzzy relations Operations on Fuzzy relations; fuzzy partitions, Fuzzy Semigroups, Fuzzy ideals of semigroups; Fuzzy quasi-ideals; Fuzzy bi-ideals of Semigroups; Characterization of different classes of semigroups by the properties of their fuzzy ideals fuzzy quasi-ideals and fuzzy bi-ideals. Fuzzy Rings: Fuzzy ideals of rings; Prime; semiprime fuzzy ideals; Characterization of rings using the properties of fuzzy ideals.

Recommended Books

1. Hung T. Nguyen and Elbert A. Walker ,A First Course in Fuzzy Logic, , Chapman and Hall/CRC 1999.
2. M. Ganesh, Introduction to Fuzzy Sets and Fuzzy Logic, Prentice-Hall of India, 2006.
3. John N. Mordeson and D. S. Malik, Fuzzy Commutative algebra, World Scientific, 1998.
4. John N. Mordeson, D. S. Malik and Fuzzy Semigroups, Springer-Verlage, 2003. Nobuki Kuroki.

MAT-719 Advanced Ring Theory

Radical classes, semisimple classes, the upper radical, semisimple images, the lower radical, hereditariness of the lower radical class and the upper radical class, Partitions of simple rings, Minimal left ideals, Wedderburn-Artin structure theorem, The Brown-McCoy radical, The Jacobson radical, Connections among radical classes, Homomorphically closed semi-simple classes.

Recommended Books

1. Wiegandt, R., Radical and Semisimple classes of Rings, Queen's papers in Pure and Applied Mathematics No.37, Queen's University, Kingston, Ontario, 1974.
2. David Dobbs, Advances in Commutative Ring Theory (Lecture Notes in Pure and Applied Mathematics), (1999)
3. H. Matsumura and Miles Reid, Commutative Ring Theory (Cambridge Studies in Advanced Mathematics), (1989)

MAT-720 Topological Algebras

Definition of a Topological algebra and its Examples. Adjunction of Unity, Locally Convex Algebras, Idempotent and m-convex sets, Locally Multicatively convex (l.m.c) algebras, Q-algebras, Frechet algebras, Spectrum of an element, Spectral radius, Basic theorems on Spectrum, Gelfand-Mazur Theorem. Maximal ideals, Quotient algebras, Multiplicative linear functionals and their continuity, Gelfand transformations, Radical of an algebra, Semi-simple algebras, Involutive algebras, Gelfand-Naimark theorem l.m.c. algebras.

Recommended Books:

1. E. Beckenstein, L. Narici and C. Suffel, Topological Algebras, North-Holland Company, 1977.
2. Mallios, Topological Algebras, Selected Topics, North-Holland Compnay, 1986.
3. T. Husain, Multiplicative Functions on Topological Algebras, Pitman Advanced Publishing Program, 1983.
4. E. Michael, Locally Multiplicatively-convex Topological Algebras, Memoirs Amer. Math. Soc. No.11, 1951.

MAT-721 Commutative Semigroup Rings

Commutative Rings: Definition and examples, Integral domains, unit, irreducible and prime elements in ring, Types of ideals, Quotient rings, Rings of fractions, Ring homomorphism, Definitions and examples of Euclidean Domains, Principal ideal domains and Unique Factorization domains. Definition and Examples of DVRs, Dedekind and Krull Domains. Commutative Semigroups: Basic notions, Cyclic Semigroups, Numerical Monoids, Ordered Semigroups, Congruences, Noetherian Semigroups, Factorization in Commutative Monoids. Semigroup Ring and its Distinguished Elements: Introduction of Polynomial Rings in one indeterminate including its elements of distinct behaviours, Structure of Semigroup ring, Zero Divisors, Nilpotent Elements, Idempotents, Units. Ring Theoretic Properties of Monoid Domains: Integral Dependence for Domains and Monoid Domains, Monoid Domains as Factorial Domains, Monoid Domains as Krull Domains, Divisor Class Group of a Krull Monoid Domain.

Recommended Books

1. M. F. Atiyah and I. G. Macdonald, Introduction to Commutative Algebra, Addison Wesley Pub. Co., 1969.
2. R. Gilmer, Multiplicative Ideal Theory, Marcell Dekker, New York, 1972.
3. H. Matsumura, Commutative Ring Theory, Cambridge University Press, 1986.
4. R. Gilmer, Commutative Semigroup Rings, The University of Chicago Press, Chicago, 1984.

MAT-722 General Relativity

Review of special relativity, tensors and field theory, the principles on which General Relativity is based, Einstein's field equations, obtained from geodesic deviation, Vacuum equation, the Schwarzschild exterior solution, solution of the Einstein-Maxwell field equations and the Schwarzschild interior solution, the Kerr-Newmann solution (without derivation), Foliations, Relativistic corrections to Newtonian gravity, Black holes, the Kruskal and Penrose diagrams, The field theoretic derivation of Einstein's equations, Weak field approximations and gravitational waves, Kaluza-Klein theory, Isometries, conformal transformations, problems of "quantum gravity".

Recommended Books

1. Qadir, A., Relativity: An Introduction to the Special Theory, World Scientific, 1989.
2. Misner, C.W., Thorne, K.S. and Wheeler, J.A., Gravitation, W.H. Freeman, 1974.
3. Hawking, S.W. and Ellis, G.F.R., The Large Scale Structure of Spacetime, Academic Press, 1972.

MAT-723 Advanced Analytical Dynamics

Equations of dynamic and its various forms. Equations of Langrange and Euler. Jacobi's elliptic functions and the qualitative and quantitative solutions of the problem of Euler and Poisson. The Problems of Langrange and Poisson. Dynamical system. Equations of Hamilton and Appell. Hamilton-Jacobi theorem. Separable systems. Holder's variational principle and its consequences. Groups of continuous transformations and Poincare's equations. Systems with one degree of freedom, Singular points, cyclic characteristics of systems with a degree of freedom. Ergodic theorem, Metric indecomposability. Stability of motion.

Recommended Books

1. Pars, L.A., Analytical Dynamics, Heinmann, London.
2. Whittaker, E.T., Atreatise on Dynamics of Rigid Bodies and Particles, Cambridge University Press.
3. Dan B. Marghitu, Mihai Dupac, Advanced Dynamics: Analytical and Numerical Calculations with MATLAB, 2012th Edition, ISBN-13: 978-1461434740

4. Vincent De Sario, Advanced Analytical Dynamics: Theory and Applications, ISBN-13: 978-1107179608

MAT-724 Heat and Mass Transfer

Modes of heat transfer, Conduction heat transfer, Steady-state heat conduction, Electrical analogs and thermal circuits for one-dimensional internal heat source, Unsteady-state three-dimensional with internal heat energy source, Convection, Introduction to viscous and non-viscous fluid flows, Boundary layers and heat transfer coefficient, Free and forced convection, Concepts of black body and gray body, Radiation exchange between black and gray bodies, Radiation network, Types of heat exchangers, Log Mean Temperature Difference (LMTD), Heat exchanger effectiveness, Intro to mass transfer, Fick's law of diffusion, Mean diffusion coefficient, Schmidt number, concept of force, free and mixed convection.

Recommended Books

Theodore L. Bergman and Adrienne S. Lavine Fundamentals of Heat and Mass Transfer, (2011)

1. Holman, J.P., Heat Transfer, 10th edition, (McGraw-Hill)
2. Yunus A. Cengel, Heat Transfer, A practical Approach, 2nd Edition, (McGraw-Hill)
3. Bejan, Heat Transfer, Wiley, ISBN: 978-81-265-3074-8

MAT-610 Mathematical Techniques for Boundary Value Problems

Introduction to boundary value problems, linear and nonlinear models, Adomian's decomposition method, modified decomposition methods, solving linear and nonlinear bvp's by ADM and MDM, solutions of singular initial and BVPs by ADM and MDM, variational iteration method, modification in variational iteration method on the basis of He's polynomials, Adomian's polynomials and Padé approximation, calculation of approximate and exact lagrange multipliers, applications of variational iteration method and its modified versions on various linear and nonlinear problems, relation of approximate and exact Lagrange multiplier with the accuracy of solutions, solution of linear and nonlinear system of equations by VIM, MVIMS, solution of singular problems by VIM and MVIM, comparison of VIM, ADM and other techniques, Homotopy Perturbation Method (HPM) and modification, Applications of HPM

Recommended Books

1. Partial Differential Equations and Solitary Waves Theory, by Abdul-Majid Wazwaz
2. Homotopy Analysis Method in Nonlinear Differential Equations-Shijun Liao
3. Introduction to Partial Differential Equations and Boundary Value problems by R. Dennemyer, published by McGraw-Hill Book Company, 1968.
4. Perturbation Methods by A. Nayfeh, 1998.
5. Boundary Value Problems of Mathematical Physics by I. Stakgold.

MAT-511 Integral Equations and Applications

Introduction to integral equations, volterra integral equations, Fredholm integral equations, Volterra integro-differential equations, Fredholm integro-differential equations, Abel's integral equation and singular integral equations, Volterra-Fredholm integral equations, Volterra Fredholm integro-differential equations, systems of Volterra integral equations, systems of Fredholm integral equations, systems of singular integral equations, nonlinear Volterra integral equations, nonlinear Volterra integro-differential equations, nonlinear Fredholm integral equations, nonlinear Fredholm integro-differential equations, nonlinear singular integral equations, applications of integral equations: Volterra's population model, integral equations with logarithmic kernels, the Fresnel integrals, the Thomas-Fermi equation, heat transfer and heat radiation. Mellon transform, Hankel transform, Fox integral, Existence Theorems, Integral Equations with L_2 Kernels. Applications to partial differential equations. Integral transforms, Wiener-Hopf Techniques.

Recommended Books

1. Harry Hoch Stadl, Integral Equations, John Wiley, 1973.

2. Stakgold, I., Boundary Value Problems of Mathematical Physics, Macmillan, New York, 1968.
3. B. G. Pschpatte, Multidimensional Integral Equations and inequalities, 2011.

MAT-727 Riemannian Geometry

Vector spaces: Balanced sets, absorbent sets, convex sets, linear functionals, linear manifolds, sublinear functionals and extension of linear functionals. Topological vector spaces: Definitions and general properties, product spaces and quotient spaces, bounded and totally bounded sets, convex sets and compact sets in topological vector spaces, closed hyperplanes and separation of convex sets, complete topological vector spaces, metrizable topological vector spaces, normed vector spaces, normable topological vector spaces and finite dimensional spaces. Geodesics and their length minimizing properties; Jacobi fields; Equation of geodesic deviation; Geodesic completeness (Theorem of Hopf-Rinow); Curvature and its influence on topology (Theorem of Cartan-Myers and Hadamard); Geometry of submanifolds; Second fundamental form; Curvature and convexity; Minimal surfaces, Mean curvature of minimal surfaces; Calculus of differential forms and integration on manifolds; Theorem of Stokes; Elementary applications of differential forms to algebraic topology.

Recommended Books:

1. Do Carmo, M.P., Riemannian Geometry, Birkhauser, 1992.
2. Gallot. S.; Lafontaine, J., Riemannian Geometry, Springer-Verlag, 1990.
3. Bott, R. and Tu, M., Differential forms in algebraic topology, Springer-Verlag, 1987.
4. Do Carmo, M.P., Riemannian Geometry, Birkhauser, Boston, 1992

MAT-728 ODEs and Computational Linear Algebra

Introduction to ODEs, Existence and uniqueness theory for ordinary differential equations. Stability theory for linear and nonlinear ordinary differential equations. Stability and convergence of numerical techniques, and numerical schemes for stiff ordinary differential equations. Modelling with partial differential equations. Classical solution techniques and weak solutions. Numerical methods for partial differential equations, Fundamentals: matrix multiplication, orthogonal vectors, orthogonal matrices, norms; Gaussian Elimination and its variants: Cholesky decomposition, LU decomposition, pivoting strategies; Sensitivity of linear systems: conditioning and stability; The least squares problem and SVD; Eigen values and Eigen vectors Ill-posedness & Regularization.

Recommended Books

1. Matrix Computations by G.H Golub and C.P Van Loan.
2. Fundamentals of Matrix Computations by D.S Watkins.
3. Numerical Linear Algebra by Lloyd N. Trefethen and David Bau
4. Numerical Linear Algebra and Applications by B.N Datta.
5. M.D. Raisinghania, Advanced Differential Equations

MAT-729 Advanced Mathematical Physics

Maxwell's equations, electromagnetic wave equation, boundary conditions, waves in conducting and non-conducting media, reflection and polarization, energy density and energy flux, Lorentz formula, wave guides and cavity resonators, spherical and cylindrical waves, inhomogeneous wave equation, retarded potentials, Lenard-Wiechart potentials, field of uniformly moving point charge, radiation from a group of moving charges, field of oscillating dipole, field of an accelerated point charge.

Recommended Books

1. Foundations of Electromagnetic Theory by J. R. Reitz and F. J. Milford, published by Addison Wesley, 1969.
2. Classical Electricity and Magnetism by K. H. Panofsky and M. Phillips, published by Addison Wesley, 1962.
3. Introduction to Electromagnetic Fields and Waves by D. Corson and P. Lorrain, published by Freeman, 1962.
4. Classical Electrodynamics by D. W. Jackson, published by John Wiley.
5. Electrodynamics by F. Melia, 2001.

MAT-730 Numerical Optimization

Introduction, Fundamental of unconstrained optimization, Line search methods, Trust-Region methods, Conjugate gradient methods, Quasi-Newton methods, Large scale unconstrained optimization, Calculating Derivatives, Derivative free optimization, Least square problems, nonlinear equations, theory of constrained optimization, linear programming, the Simplex method, interior point methods, fundamental of algorithms for nonlinear constrained optimization, quadratic programming, penalty and augmented Lagrangian methods, sequential quadratic programming, interior point methods for nonlinear programming.

Recommended Books

1. Numerical optimization by J. Nocedal and Stephen J. Wright, Second ed. Springer (2006).
2. Numerical Optimization: Theoretical and Practical Aspects, Claudia A. Sagastizába, Springer (2003)
3. Numerical Optimization, **Nocedal, Jorge, Wright, S.** Springer (2006)

MAT-731 Advanced Cryptography

Review of Number theory, Factoring Problems, An Introduction to Classical Cryptography, Hash Functions and Data Integrity, Symmetric Key Cryptography (private key cryptography) Classical Ciphers, One-Time Pad, Stream Ciphers, Asymmetric Key Cryptography/ Public Key Cryptography (RSA, Elgamal, Elliptic Curve, in brief), Digital Signatures Schemes (RSA, DSA) Key Establishment and Key Management (key transport and key agreement, symmetric and asymmetric techniques), Crypt Analysis, Algorithm Development using Matlab. Application range from (conceptually) simple tasks such as encryption, authentication, and key management to sophisticated task such as Internet security, electronic cash payments (using smart cards),and electronic voting.

Recommended Books

1. Johannes A. Buchmann, Introduction to Cryptography, Springer, second Edition, 2004
2. DOUGLAS R.STINSON, Cryptography Theory and Practice, Chapman and Hall/CRC, 2nd Edition, 2006
3. Arto Salomaa, Public-Key Cryptography, Springer second enlarged edition, 1996

MAT- 732 Probability Models and Applications

Preview of Basic Concepts: probability, Classical Probability, Axioms of Probability, Conditional Probability and independence Markov Chains. Random Variables, Distribution functions in one or more dimensions, Expected value and moments, Moments of random vectors, Conditional moments, Moment generating function, Characteristic function, and their application, Inequalities of Markov, Chebyshev and Kolmogorov. Weak law of large numbers, Strong law of large numbers, Central limit theorem. Probability Models, Binomial distribution, Multinomial Distribution, Geometric and Negative Binomial Distribution, Hyper geometric distribution, Poisson Distributions, Exponential and Gamma distributions, Beta Distribution, Normal Distribution, Bivariate normal, Multivariate normal, Lognormal distribution, Cauchy distribution, Double exponential or Laplace distribution, Weibull distribution, Rayleigh distribution, Logistic distribution, Pareto distribution, Pearsonian system of distributions.

Recommended Books

1. Galambos J. (1995), Advanced Probability Theory, 2nd Edition, Marcal Dekker Inc. New York.
2. Johnson N L and Kotz S (1994), Continuous Univariate Distributions, John Wiley and Sons.
3. Stuart A. and Ord J.K. (1987), Kendall's Advanced Theory of Statistics, Vol 1, 5th edition, Charles Griffin and Co. Ltd.
4. Vincotis Y. (1998), Probability and Random Processes for Electrical Engineers, McGraw hill Companies, New York.
5. Durrett R. (1991), Probability, Theory and examples. Wads worth & Brooks/Cole Series, California.

MAT-733 Advanced Modern Algebra with Applications

This course examines the structures of modern algebra, including Boolean Algebras, groups, linear spaces, rings, polynomials, fields, Polya–Burnside Method of Enumeration, Monoids and Machines, Finite state machines and some of their applications to such areas as cryptography, coding theory, and other mathematical disciplines. Groups, Cyclic and Dihedral groups, Permutation groups, Quotient groups, Groups of Low Order, Action of a group on a set, Monoids and Machines, Finite state machines. Ideals and Quotient Rings, Computations in Quotient Rings, Quotient Rings that are Fields. Fields extensions, Galois Fields, Primitive Elements, Geometrical Constructions, Error – Correcting Codes.

Recommended Books

1. W.J Gilbert, Modern Algebra With Applications, J. Wiley and Sons, New York 1976
2. G. Birkhoff and B.C. Thomas, Modern Applied Algebra, McGraw-Hill, New York 1970
3. Matrix Computations by G.H Golub and c.P Van Loan.

MAT-734 Spectral Methods in Fluid Dynamics

Introduction, Spectral Approximation: The Fourier System, Orthogonal Polynomials in (-1,1) Legendre Polynomials, Chebyshev Polynomials, Jacobi Polynomials, Fundamentals of Spectral Methods for PDE's: Spectral Projection of Burgers Equation, Convolution sum, Boundary conditions, Coordinates singularities, Temporal Discretization: The Eigenvalues of Basic Spectral Operators, Some Standard Schemes, Conservation Forms, Global Approximation Results: Fourier Approximation, Sturm–Liouville Expansions, Discrete norms, Legendre Approximations, Chebyshev Approximations, Jacobi Approximations, Theory of Stability and Convergence for Spectral Methods: Fourier Galerkin Method for Wave Equation, Chebyshev Collocation Method for Heat Equation, Legendre Tau Method for the Poisson Equation, General Formulation of Spectral Approximations to Linear Study Problems, Galerkin, Collocation and Tau Methods, Condition for Stability and Convergence: The Parabolic Case, Condition for Stability and Convergence: The Hyperbolic Case.

Recommended Books

1. Claudio Canuto, M.Y. Hussaini, Alfio Quarteroni and T.A. zang, Spectral Methods in Fluid Dynamics, Springer-Verlag, 1988
2. D. Gottlieb and S.A. Orszag, Numerical Analysis of Spectral Methods: Theory and Applications, SIAM-CBMS, Philadelphia, 1977
3. P.A.Davidson, An introduction to magnetohydrodynamics, Cambridge University Press, 2001.

MAT-735 Simple Linear Regression Models

Linear Regression with one Predictor variable, Inferences in Regression Analysis, Diagnostics and Remedial Measures, Simultaneous Inferences and other topics in regression analysis, Matrix approach to simple linear regression analysis.

Recommended Books

1. Applied Linear Statistical Models by John Neter, Michael H. Kutner, Christopher J. Nachtsheim and William Wasserman. Fourth Edition WCB McGraw-Hill.
2. D.A. Belsley, E.Kuh, R.E, Welsch, " Regression Diagnostics, Identifying Influential, Data and sources of collinearity".
3. John O. Rawlings " Applied Regression Analysis" (Spring)
4. J.S. Simonoff, "Analyzing Categorical data", New York Univsf-USA. Ashish Sen and muni Srivastava, " Regression Analysis Theory, Methods and Applications" Spring.
5. Montogomery D.C., E.A peck al G.G Vining, " Introduction to Linear, Regression Analysis" Weily.

MAT -736 Lattice Boltzmann Method

Basic concepts of Lattice Gas Cellular Automata, Basic concepts about the derivation of hydrodynamics, The Boltzmann equation with BGK(Bhatnagar-Gross-Krook) approximation, Moments of the equilibrium distribution function, Mass conservation, Momentum conservation, Energy conservation, The derivation of lattice Boltzmann equation using the Taylor series expansion and Chapman-Enskog expansion, One- and two-dimensional implementation of the Boltzmann equations, Isothermal Lattice Boltzmann models, Lattice Boltzmann methods for non-ideal fluids, Boundary

conditions for Lattice Boltzmann method, Practical implementation of lattice Boltzmann method for laminar, turbulent, bluff-body flows and two-phase flows.

Recommended Books

1. Dieter A. Wolf-Gladrow, Lattice-Gas Cellular Automata and Lattice Boltzmann Models: An Introduction, (Springer, 2000).
2. SauroSucci, The Lattice Boltzmann Equation for Fluid Dynamics and Beyond, (OUP, 2001).
3. M. C. Sukop and D. T. Thorne, Jr., Lattice Boltzmann Modeling-An Introduction for Geoscientists and Engineers, (Springer, 2006).
4. A. A. Mohamad, Lattice Boltzmann Method: Fundamentals and Engineering Applications with Computer Codes, (Springer, 2011).

MAT-737 Fluid Dynamics-II

Review of basic concept of fluid dynamics, Euler's equation of motion, Navier-Stoke's equation and exact solutions, Dynamical similarity and Reynold's number, Turbulent flow, Boundary layer concept and governing equations, Reynold's equations of turbulent motion. Unsteady duct flows; some exact analytic solution of BVP, similarity solutions; two dimensional solutions; thermal boundary layer. Some exposure will also be given from the recent literature appearing in the journals. Thermal boundary layers without coupling of velocity field to the temperature field: Boundary layer equations for the temperature field; forced convection; similar solution of the thermal boundary layers and coupling of Thermal boundary layer with velocity field to the temperature field: Boundary layer with moderate wall heat transfer; natural convection effect of dissipation; indirect natural convection; mixed convection. Different kinds of boundary layer control; continuous suction and blowing; massive suction and blowing; similar solutions.

Recommended Books:

1. Landau Lifshitz, Fluid Mechanics, Pergamon Press, 1959.
2. G.K. Batchelor, Fluid Dynamics, Cambridge University Press, 1967.
3. J.A. Shercliff, Magnetohydrodynamics, Pergamon Press, 1965.
4. F.F. Chen, Introduction to Plasma Physics, Plenum Press, 1974.
5. N.A. Krall and A.W. Trivelpiece, Principles of Plasma Physics, McGraw-Hill Book Company, 1973.

Working Paper**LAUNCHING OF NEW PROGRAM: MS MATHEMATICS AT BUKC****Background /Discussion:**

The MS Program in Mathematics at Department of Humanities & Natural Sciences, Bahria University Karachi Campus was planned to be introduced w.e.f. Fall 2017. The MS program in the evening at the Department of Humanities & Natural Sciences (H&NS) will take maximum of two years to complete, which include mandatory course work of 24 credit hours followed by individual research project/dissertation of 6 credit hours.

Department of Humanities of Natural Sciences (H&NS) Karachi Campus is newly establish department. The degree program of MS in Mathematics was decided to launch after thorough deliberation. The main reason for studying Mathematics at advance level is to provide analytical and logical approach to resolve various research problems in deferent discipline of Arts and Sciences. Accordingly Bahria University has devised MS program in Mathematics, the contents of which have been carefully selected after studying the syllabus being taught in reputed universities, local and abroad and also by taking into account the current market demands in different research and academic institutions.

Conclusion:

The students will find wide choices for their future jobs and they can select from any of the fields like Commerce, Data Processing, Banking, Marketing, Teaching (any level), Engineering, Insurance, Architecture, Accounting, econometrics, quantitative analysis of any productive and business organizations and universities etc. Therefore, it is imperative to launch this discipline which will surely add laurel to the university but it will also benefit the public in a way that desirous students will get quality education.

In accordance with the decision of 27th ACM, the program of MS Mathematics to be presented in 28th ACM after joining of the second PhD Mathematics faculty member on 17 February 2017.

Recommendations:

Hence, it is recommended that the working paper item may be approved by the worthy house.

**New Programme Proposal
MS Mathematics**

A. Academic Details	
(1)	Faculty / Institute / Department: Department of Humanities & Natural Sciences (H&NS) Bahria University, Karachi Campus (BUKC)
(2)	Name of the Program: Master in Science (MS)- Mathematics
(3)	Duration: 4 Semesters (2 years degree program)
(4)	Venue (s) The Department of Humanities & Natural Sciences (H&NS), BUKC.
(5)	Whether the proposed program will be offered in (morning/evening/weekend)? The program of MS Mathematics will be in evening shift after 6:00 p.m, during Monday - Friday

(6)	<p>Number of Extra Faculty Member(s) or Skilled-Worker(s) Required? <i>(Write the faculty members and skilled-workers, fulltime/Visiting, required in addition to the existing strength, along with their qualifications)</i></p> <p>➤ At least one Visiting Faculty MS/P.hD (Mathematics) required in every semester.</p>
(7)	<p>Any extra class room(s) required? If yes, how many? And what will be their capacities required?(provide details)</p> <p>No – Present classrooms are sufficient enough..</p>
(8)	<p>Any extra laboratory/laboratories required? If yes, how many? And what additional equipment will be required?(provide details of equipment, use extra sheet if necessary)</p> <p>One existing computing lab equipped with all the relevant software will be used for new degree program of MS Applied Mathematics.</p>
(9)	<p>Minimum Entry Level:</p> <ul style="list-style-type: none"> • 16 years of education from HEC recognized educational universities/ institutes, students with Mathematical Background. • CGPA 2.50 or above in the final degree, on hand, if degree obtained from a CGPA based system. • Minimum 50% marks if degree obtained from a non-CGPA program. • Must pass Bahria University Admission Test. Or • GAT General with 50 marks obtained in less than two years prior to admissions. <p>(policies of HEC shall apply as amended from time to time)</p>
(10)	<p>Admission Criteria: As per BU Policy</p>
(11)	<p>Proposed Date of Commencement:</p> <ul style="list-style-type: none"> • From Fall-2017
(12)	<p>Mode of Study / Examination: <i>(Semester / Annual / Bi-Annual)</i></p> <ul style="list-style-type: none"> • Semester System (Two semester per year)-Fall and Spring
(13)	<p>Brief Description & Rationale of the Program: <i>(Attach separate sheet, if necessary)</i></p> <ul style="list-style-type: none"> • Department of Humanities & Natural Sciences (H&NS) Karachi Campus is newly establish department. The degree program of MS in Mathematics is intended to launch from Fall-2017. • The complete draft of the program is attached to be forwarded to HEC for necessary approval. • The program is designed to enhance research & professional skills among the mathematicians of the country. • It has been planned to offer this program in the evening for the convenience of students.
(14)	<p>Complete Plan of Studies</p> <ul style="list-style-type: none"> • Department of Humanities & Natural Sciences (H&NS) Karachi Campus will follow the approved Road Map of MS Mathematics. <i>(Attach complete roadmap with semester wise breakup)-attached</i>
(15)	<p>Course Outlines</p> <ul style="list-style-type: none"> • Detailed course description for each course is attached
(16)	<p>Examination Policy</p> <ul style="list-style-type: none"> • Will follow the examination Policy of Bahria University
(17)	<p>Number of Admissions Expected for First Intake:</p> <ul style="list-style-type: none"> • It is expected that 6 to 8 students may be enrolled in 1st semester in this program.
(18)	<p>Number of Admissions Planned/Expected for Subsequent Intakes:</p> <ul style="list-style-type: none"> • 6 to 8 students may join in each semester.

(19)	Date of Approval by the Board of Study?
	<ul style="list-style-type: none"> As recommended by 27th ACM (2016), it will be presented for approval in 28th ACM, to be held during April'2017.

B. FINANCIAL ANALYSIS

(1)	Any Agency (Public/Private) Funding this Program (Fully/Partially)?
	<ul style="list-style-type: none"> Nil
(2)	Expected Earning from First Intake:
	<ul style="list-style-type: none"> Rupees 1,264,000/- from 1st intake (S-I+S-II+S-III+S-IV).
(3)	Projected Earnings for the Next Five Years:
	<ul style="list-style-type: none"> 10% to 20% (per annum)
(4)	Total Estimated Salaries of all Extra Human Resources per Annum:
	<ul style="list-style-type: none"> Rupees 747,500/- (S-I+S-II).
(5)	Cost of Extra Laboratory Equipments/Tools (if required):
	<ul style="list-style-type: none"> Nil (initially no requirement)
(6)	Cost of Extra Books for the Library: (if required):
	<ul style="list-style-type: none"> Nil
(7)	If the Venue is Hired, provide Annual Rental Expenses and Cost of other Fixtures:
	<ul style="list-style-type: none"> Nil
(8)	Miscellaneous Expenses Required for Starting the Program: <i>(Write all expenses required for Furniture, Marketing, Advertisements, Prospectus-Printing etc.)</i>
	<ul style="list-style-type: none"> Approximately Rupees 300,000/- per year for maintenance and upgrading classroom/lab.
(9)	Total Annual Recurring Expenditures Required in Subsequent Years: (like Salaries, Advertisements, Stationeries etc) Rupees 500000/- per annum

C. PROGRAM VIABILITY

(1)	Total Expenditures Required: Add B(4) to B(8)
	<ul style="list-style-type: none"> Rupees 1,047,500/-
(2)	Net Expenditures Required: Subtract B(1) from C(1)
	<ul style="list-style-type: none"> Rupees 1,047,500/-
(3)	Net Earnings in First Year: Subtract C(2) from B(2)
	<ul style="list-style-type: none"> Rupees 216,500/-
(4)	Projected Annual Gross Earning in Subsequent Years:
	<ul style="list-style-type: none"> 10% to 20% increase in subsequent years.
(5)	Projected Annual Net Earning in Subsequent Years for five years: Rs. 1 million (Approximately) Subtract B(9) from C(4) The program shall become more profitable in coming years.

FINANCIAL IMPLICATIONS/PROJECTED EARNINGS

Proposed MS Degree Program in Mathematics from Fall-2017

At Humanities & Natural Sciences Department, BUKC

Course Work: **08 courses (24 credit hours)**
Fee per course: **Rs. 11,000/-**
Thesis: **06 credit hours (In two semesters)**
Fee per thesis: **Rs. 70,000/- (35,000/- in two semesters)**
Total Credit Hour: **30 credit hours**
Max. Course offered: **03 per student**

SEMESTER WISE INTAKE/EARNING

Intake	Sem-ester	No. of Sections	Stre-nghth	No. of 3 CR courses	Earnings (# of students x # of courses x per course fee)
Fall-2017	1 st	One	8	3 (3)	(8x3x11000) = 264,000
Spring-2018	1 st , 2 nd	Two	16	6 (3+3)	(8x3x11000)+(8x3x11000)= 528,000
Fall-2018	1 st , 2 nd , 3 rd	Three + Thesis groups	24	8 [3+3+(1+1*)]	(8x3x11000)+(8x3x11000)+[(8x1x11000)+(8x1x35000)] = 896,000/-
Spring 2019	1 st , 2 nd , 3 rd , 4 th	Four + Thesis groups	32	10 [3+3+(1+1*)+(1+1*)]	(8x3x11000)+(8x3x11000)+[(8x1x11000)+(8x1x35000)]+[(8x1x11000)+(8x1x35000)] = 1264,000/-
					2.952000 Million

*Thesis

Estimated Cost on hiring Visiting Faculty Member per semester:

Fall Semester 2017: (One VFM for 45 Hours) 1x45x3000 = 135,000/-

Spring Semester 2018: (Two VFM for 45 Hours each) 2x45x3000 = 270,000/-

Fall Semester 2018: Three VFM for 45 Hours each) 3x45x3000= 405,000/- Note: No payment will be paid against Thesis in this semester)

Spring Semester 2019: (Three VFM + Thesis Rs. 35,000/- per students) 405000+280000 = 685,000/-

Payment to Visiting Faculty Member: Rs 1,495,000/-

TOTAL EARNING :

2,952,000/- – 1,495,000/- = Rs 1,457,000/-

BAHRIA UNIVERSITY

**(Department of Humanities & Natural Sciences, Karachi Campus)
Road Map for MS in Mathematics**

Bahria University is one of the leading universities of the country. It has signed agreements / MOUs with over 20 universities around the world and the number is growing. There has been repeated exchange of programs and exchange of students among these educational institutes. Bahria University is also committed in providing International

Certifications to its students that improves international acceptability and credibility of its students / alumni.

The course contents that are listed below are the ones most suited in the current local and international market scenario. The course contents and the subjects offered may change over a period of time based on Bahria University collaboration with other notable institutes / organizations / International Certifications providers locally and worldwide. The MS program spreads over 30 credit hrs study, to be completed within 2 years duration: it comprises two components.

- 1- Core/Compulsory & Elective course work of 12 + 12 credit hrs supported by lectures, labs, exposure to digital technologies, and training of software.
- 2- Independent research and thesis of 6 credit hrs encompassing the higher objective of creating scholar capability to conduct independently the high level original and quality research.

ROADMAP FOR MS MATHEMATICS

Semester	Credit Hours
1	9 (Course Work)
2	9 (Course Work)
3	3 (Course Work)+ 3(Course Work/Thesis)
4	3 (Course Work)+ 3(Course Work/Thesis)
Total Credit Hours	30

Semester - 1

Course Code	Course Title	Credit Hours
-	Core I	3
-	Core II	3
-	Elective I	3

Semester – 2

Course Code	Course Title	Credit Hours
	Core III	3
-	Core IV	3
-	Elective II	3

Semester - 3

Course Code	Course Title	Credit Hours
-	Elective III	3
-	Elective V/Thesis I	3

Semester – 4

Course Code	Course Title	Credit Hours
-	Elective IV	3
-	Elective VI/Thesis II	3

Core/Compulsory Courses

Courses	Course Title	Credit Hours
MT 701	Advanced Differential Equations	3
MT 702	Applied Linear Algebra	3
MT 703	Advance Numerical Analysis of Boundary Value Problems	3
MT 704	Simulation & Modeling	3

Elective Courses

Courses	Course Title	Credit Hours
MT 710	Advance Engineering Mathematics	3
MT 711	Advance Discrete Mathematics	3
MT 712	Mathematical Statistics	3
MT 713	Statistical Modeling & Computing	3
MT 714	Operations Research and Optimization	3
MT 715	Applied Stochastic Analysis	3
MT 716	Calculus of Variations	3
MT 717	Introduction to Computational Fluid Dynamics	3
MT 718	Dynamical Systems	3
MT 719	Applied Database Techniques	3
MT 720	Machine Learning & Pattern Recognition	3
MT 721	Fuzzy Logic & Neural Networks	3
MT 722	Applied Probability and Statistics	3
MT 723	Vector Calculus and Complex Variables	3
MT 724	Numerical Analysis of Time Dependent Problems	3
MT 725	Computational Methods of Data Analysis	3
MT 726	Combinatorics and Graph Theory	3
MT 727	Complex Variables	3
MT 728	Advanced Functional Analysis	3
MT 729	Fourier Series	3
MT 730	Theory of Semi Groups	3

Framework for Grooming BU Students Engineering Sciences Perspective

Background

- ❖ Grooming Frame work is approved for Management Sciences Faculty w.e.f. Fall'16
- ❖ Study of Implementation in the Faculty of Engineering Sciences
- ❖ Roadmaps of all the programs were to be analyzed as per the proposed framework

Glimpse of the Dean M&SS proposal

Preparing the Students for Placement (Employability Skills)

Curricular Learning	Co-curricular Learning
<ul style="list-style-type: none"> • IT Skills • Numeracy Skills • Oral Communication and Public Speaking Skills • Business Communication Skills • Self Management • Psychological & Emotional Development • Career Exploring & Management • Corporate Skills 	<ul style="list-style-type: none"> • Civic Education • Intellectual Development • Physical Education • Social & Emotional Development • Aesthetic Development • Internationalization

Committee to Review / Revise Non-core courses

Following committee was constituted to review / revise non-core courses in FoES in line with framework for grooming students and in light of accreditation bodies' guideline.

• Dr. Khurram Shahzad	CE, BUIC
• Dr. Ansa Rukya Saleem	E&ES, BUIC
• Dr. Raja M. Suleman	SE, BUIC
• Dr. Junaid Imtiaz	EE, BUIC
• Ms. Sabeen Arshad	CS, BUIC

Undergrad Degree Program in FoES

S#	Program Title	Accreditation Body / Road Map Body
1	Bachelor of Electrical Engineering	PEC/ HEC
2	Bachelor of Software Engineering	PEC/ HEC
3	Bachelor of Computer Engineering	PEC/ HEC
4	Bachelor of Computer Science	NCEAC / HEC
5	Bachelor of Information Technology	NCEAC / HEC
6	Bachelor of Geology	- / HEC
7	Bachelor of Geophysics	- / HEC
8	Bachelor of Environmental Sciences	- / HEC

Current Practices w.r.t. Dean MS Proposal

Curricular Learning

- Professional Development
 - Technical knowledge and skills
 - Management skills

Existing Mechanism

- State of the art courses/labs for all programs in the faculty of ES as per the guidelines of HEC and accrediting bodies such as PEC, NCEAC.
- A good balance of HEC approved courses covering Social & Management Sciences and Humanities are offered

Co-curricular Learning

- Personal Development
 - Intellectual growth
 - Physical fitness

Available Support

- Achieved through class activities / projects / competitions / case studies
- Sports week/inter-departmental & inter-university games

C-CODE, Project Gala, BU Olympiad, IEEE Day, Workshops/Seminars, Internships, Open House

List of Courses Reviewed

In almost all undergrad Engineering Sciences programs, following courses are taught as compulsory subjects

	Courses	Objectives achieved
Language Proficiency	Functional English	Oral, writing and presentation skills are enhanced.
	Communication Skills	
	Technical Writing & Presentation	
Social Sciences	Professional / Engineering Ethics	Do's and Don'ts of the technical as well as normal living society are taught.
	Social Sciences Elective	
Management Sciences	Entrepreneurship	Career exploration, decision making, self & project/business management skills polished.
	Engineering Economics & Management / Project Management	

Courses Reviewed

S#	Course Title	Objectives as per HEC's roadmap	Recommendations
1	Functional English /English-I (English Language Proficiency)	<ul style="list-style-type: none"> • Reading Comprehension • Writing • Listening • Speaking 	Outlines are updated. Grading policy shall be mapped to each objective (e.g. currently more than 70% part of examination is conducted in written form).
2	Communication skills / English-II	<ul style="list-style-type: none"> • English composition writing • Oral communication 	Outlines are updated. Grading policy shall be mapped to each objective (e.g. currently more than 70% part of examination is conducted in written form).

3	Technical Report Writing	<ul style="list-style-type: none"> Identification of main idea/central theme of the selected passages from literature Critical analysis & interpretation of selected passages Expository writing, listening and speaking. 	Outlines are updated. Mid/Final term exam's methodology / weightage may be re-adjusted to accommodate assessment of comprehensive reports. Moreover, reports shall be checked for plagiarism (e.g. using TurnItIn). Online chat rooms (e.g. Moodle) shall be used for healthy discussion and comments by other members and this shall be also be part of assessment & grade.
4	Professional / Engineering Ethics	<ul style="list-style-type: none"> Moral values Ethical manners 	Outlines are updated.
5	Project Management	<ul style="list-style-type: none"> Develop ability to plan and manage projects 	Case studies relevant to the program shall be made part of the curricula.
6	Entrepreneurship	<ul style="list-style-type: none"> Importance of entrepreneurship Areas of leadership Decision making and negotiation. 	Outlines are updated. It is however recommended to have at least $\frac{1}{4}$ of the course time dedicated to guest speakers; preferably entrepreneurs / innovators / successful business men / managers

Outcome Based Education (OBE)

- Pakistan Engineering Council (PEC) is in process of shifting to the Washington Accord (Accreditation Process – OBE).
- All Engineering Programs in Pakistan are aligning themselves with OBE, and BU is no different.
- The comprehensive goals targeted in OBE cater the needs proposed by the Faculty of M&SS.
- BU has already started pilot implementation of OBE from Fall 2016.

Outcome Based Education (OBE) - Program Objectives

In OBE, each program has to have following 12 objectives, mapped down to level of individual courses.

- Engineering Knowledge
- Problem Analysis
- Design/Development of Solutions
- Investigation
- Modern Tool Usage
- The Engineer and Society
- Environment & Sustainability
- Ethics
- Individual and Team Work
- Communication
- Project Management
- Lifelong Learning

ABET (Accreditation Board for Engineering and Technology)

- Computer Sciences & IT programs have started following ABET guidelines since Fall'16.
- Outlines for the core courses have already been updated.
- For Non-Core courses, the revision is being carried out at Faculty Level

Further Recommendations

- Special seminars / workshops shall be arranged for final year undergraduate students
 - ❖ To improve their communication and presentation skills, especially related to job search, applying for jobs, & interviews, and Mock Interviews etc. ➔ LDC

Summary

- Review of Course Outlines (Non-Core Courses) have been forwarded to all HoDs in FoES.
- The procedure is to be completed during Summer'2017 & to be implemented w.e.f. Fall'2017 after the approval of FBoS.
- The final year students' special sessions (workshops, seminars, guest lectures, and trainings) – in coordination with LDC
- Washington Accord (OBE) & ABET
 - ❖ All Engineering Sciences programs comply with the proposed scheme in one way or the other.
 - ❖ With the full implementation of OBE & ABET, these goals will be monitored at each course level for each student.

BU AFFILIATION DOCUMENT

SCHEME OF PRESENTATION

- Introduction
- Revised Document
- Affiliation Committee
- Technical Evaluation Committee (TEC)
- Procedure/Steps to follow for Affiliation to BU
- Affiliation Criteria/Guidelines

INTRODUCTION

Bahria University (BU) is an HEC recognize Public Sector University, established in year 2000 under presidential ordinance. Its Chancellor is the President of Pakistan. Its affairs are managed by Board of Governors, chaired by Chief of the Naval Staff as Pro Chancellor and has members from Education, Finance and Science of Technology Ministries. Bahria University imparts education in multiple disciplines. It is a multi-campus university with campuses located in Islamabad, Lahore and Karachi.

REVISED DOCUMENT

- BU Affiliation Document was formulated in 2008.
- HEC in its letter dated 12 August, 2016 asked for revision in Affiliation Document.
- Revised and Approved Affiliation Document is Prepared in the light of observations and recommendations by HEC Review Panel Visit report on BU.

AFFILIATION COMMITTEE

- "Affiliation Committee" will look into all affiliation applications received by the university and make its recommendations to BOG. The committee will be composed of as given below:
- | | | |
|----------------------------------------------------|---|-------------------------------------|
| • Rector | - | Chairman |
| • Registrar | - | Member |
| • Dean of concerned Faculty | - | Member |
| • Director Academics | - | Member |
| • Director Examinations | - | Secy & Member |
| • Director Finance | - | Member |
| • Director R&D / Director ORIC | - | Member |
| • Director QA/HEC Representative | - | Member |
| • Director Health Sciences (for medical entities)- | | Member |
| • Such other academicians in the relevant field- | | Member(s) appointed by the Chairman |

Director Academics, Director Finance, Director QA/HEC Representative and DHS have been included in revised Affiliation Document for smooth processing of Affiliation.

TECHNICAL EVALUATION COMMITTEE (TEC)

TEC HAVE ALSO BEEN INCLUDED IN REVISED DOCUMENT:

After evaluating the application for affiliation, Chairman Affiliation Committee tasks TEC to visit the concerned Institute and submit its report. The TEC shall comprise of following:

- | | | |
|------------------------------------------------------------------------|---|---------------|
| • Pro-Rector | - | Chairman |
| • Registrar | - | Member |
| • Director Academic Affairs | - | Member |
| • Director Examination | - | Secy & Member |
| • Director Finance | - | Member |
| • Dean/Senior FM of relevant discipline - | - | Member |
| • Director Health Sciences (incase of Medical/Dental/ Nursing College) | - | Member |

REVISED PROCEDURE/STEPS FOR AFFILIATION

- STEP 1 – Applying institute to obtain application form.
 - Fees revised for Application form Rs 10,000 to Rs 100,000 (Local) and US \$ 400 to US \$ 2000 (Foreign).
- STEP 2 – Submit completed application form.
- STEP 3 – Preliminary inspection by Technical Evaluation Committee (TEC).
 - Rs 100,000 non-refundable was charged previously for transport expenses of University team members which was changed to Rs 500,000 non-refundable for local institutes and \$4,000 non-refundable for foreign institutes to cover boarding, lodging and transportation expense for BU team.
- STEP 4 –HEC Minimum Quality Standards have also been included in the revised document.
- STEP 5 – TEC submits report with recommendations. Affiliation Committee conducts final visit before granting affiliation.
- STEP 6 – Case presented in ACM for recommending to BOG.
- STEP 7 – Case presented to BOG for decision.
- STEP 8 – After approval of BOG – affiliation letter issued to applying institute.

AFFILIATION CRITERIA/GUIDELINES

• Application Processing Fees for Affiliation:

Fees for application processing was kept same as previous which was Rs 100,000 which is for local institutes while an addition of fee for foreign institutes is made which is US \$ 2,000.

• Institutional and Academic:

Previously there was no Quality Assurance Cell but revised document requires the institute to establish Quality Assurance Cell to ensure quality functioning at institution level as per HEC's MQS Manual.

• Financial:

- The amount of Endowment Fund was changed from 1 Million to 5 Million, whose interest will be utilized to refurbish the laboratories and library and for provision of gadgets to enhance the quality of education.

- Tangible asset in form of land, building etc was enhanced from Rs 5 Million to Rs 50 Million .

A new paragraph was added about Medical and Dental Institutes

MEDICAL & DENTAL INSTITUTES:

- The applicant shall provide two bank guarantees in favor of the Council valid for a period of five years from scheduled Pakistan commercial banks approved by the State Bank of Pakistan having AAA rating, one for the college amounting to Rs 20 Million and one for the hospital amounting to Rs 30 Million.
- Fee from students prescribed by the Council shall be strictly adhered to and any overcharging or demand for donation from students shall be considered a violation and shall merit de-affiliation. Fee from the students shall not be the only source for running the college and reliance on student tuition shall not be so great that the quality of the program is compromised due to lack of finances. In this regard
 - a. The institution shall furnish such reports, returns and other information as the Council may require, enabling it to judge the financial sustainability.
 - b. The institution as well as the University shall prior to enrolling students establish an endowment fund of at least Rs 10 Million for development and enhancing the quality of education. The endowment fund shall have an increase at a minimum rate of 3% annually; and
 - c. At the commencement of operation of the institution, the working capital of at least Rs 20 Million needs to be with the institution for smooth functioning of its affairs.

MISSION, OBJECTIVES & OUTCOMES OF BS ACCOUNTING & FINANCE

The BS (A&F) is an approved program by the academic council and it has been running successfully in collaboration with ICAP for the last three semesters. This program is growing in terms of intake. However, mission, objectives and outcomes of the program has not been developed yet due to which the program lacks a clear road map. It is important to outline a clear roadmap for the graduates of this program. BS. The case proposes Mission, Objectives and Outcomes of/for the program which the Board may consider for adoption. Besides, mission, objectives and outcomes of this program in written form is needed for the program accreditation purpose also.

Recommendations:

In the wake of the importance of mission, objectives and outcomes as discussed above, it is recommended that a uniform mission, objectives and outcomes of BS (A&F) across the campuses may be developed and get approved from the competent academic bodies.

NEW PROGRAMME PROPOSAL

A. ACADEMIC DETAILS	
1	Faculty/Department:
2	Name of the Programme:
3	Mission of the Programme:
4	Objectives of the Programme:
5	Outcomes of the Programme:
6	Rationale for the Programme:
7	Brief Description of the Programme:
8	Duration:
9	Venue(s): On Site/Off Site/Both On & Off Site (<i>Tick one; if Off Site, give details</i>)
10	Programme Scheduling Format: <ul style="list-style-type: none"> • Morning/Evening/Weekend (<i>tick one</i>) • Bi-Semester/Trimester/Semester+Summer Session/Annual/Bi-Annual (<i>tick one</i>)
11	Proposed Date of Commencement:
12	Mode of Study/Examination:
13	Additional Faculty Member(s) Required: (<i>Indicate if there is a requirement for additional faculty members, fulltime/visiting, along with qualifications.</i>)

14	Additional Skilled-Worker(s) Required: (<i>Indicate if there is a requirement for additional Skilled Staff, fulltime/part-time, along with their qualifications/skill sets.</i>)
15	Additional Classroom(s) required: (<i>The requirement is to include the number of classrooms and their capacities.</i>)
16	Additional Requirement for Laboratories: (<i>The requirement is to include the number of laboratories, their equipment and their capacities.</i>)
17	Additional Requirement for Books, Subscriptions, Memberships to Online Research Sites/ Repositories:
18	Minimum Entry Level:
19	Admission Criteria:
20	Additional/Different Examination Requirement <i>(Indicate if there will be any examination requirement, additional to or different from the BU Academic Rules or Examination Policy in vogue).</i>
21	Number of Admissions Expected for First Intake:
22	Number of Admissions Planned/Expected for Subsequent Intakes:
23	Referred by: (<i>delete which is inapplicable</i>) FBOS: (<i>Indicate the FBOS meeting reference and Item No</i>) Competent Authority: (<i>Indicate the File No & date; reproduce the decision</i>)
24	Complete Plan of Studies, inclusive of complete Roadmap: (<i>Attach as Annex 'A'</i>)
25	Course Outlines, Descriptions, Pre-Requisites & Readings (Compulsory & Recommended) (<i>Attach as Annex 'B'</i>)

B. FINANCIAL DETAILS	
1	Source of Funding: <ul style="list-style-type: none"> • BU: Fully/Partially: • Public Sector (B1): Fully/Partially (<i>provide complete details; attach MOU, agreement etc.</i>) • NNGO (B1): Fully/Partially (<i>provide complete details; attach MOU, agreement etc.</i>)

	<ul style="list-style-type: none"> INGO (B1): Fully/Partially (provide complete details; attach MOU, agreement etc.) UN/IGO (B1): Fully/Partially (provide complete details; attach MOU, agreement etc.) 				
2	<p>Degree Duration: Annual or Semester System:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Annual</td> <td style="width: 60%;">Number of Years</td> </tr> <tr> <td>Semester:</td> <td>Number of Semester</td> </tr> </table> <p>Total Number of Credit Hours:</p>	Annual	Number of Years	Semester:	Number of Semester
Annual	Number of Years				
Semester:	Number of Semester				
3	<p>Expected fee to be charged based on Cost & Benefits Analysis: (show working)</p> <p>Per annum fee: or Fee rate per credit hour:</p>				
4	<p>Expected Number of students for 1st & 2nd Intakes:</p>				
5	<p>Expected Earning from first two Intakes (B5): (Show working)</p>				
6	<p>Expected Earning for the Next Five Years (B6): (show working)</p>				
7	<p>Total Estimated Salaries of all Additional Human Resources per annum (B7): (Show working)</p>				
8	<p>Cost of Additional Laboratory Equipment/Tools (B8): (show working)</p>				
9	<p>Cost of Additional Classrooms (B9): (Include furniture, technical aids etc)</p>				
10	<p>Cost of Additional Books, Subscription & Memberships to on-line Sites/Repositories (B10): (show details)</p>				
11	<p>Off-Site rental Expenses and Cost of other Fixtures (B11): (Show details)</p>				
12	<p>Miscellaneous Expenses required for Starting the Program (B12):</p> <ul style="list-style-type: none"> - Advertisement: - Printing & Stationery - Admin Cost - Any other - Total 				
13	<p>Annual Recurring Expenditures in Subsequent Years (B13):</p> <ul style="list-style-type: none"> - Salaries: - Rentals: - Subscriptions/Memberships: - Advertisements: - Printing & Stationery: 				

	<ul style="list-style-type: none"> - Admin Cost - Any other - Total:
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14	Total Cost of the Programme (B14): [Add B(7) to B(12)]
15	Net Cost of the Programme (B15): [Subtract B(1) from B(14)]
16	Net Earnings in First Year (B16: [Subtract B(15) from B(5)]
17	Projected Annual Gross Earning in Subsequent Years (B 17): (<i>show details & working; add 10% towards all expenses in subsequent years.</i>)
18	Projected Annual Net Earning in Subsequent Years: [Subtract B(13) from B(17)]

Adjustment of Electives BSE roadmap

Problem details:

1. **Moving Courses in Lists of SE electives and Supporting Electives:** It is submitted that SEN - 441 "Mathematical tools for Software Engineering" is currently placed as Supporting elective and it is more appropriate to shift it to list of SE electives. It is submitted that the course CEN-453 "Real time Systems" is currently in list of SE electives and it would be more appropriate to be placed in the list of Supporting Electives. The replacements are proposed and reflected in the Annexure.
2. **Addition of electives to list of SE Electives:** There are couple of courses, which are already in the other roadmaps/unified code booklet starting with SEN, need to be added in the software engineering electives.
 - a. SEN-421 Semantic Web (Found in the unified course code/CS roadmap)
 - b. SEN-456 Usability Engineering (Found in the unified course code/CS roadmap).
3. **Addition of electives to list of Domain Electives:** Adding few new courses to the list of Domain Elective Courses which already exists in the unified code book and are being offered in other departments having SEN codes.
 - a. SEN-493 Multimedia Systems to Multimedia domain
 - b. SEN-455 Knowledge Management to Information System Domain
4. **Change of Pre-requisites of domain electives:** The courses including CEN-453 Real Time Systems, SEN-459 Mobile and Pervasive Computing and GSC-445 Operation Research have pre-requisites; it is submitted that they may be updated as given in the recommendation.

S.No.	Pre-Req	Course Code	Course Name
1	CSC-320	CEN-453	Real Time Systems
2	None	SEN-459	Mobile and Pervasive Computing
3	GSC-122	GSC-445	Operation Research

5. There is an adjustment of electives in the currently approved BSE roadmap. Working paper is attached. The only change is in the shifting of SE elective - II from 5 to 6th semester and shifting of supporting elective from fifth to sixth semester. SE departments submit an update that elective courses may show an elective course with its total credit hours and not with the details as is evident in provided Annexure.

Recommendation:

The update is presented for approval please.

Adjustment of Electives

SEMESTER 5

Pre-Req	Course Code	Course Title	Total Credit Hours	Theory	Lab
SEN-210	SEN-458	Software Requirements Engineering	3	3	0
None	GSC-122	Probability & Statistics	3	3	0
CEN-120	CEN-222	Data Communication & Networking	3	3	0
CEL-120	CEL-222	Data Communication & Networking Lab	1	0	1
None	SEN-320	Human Computer Interaction	3	3	0
		SE Elective I	3	-	-
		Supporting Elective II- SE Elective II	3	-	-

			19	-	-
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SEMESTER 6

Pre-Req	Course Code	Course Title	Total Credit Hours	Theory	Lab
SEN-458	SEN-420	Software Quality Engineering	3	3	0
SEN-458	SEN-457	Software Design & Architecture	2	2	0
SEN-458	SEL-457	Software Design & Architecture Lab	1	0	1
None	PAK-101	Pakistan Studies	2	2	0
		SE Application Domain Elective -I	3	-	-
		SE Elective II Supporting Elective II	4	-	-
		SE Elective III	3	-	-
			18	-	-

Elective Software Engineering Courses -15 Credit Hours

Pre-Req	Course Code	Course Title	Total Credit Hours	Theory	Lab
SEN-210	SEN-440	Software Engineering Economics	3	3	0
SEN-210	SEN-449	Business Process Automation	3	3	0
None	SEN-453	Information System Audit	3	3	0
GSC-110	SEN 324	Software Metrics & Estimation	3	3	0
CSC-113	SEN-310	Web-Engineering	3	2	1
GSC-110	SEN 323	Formal Methods in Software Engineering	3	0	0
GSC-110	SEN 311	Software Construction	3	2	1
CSC-210	CSC-456	Distributed Computing	3	2	1
None	CSC-315	Theory of Automata	3	3	0
CSC-221	CSC-321	Design and Analysis of Algorithms	3	3	0
CSC-113	CSC-445	Principles of Programming Languages	3	3	0
CSC-113	CSC-313	Visual Programming	3	2	1
None	CSC-411	Artificial Intelligence	3	2	1
None	CSC-444	Computer Graphics	3	2	1
None	SEN-448	Software Applications for Mobile Devices	3	2	1
None	SEN 332	Big Data Analytics	3	3	0
None	SEN-459	Mobile and Pervasive Computing	3	3	0
None	SEN325	Cloud Computing	3	3	0
None	SEN-450	Design Pattern	3	3	0
None	CSC-448	Introduction to Bio-Informatics	3	3	0
None	SEN-452	Agile Development	3	3	0
CSC-113	SEN-441	Mathematical tools for Software Engineering	3	2	1
SEN-320	SEN-456	Usability Engineering	3	3	0
SEN-310	SEN-421	Semantic Web	3	3	0

Elective Supporting Courses (10 Credits)

Pre-Req	Course Code	Course Title	Total Credit Hours	Theory	Lab
EEN-210	EEN-442	Digital Electronics	4	3	1
GSC-113	EEN-210	Basic Electronics	4	3	1

CSC-320	CEN-321	Microprocessors & Interfacing	4	3	1
GSC-113	CEN 440	Embedded System Design	4	3	1
SEN-423	CEN-443	Fault Tolerant Systems	4	3	1
CEN-222	CEN-454	System Programming	4	3	1
GSC-110	GSC-320	Numerical Analysis	3	3	0
GSC - 122	GSC-445	Operation Research	3	3	0
GSC-122	CEN-450	Simulation and Modeling	3	2	1
GSC-113	CEN 458	Robotics	3	3	0
None	EEN 110	Linear Circuits Analysis	3	3	0
EEN 313	EEN 325	Digital Signal Processing	3	3	0
GSC-110	CSC 453	Information Theory	3	3	0
GSC-110	GSC 210	Differential Equations	3	3	0
GSC-110	GSC-220	Complex Variables and Transforms	3	3	0
GSC-113	GSC-446	Physics-II(Mechanics)	3	3	0
None	GSC-441	Bio-Chemistry	3	3	0
None	GSC-442	Biology/ Genetics	3	3	0
CSC-320	CEN 453	Real Time Systems	3	3	0

Appendix: Course Outlines

SEN 421: Semantic Web

Credit Hours: 3+0

Prerequisite: SEN-310 Web Engineering

Course Objectives and Related Program Educational Objectives:

The main objective of this course is to study the concepts, technologies and techniques underlying and making up the Semantic Web. The main topics of the study including Semantic web modelling, RDF- The basis of the semantic web, Semantic web architecture, Querying the semantic web – SPARQL, RDF and inferencing, RDF Schema language, Protégé, Basic OWL and its types, Description Logics, Linked Data, JENA OWL API.

Upon completion of this course, students will be able to:

- Demonstrate a familiarity with the concepts of semantic web
- Understand different types of semantic web technologies including RDF, RDFS and OWL
- Understand how to implement SPARQL queries and programming with JENA OWL API
- Design domain ontologies in the ontology development tool particularly Protégé

Course Outline:

Today's Web, What is a Semantic Web, Smart Web, Semantic Web technologies, A layered approach, Modelling for human communication, expressivity in modelling, RDF: The basis of Semantic Web, RDF and tabular data, Higher order relationship, Semantic Web architecture, Tell-and-Ask systems, SPARQL query language, Construct basic and advanced queries, RDF schema language, Ontologies, Types and applications of ontologies, OWL: Web ontology language, Types of OWL, RDFS versus OWL, Protégé, DL-Query and SPARQL query tabs, Object and data properties, Named and disjoined classes, Restrictions, cardinality and special properties, Description logics, Linked data, JENA OWL API.

Text Books:

- Allemang, D. & Hendler, J. (2011). *Semantic Web for the Working Ontologist*. 2nd Edition, Elsevier Inc.

Reference Books:

- Antoniou, G. Groth, P., van Harmelen, F., & Hoekstra, R. (2012). *A Semantic Web Primer*. 3rd Edition, MIT Press.
- De Pablos, Ordóñez (2013). *Advancing Information Management through Semantic Web Concepts and Ontologies*. IGI Global.
- Sheth, A. (2013). *Semantic Web Ontology and Knowledge Based Enabled Tools, Services and Applications*. IGI Global.

- Duchame, B. (2013). *Learning SPARQL: Querying and Updating With SPARQL 1.1*. O'Reilly.
- Arp, R., Smith, B., Spear, A.D. (2015). *Building Ontologies With Basic Formal Ontology*. MIT Press.

SEN 456: Usability Engineering

Credit Hours: 3+0

Prerequisite: SEN-320 Human Computer Interaction

Course Objectives and Related Program Educational Objectives:

The main objective of this course is to study the concepts and techniques used in usability engineering. The main topics of the study including usability engineering, usability engineering life cycle, task analysis, usability heuristics, web usability, mobile usability, usability assessment methods and usability testing.

Upon completion of this course, students will be able to:

- Demonstrate a familiarity with the concepts of usability engineering
- Understand different types of usability assessment methods
- Understand how to test and analyze web and mobile usability
- Design user interface using usability engineering techniques

Course Outline:

The Usability engineering, the usability engineering life cycle, task analysis, financial analysis, usability heuristics, usability assessment methods, web usability, mobile usability, usability testing, designing user interfaces, prototyping user interfaces, methodologies for prototyping, heuristic testing, future development in usability engineering.

Text Books:

- Wixon, D., & Ramey, J. (2013). *Usability Engineering II: Engineering for the Next Generation of Customers, Products and Communities*. Morgan & Claypool publishers.

Reference Books:

- Nielsen, J. & Budiu, R. (2012). *Mobile Usability*. Pearson Education.
- Spiliotopoulos, T. et al. (2010). *Integrating Usability Engineering For Designing the Web Experience*. IGI Global.
- Preece, J., Rogers, Y., & Sharp, H. (2015). *Interaction Design: Beyond Human-Computer Interaction*. Wiley Publications.

SEN 493: Multimedia Systems

Credit Hours: 3+0

Prerequisite:

Course Objectives and Related Program Educational Objectives:

The main objective of this course is to study basic concepts and techniques used in multimedia systems. The topics covered in this course including introduction to multimedia systems its components and applications, media formats and media fundamentals, digital signal processing of audio, images, and video data in multimedia systems, multimedia operating systems, media server architectures, speech and gesture recognition systems. Upon completion of this course, students will be able to:

- Demonstrate a familiarity with the concepts of multimedia systems
- Understand different types of multimedia systems and applications
- Understand how to use audio, images and video data in multimedia systems
- Design and build multimedia systems

Course Outline:

Introduction to multimedia systems, multimedia operating systems, media server architectures, media formats and media fundamentals, networks, media characteristics and compression techniques, metadata generation, indexing structures, streaming multimedia data, watermarking techniques and security, organizing and delivering multimedia objects, speech and gesture recognition systems.

Text Books:

- Steinmetz, R., & Nahrstedt, K. (2013). *Multimedia Systems*. Springer Publishers.

Reference Books:

- Morris, T. (2012). *Multimedia Systems: Delivering, Generating, and Interacting with Multimedia*.
- Furht, B. (2012). *Multimedia Systems and Techniques*.
- Guan, L., He, Y., & Kung, S. (2012). *Multimedia Image and Video Processing*. 2nd Edition, Taylor & Francis Group.

SEN 455: Knowledge Based Management Systems**Credit Hours:** 3+0**Prerequisite:** None**Course Objectives and Related Program Educational Objectives:**

The major areas of study include the nature of knowledge, the knowledge management cycle, knowledge models, knowledge management capturing and codification tools and techniques, knowledge management tools, system testing and deployment and the knowledge management team. Upon completion of this course, students will be able to:

- Learn about the main concepts of knowledge management
- Get hands-on-experience on the implementation of knowledge management practices in the organizations
- Comprehend the impact of knowledge management techniques and tools at organizational and individuals' perspectives.
- Enhance technical writing, interpersonal and communication skills
- Understand how to conduct and analyze knowledge capturing tool (i.e. Interview).

Course Outline:

Introduction to knowledge based management system, the nature of knowledge, the knowledge management life cycle, major approaches for knowledge management cycle, knowledge management models, knowledge capturing tools, knowledge codification, knowledge transfer and sharing, knowledge management tools, system deployment and testing, impact of knowledge based management on the organization's work, Factors affecting knowledge based management system, learning and knowledge management, future challenges for knowledge.

Text Books:

- Dalkir, K. (2011). *Knowledge Management in Theory and Practice*. (2nd, Ed.) The MIT Press.

Reference Books:

- Becerra-Fernandez, I., & Sabherwal, R. (2010). *Knowledge Management Systems and processes*. M.E.Sharpe Inc.
- Hislop, D. (2013). *Knowledge Management in Organizations: A Critical Introduction*. (3rd, Ed.) Oxford University Press.

Appendage 2803**Title: Adoption of New Elective Courses in the LL.B Curriculum****Background**

The Department of Law is running LLB program in accordance with curriculum/scheme approved by HEC and Pakistan Bar Council. The scheme includes a number of elective courses and allows the institutions to adopt more elective courses. Keeping in view the employment opportunities for Law graduates, the Departmental Board of Studies in its meeting on 23-12-2016 has approved the courses such as Competition Laws, Parliamentary Studies, Air and Space Laws and Cyber Security Laws. The details of the courses are attached at **Appendage 2**.

Conclusion:

The point was discussed in combined meeting of FBOS of all campuses of Bahria University. The members of FBOS discussed various program management issues. The input was obtained from all the campuses. Having seen the emerging need of introducing new electives, the members supported the point to be taken to FBOS.

Recommendations:

Hence, it is recommended that the agenda item may be approved by the worthy house.

New Electives in LLB Curriculum

Title: Competition Law

Credit Hours: 03

Status: Elective

Program: LL. B

Contents Breakup

History of Competition in Pakistan – Moving from the Monopolies & Restrictive Trade Practices (MRTPO) Ordinance, 1970 to the Competition Act, 2010.

Important concepts and definitions

1. Perfect competition vs. Monopoly;
2. Oligopoly;
3. Concept of market power;
4. Anti-competitive practices.

Abuse of Dominant Position – Section 3 of the Competition Act, 2010

1. What constitutes abuse of dominant position?
 - a. Limiting production, sales;
 - b. unreasonable increase in price (reference to Urea-Fertilizer case);
 - c. Unfair trading conditions;
 - d. price discrimination;
 - e. Tie-ins;
 - f. predatory pricing;
 - g. boycotting or excluding undertakings from the production, distribution or sale of goods.
2. Assessing existence of dominant position:
 - a. Defining relevant market;
 - b. Assessing market shares;
 - c. Assessing entry barriers.

Prohibited Agreements – Section 4 of the Competition Act, 2010

1. Distinguishing between pro-competitive and anti-competitive agreements;
 2. Cartel Agreements:
 - a. Types of markets prone to cartelization;
 - b. Typical features of a cartel agreement;
 - c. Price fixing;
 3. Prosecuting cartels tools available to CCP under CA, 2010 --Leniency and Reward Payment Regulations;
 4. Bid Rigging in public procurement, concept of cover pricing, bid rotations etc.
- Possible case study on bid rigging in Pakistan's power sector and CCP's experience;

Approval of Mergers – Section 11 of the Competition Act, 2010

1. Horizontal mergers;
2. Vertical mergers; and
3. Conglomerate mergers
4. Anti-competitive effects of each type of merger
5. Merger Review Process.
6. Remedies.

Deceptive Marketing – Section 10 of the Competition Act, 2010

What constitutes deceptive marketing and citing the relevant cases and experiences of the CCP with specific focus on compliance oriented approach of CCP

Advocacy – Section 29 of the Competition Act, 2010

Instilling the importance of competition in government policies and combating public restraints through Policy Notes, market research. Addressing issues of state aid, competitive neutrality, and Public Sector Enterprises (PSE); Favorable treatment to firms through SROs. Conducting compliance programmes for the private sector.

Contemporary Issues in competition policy

Oligopoly and tacit collusion revision exercise. Linkage between competition and intellectual property rights. Emerging challenges.

Title: Parliamentary Studies

Credit Hours: 03

Status: Elective

Program: LL. B

Lectures Breakup:

1. State Building and constitution in Pakistan

Goals of State Building

2. Basis of Pakistani state as envisioned by quid- e- Azam Muhammad Ali Jinnah

Parliamentary History

Constitutional development

3. Structure and Functions of parliament

Senate and National Assembly of Pakistan

Functions, Representations, Oversight, Legislation, Budget Analysis

4. Parliamentary Business (Rule of Procedure)

Legislative Business

Non-Legislative Business

5. Parliamentary Committee

Power Function and Authorities

Types of Committee

6. Public Policy and Governance system in Pakistan and Rules of Business

Structure of Government of Pakistan

7. Rules of Business 1973 and amendments

Public analysis design and Implementation

8. Legislative Process, Drafting and Delegated Legislation

Language of the Bill

9. Section and Structure of the Bill

Bill Process and assessment

10. Comparative Political and parliamentary systems

Presidential and parliamentary Democracy

11. Federalism

Role of MPAs in Different Parliaments

12. Parliamentary Diplomacy

IPU, CPA and other institutions

Recommended Books:

1. Handout provided by Pakistan Institute of Parliamentary Studies

Title: Air and Space Law

Credit Hours: 03

Status: Elective

Program: LL. B

Contents Breakup

1. Introduction to Air Law

Theories of airspace

Origin of air law

Freedom v. Sovereignty debate

The development of international legal regime

2. Chicago Convention and Fundamental Principles

Scheduled and nonscheduled air traffic

Airline cooperation

Nationality of aircrafts

Rules on airports

Jurisdiction

International Civil Aviation Organization

3. Carriers' Liability under the Warsaw Convention

Debate over applicability

Carriage documents

Extent of the liability of carrier

Duration of the Liability

Jurisdiction and procedural aspects

Related instruments

4. Product Liability in Aviation

Concept of product liability

Move towards strict liability in aviation

Crashworthiness

Punitive damages

Codification of product liability

5. Liability for Damage Caused on Surface and During Collisions

Relevance of the Rome Convention and Montreal Protocol

Risk liability of the operator

Liability for noise, sonic boom and crop-dusting

Air collisions

6. Liability Insurance in Aviation

Development of aviation liability insurance
Risk evaluation
Aviation Hull Insurance
Carriers' liability insurance
Flying personnel insurance
Insurance against hijacking of aircrafts

7. Outer space vs Air space

Legal definition of outer space
What constitutes outer space
(Layer Theory, Effective Control Theory, Gravitational Theory, Perigee Theory, Aeronautical Ceiling theory, Von Karman Line Theory)

8. Fundamental Principles

Province of all Mankind
National non-appropriation
Freedom of exploration, use and scientific investigation
Common Heritage of Mankind
Jurisdiction and control
Co-operation between the states
Astronauts - Envoys of Mankind

9. The role of UN Committee on Peaceful Use of Outer Space

10. Space Law Conventions

The Outer Space Treaty 1967
The Rescue Agreement 1968
The Liability Convention 1972
The Registration Convention 1975
The Moon Agreement 1979

11. UNO Principles

Direct Broad casting 1982
Remote sensing 1968
Nuclear Power 1992

12. Intergovernmental Organization INELSAT, TNMARSAT, ITU, ESA

Telecommunication and Geostationary Orbit

13. International law and other

regulations applicable to remote sensing, geographic information systems, satellite meteorology and global climate activities
National Regulation and Launching activities
(Iran, UK, US, India, Japan)

14. Military Use of Space

Use of space in military space
Legal prohibition
Weaponization of space

15. Commercial Uses and Privatization of Space

Legal regime
Intellectual Property
Insurance

16. Environmental Issues and problem of debris

Recommended Books:

1. Andrew G Haley, Space Law and Government, (Duke Law Journal, 1963)
2. Bin Cheng, Studies in International Space Law, (OUP, 1997)
3. Francis Lyall and Paul B. Larsen, Space Law – A Treatise, (Ashgate, Dartmouth 2007)
4. Glenn H Reynolds, Robert P Merques, Outer Space: Problems of Law and Policy, (HJLT, 1990)
5. I.H.Ph. Diederiks-Verschoor, An Introduction to Air Law, (Kluwer Law International, 8th ed, 2006)
6. I.H.Ph. Diederiks-Verschoor, An Introduction to Space Law, (Kluwer Law International, 8th ed, 2008)
7. Mathen J VonBencke, The Politics of Space: A history of US Soviet/Russian competition and Cooperation in Space, (Westview Press, 1997)
8. Ram S. Jakhu, International Space Law, (Springer Publishing, London, 2012)

Title: Cyber Security Law & Policy

Credit Hours: 03

Status: Elective

Program: LL. B

Course Description

This course examines legal and policy challenges stemming from rapidly evolving cyber security threats. Cyber insecurities affect many types of actors—for example, individuals who suffer cybercrimes, media outlets whose websites are hacked or taken offline, businesses whose intellectual property is plundered, and states that undertake and/or attempt to defend against espionage and uses of force in cyberspace. This course will explore the national and international legal frameworks that govern malicious and defensive actions in cyberspace, including laws related to cybercrime, cyber espionage, and cyber war. The course will consider legal questions within the context of broader debates about issues such as governance of cyberspace and the Internet, the roles of governmental and non-governmental actors, evolving understandings of privacy, and the role of law in governing a constantly changing domain where many actors operate in secret. The objective of the course is to contextualize cyber security threats and responses to them in a national and international law framework, while also recognizing the limits of current law, the need for further policy evolution, and the real-world impacts of different legal and policy options.

No technical knowledge is required. Background in or familiarity with public international law is helpful, but not necessary. International law concepts will be introduced as necessary.

Suggested Books

1. Michael N. Schmitt (ed.). *Tallinn Manual on the International Law Applicable to Cyber Warfare*, Cambridge University Press.
2. Singer and Friedman. *Cyber security and Cyber war: What Everyone Need*
3. Murray, *Information Technology Law: The Law and Society* (OUP, 3rd ed, 2016)
4. Edwards &Waelde (eds), *Law and the Internet* 3rd ed (Hart, 2009)
5. Murray, *The Regulation of Cyberspace* (Routledge, 2007)
6. Zittrain, *The Future of the Internet* (Penguin, 2009)

Research Methodology & Technique course to be offered in BBA 7th semester

Sponsor: HOD(MS)KC

Referral Authority: FBOS

Summary of the Case

1. It is being observed with concern that the quality of MBA thesis needs improvement. One important reason for not up to mark quality of MBA thesis is that students learn research methodology & Technique in semester four (4th) of BBA. While thesis is undertaken by students in third semester of MBA which means there is a gap of 2 1/2 years. Hence, when they come to MBA thesis stage, students forget research methodology taught or at least they face difficulties in retrieving the basic structure and flow of research. As a result, student and supervisor both face difficulties in producing thesis of good quality. Therefore, it is important that the course of research methodology should be offered in the last semester of BBA so that the students will take this course much closer to the thesis stage in MBA.
2. The point was discussed in combined meeting of FBOS of all campuses of Bahria University. The input was obtained from all the campuses. There is a consensus that Research Methodology and Technique if moved from 4th semester of BBA to 7th (last semester of BBA) will be helpful in improving the quality of MBA thesis

Recommendation:

3. The course Research Methodology and Technique should be moved to 7th semester and the 7th semester course of Sociology should be moved to 4th semester. It is expected that this change will be helpful in improving the quality of MBA thesis. Hence, it is submitted that the point may be approved.

Changes of Nomenclature of 'Electives' to 'University Electives' in the BBA Roadmaps

Sponsor: HOD(MS)IC

Referral Authority: FBOS

Summary of the Case

2. BBA roadmaps offer two elective courses in the last semester(s) enabling the students to opt for courses of their interest and personal development. In this context the students of BBA program are restricted to the elective courses of the BBA roadmap only. However, sometimes these elective courses do not interest these BBA students. All the programs of the university are offering different elective courses, which may be useful for the students of other programs. To enable the BBA students to register elective courses of their choice from other undergraduate programs of the university, there is a need to make the BBA roadmap more flexible as far as the elective courses are concerned.

3. In this regard it is suggested that following corrections may be approved and incorporated in the roadmap of BBA programs:

From	To	ACM Reference
Semester 8:	Semester 8:	Old Roadmap approved in the meeting of ACM
Elective – I	University Elective -I	
Elective – II	University Elective –II	
Semester 7:	Semester 7:	Latest BBA Roadmap approved in the ---the meeting of ACM
Elective – I	University Elective – I	
Semester 8:	Semester 8:	
Elective – II	University Elective – II	

4. The above changes in the nomenclature of the Elective-I and II of the BBA Roadmaps will allow the students to opt for a course from any other program of the university. The only condition for selection of the Elective is that students can register course with Course Code-4XX.

5. The above changes in the nomenclature of the Elective courses to 'University Electives' will enable the students to register any course from the available elective courses of Course Code – 4XX from any other program of the university.

Title: Inclusion of course “Social Marketing” in BBA/MBA Electives

Marketing professionals need to be socially sensitized in order to serve the society through businesses. Besides, in the current scenario, there are many jobs being generated by the third sector and civil society. Students getting jobs in NGO's are required to have the knowledge of Social marketing. Alumni of BUKC have approached Management Sciences Department and suggested to start a course in Social Marketing. A course outline was prepared in consultation with academicians and industry professionals. The point was also endorsed by the Corporate Advisory Committee in its 5th meeting held at BUKC. This outline is attached.

Conclusion

The point was discussed in combined meeting of FBOS of all campuses of Bahria University. The input was obtained from all the campuses. There is a consensus that the new course “Social Marketing” may be included as BBA/MBA electives.

Recommendation(s) to the Academic Council

Keeping in view of the above, the course “Social Marketing” as BBA/MBA Electives will be helpful in enhancing the understanding of social realities of business students. It would further increase the marketability of our graduates. Hence it is submitted that the point may be approved

Social Marketing

Instructor Name:
E-mail:
Course Name: Social Marketing
Pre-requisite: Principles of Marketing

Overview

Social Marketing seeks to impart principles and techniques involved in marketing for the improvement of society. Over the term we will examine what Social Marketing is and how it differs from other types of marketing. Further, we will try and understand the role of Social Marketers, the extent of their planning requirements and the importance of understanding behavior of people or groups. This understanding will give us a base from which we can then develop a marketing campaign for a cause with the aim to benefit a community or society at large.

Grading

Assignments& projects	20%
Quizzes	15%
Mid Term	25%
Final Exam	40%

Getting the most out of the course

I would encourage students to read the assigned readings prior to the class. If there are questions or discussion points along with the readings or cases, Students shall prepare them in order to add value to the class discussions. I will aim to make the class as interactive as possible, which means students will need to participate and add to the collective learning of the class.

In terms of the term project, I will break up the deliverables over the term, in the shape of assignments, culminating the projects with final reports and presentations in the last few weeks of the course. This will allow students to space out the project work and hopefully increase the grasp over the subject at hand.

Class Norms

- Please be punctual. Since we would like to learn from each other, you do an injustice to others by being late – not just by being distractible, but also by not contributing to the class in the time you are absent.
- Please keep your phones off or put them on silent and away. No calls, no messages, no browsing.
- Students should make a name card and keep it in front of them.

Session Number	Content	Objective	Content Source
Session 1	Introduction to social marketing and discussion of Term project	To introduce the concept and movements in social marketing	SAGE Handbook of Social Marketing
Session 2	Social Marketing: An approach to planned social change	To see if Marketing concepts be effectively used to the promotion of Social Objectives	Research article by Kotler and Zaltman
Session 3	Behavior change models, Social norms theory, Health benefit model, Social Cognitive theory and Diffusion of Innovation theory	To conceptualize theoretical models and theories of behavior change	Chapter 1 of SAGE Handbook of Social Marketing
Session 4	Social Capital, Social Networks, Relationship Marketing and Value creation process,	To capitalize on the concept of social capital and the importance of relationship building in social Marketing	Chapter 2 of SAGE Handbook of Social Marketing
Session 5	The Ringing Bells: Perspective of Karachiites regarding noise pollution	To highlight a major social issue of Karachi - Noise pollution and discuss how this can be solved and be used as a tool to market any product or brand along with solving the problem	Survey report by Liaquat Ali and TabassumZehra
Session 6	Design Thinking and De-marketing	To understand why De-marketing is an important concept in Social organizations	Chapter 5 of SAGE Handbook of Social Marketing
Session 7	Case Study: Canadian Blood Service	To make students analyze critically the problem of the case and discuss the possible solutions of not only the social issue addressed in the case but also the organizational one	Richard Ivey School of Business - (The case study will be provided to the students by the instructor)
Session 8	Live Case Study: An In depth study of unique Social Enterprise - Indus Hospital	To make students study a live social entrepreneurship venture and how the marketing of this Social organization is different from traditional marketing	Study tour to Indus Hospital and detailed power point slides will be provided to students by the instructor

Session 9	Guest Speaker Session from a Renowned NGO or Social Enterprise	To make students interact with the industry experts and give them important insights regarding how it is to work in a social sector in Pakistan	—
Session 10	Case Study: Japan Cancer Screening	To make students analyze critically the problem of the case and discuss the possible solutions of not only	Case Study will be provided to students by the instructor

		the social issue addressed in the case but also the organizational one	
Session 11	Determining Research Needs and Option	To understand why research has fundamental importance in running a social enterprise	The chapter will be provided to students by the instructor
Session 12	Segmenting, Evaluating, and Selecting Target Audiences	To understand the importance of targeting a specific group or segment	The chapter will be provided to students by the instructor
Session 13	Choosing a purpose and focus for your plan and conducting a situation analysis	The importance of choosing the purpose of the social marketing campaign and why conducting a situation analysis is important	The chapter will be provided to students by the instructor
Session 14	Setting behavior objectives and Goals	To understand why setting up particular behaviors are important in social marketing	The chapter will be provided to students by the instructor
Session 15	Final Group Presentations	To analyze the understanding of the students regarding the subject and how would they implement all the social marketing concepts practically	—

Course Materials:

SAGE Handbook of Social Marketing (Editors: Gerald Hastings Carol Bryant and Kathryn Angus)

Other required material will be provided to students by the instructor

Classes will be supplemented with guest speakers, previously carried out campaign examples and videos from globally experienced social marketers

Regularization of MBA Weekend Roadmap**Background /Discussion:**

As observation taken by the Registrar BU, since the Karachi Campus is following the trimester in the weekend, so the trimester road maps of MBA weekend are required to be regularized from ACM. Therefore three streams of road maps for MBA program were developed. These streams are attached.

Conclusion

The point was discussed in combined meeting of FBOS of all campuses of Bahria University. The input was obtained from all the campuses. There is a consensus that the road map needs to be approved/regularized from ACM.

Recommendations:

Hence, it is recommended that the agenda item may be approved by the worthy hous

**Regularization of MBA Weekend Program
Three Roadmaps of MBA Weekend Program**

**ROAD MAP
MBA 1.5/36 Credit Hours
(Students with 4 years BBA program)
WEEKEND**

SEMESTER 1

S.No	Course Code	Course Title	Credit Hours
1	MGT 662	Strategic Management	3
2	FIN 611	Corporate Finance	3
3	MKT 600	Contemporary Issues in Business	3
4	MGT 653	Corporate Leadership and Social Responsibility	3

SEMESTER 2

S.No	Course Code	Course Title	Credit Hours
1	MGT 655	Business Decision Modeling	3
2	MGT 626	Project Management	3
3		Specialization I	3
4		Specialization II	3

SEMESTER 3

S.No	Course Code	Course Title	Credit Hours
1		Specialization IV	3
2		Specialization III	3
3	SDW 697	Dissertation-1(Proposal Development)	2

SEMESTER 4

S.No	Course Code	Course Title	Credit Hours
5	SDW 698	Dissertation-II	4

**ROAD MAP
MBA 2 years 60 Credit Hours**

(Students with 16 years Non Business program)
WEEKEND

SEMESTER 1

S.No	Course Code	Course Title	Credit Hours
1	MKT 522	Marketing Management	3
2	ACC 501	Financial Accounting	3
3	MGT 501	Theories and Practices of Management	3
4	BCM 512	Business Communication	3

SEMESTER 2

S.No	Course Code	Course Title	Credit Hours
1	MIS 510	E Commerce	1.5
2	SCM 510	Supply Chain Management	1.5
3	ACC 503	Cost & Managerial Accounting	3
4	ECO 520	Economics	3
5	QTM 503	Stats & Maths For Management	3

SEMESTER 3

S.No	Course Code	Course Title	Credit Hours
1	FIN 502	Financial Management	3
2	RMT 620	Methods In Business Research	3
3	MGT 541	Human Resource Management	3
4	MKT 501	Entrepreneurship	3

SEMESTER 4

S.No	Course Code	Course Title	Credit Hours
1	MGT 653	Corporate Leadership and Social Responsibilities	1.5
2	FIN 611	Project Management	1.5
3	MGT 662	Strategic Management	3
4		Specialization I	3

SEMESTER 5

S.No	Course Code	Course Title	Credit Hours
1	SDW 697	Dissertation-1(Proposal Development)	2
2		Specialization II	3
3		Specialization III	3

SEMESTER 6

S.No	Course Code	Course Title	Credit Hours
1		Specialization IV	3
2	SDW 698	Dissertation-II	4

**ROAD MAP FOR MBA 3 1/2 years
(96 CREDIT HOURS)**
(Students with B.A/B.Sc/B.Com)

SEMESTER 1 MBA-1

S.No	Course Code	Course Title	Credit Hours
1	ACC 501	Financial Accounting	3

2	BEN 511	Business English	3
3	MGT 501	Theories and Practices of Management	3
4	MKT 510	Principles of Marketing	3

SEMESTER 2

MBA-2

S.No	Course Code	Course Title	Credit Hours
1	ACC 503	Cost & Managerial Accounting	3
2	ECO 520	Economics	3
3	BCM 512	Business Communication	3
4	QTM 501	Business Quantitative Techniques	3

SEMESTER 3

S.No	Course Code	Course Title	Credit Hours
1	MKT 522	Marketing Management	3
2	MGT 530	Organizational Behavior	3
3	FIN 501	Business Finance	3
4	MGT 508	Corporate Law	3

SEMESTER 4

S.No	Course Code	Course Title	Credit Hours
1	MKT 640	Entrepreneurship	3
2	SCM 610	Supply Chain management	3
3	FIN 502	Financial Management	3
4	QTM 502	Statistical Inference	3

SEMESTER 5

S.No	Course Code	Course Title	Credit Hours
1	MGT 541	Human Resource Management	3
2	MGT 630	International Business Analysis	3
3	RMT 620	Methods In Business Research	3
4	RMT 621	Operation Research	3

SEMESTER 6

S.No	Course Code	Course Title	Credit Hours
1	MGT 662	Strategic Management	3
2	FIN 611	Corporate Finance	3
3	MKT 600	Contemporary Issues in Business	3
4	MGT 653	Corporate Leadership and Social Responsibility	3

SEMESTER 7

S.No	Course Code	Course Title	Credit Hours
1	MGT 655	Business Decision Modeling	3
2	MGT 626	Project Management	3
3		Specialization I	3
4		Specialization II	3

SEMESTER 8

S.No	Course Code	Course Title	Credit Hours
1		Specialization IV	3
2		Specialization III	3
3	SDW 697	Dissertation-1(Proposal Development)	2

SEMESTER 9

S.No	Course Code	Course Title	Credit Hours
2	SDW 698	Dissertation II	4

MBAs in BI-SEMESTER & TRI-SEMESTER FORMATS

Karachi Campus is following the trimester in the weekend, so the trimester road maps of MBA weekend are required to be regularized from ACM. Therefore three streams of road maps for MBA program were developed.

Facts

1. There is no difference between the curriculum and recognition of bi-annual and trimester MBAs of all the three (1.5, 2 & 3.5 years) courses. However, the road maps are different.
2. Regular program has spread of two semesters and trimester (weekend) program spreads over 3 semesters in a year (including summer).
3. Road map of regular semester has five courses (15 crhs) while trimester has 4 courses (12 crhs in each semester). Because of this regular 1.5 MBA completes in 3 semesters and weekend MBA becomes 4 semester's course in trimester. Similarly for 2 years it is 6 semester and 3.5 years' is 9 semesters.

Approval Needed because

1. Trimester program was approved earlier but clearly defined road map was not mentioned in the approval
2. A clearly defined road map needs approval by the statutory bodies to have legitimacy
3. After getting approval, students of weekend program will not be deprived of medals on the pretext that they have completed in 4 semesters instead of 3, for say, in case of MBA 1.5.

Recommendation:

MBA weekend Roadmap was approved by the special FBOS held recently. The point is being forwarded for its regularization and ratification through proper channel.

COMPARATIVE ROADMAP OF MBAs in BI-SEMESTER & TRI-SEMESTER FORMATS

	BI ANNUAL		TRI MESTER					
MBA-1.5 YEARS (36 Credit Hours)								
Semester-1:								
S.NO	Course Code	Subject	CH					
1	MGT 662	Strategic Management	3					
2	FIN 611	Corporate Finance	3					
3	MKT 600	Contemporary Issues in Business	3					
4	MKT 653	Corporate Leadership and Social Responsibility	3					
5		Specialization I	3					
Semester-2:								
S.NO	Course Code	Subject	CH					
1	MGT 626	Project Management	3					
2		Specialization II	3					
3		Specialization III	3					
4	MGT 655	Business Decision Modeling	3					
5	RMT 697	Dissertation (Proposal Development)	2					
		Internship						
Semester-3:								
S.NO	Course Code	Subject	CH					
1	RMT 698	Dissertation (Thesis Write-up and Defense)	4					
2		Specialization IV	3					
				36				
MBA-2 Years (60 Credit Hours)								
Semester-1:								
Course Code	Subject	CH						
MKT 522	Marketing Management	3						
ACC 501	Financial Accounting	3						
MGT 501	Theories and Practices of Management	3						
BCM 512	Business Communication	3						
QTM 503	Stats & Math For Management	3						
Semester-2:								
Course Code	Subject	CH						
MGT 541	Human Resource Management	3						
ACC 503	Cost and Managerial Accounting	3						
ECO 520	Economics	3						
FIN 502	Financial Management	3						
	E-Commerce	1.5						
	Supply Chain Management	1.5						
Semester-3:								
Course Code	Subject	CH						
MGT 662	Strategic Management	3						
	Methods in Business Research	3						
	Dissertation-1(Proposal Development)	3						
	Specialization I	3						
	Specialization II	3						
Semester-4:								
Course Code	Subject	CH						
MGT 626	Project Management	1.5						
	Corporate Leadership and Social Responsibility	1.5						
	Specialization III	3						
	Specialization IV	3						
	Entrepreneurship	3						
	Dissertation(Thesis Composition)	3						
				60				
SEMESTER 1								
S.No	Course Code	Course Title	Credit Hours					
1	MGT 662	Strategic Management	3					
2	FIN 611	Corporate Finance	3					
3	MKT 600	Contemporary Issues in Business	3					
4	MGT 653	Corporate Leadership and Social Responsibility	3	12				
SEMESTER 2								
S.No	Course Code	Course Title	Credit Hours					
1	MGT 655	Business Decision Modeling	3					
2	MGT 626	Project Management	3					
3		Specialization 1	3					
4		Specialization II	3	12				
SEMESTER 3								
S.No	Course Code	Course Title	Credit Hours					
1		Specialization IV	3					
2		Specialization III	3					
3	SDW 697	Dissertation-1(Proposal Development)	2	8				
SEMESTER 4								
S.No	Course Code	Course Title	Credit Hours					
5	SDW 698	Dissertation-II	4	4				
				36				
SEMESTER 1								
S.No	Course Code	Course Title	Credit Hours					
1	MKT 522	Marketing Management	3					
2	ACC 501	Financial Accounting	3					
3	MGT 501	Theories and Practices of Management	3					
4	BCM 512	Business Communication	3	12				
SEMESTER 2								
S.No	Course Code	Course Title	Credit Hours					
1	MIS 510	E Commerce	1.5					
2	SCM 510	Supply Chain Management	1.5					
3	ACC 503	Cost & Managerial Accounting	3					
4	ECO 520	Economics	3					
5	QTM 503	Stats & Maths For Management	3	12				
SEMESTER 3								
S.No	Course Code	Course Title	Credit Hours					
1	FIN 502	Financial Management	3					
2	RMT 620	Methods In Business Research	3					
3	MGT 541	Human Resource Management	3					
4	MKT 501	Entrepreneurship	3	12				
SEMESTER 4								
S.No	Course Code	Course Title	Credit Hours					
1	MGT 653	Corporate Leadership and Social Responsibilities	1.5					
2	FIN 611	Project Management	1.5					
3	MGT 662	Strategic Management	3					
4		Specialization I	3	9				
SEMESTER -5								
S.No	Course Code	Course Title	Credit Hours					
1	SDW 697	Dissertation-1(Proposal Development)	3					
2		Specialization II	3					
3		Specialization III	3	9				
SEMESTER 6								
S.No	Course Code	Course Title	Credit Hours					
1		Specialization IV	3					
2	SDW 698	Dissertation-II(Thesis Completion)	3	6				
				60				

MBA-3.5 Years (96 Credit Hours):			
SEMESTER 1			
Course Code	Subject	CH	
ACC 501	Financial Accounting	3	
BEN 511	Business English	3	
MGT 50	Theories and Practices of Management	3	
MKT 510	Principles of Marketing	3	
QTM 501	Business Quantitative Techniques	3	
SEMESTER 2			
MBA-2			
S.No	Course Code	Course Title	Credit Hours
1	ACC 503	Cost & Managerial Accounting	3
2	ECO 520	Economics	3
3	BCM 512	Business Communication	3
4	QTM 501	Business Quantitative Techniques	3
SEMESTER 3			
S.No	Course Code	Course Title	Credit Hours
1	MKT 522	Marketing Management	3
2	MGT 530	Organizational Behavior	3
3	FIN 501	Business Finance	3
4	MGT 508	Corporate Law	3
SEMESTER 4			
S.No	Course Code	Course Title	Credit Hours
1	MKT 640	Entrepreneurship	3
2	SCM 610	Supply Chain management	3
3	FIN 502	Financial Management	3
4	QTM 502	Statistical Inference	3
SEMESTER 5			
S.No	Course Code	Course Title	Credit Hours
1	MGT 541	Human Resource Management	3
2	MGT 630	International Business Analysis	3
3	RMT 620	Methods in Business Research	3
4	RMT 621	Operation Research	3
SEMESTER 6			
S.No	Course Code	Course Title	Credit Hours
1	MGT 662	Strategic Management	3
2	FIN 611	Corporate Finance	3
3	MKT 600	Contemporary Issues in Business	3
4	MGT 653	Responsibilities	3
		Specialization I	3
SEMESTER 7			
S.No	Course Code	Course Title	Credit Hours
1	MGT 655	Business Decision Modeling	3
2	MGT 626	Project Management	3
3		Specialization 1	3
4		Specialization II	3
SEMESTER 8			
S.No	Course Code	Course Title	Credit Hours
1		Specialization IV	3
2		Specialization III	3
3	SDW 697	Dissertation-1(Proposal Development)	2
SEMESTER 9			
S.No	Course Code	Course Title	Credit Hours
1	SDW 698	Dissertation II	4

Inclusion of a new elective course “Tourism and Development” in the curriculum of Development Studies and Anthropology**Background /Discussion:**

The purpose of the course is to familiarize students with the main debates, issues and themes in the field of Tourism and Development around the world and those to South Asian countries and then to Pakistan. Course Outline is attached.

Financial Implications: Positive at the country level in times to come.

Conclusion

The point was supported by the member especially in view of upcoming CPEC and more opportunities for tourism and requested for approval by the house of ACM.

Recommendations:

Hence, it is recommended that the agenda item may be approved by the worthy house

Course Outline of Tourism and Development

The purpose of the course is to familiarise students with the main debates, issues and themes in the field of Tourism and Development around the world and those particular to South Asian countries and then to Pakistan.

A brief outline of the course is as followed:

Week	Topic of Discussion	Mandatory Readings
1	Defining Tourism and Development	Goodall, Brian. (1987). Tourism and Regional Development. 13 (2), 68-72. Built Environment. W. Wyllie. Robert. (2011). An Introduction to Tourism. (Chapter 12 titled Tourism in Developing Countries). Willis, Katie. (2011). Theories and Practices of Development. Routledge. (Chapter 1 titled Introduction: what do we mean by development?)
2	Current Discourse in Tourism and Development	Harrison, David. (2015). Development Theory and Tourism in Developing Countries: What has Theory Ever Done for Us. 11 (1), 53-82. IJAPS. Amundsen, Helene. (2012). Differing Discourses of Development in the Arctic: The case of nature based tourism in Northern Norway. 35, 125-146. The Northern Review.
3	Debates in the Field	Tribe, John. (2009). Philosophical Issues in Tourism. (Chapter 12 titled Epistemology, Ontology and Tourism).
4	Theoretical and Contextual Issues	Jamal, Tazim. (2009). The SAGE handbook of tourism studies. SAGE. (The chapter titled Development Studies and Tourism by David J. Telfer). Holden, Andrew. (2005). Tourism Studies and the Social Sciences. Routledge. (Chapter 4 titled Economics and Tourism and chapter 6 titled Anthropology and Tourism). G. Reid, Donald. (2003). Tourism, Globalisation and Development: Responsible Tourism Planning. Pluto Press. (Chapter 3 titled Tourism as a Function of Development Studies).
5	Tourism and Public Policy	A. Lew, Alan., Hall, C. Michael. and M. Williams, Allan. A companion to Tourism. Blackwell Publishing. (Chapter 42 titled Tourism and Public Policy by Hall, C. Michael and Jenkins, John).

		Karim, Rehmat., A. Durrani, Salma. andHussain, Azhar. (2012). Review of issues related to tourism policies regarding environmental management and customary practices of tourism in Gilgit-Baltistan, Pakistan, 1087-1093. Journal of Environmental Science and Engineering.
6	Rock Art Tourism	Agnew, J. and Bridgland, J. (2006). Of the past, for the future: Integrating archaeology and conservation. (The article titled Rock art tourism in Southern Africa: Problems, Possibilities and Poverty Relief by Smith, Benjamin). Deacon, Janette. (2006). Rock art conservation and tourism. 13 (4), 379-399. Journal of Archaeological Method and Theory.
7	Religious Tourism in Pakistan	Olsen, Daniel. and Timothy, Dallen. (2006). Tourism, Religion and Spiritual Journeys. Taylor and Francis. (Chapter 2 titled Sacred Spaces and Tourist Places by S. Bremer, Thomas and chapter 13 titled Tourism and Islam: Considerations of Culture and Duty by J. Timothy, Dallen and Iverson, Thomas). Laderlah, SitiAnis., Rahman, Suhaimi Ab., Awang, Khairil. and Man, YaakobChe. (2011). A study on Islamic Tourism: A Malaysian Experience, 17, 184-189. IACSIT Press, Singapore.
8	Heritage Tourism	Staiff, Russell.,Bushell, Robyn. and Watson, Steve. (2013). Heritage and Tourism: Place, encounter, engagement. Routledge. (Chapter 11 titled Discourses of Development: Narratives of cultural heritage as an economic source by Silberman, Neil Asher) B. Masilang. (2010). Perspectives on heritage tourism. SEAMEO-SPAFA. (Paper presented titled Strengthening heritage tourism through education).
9	Tourism and Poverty Reduction	Cottrell, Stuart., Pearce, Philip. andArntzen, Jaap. (2008). Tourism as an Income Earner, 39, 13-22. Bostwana Notes and Records. Little, Terry. andBorona, Gloria. (2014). Can rock art in Africa reduce poverty? 13(1-3), 178-186. Public Archaeology. Singh, TejVir. (). Critical Debates in Tourism. Channel view publications. (2012). (Chapter 5 titled Does tourism reduce poverty? By Scheyvens, Regina., Meyer, Dorothea., Harrison, David. andPeeters, Paul).
10	Terrorism and Tourism in Pakistan	Khan, Khalida. (2012). Tourism downfall: Sectarianism an apparent major cause, in Gilgit-Baltistan (GB), Pakistan. Journal of Political Studies, 9 (2), 255-168. M. Weiss, Anita. andKhattak, Saba Gul. (2013). Development challenges confronting Pakistan. Kumarian Press. (Chapter 9 titled No American, No Gun, No BS: Tourism, Terrorism and the Eighteenth Amendment by Mock, John).
11	Tourism Planning and Development Processes	Baloch, QadarBakhsh. (2012). Managing Tourism in Pakistan. Journal of Managerial Sciences. Vol. II (2), 169-190.
12	Tourism and Sustainable development	Markandya, Anil., Taylor, Tim. and Pedroso, Suzette. (2005). Tourism and sustainable development: Lessons from recent World Bank experience. World Bank
13	Globalization and Tourism	Cohen, Eric. (2012). Globalisation, global crises and tourism. Tourism recreation research. 37 (2), 103-111.
14	Community response to Tourism	Moscardo, Gianna. (2008). Building community capacity for tourism development. (Chapter 5 titled Community-based Tourism in Asia by Rocharungsat, Pimrawee).

15	Environment, Poverty and Tourism	Ozyavvz, Murat. (2013). Advances in Landscape Architecture. (Chapter 31 titled Role of ecotourism in sustainable development by Kiper, Tugba). Jehan, Salim. and Umana, Alvaro. (2003). The environment-poverty nexus. UNDP Report. Neto, Frederico. (2003). A new approach to sustainable tourism development: Moving beyond environmental protection. DESA Discussion Paper (No. 29).
16	The consumption of tourism	Gossling, Stefan., Peeters, Paul., ... Scott, Daniel. (2012). Tourism and water use: Supply, demand and security. An international view. <i>Tourism Management</i> , 33, 1-15.

Earth & Environmental Sciences Programs – Changes in Roadmaps & Curricula

Issue/Case:

Revision of Road Maps, Course Titles, Core and Elective Courses, Breakdown of Lab Oriented Courses from 3 credit hours to 2+1 Credit hours and Change of MS thesis from 12 credit hours to 6 credit hours as per HEC guidelines

Background

The self-academic assessment team during their audit of MS Environmental Science program noted that the road map of the department of E&ES deviates 50% from the HEC recommended road map for Environmental Sciences. It was also observed that the labs are been conducted in all the lab oriented courses for both BS and MS programs, but they are not mentioned as a separate credit hour in the roadmap which gives an impression of a theory course. QA Team also suggested that the department offers 12 credit hours MS thesis that does not align with HEC recommendation of 6 credit hours MS thesis. Therefore, all the members of DBOS agreed to forward the revised road map of the all programs (MS Geology/Geophysics/Environmental Sciences) of the department including the revised Course Titles, Core and Elective Courses, Breakdown of Lab Oriented Courses from 3 credit hours to 2+1 Credit hours (BS and MS) and Change of MS thesis from 12 credit hours to 6 credit hours as per HEC guidelines to FBOS for subsequent approval from ACM.

Discussion and analysis

During the discussion in the FBOS, it was suggested that any changes in the road map are to be discussed with Dr. Mubarak (HOD-EES-BUKC) in detailed and revised road map is to be submitted by 27th February 2017. HOD, EES, BUIC discussed the subject matter with HOD, EES, BUKC and the revised road maps were submitted to FBOS.

The house unanimously agreed to the recommendations related to the Breakdown of Lab Oriented Courses from 3 credit hours to 2+1 Credit hours and Change of MS thesis from 12 credit hours to 6 credit hours as per HEC guidelines by QA Directorate.

Conclusions

The case is recommended by FBOS for the approval from ACM.

Recommendations

Permission may be granted for the Revision of Road Maps, Course Titles, Core and Elective Courses, Breakdown of Lab Oriented Courses from 3 credit hours to 2+1 Credit hours and Change of MS thesis from 12 credit hours to 6 credit hours as per HEC guidelines

Implications

Financial: Fee for six credit hours will be reduced if the credit hours for MS thesis are changed from 12 to 6.

Breakdown of Lab Oriented Courses to 2+1 Credit hours for BS programs.

S. No.	Course Code	Title	Credit Hours
Class: BS (Geo) 1 (A) Morning			
1	PAK-101	Pakistan Studies	2
2	ISL-101	Islamic Studies	2
3	ENG-103	English I	3
4	GEO-105	Physical & General Geology	2+1
5	MAT-105*	Mathematics	0
6	CSC-105	Introduction to Computers	2+1
7	PHY-101	Physics	2+1

* Academic credit of this course is zero but its contact hours, teaching material and tuition fee are equal to a 3-credits hour course

Class: BS (Geo) 2 (A) Morning

8	ENG-104	English II	3
9	GEO-110	Fundamentals of Geography & Geomorphology	3
10	GEO-115	Introduction to Geophysics	3
11	GEO-120	Field Geology	2+1
12	MAT-115	Calculus & Analytical Geometry	3
13	CHM-105	Chemistry	2+1

Class: BS (Geo) 3 (A) Morning

14	ENG-232	Oral Communication	3
15	GEO-205	Structural Geology	2+1
16	GEO-210	Mineralogy & Crystallography	2+1
17	CSC-205	Programming Fundamentals	2+1
18	MAT-205	Statistics	3
19	HSS-111	IR	3

Class: BS (Geo) 4 (A) Morning

20	GEO-215	Sedimentology	3
21	GEO-220	Optical Mineralogy	2+1
22	GEO-225	Geochemistry	3
23	GEO-230	Geotectonics	3
24	MAT-210	Advance Mathematics	3

Class: BS (Geo) 5 (A) Morning

25	GEO-305	Environmental Geology	3
26	GEO-310	Paleontology	3
27	GEO-315	Igneous & Metamorphic Petrology	2+1
28	CSC-305	MET LAB	2+1
29	GEO-325	Stratigraphy of Pakistan	3
30	GEO-320	Marine Geology	3

Class: BS (Geo) 6 (A) Morning

31	GEO – 330	Micropaleontology & Biostratigraphy	3
32	GEO – 335	Earthquake Seismology	3
33	GEO – 340	Well Logging	3
34	GEO – 345	Petroleum Geology	3
35	GEO – 350	Geology of Pakistan	3
36		Field work & Report 1	0+3

Class: BS (Geo) 7 (A) Morning

37	GEO-405	Petroleum Engineering	3
38	GEO-410	Engineering Geology	2+1
39	GEO-415	Economic Geology	3
40	GEO-420	Hydrogeology	3
41	GEO-425	Research Methodology	2
42		Field work & Report 2	0+3

Class: BS (Geo) 8 (A) Morning

43	GEO-445	Seismic Stratigraphy	3
44	GEO-430	Geochemical Exploration Techniques	3
45	GEO-435	GIS & Computer Image Processing	2+1
46	GEO-440	Thesis	6

Class: BS (Geo) 1 (A) Morning

47	PAK-101	Pakistan Studies	2
48	ISL-101	Islamic Studies	2
49	ENG-103	English I	3
50	GEO-105	Physical & General Geology	2+1
51	MAT-105*	Mathematics	0

52	CSC-105	Introduction to Computers	2+1
53	PHY-101	Physics	2+1

* Academic credit of this course is zero but its contact hours, teaching material and tuition fee are equal to a 3-credits hour course

Class: BS (Geop) 2 (A) Morning

54	ENG-104	English II	3
55	GEO-110	Fundamentals of Geography & Geomorphology	3
56	GEO-115	Introduction to Geophysics	3
57	GEO-120	Field Geology	2+1
58	MAT-115	Calculus & Analytical Geometry	3
59	CHM-105	Chemistry	2+1

Class: BS (Geop) 3 (A) Morning

60	ENG-232	Oral Communication	3
61	GEO-205	Structural Geology	2+1
62	GEO-210	Mineralogy & Crystallography	2+1
63	CSC-205	Programming Fundamentals	2+1
64	MAT-205	Statistics	3
65	HSS-101	IR	3

Class: BS (Geop) 4 (A) Morning

66	GEO-215	Sedimentology	3
67	GEO-240	Gravity & Magnetic Exp. Techniques	3
68	GEO-245	Mathematical Method of Physics	3
69	GEO-230	Geotectonics	3
70	MAT-210	Advance Mathematics	3

Class: BS (Geop) 5 (A) Morning

71	GEO-305	Environmental Geology	3
72	GEO-365	Electric & Radioactive Exp. Techniques	3
73	GEO-315	Igneous & metamorphic Petrology	2+1
74	CSC-305	MET LAB	2+1
75	GEO-325	Stratigraphy of Pakistan	3
76	GEO-320	Marine Geology	3

Class: BS (Geop) 6 (A) Morning

77	GEO-335	Earthquake Seismology	3
78	GEO-350	Geology of Pakistan	3
79	GEO-370	Geomagnetism & Paleomagnetism	3
80	GEO-340	Well Logging	3
81	GEO-345	Petroleum Geology	3
82		Field work & Report 1	0+3

Class: BS (Geop) 7 (A) Morning

83	GEO-450	Seismic Exploration Techniques	3
84	GEO-415	Economic Geology	3
85	GEO-405	Petroleum Engineering	3
86	GEO-420	Hydrogeology	3
87	GEO-425	Research Methodology	2
88		Field work & Report 2	0+3

Class: BS (Geop) 8 (A) Morning

89	GEO-455	Geophysical Data Processing	3
90	GEO-445	Seismic Stratigraphy	3
91	GEO-435	GIS & Computer Image Processing	2+1
92	GEO-460	Thesis	6

Class: BS ES 1 (A) Morning

93	PAK-101	Pakistan Studies	2
94	ISL-101	Islamic Studies	2
95	ENG-103	English I	3
96	ENV-105	Introduction to Environmental Sciences	3

97	PHY-101	Physics	2+1
98	CSC-105	Introduction to Computers	2+1
99	BIO-105*	Fundamentals of Biology	0
100	MAT-105*	Fundamentals of Mathematics	0

* Academic credit of this course is zero but its contact hours, teaching material and tuition fee are equal to a 3-credits hour course

Class: BS ES 2 (A) Morning

101	ENG-104	English-II	3
102	ENV-110	Environmental Biology	2+1
103	CHM-105	Chemistry	2+1
104	GEO-110	Fundamental of Geography	3
105	GEO-105	Physical and General Geology	2+1
106	MAT-115	Calculus and Analytical Geometry	3

Class: BS ES-3 (A) Morning

107	ENG-232	Oral Communication	3
108	ENV-205	Fundamentals of Ecology	3
109	ENV-210	Environmental Chemistry	3
110	GEO-305	Environmental Geology	3
111	ENV-245	Introduction to Oceanography	3
112	HSS-111	IR	3

Class: BS ES-4 (A) Morning

113	ENV - 215	Social Theory of Environment	3
114	ENV - 220	Environmental Microbiology	2+1
115	ENV - 225	Applied Ecology	3
116	ENV - 230	Environmental Issues	3
117	ENV - 235	Meteorology & Climatology	3
118	MAT - 205	Statistics	3

Class: BS ES- 5 (A) Morning

119	ENV - 305	Environmental Monitoring	2+1
120	ENV - 310	Environmental Toxicology	2+1
121	ENV - 315	Environmental Management System	3
122	ENV - 320	Environmental Biotechnology	2+1
123	ENV - 325	Water Resources Management	3
124	HSS-102	Introduction to Sociology	3

Class: BS ES-6 (A) Morning

125	ENV-330	Environmental& Natural Resource Economics	3
126	ENV-335	Analytical Techniques in Environmental Sciences	2+1
127	ENV-340	Solid Waste Management	3
128	ENV-345	Environmental Hazards	3
129	ENV-350	Remote Sensing & GIS for Environment	2+1
130		Field work & Report	0+3

Class: BS ES-7 (A) Morning

131	ENV-405	Pollution Control	2+1
132	ENV-410	Environmental Impact Assessment	2+1
133	ENV-420	Research Methods in Environmental Sciences	2
134	GEO-420	Hydrogeology	3
135	ENV-415	NRM	3

Class: BS ES-8 (A) Morning

136	ENV-430	Env. Law & Policies	3
137	ENV-425	Occupational Health & Safety	3
138	ENV-440	Energy & Environment	3
139		Thesis	6

Revised List of courses in MS Environmental Sciences E&ES in alignment with HEC curriculum (2013).

CORE COURSES:

	<u>Course by HEC</u>	<u>Credit Hours</u>	<u>Course by E&ES</u>	<u>Credit Hours</u>
1.	Research Methods in Environmental Sciences	3	Research Methods in Environmental Sciences	3
2.	Climate Change Adaptation and Mitigation	3	Climate Change Adaptation and Mitigation	3
3.	Strategic Environmental Assessment	3	Strategic Environmental Assessment	3
4.	Analytical Techniques	2+1	Environmental Analytical Techniques	2+1

ELECTIVE COURSES

	<u>Course by HEC</u>	<u>Credit Hours</u>	<u>Course by E&ES</u>	<u>Credit Hours</u>
1.	Environmental Chemistry	3	Advance Environmental Chemistry	3
2.	Applied Environmental Microbiology	2+1	Applied Environmental Microbiology	2+1
3.	Fresh Water Ecology	3	Fresh Water Ecology	3
4.	Environmental Sociology	3	Environmental Sociology	3
5.	Environmental Geology	3	Advanced Environmental Geology	3
6.	Disaster Risk Management	3	Disaster Management	3
7.	Marine Pollution Management	3	Marine Pollution	3
8.	Epidemiology	3	Epidemiology	3
9.	Green Economy	3	Green Economy	3
10.	Population Dynamics and Environment	3	Population Dynamics and the Environment	3
11.	Environmental Biotechnology	2+1	Environmental Biotechnology	2+1
12.	Wetland Management	3	Wildlife, Forestry and Wetland Management	3
13.	Alternative Energy Sources	3	Energy and Environment	3
14.	Environmental Auditing	3	Environmental Auditing	3
15.	Wildlife and Forest Conservation	3	Wildlife and Forest Conservation	3
16.	Cleaner Production Technologies	3	Cleaner Production Technologies	3
17.	Solid and Hazardous waste Management	3	Solid and Hazardous Waste Management	3
18.	Remote Sensing and GIS	2+1	Remote Sensing and GIS	2+1
19.	Environmental Risk Assessment and Management	2+1	Environmental Risk Assessment and Management	2+1
20.	Principles and Applications of Bioremediations	3	Principles and Applications of Bioremediations	3
21.	Sustainable Urban Planning and Management	3	Sustainable Development	3
22.	Sustainable Agriculture	3	Sustainable Agriculture	3
23.	Industrial Ecology	3	Industrial Ecology	3
24.	Sustainable Development	3	Sustainable Development	3
25.	Project Development and Management	3	Project Management	3
26.	Health Safety and Environmental Management	2+1	Health Safety and Environmental Management	2+1

27.	Energy and Environment	3	Energy and Environment	3
28.	Carbon Sequestration and Environment	3	Carbon Sequestration and Environment	3
29.	Advances in Plant Ecology	3	Advances in Plant Ecology	3
30.	Biological Conservation	2+1	Biological Conservation	2+1
31.	Urban Ecology	3	Urban Ecology	3
32.	Environmental Education	2+1	Environmental Education	2+1
33.	Laboratory Management Practices	1+2	Laboratory Management Practices	1+2
34.	Restoration Ecology	3	Restoration Ecology	3
35.	Gender and Environment	3	Gender and Environment	3
36.	Global Environmental Policies	3	Environmental Policies and Law	3
37.	Coastal Environment and Management	3	Coastal Environment and Management	3
38.	Agrochemicals in the Environment	3	Agrochemicals in the Environment	3
39.	Remediation Strategies for Contaminated Environment	3	Pollution Control Technologies	3
40.	Treatment and Management of Waste Water	3	Treatment and Management of Waste Water	3
41.	Environmental Application of Nanomaterials	3	Environmental Application of Nanomaterials	3
42.	Polymers and the Environment	3	Polymers and the Environment	3
43.			Hydrochemistry and Ground Water Pollution	3
44.			Environmental Impact Assessment	3
45.			Environmental Economics	3
46.			Environmental Engineering	3
47.			Watershed Management	3
48.			Air and Noise Pollution	3
49.	Thesis	6	Thesis	6

Revised List of courses in MS GEOLOGY/GEOPHYSICS E&ES in alignment with HEC curriculum 2013).

S#	Course by HEC	Credit Hours	Course by E&ES	Credit Hours
1	Igneous Petrogenesis	3	Igneous Petrogenesis	3
2	Metamorphic Petrogenesis	3	Metamorphic Petrogenesis	3
3	Advanced Mineralogy	3	Advanced Mineralogy	3
4	Geothermometry and Geobarometry	3	Geothermometry and Geobarometry	3
5	Advanced Stratigraphy	3	Advanced Stratigraphy	3
6	Micropalaeontology	3	Micropalaeontology	3
7	Invertebrate Palaeontology	3	Invertebrate Palaeontology	3
8	Vertebrate Palaeontology	3	Vertebrate Palaeontology	3
9	Palynology and Paleobotany	3	Palynology and Paleobotany	3
10	Mineral Prospecting and Exploration	3	Mineral Prospecting and Exploration	3
11	Coal Geology	3	Coal Geology	3
12	Metallogeny and Plate Tectonics	3	Metallogeny and Plate Tectonics	3
13	Coal Petrology	3	Coal Petrology	3
14	Process Mineralogy	3	Process Mineralogy	3

15	Mineral Deposit Evaluation and Economics	3	Mineral Deposit Evaluation and Economics	3
16	Rock Mechanics	3	Rock Mechanics	3
17	Soil Mechanics	3	Soil Mechanics	3
18	Seismotectonics	3	Seismotectonics	3
19	Engineering Geology	3	Engineering Geology	3
20	Petroleum Geology	3	Petroleum Geology	3
21	Sequence Stratigraphy	3	Sequence Stratigraphy	3
22	Petroleum Engineering and Geophysical Methods	3	Petroleum Engineering and Geophysical Methods	3
23	Reservoir Geology	3	Reservoir Geology	3
24	Organic Geochemistry	3	Organic Geochemistry	3
25	Petroleum Geology of Pakistan	3	Petroleum Geology of Pakistan	3
26	Seismic Methods and Seismic Stratigraphy	3	Seismic Methods and Seismic Stratigraphy	3
27	Earthquake Seismology	3	Earthquake Seismology	3
28	Geomagnetism	3	Geomagnetism	3
29	Paleomagnetism	3	Paleomagnetism	3
30	Radiometric Methods	3	Radiometric Methods	3
31	Electrical Methods	3	Electrical Methods	3
32	Bore-hole Geophysics	3	Bore-hole Geophysics	3
33	Geophysical Data Processing	3	Geophysical Data Processing	3
34	Gravity and Magnetic Methods	3	Gravity and Magnetic Methods	3
35	Engineering Seismology	3	Engineering Seismology	3
36	Thermodynamics	3	Thermodynamics	3
37	Geochemical Exploration	3	Geochemical Exploration	3
38	Isotope Geochemistry	3	Isotope Geochemistry	3
39	High Temperature Geochemistry	3	High Temperature Geochemistry	3
40	Low Temperature Geochemistry	3	Low Temperature Geochemistry	3
41	Clastic Sedimentology	3	Clastic Sedimentology	3
42	Carbonate Sedimentology	3	Carbonate Sedimentology	3
43	Sedimentary Petrology	3	Sedimentary Petrology	3
44	Basin Analysis	3	Basin Analysis	3
45	Quaternary Geology	3	Quaternary Geology	3
46	Clay Mineralogy	3	Clay Mineralogy	3
47	Sequence Stratigraphy	3	Sequence Stratigraphy	3
48	Techniques in Sedimentology	3	Techniques in Sedimentology	3
49	Advanced Hydrology	3	Advanced Hydrology	3
50	Groundwater Investigations	3	Groundwater Investigations	3
51	Groundwater Engineering	3	Groundwater Engineering	3
52	Groundwater Planning and Management	3	Groundwater Planning and Management	3
53	Hydrochemistry and Groundwater Pollution	3	Hydrochemistry and Groundwater Pollution	3
54	Modeling in Groundwater	3	Modeling in Groundwater	3
55	Industrial Mineralogy	3	Industrial Mineralogy	3
56	Technology of Industrial Minerals and Rocks	3	Technology of Industrial Minerals and Rocks	3
57	Mining Geology and Mineral Economics	3	Mining Geology and Mineral Economics	3
58	Physical and Chemical Oceanography	3	Physical and Chemical Oceanography	3
59	Advanced Marine Geology	3	Advanced Marine Geology	3
60	Coastal Geomorphology	3	Coastal Geomorphology	3
61	Geology of Arabian Sea	3	Geology of Arabian Sea	3
62	Advanced Environmental Geology	3	Advanced Environmental Geology	3

63	Soil and Water Resources	3	Soil and Water Resources	3
64	Environmental Hazards	3	Environmental Hazards	3
65	Hydrological Systems and Environment	3	Hydrological Systems and Environment	3
66	Environmental Impact Assessment and Management	3	Environmental Impact Assessment and Management	3
67	Plate Tectonics	3	Plate Tectonics	3
68	Advanced Structural Geology	3	Advanced Structural Geology	3
69	Metamorphic Structures	3	Metamorphic Structures	3
70	Applied Structural Techniques	3	Applied Structural Techniques	3
71	Tectonics of Pakistan	3	Tectonics of Pakistan	3
72	Neotectonics	3	Neotectonics	3
73	Gemology	3	Gemology	3
74	Advanced Geomorphology	3	Advanced Geomorphology	3
75	Glacial Geology	3	Glacial Geology	3
76	Remote Sensing	3	Remote Sensing	3
77	Geographic Information System	3	Geographic Information System	3
78	Mining Geophysics	3	Mining Geophysics	3
79	Geochronology	3	Geochronology	3
80	Research Methodology	3	Research Methodology	3
81	Advanced Instrumentation	3	Advanced Instrumentation	3
82	Volcanology	3	Volcanology	3
83	Tectonic Geomorphology	3	Tectonic Geomorphology	3
84	Active tectonics	3	Active tectonics	3
85	Paleoseismology	3	Paleoseismology	3
86	Seismic trenching	3	Seismic trenching	3
87	Geobotany	3	Geobotany	3
88	Applications of Archeology in Active Tectonics	3	Applications of Archeology in Active Tectonics	3
89	Quaternary Geochronology	3	Quaternary Geochronology	3
90	Soil Stratigraphy	3	Soil Stratigraphy	3
91	Geodesy	3	Geodesy	3
92	Pegmatites and Gem Stones	3	Pegmatites and Gem Stones	3
93	Geophysical modeling	3	Geophysical modeling	3
94	Organic Biomarkers	3	Organic Biomarkers	3
95	Isotope Geology	3	Isotope Geology	3
96	Quaternary Environments	3	Quaternary Environments	3
97	Quaternary Glaciology	3	Quaternary Glaciology	3
98	Medical Geology	3	Medical Geology	3
99	Military Geology	3	Military Geology	3
100	Thesis	6	Thesis	6

Revised List of courses in MS Environmental Sciences E&ES in alignment with HEC curricula (2013)

CORE COURSES

S #	Courses suggested by HEC	Courses offered by E&ES	Revised Courses by E&ES
	Research Methods in Environmental Sciences	Advanced Research Methodology ESC-701	Research Methods in Environmental Sciences ENV-506

	Climate Change Adaptation and Mitigation		Climate Change Adaptation and Mitigation ENV-572
	Strategic Environmental Assessment		Strategic Environmental Assessment ENV-573
	Analytical Techniques	Environmental Analytical Techniques ENV-531	Environmental Analytical Techniques ENV-531
		Advances in Environmental Sciences ENV-532	
		Environmental Management ENV-502	
		Comprehensive Oral Exam ENV-540	

ELECTIVE COURSES

	<u>Course by HEC</u>	<u>Course offered by E&ES</u>	<u>Proposed Courses by E&ES</u>
	Environmental Chemistry	Advance Environmental Chemistry ENV-533	Environmental Chemistry ENV-533
	Applied Environmental Microbiology	Advanced Environmental Microbiology ENV-534	Applied Environmental Microbiology ENV-534
	Fresh Water Ecology	Fresh Water Ecology ENV-533	Fresh water Ecology ENV-574
	Environmental Sociology	Environmental Sociology ENV-508	Environmental Sociology ENV-508
	Environmental Geology	Advanced Environmental Geology ENV-536	Environmental Geology ENV-536
	Disaster Risk Management	Disaster Management ENV-522	Disaster Risk Management ENV-522
	Marine Pollution Management	Marine Pollution ENV-521	Marine Pollution Management ENV-521
	Epidemiology	Epidemiology ENV-519	Epidemiology ENV-519
	Green Economy		Green Economy ENV-575
	Population Dynamics and Environment	Population Dynamics and the Environment ENV-509	Population Dynamics and Environment ENV-509
	Environmental Biotechnology	Environmental Biotechnology ENV-530	Environmental Biotechnology ENV-530
	Wetland Management	Wildlife, Forestry and Wetland Management ENV-516	Wetland Management ENV-516
	Alternative Energy Sources		Alternative Energy Sources ENV-576
	Environmental Auditing	Environmental Auditing ENV-510	Environmental Auditing ENV-510
	Wildlife and Forest Conservation		Wildlife and Forest Conservation ENV-577
	Cleaner Production Technologies		Cleaner Production Technologies ENV-578
	Solid and Hazardous waste Management	Solid and Hazardous Waste Management ENV-520	Solid and Hazardous Waste Management ENV-520

	Remote Sensing and GIS	Remote Sensing and GIS applications in Environment ENV-514	Remote Sensing and GIS ENV-514
	Environmental Risk Assessment and Management	Environmental Risk Assessment ENV-515	Environmental Risk Assessment and Management ENV-515
	Principles and Applications of Bioremediations		Principles and Applications of Bioremediations ENV-579
	Sustainable Urban Planning and Management		Sustainable Urban Planning and Management ENV-580
	Sustainable Agriculture		Sustainable Agriculture ENV-581
	Industrial Ecology		Industrial Ecology ENV-582
	Sustainable Development	Sustainable Development ENV-507	Sustainable Development ENV-507
	Project Development and Management	Project Management ENV-512	Project Development and Management ENV-512
	Health Safety and Environmental Management	Health Safety and Environment ENV-513	Health Safety and Environmental Management ENV-513
	Energy and Environment	Energy and Environment ENV-503	Energy and Environment ENV-503
	Carbon Sequestration and Environment		Carbon Sequestration and Environment ENV-583
	Advances in Plant Ecology		Advances in Plant Ecology ENV-584
	Biological Conservation		Biological Conservation ENV-585
	Urban Ecology		Urban Ecology ENV-586
	Environmental Education		Environmental Education ENV-587
	Laboratory Management Practices		Laboratory Management Practices ENV-588
	Restoration Ecology		Restoration Ecology ENV-589
	Gender and Environment		Gender and Environment ENV-590
	Global Environmental Policies	Environmental Policies and Law ENV-505	Global Environmental Policies ENV-591
	Coastal Environment and Management		Coastal Environment and Management ENV-592
	Agrochemicals in the Environment		Agrochemicals in the Environment ENV-593
	Remediation Strategies for Contaminated Environment	Pollution Control Technologies ENV-517	Remediation Strategies for Contaminated Environment ENV-517
	Treatment and Management of Waste Water		Treatment and Management of Waste Water ENV-594

	Environmental Application of Nanomaterials		Environmental Application of Nanomaterials ENV-595
	Polymers and the Environment		Polymers and the Environment ENV-596
		Climate change ENV-523	Climate change ENV-523
		Hydrochemistry and Ground Water Pollution ENV-527	Hydrochemistry and Ground Water Pollution ENV-527
		Environmental Impact Assessment ENV-504	Environmental Impact Assessment ENV-504
		Environmental Economics ENV-511	Environmental Economics ENV-511
		Environmental Engineering ENV-537	Environmental Engineering ENV-537
		Watershed Management ENV-518	Watershed Management ENV-518
		Air and Noise Pollution ENV-524	Air and Noise Pollution ENV-524
		Any other relevant course from Geology/Geophysics/ Environmental Sciences/EPM road maps.	Any other relevant course from Geology/Geophysics/ Environmental Sciences/EPM road maps.
		Thesis ENV-600	Thesis ENV-600

Revised List of courses in MS Geology/Geophysics E&ES in alignment with HEC curricula (2013).

S #	Course by HEC	Course by E&ES	Revised Courses by E&ES
1	Advanced Geochemistry		Advanced Geochemistry GEO-551
2	Igneous Petrogenesis	Advanced Igneous Petrology GEO-536	Igneous Petrogenesis GEO-552
3	Metamorphic Petrogenesis	Advanced Metamorphic Petrology GEO-538	Metamorphic Petrogenesis GEO-553
4	Advanced Mineralogy	Applied Mineralogy GEO-535	Advanced Mineralogy GEO-535
5	Geothermometry and Geobarometry		Geothermometry and Geobarometry GEO-554
6	Advanced Stratigraphy	Stratigraphy and Petroleum Prospects of Pakistan GEO-508	Advanced Stratigraphy GEO-555
7	Micropalaeontology		Micropalaeontology GEO-556
8	Invertebrate Palaeontology		Invertebrate Palaeontology GEO-557
9	Vertebrate Palaeontology		Vertebrate Palaeontology GEO-558
10	Palynology and Paleobotany		Palynology and Paleobotany GEO-559
11	Mineral Prospecting and Exploration	Mineral Prospecting and Exploration GEO-512	Mineral Prospecting and Exploration GEO-512
12	Coal Geology	Coal Geology GEO-519	Coal Geology GEO-519

13	Metallogeny and Plate Tectonics		Metallogeny and Plate Tectonics GEO-560
14	Coal Petrology		Coal Petrology GEO-561
15	Process Mineralogy		Process Mineralogy GEO-562
16	Mineral Deposit Evaluation and Economics		Mineral Deposit Evaluation and Economics GEO-563
17	Rock Mechanics	Rock Mechanics GEO-520	Rock Mechanics GEO-520
18	Soil Mechanics	Soil Mechanics GEO-521	Soil Mechanics GEO-521
19	Seismotectonics		Seismotectonics GEO-564
20	Engineering Geology	Advanced Engineering Geology GEO-537	Engineering Geology GEO-537
21	Petroleum Geology	Advanced Petroleum Geology GEO-503	Petroleum Geology GEO-503
22	Sequence Stratigraphy	Advanced Sequence Stratigraphy GEO-504	Sequence Stratigraphy GEO-504
23	Petroleum Engineering and Geophysical Methods		Petroleum Engineering and Geophysical Methods GEO-568
24	Reservoir Geology	Reservoir Geology GEO-534	Reservoir Geology GEO-534
25	Organic Geochemistry	Hydrocarbon Geochemistry GEO-506	Organic Geochemistry GEO-569
26	Petroleum Geology of Pakistan		Petroleum Geology of Pakistan GEO-570
27	Seismic Methods and Seismic Stratigraphy	Advanced Seismic Techniques GEO-540	Seismic Methods and Seismic Stratigraphy GEO-571
28	Earthquake Seismology		Earthquake Seismology GEO-572
29	Geomagnetism		Geomagnetism GEO-573
30	Paleomagnetism		Paleomagnetism GEO-574
31	Radiometric Methods		Radiometric Methods GEO-575
32	Electrical Methods		Electrical Methods GEO-576
33	Bore-hole Geophysics	Bore-hole Geophysics GEO-544	Bore-hole Geophysics GEO-544
34	Geophysical Data Processing		Geophysical Data Processing GEO-577
35	Gravity and Magnetic Methods		Gravity and Magnetic Methods GEO-578
36	Engineering Seismology		Engineering Seismology GEO-579
37	Thermodynamics		Thermodynamics GEO-580
38	Geochemical Exploration	Geochemical Exploration GEO-522	Geochemical Exploration GEO-522
39	Isotope Geochemistry	Isotope Geochemistry GEO-523	Isotope Geochemistry GEO-523

40	High Temperature Geochemistry		High Temperature Geochemistry GEO-581
41	Low Temperature Geochemistry		Low Temperature Geochemistry GEO-582
42	Clastic Sedimentology	Clastic Sedimentology GEO-524	Clastic Sedimentology GEO-524
43	Carbonate Sedimentology	Carbonate Sedimentology GEO-525	Carbonate Sedimentology GEO-525
44	Sedimentary Petrology		Sedimentary Petrology GEO-583
45	Basin Analysis	Basin Analysis GEO-507	Basin Analysis GEO-507
46	Quaternary Geology		Quaternary Geology GEO-584
47	Clay Mineralogy	Clay Mineralogy GEO-526	Clay Mineralogy GEO-526
48	Sequence Stratigraphy		Sequence Stratigraphy GEO-585
49	Techniques in Sedimentology		Techniques in Sedimentology GEO-586
50	Advanced Hydrology		Advanced Hydrology GEO-587
51	Groundwater Investigations	Development of Groundwater Resources GEO-510	Groundwater Investigations GEO-588
52	Groundwater Engineering		Groundwater Engineering GEO-589
53	Groundwater Planning and Management		Groundwater Planning and Management GEO-590
54	Hydrochemistry and Groundwater Pollution	Hydrochemistry and Groundwater Pollution GEO-527	Hydrochemistry and Groundwater Pollution GEO-527
55	Modeling in Groundwater	Groundwater Modeling GEO-528	Modeling in Groundwater GEO-528
56	Industrial Mineralogy	Industrial Mineralogy GEO-529	Industrial Mineralogy GEO-529
57	Technology of Industrial Minerals and Rocks		Technology of Industrial Minerals and Rocks GEO-612
58	Mining Geology and Mineral Economics		Mining Geology and Mineral Economics GEO-613
59	Physical and Chemical Oceanography		Physical and Chemical Oceanography GEO-614
60	Advanced Marine Geology	Advanced Marine Geology GEO-530	Advanced Marine Geology GEO-530
61	Coastal Geomorphology		Coastal Geomorphology GEO-615
62	Geology of Arabian Sea		Geology of Arabian Sea GEO-616
63	Advanced Environmental Geology		Advanced Environmental Geology GEO-617
64	Soil and Water Resources		Soil and Water Resources GEO-618

65	Environmental Hazards		Environmental Hazards GEO-619
66	Hydrological Systems and Environment		Hydrological Systems and Environment GEO-620
67	Environmental Impact Assessment and Management	Environmental Impact Assessment ENV-504	Environmental Impact Assessment and Management ENV-504
68	Plate Tectonics		Plate Tectonics GEO-622
69	Advanced Structural Geology	Advanced Structural Geology GEO-531	Advanced Structural Geology GEO-531
70	Metamorphic Structures		Metamorphic Structures GEO-623
71	Applied Structural Techniques		Applied Structural Techniques GEO-624
72	Tectonics of Pakistan		Tectonics of Pakistan GEO-625
73	Neotectonics		Neotectonics GEO-626
74	Gemology	Fundamentals of Gemology GEO-532	Gemology GEO-532
75	Advanced Geomorphology		Advanced Geomorphology GEO-628
76	Glacial Geology		Glacial Geology GEO-629
77	Remote Sensing		Remote Sensing GEO-630
78	Geographic Information System	Advanced GIS and Remote Sensing GEO-511	Geographic Information System GEO-631
79	Mining Geophysics	Mining Geophysics GEO-514	Mining Geophysics GEO-514
80	Geochronology		Geochronology GEO-632
81	Research Methodology	Advanced Research Methodology ESC-701	Research Methodology ESC-701
82	Advanced Instrumentation		Advanced Instrumentation GEO-634
83	Volcanology		Volcanology GEO-635
84	Tectonic Geomorphology		Tectonic Geomorphology GEO-636
85	Active tectonics		Active tectonics GEO-637
86	Paleoseismology		Paleoseismology GEO-638
87	Seismic trenching		Seismic trenching GEO-639
88	Geobotany		Geobotany GEO-640
89	Applications of Archeology in Active Tectonics		Applications of Archeology in Active Tectonics GEO-641
90	Quaternary Geochronology		Quaternary Geochronology GEO-642
91	Soil Stratigraphy		Soil Stratigraphy GEO-643
92	Geodesy		Geodesy GEO-644
93	Pegmatites and Gem Stones		Pegmatites and Gem Stones GEO-645
94	Geophysical modeling		Geophysical modeling GEO-646

95	Organic Biomarkers		Organic Biomarkers GEO-647
96	Isotope Geology		Isotope Geology GEO-648
97	Quaternary Environments		Quaternary Environments GEO-649
98	Quaternary Glaciology		Quaternary Glaciology GEO-650
99	Medical Geology		Medical Geology GEO-651
100	Military Geology		Military Geology GEO-652
101		Global Tectonics GEO-501	Global Tectonics GEO-501
102		Comprehensive Oral Exam GEO-550	Comprehensive Oral Exam GEO-550
103		Geophysical Exploration Methods GEO-502	Geophysical Exploration Methods GEO-502
104		Advanced Sedimentology GEO-505	
105		Well Site Geology GEO-509	Well Site Geology GEO-509
106		Petrophysical Analysis GEO-545	Petrophysical Analysis GEO-545
107		Climate Change ENV-523	
108		Natural Disaster Management ENV-522	
109		Environmental Engineering ENV-537	Environmental Engineering ENV-537
110		Health Safety and Environment ENV-513	Health Safety and Environment ENV-513
111		Ore Geology GEO-539	Ore Geology GEO-539
112		Advacned Biostratigraphy GEO-546	Advacned Biostratigraphy GEO-546
113		3D Seismic Interpretation GEO-518	3D Seismic Interpretation GEO-518
114		Geophysical and Geological Softwares GEO-541	
115		Advanced Seismology GEO-513	Advanced Seismology GEO-513
116		Exploration Geophysics GEO-515	
117		Environmental Geophysics GEO-516	
118		Seismic Data Analysis GEO-517	Seismic Data Analysis GEO-517
		Any other relevant course from Geology/Geophysics/ Environmental Sciences/EPM road maps.	Any other relevant course from Geology/Geophysics/ Environmental Sciences/EPM road maps.
119	Thesis	Thesis GEO-600	Thesis GEO-600

PRESENTATION MADE BY HOD EES IC

Revision of Road Maps, Course Titles, Core and Elective Courses, Breakdown of Lab Oriented Courses from 3 credit hours to 2+1 credit hours and Change of MS thesis from 12 credit hours to 6 credit hours as per HEC guidelines

Revised Road map of Geology/Geophysics/Environmental Sciences Background

1. Finding of the self-academic assessment team shows that the road map of the department of E&ES deviates about 50% in MS programs from the HEC recommended road map for the Environmental Sciences. [ACM28\Revised road maps of courses.docx](#)

2. It was also observed that the lab hour is not mentioned as a separate credit hour for certain courses being taught in BS and MS programs. [ACM28\Revised 2+1 courses for BS.docx](#)

[ACM28\Revised courses for MS ES, Geol and Geop.docx](#)

3. At present, 36 credit hours are allocated for the completion of MS degree. This includes 12 credit hours for thesis work. As per HEC guidelines, minimum 30 credit hours including 6 credit hours for thesis are required for MS programs.

Implications

Financial: Fee for six credit hours will be reduced if the credit hours for MS thesis are reduced from 12 to 6.

Recommendations

Approval may be granted for the Revision of Road Maps including Course Titles, Core and Elective Courses, Breakdown of Lab Oriented Courses from 3 credit hours to 2+1 Credit hours and Change of MS thesis from 12 credit hours to 6 credit hours and bringing MS programs as whole to 30 credit hours from 36 credit hours as per HEC guidelines.

MS EE Program - Addition of Electives

Summary of the Case:

- Following courses are proposed to be added in the Elective List of MS-EE program:
 - EET-546 Radio and Microwave Engineering
 - EET-768 Cognitive and Software Defined Radio
 - EEP-780 EMS & SCADA and
- The contents of these courses are in line with the recent researches in wireless communication as well as electrical power domains.
- It is therefore proposed that these courses may be included in the elective course list as through these courses students are introduced to the latest research. Contents of each course is attached.

FBoS approved the case and forwarded to ACM.

Recommendation:

The '3' courses listed above may please be added in the MS-EE Elective course list.

Course Title: Cognitive and Software Defined Radio

Course Code: EET-768

Prerequisite: Digital Communication, Digital System Design

Credit Hours: 03

Objectives:

The objective of the course is to train the students in the domain of Cognitive and Software Defined Radio. In the first step the lectures shall be delivered to build up the knowledge on the techniques used in the multiple wireless standards and later on need for the Software Defined Radio shall be explained in detail. After this focus shall be on the baseband part of the software defined radio with specific attention to Adaptive Coding and Modulation. In this regard, the FEC coding and decoding shall be explained in the context of multiple wireless standard. This shall include simple and turbo convolutional codes. The decoding techniques such as ML and MAP shall be explained. The students shall be trained on software implementation of FEC coding and decoding. In the end of coding/decoding part students shall be introduced with state of the art hardware architectures for turbo decoding in the context of SDR. Same philosophy shall be adopted for constellation mapping and de-mapping. In the last quarter of the semester the focus shall be on Cognitive Radio whereby introduction to cognitive radios, networks, their architecture and SDR for cognitive radio shall be under focus.

Overview and Contents:

- Introduction to SDR
- Introduction of Few Fundamentals of DSP.
- Channel Effects and Transmission Techniques
- Why SDR? in Detail
- Forward Error Correction in Multiple Wireless Standards.
- Turbo Code Case Study: Software Modeling and Flexible Hardware Design
- Constellation Mapping in SDR : Theory and Case Study
- Introduction to Adaptive, Aware and Cognitive Radios
- Cognitive Networks
- Cognitive Radio Architecture
- SDR for Cognitive Radio

Recommended Books:

- Cognitive Radio, SDR and Adaptive Wireless Systems by HuseyinArsalan, 2007.
- Implementing SDR by Eugene Grayer, 2013.
- Software Defined Radio: Enabling Technologies by Walter TuttleBee, 2002.

Course Title:EMS & SCADA**Course Code:** EEP-780**Credit Hours:** 03**Objectives:**

This course is intended for graduate students who wish to learn more comprehensive concept of energy management systems (EMS) and SCADA (supervisory control and data acquisition) applied in the field of electrical power engineering. An energy management system (EMS) is a system of computer-aided tools used by operators of electric utility grid to monitor, control and optimize the performance of the generation and transmission system. The monitor and control functions are known as SCADA. The computer technology is also referred to as SCADA/EMS or EMS/SCADA. Energy management systems are also often commonly used by individual commercial entities to monitor, measure, and control their electrical building loads. Energy management systems can be used to centrally control lighting systems across multiple locations. Energy management systems can also provide metering, sub metering, and monitoring functions that allow facility and building managers to gather data and insight that allows them to make more informed decisions about energy activities across their sites.

Overview and Contents:

- Introduction To EMS& SCADA
- Renewable Energy Technologies, Power Factor Correction, Power Factor Issue
- AGC, ALFC, Power System Control Functions
- Presentation Topics
- Primary & Secondary Regulation
- Fundamentals of Control
- Discrete Control
- Analog Control
- Network topologies
- Contingency analysis detection of network problems
- SCADA Sensors – temperature, light and occupancy sensors

Recommended Books:

- Electrical Network Automation and Communication Systems by Cobus Strauss, 2003.
- Network Protection and Automation Guide NPAG, by Areva, 2011.

Course Title: Radio & Microwave Engineering**Course Code:** EET-546**Credit Hours:** 03**Objectives:**

To design radio and microwave systems using Engineering techniques and principles in different types of modern telecommunication networks. At the end of this course, student will know how to design radio and microwave systems using engineering design techniques in different telecom networks.

Overview and Contents:

- Introduction to radio and microwave Engineering, Applications of radio and microwave Engineering, A Short History of radio and microwave engineering.
- Revision of basic concepts of Electromagnetic field theory, General wave equation, solutions of general wave equation
- Fields at a General Material Interface, Fields at a Dielectric Interface, Fields at the Interface with a Perfect Conductor (Electric Wall), The Magnetic

- Maxwell's Equations, solution of Maxwell's equations, Wall Boundary Condition, The Radiation Conditions
- The Helmholtz Equation, Plane Waves in a Lossless Medium, Plane Waves in a General Lossy Medium, Plane Waves in a Good Conductor
- General Plane Wave Solutions, Circularly Polarized Plane Waves, Parallel Polarization, Perpendicular Polarization, Total Reflection and Surface Waves
- TEM Waves, TE Waves, TM Waves, General Solutions for TEM, TE, and TM, Waves Attenuation Due to Dielectric Loss
- Propagation at UHF and VHF, Atmospheric Effects, Ground Effects, Plasma Effects, types of propagation, ground wave propagation, sky wave propagation
- Effect of distance on Propagation at VHF and UHF, Effect of Reflection on Propagation at VHF and UHF, Effect of Scattering on Propagation at VHF and UHF, Effect of Refraction on Propagation at VHF and UHF.
- Effect of Diffraction on Propagation at VHF and UHF, Effect of absorption on Propagation at VHF and UHF, Refractivity profiles, modified refractivity.
- Propagation Modeling, Point-to- Area Models, General Properties of point-to-Area Models, ITU-R P.370 and ITU-R P.1546, Okumura-hata, COST 231 Hata and other point-to-point model.
- Point to point propagation models, General properties of Point-to-point models, Bullington Method, Epstein-Peterson Method, Edwards and Durkin Method, Degyout method, ITU-R P.526 Model, Abnormal Propagation conditions, Propagation Model summary
- Antenna Gain and Efficiency, Aperture Efficiency and Effective Area, Background and Brightness Temperature, Antenna Noise Temperature and G/T.

Recommended Books:

- Microwave Engineering by David M Pozar (4th Ed.), 2011.
- Microwave and RF Engineering by Roberto Sorrentino and Giovanni Bianchi, 2010.
- Mobile radio Network design in the VHF and UHF bands by Adrian W Graham, 2006.
- RF and Microwave Engineering Fundamental of Wireless communicationby Frank Gustrau, 2012.

Change in the Nomenclature of MS EE Thesis (i.e., within transcript)

Sponsor: HOD (EE) IC

Referral Authority: Dean ES

Summary of the Case

1. The MS Electrical Engineering program requires 30 credit hours for completion of the degree. The students have two options to complete their degree, Thesis and Non-Thesis.
 - Thesis **Option (MS by Research):** The requirement is minimum 24 credit hours of course work and 6 credit hours of thesis involving research work.
 - It has been observed that the thesis offered in 3rd and 4th semester has not been clearly defined.
 - It may be Thesis-I in 3rd and Thesis-II in 4th semester.
 - In Thesis-I the students will do literature review and completely understand their model. The requirement for Thesis-I to get cleared maybe the proposal defense.
 - The students will register for Thesis-II after successfully defending their proposals.
 - Thesis-II will be concluded on the successful completion of final defense.
2. FBoS recommended the case for ACM's consideration.
3. The Thesis milestones may please be revised for MS Programs

Presentation to the Council

Preamble

- 30 Credit Hours for MS-EE
 - 24 Hours Course Work
 - 6 Hours Research (Optional)
 - Thesis – I and Thesis - II
 - No clear boundary of two stages in 3rd and 4th Semester

Action Proposed

- It may be Thesis-I in 3rd and Thesis-II in 4th semester
- Thesis – I
 - Literature Review
 - **Proposal Defense As Criteria To Pass This Stage**
- Thesis – II
 - Entry to this stage after passing Thesis-I
 - **Final Defense As Criteria To Pass This Stage**

ROADMAP AND CURRICULUM REVISION OF MS CLINICAL PSYCHOLOGY

The Case

Revision of the curriculum is a continuous process as per HEC guidelines. The MS (Clinical Psychology) program has been running in both the campuses. The curriculum revision will help bring improvement in the academic program as well as develop a strong alignment between roadmap and curriculum of MS programs with HEC guidelines while accommodating contemporary international trends.

The Faculty Board of Studies (FBOS) in its meeting held on February 22nd 2017, suggested revisions to be made in content, courses and credit hours in the best interests of students, teachers, other stake holder feedback received; and incorporating recommendations by the Departmental Board of Studies (DBOS).

Corroborative Data

Revised roadmap and course outlines attached as Annexure 'A'.

Recommendations

The suggested revision in the Roadmap and Course outline if placed before the house for approval.

Annexure 'A'

MS CLINICAL PSYCHOLOGY REVISED ROADMAP

Course Code	Semester I	Theory	Lab	Total
CPY 611	Humanistic and Existential Therapies	1	1	2
CPY 631	Applied Behavioral Analysis	1	1	2
CPY 621	Psychodiagnosis and Intellectual and Neuropsychological Assessment	1	2	3
CPY 651	Research Methods and Statistics	2	1	3
CPY 641	Neurological Basis of Behaviour	2	-	2
				12
Semester II				
CPY 612	Cognitive Behavioral Therapy	1	1	2
CPY 622	Personality Assessment	-	3	3
CPY 632	Pharmacology	2	-	2
CPY 642	Internship I	-	2	2
				9
Semester III				
CPY 743	Psychodynamic Therapies	2	1	3
CPY 713	Psychopathology and Psychotherapies of Children / Adolescents	2	1	3
CPY 610	Internship II	-	3	3
CPY 753	Dissertation I	3	-	3
				12
Semester IV				
CPY 745	Internship III	-	3	3
CPY 744	Dissertation II	3	-	3
				6
				39

Coursework = 25 Credit Hours

Internship = 08 Credit Hours

Dissertation = 06 Credit Hours

Total = 39 Credit Hours

COURSES OBJECTIVES, OUTLINES & REFERENCES

Name of Course: Humanistic and Existential Psychotherapy

Credit Hours: 01+01

Course Objectives:

- 1) To introduce students to the humanistic approach to psychology;
- 2) To provide an appropriate philosophical context for the understanding of human behaviour, experience, and therapeutic change;
- 3) To study personality, growth and development from a humanistic-phenomenological perspective;
- 4) To consider transpersonal approaches to the study of human experience

Course Content

Introducing: Third and Fourth Force Psychology, Pioneers of the humanistic and existential approach, Using Humanistic and Existential Therapies, Client-Centred Therapy, Selection criteria, Essential skills for therapist, Therapeutic interventions and process, Contributions and Applications of Approach, Gestalt Therapy, The field theory and phenomenological perspective, Essential skills for therapist Levels of neurosis, Gestalt Dialogue, The therapeutic Process in gestalt therapy, Contributions and Applications of Approach

Transactional Analysis

Reference Books

- Kurg (2015) *Existential-Humanistic Therapy (Theories of Psychotherapy)*. American Psychological Association (APA); 1 edition
- Ian Stewart *Transaction Analysis counseling in action*, 2nd edition
- Games People Play(1995) (2016) *The Psychology of Human Relationships* by Eric Berne
- Muriel Dorothy Jongeward (1998), *Born to win* (1998) by McGraw Hill Inc.

Name of Course: Cognitive Behavioural Psychotherapy

Credit Hours: 01+01

Course Objectives

- 1) To learn about the history, nature, scope and theories of cognitive behavioural psychology.
- 2) To understand essential concepts, key contributors, current controversies in cognitive-behaviour therapy.
- 3) Specific cognitive and behavioural assessment methods.
- 4) Contextual considerations, including human diversity, other sociocultural factors and developmental factors, in arriving at case conceptualizations and treatment plans.

Course Content: introduction to CBT, Structure of therapy sessions the therapeutic relationship, CBT assessment, CBT formulation, setting therapy goals, coping strategies, behavioural interventions, Cognitive interventions, psycho-education about thoughts and beliefs, identifying negative thoughts (NATs), Evaluation of negative automatic thoughts or 'thought challenging, working with assumptions and core beliefs, motivation for change, therapeutic endings, CBT with children and adolescents, CBT with older people, CBT for people with intellectual and developmental disabilities, ethical issues for CBT practitioners.

Reference Books

- Beck, A.T. (1979). *Cognitive therapy and the emotional disorders*. USA: Penguin Group Publishers.
- Dollard, J., & Miller, N. (1950). *Personality and psychotherapy - An analysis in terms of Learning, thinking and culture*. USA: McGraw Hill Book Company, Inc.
- Dryden, W., & Branch, R. (2012). *The CBT handbook*. SAGE Publications Inc.
- Ellis, A., & Blau S. (1998). *The Albert Ellis reader - A guide to well-being using rational emotive behavior therapy*. Citadel Press, Carol Communications, Inc.

- Feist, J., & Feist, G.J. (2006). *Theories of personality* (6th ed.). NY: McGraw Hill Inc.
- Grant, A., Mills, J., Mulhern, R. & Short, N. (2005). *Cognitive Behavioral therapy in mental health care*. Sage Publications Ltd
- Gurman, A. S., & Messer, S. B. (1995). *Essential psychotherapies: theory and practice*. NY: Guilford Publications.
- Martin, G., & Pear, J. (2003). *Behavior modification - What it is and how to do it* (7th ed.). NJ: Prentice-Hall Inc.
- Rimm, D. C., & Masters, J. C. (1979). *Behavior therapy, techniques and empirical findings* (2nd ed.). NY: Academic Press, Inc.
- Sanders, D., & Wills, F. (2005). *Cognitive therapy: An introduction*. (2nd ed).
- Simmons, J., & Griffiths, R. (2011). *CBT for beginners*. SAGE Publications Inc.
- Sundberg, N. D., Winebarger, A. A., & Taplin, J. R. (2002). *Clinical psychology, evolving theory, practice and research* (4th ed.). NJ: Prentice Hall, Pearson Education, Inc.
- Wolpe, J. (1985). *The practice of behavior therapy* (3rd ed.). Pergamon Press.

Name of Course: Applied Behavioural Analysis

Credit Hours: 01+01

Course Objectives:

1. The present course provides an introduction to the theoretical concepts and principles of Behaviour Analysis in practical settings.
2. Formal and informal Assessment through functional assessment methods and application of appropriate techniques to address the target behaviours.
3. Practical exposure and handling of individual cases, displaying and interpreting behavioural data, and designing behaviour support plans.
4. Learning the applicability of ABA across different psychological disorders of adults and children and conducting effective research in same discipline

Course Content: Introduction and history of ABA, Conceptual models of Behaviour management, Assessment procedures in ABA, Identifying and specifying behaviour, Diagnosing Behaviour problems, Functional analysis, Pre mod analysis, Methods of data collection, Data display and analysis, Behavioural intervention plan, Behavioural strategies: shaping, Channing, fading, modelling, positive and negative reinforcement, token economy, Weakening Behaviours: behaviour reduction procedures, differential reinforcements, Extinction, Negative strategies: punishment, response cost, time out, overcorrection ,cognitive behaviour modification: the ABC model, self-instructional training, verbal mediation, problem solving skill, measuring students' progress, brief introduction of research in ABA, ABA and clinical disorders, ethical issues in ABA and critical evaluation of ABA

Reference Books

- Hergenhahn, Olson, M.H. (2005) An Introduction to Theories of Learning. 7th Edition. Pearson, Prentice Hall.
- Do It. 7th Edition. (2015) Pearson Education, Inc. USA.
- Bambrill, Eileen(2014) Behaviour Modification Handbook of Assessment, Intervention and Evaluation Part I and II.
- Kaplan, Joseph S.; Carter, Jane. (1995) Beyond Behaviour Modification – A Cognitive Behavioural Approach to Behaviour Management in the School. 3rd Edition. Pro-d Publishers.
- Ormrod, Jeanne Ellis (1999) Human Learning. 3rd Edition. Merril, an imprint of Prentice Hall.
- Maurice, Catherine; Green, Giena; Luce, Stephen C. (1996) Behavioural Intervention for Young Children with Autism: A Manual for Parents and Professionals. Pro – Ed.
- Dickman, Irving R. (1976) Behaviour Modification
- Domjan, Michael (2003) The Principles of Learning and Behaviour 5th Edition. Thomson Wadsworth Publishers
- Klein, Stephen B. (1991) Learning – Principles and Applications. 2nd Edition. McGraw Hill Inc.
- Rimm, D.C.; Masters, J.C. (1979) Behaviour Therapy, Techniques and Empirical Findings, 2nd Edition. Academic Press.

- Watson, John B. (1959) Behaviourism. Phoenix Books.
- Hilgard, Ernest R. (1956) Theories of Learning 2nd Edition Appleton – Century – Crofts – Inc.

Name of Course: Personality Assessment

Credit Hours: 03

Course Objectives:

To understand the scientific and theoretical knowledge base of psychology that is necessary for successful entry into the practice of clinical profession of psychology.

1. Student will be able to understand the theory, practice, analysis and interpretation of different scales, checklist and personality tests that includes: objective, semi projective and projective personality tests like HFD, HTP, SPS, DAT, MMPI, PAI, RISB, Beck Inventories, & TAT, ROR etc in order to assess personality.
2. Learn to write psycho-diagnostic reports.

Course Content: Human Figure Drawing & House Tree Person, Suicidal Probability Scale (SPS) & Differential Aptitude Test (DAT), Thematic Apperception Test (TAT), Minnesota Multiphasic Personality Inventory (MMPI), Beck Depression Inventories, Rotter Incomplete Sentence Blank, Personality Assessment Inventory, Rorschach Ink Blot Test (ROR), Psycho-diagnostic Report writing

Reference Books

- Morey, L. C. (2007). *Personality Assessment Inventory (PAI)*. (2nded.). USA: Psychological Assessment Resources (PAR) Inc
- Murray, H. A. 1943. *Thematic Apperception Test*. Cambridge, MA: Harvard University Press.
- Bellak, L. (1975). *The Thematic Apperception Test, the Children's Apperception Test and the Senior Apperception Technique in clinical use*. (3rded.). NY, USA: Grune& Stratton Inc.
- Manuals of HFD, HTP, SPS, RISB, Beck Inventories, DAT, MMPI, PAI, TAT and ROR.
- Gregory, R. J. (2004). *Psychological Testing: history, principles and applications*, (4th ed.). Pearson Education, Inc.
- Groth-Marnat, G. (1990). *Handbook of psychological assessment*. USA: John Wiley & Sons.
- Murphy, K. R. & Davidshofer, C. O. (1998). *Psychological Testing: principles and applications*. (4thed.). USA: Prentice Hall International, Inc.
- Frank and freeman, Theory and practice of psychological testing. (Revised edition).
- Lee J Cramback, Essentials of Psychological Testing (2d.ed). Harper and Row Illinois.

Name of Course: Psych diagnosis and Neuropsychological Assessment

Credit Hours: 01 + 02

Course Objectives:

1. Students will be able to understand the nature of intelligence, Intellectual Disabilities, Psychological issues related to intellectual and neuropsychological testing
2. Student will be able to understand the theory, administration, practice, scoring, analysis and interpretation of different intellectual and neuropsychological and intellectual assessment tests
3. Learn to write psycho-diagnostic reports

Course Content: DSM V, psychopathologies criteria, etiological factors and review of psychological disorders, Nature of Intelligence and Neuropsychological functioning, Intellectual Disabilities, Draw A Person (DAP), BGT-2, CARS, WISC-4, WPPSI-4, Quick Neurological Screening Test-3 (QNST-3), WRAT-4, WAIS-III, ADHDT, BD, STROOP

Reference Books

- Gregory, R. J. (2004). *Psychological Testing: history, principles and applications*, (4th ed.). Pearson Education, Inc.
- Groth-Marnat, G. (1990). *Handbook of psychological assessment*. USA: John Wiley & Sons.
- Murphy, K. R. & Davidshofer, (1998). *Psychological Testing: principles and applications*. (4thed.). USA: Prentice Hall International, Inc.
- Morey, L. C. (2007). *Personality Assessment Inventory (PAI)*. (2nded.). USA: Psychological Assessment Resources (PAR) Inc.
- Goodenough, F.L. (1975). *Measurement of intelligence by drawings*. NY: World Book Company.
- Murray, H. A. 1943. *Thematic Apperception Test*. Cambridge, MA: Harvard University Press.
- Manuals of all others Tests

Name of Course: **Psychopathology and Psychotherapies of Children and Adolescents**

Credit Hour: **02+01**

Course Objectives:

1. To enable the student to acquire understanding of psychological issues in children and adolescents.
2. To help students in understanding the application of therapeutic techniques primarily designed for children and adolescents.

Course Content: Psychopathology and Psychotherapies with Children and Adolescence, Neurodevelopmental disorders and their treatment, childhood disorders: anxiety, depression, developmental delay disorders and disabilities, management and treatment: play therapy, child psychoanalysis, behavioural interventions. Feeding and eating disorders, group therapy with children.

Reference Books

- Nayar, U.S. (2012). Child and Adolescent Mental Health. Sage Publications
- Wilmhurst, L. (2015). Essentials of Child and Adolescent Psychopathology, 2nd edition. Wiley.
- DSM V
- Coping Cat Workbook (Book by Philip C. Kendall) originally published: January 1, 1992 Author: Philip C. Kendal

Name of Course: Psychodynamic therapy

Credit Hours: **02+01**

Course Objectives:

1. This course lays the foundation of the advanced concepts of psychodynamic theories and psychotherapy
2. The focus is on the various aspects of Freudian, Jungian and Adlerian approaches.
3. The focus is on the various aspects of psychodynamic approaches and object relation therapies and theories
4. Techniques of transference, counter-transference, resistance and catharsis explained practically.

Course Content: CLASSICAL PSYCHOANALYSIS : History, Freud's theory of Personality,

INTRODUCTION TO PSYCHODYNAMIC APPROACHES: Object relation theories, Difference between classical psychoanalysis and psychodynamic approaches, scope of psychodynamic therapies, Method of treatment in psychoanalysis, CASES OF SIGMUND FREUD, Freud and Beyond, Sullivan: Interpersonal Therapy (IPT), Alfred Adler: Individual therapy, Carl Gustav Jung: Analytical therapy, Brief psychodynamic models, Object relation theorists: Klein, Winnicott, Kohut, Bion and Bowlby, psychodynamic practice in Pakistan.

Reference Books

- Elliot, A. (2015). *Psychoanalytic Theory and Introduction, hird Edition*. CPI Group UK 99Ltd.
- Usher, S. F. (2013). *Introduction to Psychodynamic Psychotherapy Techniques. Second Edition*. TJ International Ltd.
- Jacobs, M. (2010) *Psychodynamic Counselling in Action. 4th Edition*, London: Sage.
- Mc Leob, J. (1998) *An Introduction to Counselling*. Open University Press. Redwood Books Ltd. Trowbridge.
- Gomez, L. (1997)" Klien's Major theoretical contribution". *An Introduction to Object Relation*. Free Association.
- Mitchell, S. And Black, M. (1995)"The object relation School: Fairbairn and Winnicott". *Freud and Beyond. Basic Books*.
- Gay, P.Freud (1988): A life For Our Time. W.W Norton and Company. Inc.
- Freud, S. (1933) *New Introductory Lectures on Psychoanalysis*. Harmondsworth: Penguin.

Name of Course: Advanced Research Methodology and Statistics

Credit Hours: 02+01

Course Objectives:

- Knowledge of research, statistics, and evaluation methods in sufficient depth to evaluate published research and to plan and conduct his/her own research.
- Demonstrate the ability to use common statistics software for data analysis.
- Interpret and communicate the results of an independently conducted analysis.

Course Content: The Research Process and the Nature of Research, Approaches to Research, Establishing a Research Design and Nature of Your Research Desig, QUANTITATIVE DATA COLLECTION AND ANALYSIS, Survey Research Method and The Nature of Questionnaire Surveys, Analysing Quantitative Data, SPSS, T-tests and ANOVA, ANCOVA, MANOVA, MANCOVA, Writing up and Presenting your Research and The Structure of the Dissertation.

Reference Books

- Bordens, K. S. (2005).*Research design and methods: a process approach* (6thed.). Boston: Mc Graw Hill.
- Creswell, J. (1994). *Research design: Qualitative and quantitative approaches*. Thousand Oaks: Sage Publications.
- Dooley, D. (2001).*Social research methods*. New Delhi: Prentice Hall of India.
- Hayes , N. (2000).*Doing psychological research: Gathering and analyzing data*.Buckingham: Open University Press.
- Leedy, P., &Ormrod, J. (2000). *Practical research: Planning and design* (7thed.). London: Prentice Hall.
- Neuman, W. L. (2006). *Social research methods: Qualitative and quantitative approaches* (6thed.). Boston: Pearson Education.
- Punch, K. F. (2009). *Developing effective research proposal* (2nded.). London: Sage Publications Ltd.
- Willig, C. (2010) Introducing qualitative research in psychology: Adventures in theory and method. New Delhi: Tata Mc GrawHill Education Private Limited.
- Wilson, J. (2010). *Essential of business research: A guide to doing your research project*. London: Sage Publications Ltd.

Subject:

To align MS Supply Chain Management (MS-SCM) Course Description in Unified Course Book with the Course Description of MS-SCM in MS-SCM Student Prospectus.

1. Background of the Case:

In their NOC for starting MS-SCM, HEC recommended that "*the curriculum needs further enrichment and legal aspect may also be included.*" The same was done after negotiating with the supply chain professionals. MS-SCM Roadmap, Student's Prospectus and MIS course offering to students were updated accordingly. However, some descriptions of the Unified Course Codes Book were not modified.

The discrepancy was notified by the examination department in their letter of 24th January, 2017. Due to urgency in printing of the final transcripts of the graduating students of MS-SCM, the cases needed to be addressed before the ACM to be conducted in Spring 2017. A file was moved and approval was obtained from H. E. the Rector Bahria University on February 3, 2017 with the instructions that approval / ratification from the ACM is required.

2. Recommendations:

A file on the matter was moved and approval was obtained from H. E. the Rector Bahria University on 3rd February, 2017.

Road Map for MS in Supply Chain Management

Bahria University is one of the leading universities of the country. It has signed agreements / MOUs with over 20 universities around the world and the number is growing. There have been repeated exchange of programs and exchange of students among these educational institutes. Bahria University is also indulged in providing knowledge / trainings that assists students in acquiring International Certifications which improves international acceptability and credibility of its students / alumni.

The course contents that are listed below are the ones most suited in the current local and international market scenario. The course contents and the subjects offered may change over a period of time based on Bahria University collaboration with other notable institutes / organizations / International Certification providers locally and worldwide. However, the duration of the degree and the number of courses offered (18-months and 33-credit hours) will stay in line with the policies of Higher Education Commission of Pakistan.

Semester-wise details of the courses offered are attached below:

Semester-1

Srl. #	Course Code	Course Title	Level	Cr. Hrs.
1	SCM-701	Fundamentals of Supply Chain Management	Core	3
2	SCM-702	Supplier Selection & Bid Evaluation	Core	3
3	SCM-703	Negotiation & Contracting & Law in Procurement and Supply	Core	3

Semester-2

Srl. #	Course Code	Course Title	Level	Cr. Hrs.
1	SCM-704	Business Research Methods (Focus on SCM)	Core	3
2	SCM-705	Inventory & Logistics Operations	Core	3
3	SCM-706	Operations Management & Supply Chains	Core	3
4	SCM-707	Contemporary Issues in Supply Chain	Core	3

Semester-3 (Non Research)

Srl. #	Course Code	Course Title	Level	Cr. Hrs.

1	SCM-708	Strategic Supply Chain Management	Core	3
2	SCM-709	Supply Chain Finance	Core	3
3	SCM-7nn	Elective-1	Spec.	3
4	SCM-7nn	Elective-2	Spec.	3

Semester-3 (Research Thesis)

Srl. #	Course Code	Course Title	Level	Cr. Hrs.
1	SCM-708	Strategic Supply Chain Management	Core	3
2	SCM-709	Supply Chain Finance	Core	3
3	SCM-711	Research Thesis	Research	6

Electives Courses Offered

Srl. #	Course Code	Course Title	Concentration
1	SCM-721	Leadership in Procurement and Supply	Supply Chain
2	SCM-722	Managing Risks in Supply Chains	Risk Management
3	SCM-723	Supply Chain Diligence	Supply Chain
4	SCM-724	Category Management in Procurement and Supply	Procurement and Supply Chain
5	SCM-725	Regulatory Framework for Trade Harmonization in International Supply Chain	Supply Chain
6	SCM-726	Mathematical Modeling & Optimization Techniques in Supply Chain	Supply Chain (CBT)*
7	SCM-727	Software & Simulations (LOGWARE, TORA, SIMUL8)	Supply Chain (CBT)*

(CBT)* = Computer Based Training

Summary of the Case:

Internet of Things (IoTs) is one of the emerging research fields in the domain of Engineering Sciences. Recently, the PhD faculty members as well as students are working in the said domain. However, the domain is not represented well in the PhD course list of Engineering Sciences Programs. Hence the department has proposed following three elective courses:

1. Advanced Cryptanalysis Models for IoTs
2. Security and Privacy for Internet of Things
3. Advanced Secure communication

The proposed subjects will cover all major topics related to the Security of IoT networks. The contents of each course is attached.

FBoS approved the case and forwarded to ACM.

Recommendation:

The '4' courses listed above may please be added in the PhD Elective course list.

Course Title: Advanced Cryptanalysis Models for Internet of Things (IoTs)

Course Code: EEN-840

Credit Hours: 03

Objectives:

This course features a comprehensive introduction to modern cryptography (specifically for IoTs), with an emphasis on the new lightweight cryptographic methods and protocols. Then, some new cryptanalysis models and methods will be discussed in order to give the exposure about weaknesses in algorithms structures.

Overview and Contents:

- Introduction to Cryptography
- Cryptography and IoTs (Internet of Things)
- Authentication Protocols for IoTs
- Cryptanalysis Models:
 - Desynchronization Attack Models
 - DoS and DDoS attack Models
 - Attacks on A5 and RC4
 - Multiset Crypto Model
 - Tango Cryptanalysis
 - Recursive Linear Cryptanalysis (RLC)
 - Recursive Differential Cryptanalysis (RDC)
 - Probabilistic Attack Models
 - Traceability Attack Models
 - Impersonation and Replay Attack Models
 - Guess and Determine Attacks
 - Grobner Basis Attack Model
 - Formal Security Analysis
 - Mathematical Model (BAN & GNY logics)
 - Automatic Verification Tools (AVISPA etc.)
 - Password Cracking Techniques

Recommended Books:

- "Modern Cryptanalysis: Techniques for Advanced Code Breaking" by Swenson, (ISBN 978-0470135938), 2008.
- "Applied Cryptanalysis: Breaking Ciphers in the Real World" by Mark Stamp, 2007.

- Modern Cryptanalysis: Techniques for Advanced Code Breaking 1st Edition by Christopher Swenson (Author)
- “Ultralightweight Cryptography for Low Cost Passive RFID Tags”, Ph.D Thesis, Umar M. Khokhar, Bahria University, Islamabad, 2016.

Recommended Journals/Magazines:

- International Journal of Sensor Networks and Data Communications
- IEEE Security & Privacy
- Other Journals and Conference Proceedings (Cryptanalysis on IoTs)

Course Title: Security and Privacy for Internet of Things (IoTs)

Course Code: EEN-841

Credit Hours: 03

Objectives:

The growing importance of Internet of Things (IoT), Cloud Computing and their use to support critical applications has made security & privacy a central issue today. Information can be stolen while it is collected, stored, processed, and shared at the cloud.

The main objectives of this course are to:

- 1) Introduce high quality works highlighting security issues
- 2) Explain the state-of-the-art methodologies in security
- 3) Model threats and countermeasures
- 4) Discuss corresponding case studies in areas of IoT, cloud computing and software-defined networks.

Overview and Contents:

- Overview of Security and Privacy in Information System
- Applied Cryptography & Intrusion Detection
 - Architecture of Applied Cryptography (1 class)
 - One Way Hash Function and Integrity (One-way hash, 1 class)
 - Encryption Algorithms and Confidentiality (Stream Encryption, 1 class)
 - Digital Signature and Authentication (DH, RSA, 2 class)
 - Intrusion Detection and Information Theory (1 class)
- Internet of Things Security
 - Introduction of Internet Of Things
 - Security and Privacy for IoT
 - Case Study 1: Smart Home
 - Case Study 2: Smart Grid Network
 - Case Study 3: Modern Vehicle
 - Case Study 4: Wearable Computing & BYOD
 - Case Study 5: Mobile HealthCare
 - Software-Defined Networks (tentative)
 - Introduction of Software-Defined Networks
 - Security for Software-Defined Networks
 - Privacy Leakages for Software-Defined Networks
 - Case Studies: How to Attack Software-Defined Networks

Recommended Books:

- Security and Privacy in Internet of Things (IoTs): Models, Algorithms, and Implementations by Fei Hue, April 2016.
- “Applied Cryptanalysis: Breaking Ciphers in the Real World” by Mark Stamp, Jan, 2007.
- Data Security and Privacy in the Internet of Things (IoT) Environment, Vijayaraghavan Varadharajan, Shruti Bansal, July 2016.

Recommended Journals/Magazines:

- International Journal of Sensor Networks and Data Communications
- IEEE Security & Privacy
- Other Journals and Conference Proceedings (Cryptanalysis on IoTs)

Course Title: Advanced Secure Communication

Course Code: EET-740

Credit Hours: 03

Objectives:

The objective of this course is to provide a practical survey of security applications and standards. The emphasis is on applications that are widely used on Internet for Corporate Networks especially currently deployed standards such as RFID, GSM and VOIP security issues and solutions. This course mainly focuses on the algorithms that make securely transmission of speech and data.

Overview and Contents:

- Introduction to the cryptography, Traditional Techniques of the Cryptography, Classical techniques of the Cryptography
- Security Services, Security attacks, Cipher Block modes of operation, Key Distribution Techniques, Simplified DES, DES, Triple DES
- Advanced Encryption standard (AES) , RSA its implementation and Extended Euclidean Methods, Chinese Remainder Theorem,
- Public Key Cryptography and message authentication, Hashing, Digital signature, Diffie Hellman Key Exchange methods and its implantations.
- Speech Scrambling Techniques, Time domain speech scrambling, Frequency Domain speech scrambling, S Functions.
- Classical techniques of random number generators, Rand generators, Linear congruential random number generators, Linear feedback shift registers, Golay codes, Gold sequences, Walsh codes, kasami sequences
- Spread Spectrum communication system, Time domain coding, principles of the various spreading techniques, Space domain coding
- Coding for bandwidth spreading, Autocorrelation parameters, Performance of the phase coded spread spectrum, Spectral occupancy of m-sequences and gold codes
- Direct sequence spread spectrum, Frequency hopping spread spectrum, Slow hopping, Fast hopping,
- Code division multiple access networks, system performance for CDMA, Simulation and discussion, DS-CDMA, Narrow band interference suppression
- GSM security issues, A5 algorithm issues weakness and modifications, A7 , A8 and A3 algorithms implementations
- RFID security issues discussion, Secure and server less communication b/w Tag and Reader
- Cryptanalysis of the current deployed protocols, VOIP security issues and solutions
- System security, Intruders and viruses, Firewalls
- Intrusion Detection Systems and VPNs

Recommended Books:

- Cryptography and Secure Communication by Richard E. Blahut, March 2014.
- Secure Communications: Applications and Management by Roger Sutton, Feb, 2002.
- Data Communications and Network Security by Houston Carr, May 2006.
- A Web Developer's Guide to Secure Communication" by Nigel Chapman, Dec 2011.

Availability of Level 700 and above courses of MS/MPhil Programmes for PhD scholars which are not in the PhD course list

Sponsor: HOD(MS)KC

Referral Authority: FBOS

Summary of the Case

1. PhD scholars has to be complete 6 courses as part of their course-work during their PhD studies. Normally there are few PhD scholars and making class of these scholars is financially non-feasible. It requires special approval to offer courses for few PhD scholars. Relevant courses are sometimes offered in relevant MS/MPhil programs which are not part of PhD roadmap but have significant overlap with some courses with different course code in PhD roadmap. In some other cases, PhD scholar is working on inter-disciplinary research and need to study some course from other discipline/relevant domains which normally cannot become part of a roadmap of certain PhD program. HEC allows PhD scholar to study PhD level courses in other HEC recognized university, given such courses are not offered at the local university.
2. As per ACM decision of item 2024, “authorizing FDRC to permit PhD students to enroll in 700 or plus level courses, as part of their course work but which are not in the PhD course list, if offered in MS programmes at Bahria University, ratified.” Similar decision for Faculty of Management Sciences will result in ease of offering variety of courses to PhD scholars without the hindrance of getting repeated approval to launch courses for few PhD scholars.

ALLIED HEALTH SCIENCES B.Sc PROGRAM AT BUMDC

- A university is the zenith of knowledge that imparts quality education and awards degrees for extensive educational attainments in various disciplines. Protection of traditional knowledge, making exploration about it and obtaining deep understanding about modern technology and research techniques are the responsibilities of university. The mission of Bahria University at BUMDC is chartered to develop an intellectually conducive environment providing excellence and innovation in medical education and research to produce competent and community oriented doctors, dentists, nurses, bio-medical engineers, and paramedics.
- Allied Health Sciences is a field in medicine which has been completely neglected up till now so that there is absolute dearth of trained Allied Health personnel who are the actual service providers to the patients. As a matter of fact they form the connecting link between the doctors and the patients which is missing altogether in our health care system.
- Both technicians and technologists perform tests and procedures that physicians and surgeons or other healthcare personnel order. However technologists perform more complex tests and laboratory procedures than technicians do. For example, technologists may prepare specimens and perform detailed manual tests, whereas technicians perform routine tests they may be more automated. Medical laboratory technicians usually work under the general supervision of medical laboratory technologists or laboratory managers. Medical laboratory technologist Coursework emphasizes laboratory skills, including safety procedures and lab managements.
- Realizing all this BUMDC organize education and training at B.Sc Honors levels in all disciplines of Allied Health Sciences. Following disciplines have been identified in which these programs are to be launched at the BUMDC.
 - Medical Laboratory Technology.
 - Medical Imaging Technology.
 - Emergency and Intensive Care Technology.
 - Physiotherapy.
 - Optometry & Orthoptics.
 - Respiratory Therapy.
 - Cardiac Perfusion Technology.
 - Dental Technology.
 - Occupational Therapy.
 - Speech and Language Pathology.
 - Operation Theatre Technology.
 - Nutrition.
 - Orthotic and Prosthetic Sciences.
 - Audiology.
 - Dental Surgery Assistant.
 - Dental Radiology Assistant.
 - Dental Hygienist Assistant.
- Launch of B.Sc program in Allied Health Sciences at BUMDC is going to be a remarkable development in the field of medicine and will fill up the existing gaps in health delivery system.

Road Map and other details of programs are under preparation in all the individual department. The same will be submitted after finalization.

Title: Introduction of MBA in "Pharmaceutical and Health Management"**Background / Discussion**

World trend is that universities are coming up with more hybrid programs by building upon two or more disciplines so that students can learn more disciplines at a time in meaningful and systematic manner. The trend in international universities will replace the traditional Master's programs with such hybrid programs.

Management Sciences Department, BUKC has been offering MBA programs one each in pharmaceutical and health management. Over the years, the students' strength in both the programs is declining. It is feared that MBA programs in Health and Pharmaceutical Management if continued separately may vanish soon as the market is becoming competitive day by day as the three Medical Universities in Karachi are offering this program. Having core competency in medical sciences, these universities are having an edge over BUKC. The matter was discussed at the cluster level and it was decided that a single MBA program in Pharmaceutical and Health Management program should be offered rather than offering pharmaceutical and health management, separately. This was done after consulting with industry professionals. The feedback received in this consultation was used to revise the curriculum of this single MBA program. The point was also endorsed by the Corporate Advisory Committee in its 5th meeting held at BUKC. The revised curriculum of this unified MBA program is attached.

Conclusion

The point was discussed in combined meeting of FBOS of all campuses of Bahria University. The input was obtained from all the campuses. There is a consensus that the two separate courses may be merged and offered one course with the title: **MBA in "Pharmaceutical and Health Management"**.

Recommendation

Hence, it is recommended that the agenda item may be approved by the worthy house

ROAD MAP
MBA 2 years (Pharmaceutical & Health Management)
60 Credit Hours
(Students with 16 years Non Business program)

WEEKEND

SEMESTER 1

S.No	Course Code	Course Title	Credit Hours
1	MKT 522	Principles of Marketing	3
2	ACC 501	Financial Accounting	3
3	MGT 501	Theories and Practices of Management	3
4	BCM 512	Business Communication	3

SEMESTER 2

S.No	Course Code	Course Title	Credit Hours
1	FIN 502	Financial Management	3
2	MGT 541	Human Resource Management	3
3	QTM 520	Bio Statistics	3
4	ECO 520	Economics	3

SEMESTER 3

S.No	Course Code	Course Title	Credit Hours
1	RMT 620	Methods In Business Research	3

2	MGT 653	Corporate Leadership and Social Responsibilities	3
3	FIN 611	Project Management	3
4	MGT 662	Strategic Management	3

SEMESTER 4

S.No	Course Code	Course Title	Credit Hours
1	HBM 615	Principles of Health Care Management	3
2	HBM /PBM 620	Regularity Affairs & Health Care Ethics	3
3		Elective - 1	3

SEMESTER 5

S.No	Course Code	Course Title	Credit Hours
1	HBM/PBM 630	MIS in Health Care Management	3
2	PBM 635	Pharmaceutical Business Development & Global Business Environment	3
3		Elective - 2	3

SEMESTER 6

S.No	Course Code	Course Title	Credit Hours
1		Elective - 3	3
2	SDW 699	Project/Thesis	3

ELECTIVES

S.No	Course Code	Course Title	Credit Hours
1	PBM-610	Pharmaceutical Brand Management and E Marketing	3
2	PBM 611	Pharmaceutical sales Management	3
3	PBM 612	Pharmaceutical Marketing and Quality Assurance	3
4	PBM 613	Economics and Management of Pharmaceutical industry	3
5	PBM 614	Pharmaceutical Brand Management	3
6	PBM 615	Financial application in Pharmaceutical Marketing	3
7	PBM 616	Pharmaceutical Business Strategy	3
8	PBM 617	Marketing of Bio technology Products	3
9	PBM 618	Consumerism and Public Health	3
10	HBM 625	Basics of Medical Health	3
11	HBM 626	Health Economics	3
12	HBM 627	Financial services of Heath Services	3
13	HBM 628	Strategic Management of Health Services	3
14	HBM 629	Concepts of Primary Health Care	3
15	HBM 630	Managing Professional Health Care Organization	3
16	HBM 631	Marketing Health Care Services	3

Financial Implication (Estimated on Average)

Calculation is based on considering it as an independent program

Proposed Faculty's Remuneration	: Rs. 1800/- (per contact hour)
Total Faculty Cost	: Rs. $66 \times 3 \times 1800 = 356,400/-$ (06 Faculty Members)
Expected Advertisement Cost	: Rs. 100,000/-
Fixed overhead	: Rs. 200,000
Gross Expenses	: Rs. 656,400/-

Proposed Fee Schedule

Rate Per Credit Hour	: Rs. 4810/-
Total Tuition Fee/per student	: Rs. 4810x66 = Rs 317,460
Admission Fee	: Rs. 21,000/-
Caution Money	: Rs. 9,000/-
Misc Charges	: <u>Rs. 3,400/-</u>
Total Fee	: Rs. 350,860
Expected Earning	: Rs. 350,860x10 = 35,08,600
Net Earnings (2 years complete course)	: Rs. 35,08,600 - 656,400 = 28,52,200
Net earning /year	Rs. 14,26,100
Per Semester	Rs. 713,050

Introduction of a new program: MBA in Banking

Background / Discussion

World trend is that universities are coming up with more hybrid programs by building upon two or more disciplines so that students can learn more disciplines at a time in meaningful and systematic manner. The trend in international universities will replace the traditional Master's programs with such hybrid programs.

Institute of Bankers Pakistan (IBP) approached Management Sciences Department for offering a MBA in Banking program. The program will be offered in collaboration with IBP. Students of this program will benefit by obtaining a dual qualification i.e. MBA and JAIBP (Junior Associate of Institute of Bankers, Pakistan). This dual qualification will enhance the employment prospects of students especially in banking sector. We are also in the process of signing an MOU with IBP under which IBP will promote this course among the bank employees all across the sector and may also be helping to run this program by arranging some students and faculty for specialized field of banking. The point was also endorsed by the Corporate Advisory Committee in its 5th meeting held at BUKC. The suggested curriculum of MBA in Banking is attached.

HR Implications: A couple of visiting faculty will be hired from IBP for specialized course.

Financial Implications: Positive as a new program even with minimum strength will be financially viable.

Conclusion

The point was discussed in combined meeting of FBOS of all campuses of Bahria University. The input was obtained from all the campuses. There is a consensus that such program will be beneficial for students given the IBP's affiliation with international bodies such as Chartered Institute of Bankers, Scotland. Hence, there is a need of offering such program to diversify our MBA program in order to provide specialization in banking sector.

Recommendation

Hence, it is recommended that the agenda item may be approved by the worthy house.

Curriculum of MBA in Banking

MBA in Banking

Introduction

This program has been designed to impart focused professional education in the field of banking. The participants of this program will have an in-depth understanding of the core banking functions and allied subjects critical for executive development. It is a rigorous program, offered in collaboration with the core banking industry experts. The main objective of MBA in Banking is to develop professional skills for strategies and financial management of banking industry. In this program, practitioners from the industry share their views and experiences to provide valuable insights about the practical aspects of the industry. Equipped with the knowledge gained in this programs, ambitious executives can move quickly to key positions in the financial service sector.

Objectives

1. To build administrative, technical and analytical skills of the students.
2. Enhance understanding of the students in their respective areas of specialization.
3. To develop communication skills of the students including; written, oral, and presentation skills.
4. To keep students updated about the latest developments in the field of banking and the use of information technology in banking.

Learning Outcomes

1. Enable students to understand basic concepts in banking, finance, and general business management.

2. Enable students to critically analyze and evaluate business situations and financial statements to recommend feasible options to solve business problems and to evaluate financial health of borrowers
3. Increase depth and breadth of understanding of students in the chosen area of specialization
4. Enable students to rise to the challenges in the given area of specialization
5. Enable students to demonstrate effective written communication.
6. Enable students to demonstrate effective oral communication
7. Enable students to effectively promote banking products in particular and bank's image in general
8. Enable students to deal with the contemporary issues in the banking system
9. Enable students to keep abreast with the latest information technology used in banking industry

ROAD MAP
MBA 2 years (Banking)
60 Credit Hours

(Students with 16 years Non Business program)

WEEKEND

SEMESTER 1

S.No	Course Code	Course Title	Credit Hours
1		Marketing of Banking and Financial Services	3
2	ACC 501	Financial Accounting	3
3	MGT 501	Theories and Practices of Management	3
4		Business Communication of Banking and Financial Services	3

SEMESTER 2

S.No	Course Code	Course Title	Credit Hours
1		Branch Banking	3
2		Managerial Accounting for Financial Services	3
3	QTM 520	Stats & Maths for Management	3
4	ECO 520	Economics	3

SEMESTER 3

S.No	Course Code	Course Title	Credit Hours
1	RMT 620	Methods In Business Research	3
2	FIN 502	Financial Management	3
3	MGT 540	Human Resource Management	3
4		Information Technology in Financial Services	3

SEMESTER 4

S.No	Course Code	Course Title	Credit Hours
1	MGT 653	Corporate Leadership and Social Responsibilities	3
2	FIN 611	Project Management	3
3	MGT 662	Strategic Management	3
4		Introduction to Financial Services and Banking regulation	3

SEMESTER 5

S.No	Course Code	Course Title	Credit Hours
1	SDW 697	Dissertation-1(Proposal development)	2
2		Elective – 1	3
3		Elective – 2	3

SEMESTER 6

S.No	Course Code	Course Title	Credit Hours
1		Elective - 3	3
2	SDW 698	Dissertation - 2	4

ROAD MAP FOR MBA (Banking) 3 1/2 years**(96 CREDIT HOURS)****(Students with B.A/B.Sc/B.Com)****SEMESTER 1 MBA-1**

S.No	Course Code	Course Title	Credit Hours
1	ACC 501	Financial Accounting	3
2	BEN 511	Business English	3
3	MGT 501	Theories and Practices of Management	3
4		Marketing for Financial Services	3

SEMESTER 2 MBA-2

S.No	Course Code	Course Title	Credit Hours
1		Managerial Accounting for Financial Services	3
2	ECO 520	Economics	3
3		Business Communication for Financial services	3
4	QTM 501	Business Quantitative Techniques	3

SEMESTER 3

S.No	Course Code	Course Title	Credit Hours
1		Branch Banking	3
2	MGT 530	Organizational Behavior	3
3	FIN 501	Business Finance	3
4		Introduction to Financial Services and Banking Regulations	3

SEMESTER 4

S.No	Course Code	Course Title	Credit Hours
1		Information Technology in Financial Services	3
2	SCM 610	Supply Chain management	3
3	FIN 502	Financial Management	3
4	QTM 502	Statistical Inference	3

SEMESTER 5

S.No	Course Code	Course Title	Credit Hours
1	MGT 541	Human Resource Management	3
2	MGT 630	International Business Analysis	3
3	RMT 620	Methods In Business Research	3
4	RMT 621	Operation Research	3

SEMESTER 6

S.No	Course Code	Course Title	Credit Hours
1	MGT 662	Strategic Management	3
2	FIN 611	Corporate Finance	3
3	MKT 600	Contemporary Issues in Business	3
4	MGT 653	Corporate Leadership and Social Responsibility	3

SEMESTER 7

S.No	Course Code	Course Title	Credit Hours
1	MGT 655	Business Decision Modeling	3
2	MGT 626	Project Management	3
3		Specialization 1	3
4		Specialization II	3

SEMESTER 8

S.No	Course Code	Course Title	Credit Hours
1		Specialization IV	3
2		Specialization III	3
3	SDW 697	Dissertation-1(Proposal Development)	2

SEMESTER 9

S.No	Course Code	Course Title	Credit Hours
2	SDW 698	Dissertation II	4

ELECTIVES

S.No	Course Code	Course Title	Credit Hours
1		Lending: Products, Operations and Risk;	3
2		Financial International Trade and Related Treasury Operations	3
3		Microfinance	3
4		Agricultural Finance	3
5		Islamic Finance	3
6		SME Banking	3

Financial Implication (Estimated on Average)

Calculation is based on considering it as an independent program

Proposed Faculty's Remuneration : Rs. 1800/- (per contact hour)

Total Faculty Cost : $Rs. 66 \times 3 \times 1800 = 356,400/-$ (06 Faculty Members)

Expected Advertisement Cost : Rs. 100,000/-

Fixed overhead : Rs. 200,000

Gross Expenses : **Rs. 656,400/-**

Proposed Fee Schedule

Rate Per Credit Hour	:	Rs. 4810/-
Total Tuition Fee/per student	:	Rs. 4810x66 = Rs 317,460
Admission Fee	:	Rs. 21,000/-
Caution Money	:	Rs. 9,000/-
Misc Charges	:	<u>Rs. 3,400/-</u>
Total Fee	:	Rs. 350,860
Expected Earning	:	Rs. 350,860x10 = 35,08,600
Net Earnings (2 years complete course):	Rs. 35,08,600 - 656,400 = 28,52,200	
Net earning /year		Rs. 14,26,100
Per Semester		Rs. 713,050

Introduction of a new program: MBA in Technology Management**Background / Discussion**

World trend is that universities are coming up with more hybrid programs by building upon two or more disciplines so that students can learn more disciplines at a time in meaningful and systematic manner. The trend in international universities will replace the traditional Master's programs with such hybrid programs.

On the market side, there are a large number of engineering graduates and computing graduates aspiring to obtain management education. MBA in Technology Management program is designed for individuals who wish to specialize in technology related businesses. A Technology Management MBA degree enables individuals to step into high level positions in technology companies in both public and private sectors. This is a unique program currently not being offered in any other university in Karachi. The point was also endorsed by the Corporate Advisory Committee in its 5th meeting held at BUKC. The suggested curriculum of the program is attached.

Added advantage of offering this program will be diversification of our very stagnant MBA program adding dynamism to our MBA program.

HR Implications: Few faculty members can be hired on permanent basis or services of the faculty members for our Engineering and Computing departments can be availed on visiting basis.

Financial Implications: Positive as a new program even with minimum strength will be financially viable

Conclusion

The point was discussed in combined meeting of FBOS of all campuses of Bahria University. The input was obtained from all the campuses. There is a consensus that hybrid program like **MBA in Technology Management** may be launched at BUKC first in morning and then evening and weekended program.

Recommendation

Hence, it is recommended that the agenda item may be approved by the worthy house

Roadmap of MBA in Technology Management
MBA in Technology Management

Introduction

MBA technology management is a qualification applicable to technology management and technological innovation in a wide variety of contexts and sectors, including: IT/IS; telecommunications; computing; engineering; manufacturing; transport and logistics; retailing etc. You will focus on strategic analysis and intellectual stimulation whilst gaining interdisciplinary skills and independent judgment – exploring the processes that underpin technological innovation and the challenges of technology from a strategic perspective, with your learning firmly rooted in management practice throughout.

Program Objectives

The following are the broad objectives of the Program:

1. To provide strong conceptual base in all the facets of Management like Marketing, Finance, Human Resources Management, MIS and Business Policy areas, and develop skills required for application of concepts to real life business situations.
2. To bridge the knowledge gap in management education with the focused inputs on technology management to meet the challenging requirements of contemporary technology driven organizations.

- To equip the students with analytical frame of mind to comprehend and handle complex issues in relation to Management of Technology, viz., Technology Forecasting, Search, Transfer and Creation of New Technology.

Learning Outcomes

- Scan and organize data, abstracting meaning from information and sharing knowledge.
- Demonstrate numerical and quantitative and qualitative skills including the use of models relevant to TM and business situations more generally.
- Demonstrate competence in the design and application of research and the use of the skills required for analyzing and communication potentially complex findings and conclusions.
- Communicate effectively: listen, negotiate, and persuade or influence others; develop oral and written communication skills using a range of media, including the preparation of business reports.
- Develop personal effectiveness: improve self-awareness and self-management; time management; develop sensitivity to diversity in people and different situations, and the ability to continue learning.

Perform effectively within a team environment and be able to recognize and utilize individuals' contributions in group processes; team selection, delegation, development and management.

ROAD MAP

MBA 2 years 60 Credit Hours

(Students with 16 years Non Business program)

SEMESTER 1

S.No	Course Code	Course Title	Credit Hours
1		Principles of Management	3
2		Economics	3
3		Financial Accounting	3
4		Business Communication	3

SEMESTER 2

S.No	Course Code	Course Title	Credit Hours
1		Human Resource Management for Technology Firms	3
2		Quantitative Techniques for Management	3
3		Research Methods for Management	3
4		Marketing Management for Technology Firms	3

SEMESTER 3

S.No	Course Code	Course Title	Credit Hours
1		Operations Management	3
2		Total Quality Management	3
3		Technology Acquisitions & Diffusion	3
4		Technology Finance	3

SEMESTER 4

S.No	Course Code	Course Title	Credit Hours
1		Technology Assessment and Forecasting	3
2		Research and Development Management	3
3		Technology Projects, Appraisal and Evaluation	3

S.No	Course Code	Course Title	Credit Hours
1		Dissertation-I	2
2		Technology Transfer Management	3
3		Knowledge Management	3

SEMESTER 6

S.No	Course Code	Course Title	Credit Hours
1		Enterprise Resource Planning (ERP)	3
2		Dissertation-II	4

Financial Implication

Calculation is based on considering it as an independent program

Proposed Faculty's Remuneration	: Rs. 1800/- (per contact hour)
Total Faculty Cost	: Rs. $66 \times 3 \times 1800 = 356,400/-$ (06 Faculty Members)
Expected Advertisement Cost	: Rs. 100,000/-
Fixed overhead	: Rs. 200,000
Gross Expenses	: Rs. 656,400/-

Proposed Fee Schedule

Rate Per Credit Hour	: Rs. 4810/-
Total Tuition Fee/per student	: Rs. $4810 \times 66 = \text{Rs } 317,460$
Admission Fee	: Rs. 21,000/-
Caution Money	: Rs. 9,000/-
Misc Charges	: <u>Rs. 3,400/-</u>
Total Fee	: Rs. 350,860
Expected Earning	: Rs. $350,860 \times 10 = \text{Rs } 3,508,600$
Net Earnings (2 years complete course):	Rs. $35,08,600 - 656,400 = 28,52,200$
Net earning /year	Rs. 14,26,100
Per Semester	Rs. 713,050

Subject: Launch of PhD (Mathematics) Program**1. Background to the Case/Brief Description & Rationale of the Program**

- Mathematics is an essential part of basic & applied sciences. In fact, it is hard to functionalize any field without use of Mathematics.
- Mathematics is an integral part of all Engineering fields, such as civil, electrical, mechanical, and industrial engineering; and technological fields such as computers, and communications.
- Apart from engineering, there are uses of Mathematics in all the "hard" sciences, such as biology, chemistry, and physics; the "soft" sciences, such as economics, psychology, and sociology.
- A significant job market for PhD Mathematics candidates exist in academics, industries, banking and engineering departments.
- The PhD program in Mathematics is being proposed as per requirement of Postgraduate Academic Regulations of Bahria University and HEC.
- PhD Mathematics will strengthen research and will produce skilled, knowledgeable, and motivated postgraduates for the industries and organizations in the private/public sectors.

2. Mission

The mission of the PhD Mathematics program is to prepare individuals to work as independent researchers who are able to provide reliable and rigorous solutions to basic and applied problems in their areas of expertise.

3. Programme Objectives

- To prepare scholars that have an understanding of the processes of research which will enable them to independently make original, creative and useful research contributions in the field of Mathematics
- To prepare scholars that can formulate and solve basic/applied Mathematical problems
- To prepare scholars to effectively convey technical contributions through written and oral communication
- To enable scholars to carry out research independently as well as in teams

4. Learning Objectives

Scholars graduating from the PhD(Mathematics) program are expected to:

- Demonstrate comprehensive in-depth knowledge of Mathematics
- Apply the theoretical knowledge and concepts to find answers to research questions
- Be able to convey research contributions, ideas and arguments in rigorous Mathematical language through technical reports and research publications at reputed publication forums
- Research and solve problems independently as well as in teams.

5. New Programme Proposal

After the working paper, on the next page

6. Recommendations

Approval for launch of PhD (Mathematics) program along with its roadmap is requested.

7. Establishments/HR Effect if any

To be worked out.

8. Financial Effect To be worked out.

The table below provides a summary about launching of the proposed PhD program in Mathematics at Bahria University – Islamabad Campus. The table includes program title, which would also appear on the granted degrees, entry requirements, examination policiesand duration of the program.

Academic Details	
(1)	Faculty / Institute / Department: Faculty of Engineering Sciences / Bahria University – Islamabad Campus / Department of Computer Science
(2)	Title of program that would appear on degree: Doctor of Philosophy in Mathematics
(3)	Duration: As per approved policy of Bahria University Minimum Three years Maximum Six years
(4)	Venue (s): Bahria University -Islamabad Campus (BUIC)
(5)	Whether the proposed program will be offered in (morning/evening/weekend)? Evening
(6)	Number of Extra Faculty Member(s) or Skilled-Worker(s) Required? (Write the faculty members and skilled-workers, fulltime/Visiting, required in <u>addition</u> to the existing strength, along with their qualifications) No extra faculty member required
(7)	Any extra class room(s) required? If yes, how many? And what will be their capacities required? (provide details) None
(8)	Any extra laboratory/laboratories required? If yes, how many? And what additional equipment will be required? (provide details of equipment, use extra sheet if necessary) None
(9)	Minimum Entry Level: 18 year of education (MS/MPhil/equivalent degree) in relevant discipline from an HEC recognized university with a minimum CGPA of 3.00/4.00 (semester system) or 60% marks (annual system). HEC's attestation is required for all local degrees (on the back of original degree). HEC's equivalent certificate would be required for the candidate with foreign degree. NTS-GAT (Subject test), or GRE (subject test), or University Based Test passed with minimum 70 marks. Result has to be submitted at the time of admission.
(10)	Admission Criteria: 1. Proposal/Synopsis of potential PhD research topic is required at the time of admission. 2. NTS-GAT (Subject test), or GRE (subject test), or University Based Test passed with minimum 70 marks. Result has to be submitted at the time of admission. 3. Selection of the supervisor 4. Interview with the Rector
(11)	Proposed Date of Commencement: Fall Semester, 2017
(12)	Mode of Study / Examination: (Semester / Annual / Bi-Annual) Semester-based
(13)	Number of Admissions Expected for First Intake: Seven
(14)	Number of Admissions Planned/Expected for Subsequent Intakes: Seven - Ten

(15)	Date of Approval by the Board of Study? <i>(Write the date. If approval is conditional, write all the conditions)</i> -02-2017 (FBOS) 2017 (ACM)
(16)	Comprehensive Exam? <i>After having completed the coursework with minimum CGPA 3.0/4.0, the scholars shall be required to pass a written Comprehensive Examination based on the coursework completed before being entitled to start research work. Passing marks in the Comprehensive Examination shall be 60%.</i>
(17)	Proposal Defense? <i>As per Bahria University rules</i>
(18)	Thesis Submission Requirements? <i>As per Bahria University rules</i>
(19)	Thesis Evaluation? <i>As per Bahria University rules</i>

Brief Description & Rationale of the Program

The PhD program in Mathematics is being proposed as per requirement of Postgraduate Academic Regulations of Bahria University and HEC. A significant potential for PhD candidates exist in the college, universities, industries, banking and other engineering departments. Mathematics is primary and essential part in all the fields of sciences. In fact, it is hard to functionalize any field without use of mathematics. There are uses of Mathematics in all the "hard" sciences, such as biology, chemistry, and physics; the "soft" sciences, such as economics, psychology, and sociology; engineering fields, such as civil, electrical, mechanical, and industrial engineering; and technological fields such as computers, aerodynamics, and communications.

With above mentioned concern, Bahria University, Islamabad Campus has consensus to start PhD Mathematics in compliance with the role of universities to strengthen research and produce skilled, knowledgeable, and motivated postgraduates for the industries and organizations in the private/public sectors.

As per university criteria, the Postgraduate Academic Regulations defined, PhD is a research based program with requisite coursework. Course work is important because candidates coming from different universities, organizations, and industry have varied backgrounds, thus need to attend a certain number of advanced courses in order to ensure coverage of the necessary prerequisite knowledge required to embark upon research project.

Program Objectives

The objectives of this program are:

1. National/International recognized research in mathematics.
2. Dedicated teaching that empowers PhD students to formulate and solve mathematical problem and communicate the solutions with their significance.
3. Promoting a diverse group of students at all levels, through mentoring, material support and collegial interactions to enhance their research and teaching abilities.
4. Communicate effectively both orally and in writing.

Complete Plan of Studies

Ph.D. (Mathematics) - COMPLETE PLAN OF STUDY

Semester I

Course Code	Course Title	Credit Hours
ESC-702	Research Methods in PhD studies	03
	Elective I	03
	Elective II	03
	Total credit hours for 1 st semester	09

Semester II

	Elective III	03
	Elective IV	03
	Elective V	03
	Total credit hours for 2 nd semester	09

Semester III

	Comprehensive Exam	0
MAT-700	Supervised Research (PhD Thesis) including defence and acceptance of research proposal	9
	Total credit hours for 3 rd semester	9

Semester IV

MAT-700	Supervised Research (PhD Thesis) including design and implementation of proposed solution	9
	Total credit hours for 4 th semester	9

Semester V

MAT-700	Supervised Research (PhD Thesis) including analysis of results and thesis write-up	9
	Total credit hours for 5 th semester	9

Semester VI

MAT-700	Supervised Research (PhD Thesis) –Submission of the final thesis for evaluation.	9
	Total credit hours for 6 th semester	9
	Total credit hours for Ph.D. Program	54

Thesis

1	MAT-700	Thesis	36
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List of Elective Courses

1.	MAT-710	Advanced Partial Differential Equations	03
2.	MAT-711	Advanced Functional Analysis	03
3.	MAT-712	Numerical Solution of Partial differential Equations	03
4.	MAT-713	Advanced Group Theory	03
5.	MAT-714	Non-Newtonian Fluid	03
6.	MAT-715	Perturbation Methods	03
7.	MAT-716	Finite Element Method	03
8.	MAT-717	Near Rings	03
9.	MAT-718	Fuzzy Logic/Fuzzy Algebra	03
10.	MAT-719	Advanced Ring Theory	03
11.	MAT-720	Topological Algebras	03
12.	MAT-721	Commutative Semigroup Rings	03
13.	MAT-722	General Relativity	03
14.	MAT-723	Advanced Analytical Dynamics	03
15.	MAT-724	Heat and Mass Transfer	03
16.	MAT-725	Advanced Mathematical Techniques for Boundary Value Problems	03
17.	MAT-726	Advanced Integral Equations and Applications	03
18.	MAT-727	Riemannian Geometry	03
19.	MAT-728	ODEs and Computational Linear Algebra	03
20.	MAT-729	Advanced Mathematical Physics	03
21.	MAT-730	Numerical Optimization	03
22.	MAT-731	Introductory Cryptography	03

23.	MAT-732	Probability Models and Application	03
24.	MAT-733	Advanced Modern Algebra with Applications	03
25.	MAT-734	Spectral Methods in Fluid Dynamics	03
26.	MAT-735	Simple Linear Regression Models	03
27.	MAT-736	Lattice Boltzmann Method	03
28.	MAT-737	Fluid Dynamics-II	03
29.	MAT-810	Advanced Elastodynamics	03
30.	MAT-811	Modelling and Simulation of Dynamical Systems	03
31.	MAT-812	Advanced Finite Element Analysis	03
32.	MAT-813	Advanced Multivariate Methods and Analysis	03
33.	MAT-814	Advanced Near Rings	03
34.	MAT-815	Advanced Quantum Theory	03
35.	MAT-816	Advanced Semigroup Theory	03
36.	MAT-817	Nonlinear Waves	03

Courses Details

ESC-702 Research Methods in PhD studies

Introduction to research, Qualitative and quantitative research, The scientific method of research, Choosing a research problem, Choosing a research advisor, Literature review Conducting and writing, Formulating Design/Methodology, Information Gathering and date collection, Data representation, Analysis and interpretation, Writing research proposal, Ethics of research-Plagiarism and Intellectual property rights, Organizing and managing conferences and workshops, Writing research papers/Reviewing research papers, Planning and developing scientific presentation, Writing thesis/dissertation.

Recommended Books

1. C. R. Kothari, Research Methodology: Methods and Techniques, New Age International Limited Publishers, (2013)
2. Louis Cohen, Lawrence Manion, Keith Morrison, Research Methods in Education, Routledge, (2000)
3. Anselm L. Strauss, Basics of qualitative research, (1990)

MAT-710 Advanced Partial Differential Equations

Cauchy's problems for linear second order equations in n-independent variables, Cauchy Kowalewski theorem, characteristic surfaces, adjoint operations, bi-characteristics spherical and cylindrical waves, heat equation, wave equation, Laplace equation, maximum-minimum principle, integral transforms. Fourier series and Transforms for solution to partial differential equations, Green's function to the solution of boundary value problems. Both analytic and numerical methods will be explained to obtain the solution of hyperbolic, parabolic and elliptic partial differential equations.

Recommended Books

1. R. Dennemyer, Introduction to Partial Differential Equations and Boundary Value problems, published by McGraw-Hill Book Company, (1968).
2. C. R. Chester, Techniques in Partial Differential Equations, published by McGraw-Hill Book Company, (1971).
3. H. P. Langtangen and A. Treito, Advanced Topics in Computational Partial Differential Equations, (2003).

MAT-711 Advanced Functional Analysis

The Hahn-Banach theorem, principle of uniform boundedness, open mapping theorem, closed graph theorem, Weak topologies and the Banach-Alouglu theorem, extreme points and the Klein-Milman theorem, the dual and bidual spaces, reflexive spaces, compact operators, Spectrum and eigenvalues of an operator, elementary spectral theory.

Recommended Books

1. Manuel Escabias Ana M. Aguilera (Author, Editor) Advanced Functional Analysis Hardcover – (2016)
2. Kreyszig, E., Introductory Functional Analysis and Applications, John Wiley, (1973).

3. Taylor, A.E., and Lay, D.C., *Introduction of Functional Analysis*, John Wiley, (1979).
4. Heuser, H.G., *Functional Analysis*, John Wiley, (1982).
5. Groetsch, C.W., *Elements of Applicable Functional Analysis*, Marcel Dekker, (1980).

MAT-712 Numerical Solution of Partial Differential Equations

Parabolic equations: finite-difference representation for parabolic equation, classical explicit method, Richardson explicit method, Crank-Nicolson implicit method, Weighted average approximation method, DuFort-Frankel method, Keller box method, Parabolic Equations: Explicit finite difference approximation, implicit method; Derivative boundary conditions, the local truncation error; Stability analysis, Finite difference methods on rectangular grids in two space dimensions. Finite element method for parabolic equations in one and two space dimensions. Hyperbolic Equations: Analytic solution of linear and quasi-linear equations; Finite difference methods on rectangular mesh for first order equation, Reduction of first order equation to a system of ordinary differential equation; Second order quasi-linear hyperbolic equations; Finite difference method on a rectangular mesh for second order equations; Simultaneous first order equations and stability analysis. Elliptic Equation: Finite difference in polar coordinates; Formulae for derivative near curved boundaries; Improvement of the accuracy of solution; Finite element method for elliptic problems in one and two space dimensions.

Recommended Books

1. G.D. Smith, *Numerical Solution of Partial Differential Equations: Finite Difference Methods*, Oxford University Press, (1986).
2. J.W. Thomas, *Numerical Partial Differential Equations*, Springer-Verlag New York, Inc., (1995).
3. G. A. Evans, J. Blackledge, P. Yardley, *Numerical Methods for Partial Differential Equations*, Springer Berlin Heidelberg, (1999)
4. Johnson, *Numerical Solution of Partial Differential Equations by the Finite Element Method*, Dover, (2009).

MAT-713 Advanced Group Theory

Actions of Groups, Permutation representation, Equivalence of actions, Regular representation, Cosets spaces, Linear groups and vector spaces, Affine group and affine spaces, Transitivity and orbits, Partition of G-spaces into orbits, Orbits as conjugacy class Computation of orbits, The classification of transitive G-spaces Catalogue of all transitive G-spaces up to G-isomorphism, One-one correspondence between the right coset of $G\alpha$ and the G-orbit, G-isomorphism between coset spaces and conjugation in G, Simplicity of A_5 , Frobenius-Burnside lemma, Examples of morphisms, G-invariance, Relationship between morphisms and congruences, Order preserving one-one correspondences between congruences on Ω and subgroups H of G that contain the stabilizer $G\alpha$, The alternating groups, Linear groups, Projective groups, Möbius groups, Orthogonal groups, unitary groups, Cauchy's theorem, P-groups, Sylow P-subgroups, Sylow theorems, Simplicity of A_n when $n > 5$.

Recommended Books

1. J.S. Rose, *A Course on Group Theory*, Cambridge University Press, (1978).
2. H. Wielandt, *Finite Permutation Groups*. Academic Press, (1964).
3. J.B. Fraleigh, *A Course in Algebra*, Addison-Wesley (1982).
4. Predrag Cvitanovic, *Group Theory: Birdtracks, Lie's, and Exceptional Groups*, Princeton University Press (2008)

MAT-714 Non-Newtonian Fluid

Newtonian versus non-Newtonian behavior, review of Newtonian fluid dynamics, elementary constitutive equations and their use in solving fluid dynamics problems, Nonlinear viscoelastic constitutive equations and their use in solving fluid dynamics problems, modelling and solution of flow problems using different constitutive equations for non-Newtonian fluid, modeling of viscoelastic fluid models and to determine their solution, modeling of power law fluid models and to determine their solution, review of some basic articles related to non-Newtonian fluid model for one and two dimensional flow.

Recommended Books

1. R.D.Bird, R.C.Armstrong, and O.Hassager, Dynamics of Polymeric Liquids, Vol. 1, Fluid Mechanics, 2nd ed., John Wiley & Sons, New York, (2013).
2. J.Harris, Rheology and non-Newtonian flow, Longman, London.
3. F. Irgens, Rheology and Non-Newtonian Fluids, (2013).
4. [F. Bloom, H. Bellout](#), Incompressible Bipolar and Non-Newtonian Viscous Fluid Flow (Advances in Mathematical Fluid Mechanics), (2013)

MAT-715 Perturbation Methods

Parameter perturbation, coordinate perturbations, order symbols and gauge functions, asymptotic series and expansions, asymptotic expansion of intergrals, integration by parts, Laplace's method and Watson's lemma, method of stationary phase and method of steepest descent. Straightforward expansions and sources of non-uniformity, the Duffing equation, small Reynolds number flow past a sphere, small parameter multiplying the highest derivative, the method of strained coordinates, the Lindstedt – Poincare' methods, renormalization method, variation of parameters and method of averaging examples. Method of Multiple scales with examples, Approximate Solution of Linear differential Equations Approximate Solution of Nonlinear Differential Equations Perturbation Series Regular and Singular Prturbation Theory Perturbation methods for Linear Eigenvalue problems Asymptotic Matching Boundary Layer Theory Mathematical Structure of Boundary Layer: Inner, Outer, and Intermediate Limits Higher-Order Boundary Layer Theory distinguished Limits and Boundary Layers of Thickness.

Recommended Books

1. A.H.Nayfeh, Problems in Perturbation, John Wiley & Sons, (1985).
2. A.H. Nayfeh, Perturbation methods, John Wiley & Sons, (2000).
3. H. [Mark, Holmes](#), Introduction to Perturbation Methods (Texts in Applied Mathematics), (2012),
4. [E. J. Hinch](#), Perturbation Methods (Cambridge Texts in Applied Mathematics), (1991)

MAT-716 Finite Element Method

Incompressible fluid mechanics, reminder on finite element in the coercive frameworks (Lax- Milgram, Sobolev spaces, Lagrangian finite elements), why the coercive framework is not sufficient in many applications, Continuous case, inf-sup condition, Application to Stokes problem, link with optimization under constraints, saddle point problems, Convergence analysis, algebraic aspects, Uzawa algorithm, Conditioning, Fortin lemma. Analysis of P1-bubble-P1 finite element, other examples of finite elements, the advection diffusion case.

Recommended Books

1. Quarteroni and A. Valli, Numerical Approximation of Partial Differential Equations. Springer-Verlag.(1997).
2. Ern and J.-L. Guermond, Theory and Practice of Finite Elements. Springer-Verlag. (2004).
3. [O. C.Zienkiewicz](#) (Author), [Robert L Taylor](#) (Author), [J.Z. Zhu](#), The Finite Element Method: Its Basis and Fundamentals, Seventh Edition 7th Edition, (2005)
4. Reddy, J An Introduction to the Finite Element Method (McGraw-Hill Mechanical Engineering), (2005)

MAT-717 Near Rings

Near Rings, Ideals of Near-rings, Isomorphism Theorems, Near Rings on finite groups, Near-ring modules, Isomorphism theorem for R-modules, R-series of modules, Jorden-Holder- Schrier Theorem, Type of Representations, Primitive near-rings R-centralizers, Density theorem, Radicals of near-rings. Distributively generated near-rings, ideals isomorphism theorems, Freed.g. near rings, Representations of d.g. near-rings, Types of representations, upper and lower faithful d.g. near rings, Endomorphism near-rings of groups.

Recommended Books

1. [Bhavanari Satyanarayana](#), Near Rings, Fuzzy Ideals, and Graph Theory, (2013)
2. Mikhail Chebotar, Rings and Nearrings (De Gruyter Proceedings in Mathematics) (2007).

- Pilz, Günter F. Review: J. D. P. Meldrum, Near-rings and their links with groups. Bull. Amer. Math. Soc. (N.S.) 17(1), 156-160.(1987)

MAT-718 Fuzzy Logic/Fuzzy Algebra

Introduction, the Concept of Fuzziness: Examples; Mathematical Modelling; Operations of fuzzy sets; Fuzziness as uncertainty, Algebra of Fuzzy Sets: Boolean algebra and lattices; Equivalence relations and partitions; Composing mappings; Alpha-cuts; Images of alpha-level sets; Operations on fuzzy sets. Fuzzy Relations: Definition and examples; Binary Fuzzy relations Operations on Fuzzy relations; fuzzy partitions, Fuzzy Semi groups, Fuzzy ideals of semi groups; Fuzzy quasi-ideals; Fuzzy bi-ideals of Semi groups; Characterization of different classes of semi groups by the properties of their fuzzy ideals fuzzy quasi-ideals and fuzzy bi-ideals. Fuzzy Rings: Fuzzy ideals of rings; Prime; semi prime fuzzy ideals; Characterization of rings using the properties of fuzzy ideals.

Recommended Books

- H. T. Nguyen and E.A. Walker,A First Course in Fuzzy Logic, , Chapman and Hall/CRC 1999.
- M. Ganesh, Introduction to Fuzzy Sets and Fuzzy Logic, Prentice-Hall of India, 2006.
- J. N. Mordeson and D. S. Malik, Fuzzy Commutative algebra, World Scientific, 1998.
- J. N. Mordeson, D. S. Malik and Fuzzy Semigroups, Springer-Verlage,Nobuki Kuroki, (2003).

MAT-719 Advanced Ring Theory

Radical classes, semisimple classes, the upper radical, semisimple images, the lower radical, hereditariness of the lower radical class and the upper radical class, Partitions of simple rings, Minimal left ideals, Wedderburn-Artin structure theorem, The Brown-McCoy radical, The Jacobson radical, Connections among radical classes, Homomorphically closed semisimple classes.

Recommended Books

- J L Chen, N Q Ding, H Marubayashi, Advances in Ring Theory, Proceedings of the 4th China-Japan-Korea International Conference Nanjing, China, (2004).
- Wiegandt, R., Radical and Semisimple classes of Rings, Queen's papers in Pure and Applied Mathematics No.37, Queen's University, Kingston, Ontario, 1974.
- David Dobbs, Advances in Commutative Ring Theory (Lecture Notes in Pure and Applied Mathematics), (1999).
- H. Matsumura and Miles Reid, Commutative Ring Theory (Cambridge Studies in Advanced Mathematics), (1989).

MAT-720 Topological Algebras

Definition of a Topological algebra and its Examples. Adjunction of Unity, Locally Convex Algebras, Idempotent and m-convex sets, Locally Multicatively convex (l.m.c) algebras, Q-algebras, Frechet algebras, Spectrum of an element, Spectral radius, Basic theorems on Spectrum, Gelfand-Mazur Theorem. Maximal ideals, Quotient algebras, Multiplicative linear functionals and their continuity, Gelfand transformations, Radical of an algebra, Semi-simple algebras, Involutive algebras, Gelfand-Naimark theorem l.m.c. algebras.

Recommended Books

- A. Mallios, Topological Algebras: Selected Topics, (2011).
- E. Beckenstein, L. Narici and C. Suffel, Topological Algebras, North-Holland Company, 1977.
- Mallios, Topological Algebras, Selected Topics, North-Holland Compnay, 1986.
- T. Husain, Multiplicative Functions on Topological Algebras, Pitman Advanced Publishing Program, 1983.
- E. Michael, Locally Multiplicatively-convex Topological Algebras, Memoirs Amer. Math. Soc. No.11, 1951.

MAT-721 Commutative Semigroup Rings

Commutative Rings:Definition and examples, Integral domains, unit, irreducible and prime elements

in ring, Types of ideals, Quotient rings, Rings of fractions, Ring homomorphism, Definitions and examples of Euclidean Domains, Principal ideal domains and Unique Factorization domains. Definition and Examples of DVRs, Dedekind and Krull Domains. Commutative Semigroups: Basic notions, Cyclic Semigroups, Numerical Monoids, Ordered Semigroups, Congruences, Noetherian Semigroups, Factorization in Commutative Monoids. Semigroup Ring and its Distinguished Elements: Introduction of Polynomial Rings in one indeterminate including its elements of distinct behaviours, Structure of Semigroup ring, Zero Divisors, Nilpotent Elements, Idempotents, units. Ring Theoretic Properties of Monoid Domains: Integral Dependence for Domains and Monoid Domains, Monoid Domains as Factorial Domains, Monoid Domains as Krull Domains, Divisor Class Group of a Krull Monoid Domain.

Recommended Books

1. M. F. Atiyah and I. G. Macdonald, Introduction to Commutative Algebra, Addison Wesley Pub. Co., 1969.
2. R. Gilmer, Multiplicative Ideal Theory, Marcell Dekker, New York, 1972.
3. H. Matsumura, Commutative Ring Theory, Cambridge University Press, 1986.
4. R. Gilmer, Commutative Semigroup Rings, The University of Chicago Press, Chicago, 1984.
5. Predrag Cvitanovic, Group Theory: Birdtracks, Lie's, and Exceptional Groups, Princeton University Press (2008).

MAT-722 General Relativity

Review of special relativity, tensors and field theory, the principles on which General Relativity is based, Einstein's field equations, obtained from geodesic deviation, Vacuum equation, the Schwarzschild exterior solution, solution of the Einstein-Maxwell field equations and the Schwarzschild interior solution, the Kerr-Newmann solution (without derivation), Foliations, Relativistic corrections to Newtonian gravity, Black holes, the Kruskal and Penrose diagrams, The field theoretic derivation of Einstein's equations, Weak field approximations and gravitational waves, Kaluza-Klein theory, Isometries, conformal transformations, problems of "quantum gravity".

Recommended Books

1. Robert M. Wald, General relativity, University of Chicago Press, (2010).
2. A.Qadir, Relativity: An Introduction to the Special Theory, World Scientific, 1989.
3. C.W. Misner, Thorne, K.S. and Wheeler, J.A., Gravitation, W.H. Freeman, 1974.
4. S.W. Hawking, and G.F.R. Ellis, The Large Scale Structure of Space-time, Academic Press, 1972.

MAT-723 Advanced Analytical Dynamics

Equations of dynamic and its various forms. Equations of Langrange and Euler. Jacobi's elliptic functions and the qualitative and quantitative solutions of the problem of Euler and Poisson. The Problems of Langrange and Poisson. Dynamical system. Equations of Hamilton and Appell. Hamilton-Jacobi theorem. Separable systems. Holder's variational principle and its consequences. Groups of continuous transformations and Poincare's equations. Systems with one degree of freedom, Singular points, cyclic characteristics of systems with a degree of freedom. Ergodic theorem, Metric indecomposability. Stability of motion.

Recommended Books

1. L.A. Pars, Analytical Dynamics, Heinmann, London. (1965)
2. E. T. Whittaker, A treatise on Dynamics of Rigid Bodies and Particles, Cambridge University Press. (2006)
3. [D. B. Marghitu, Mihai Dupac](#), Advanced Dynamics: Analytical and Numerical Calculations with MATLAB, Springer, (2012).
4. V. D. Sapiro, Advanced Analytical Dynamics: Theory and Applications, Cambridge University Press, (2012).

MAT-724 Heat and Mass Transfer

Modes of heat transfer, Conduction heat transfer, Steady-state heat conduction, Electrical analogs and thermal circuits for one-dimensional internal heat source, Unsteady-state three-dimensional with

internal heat energy source, Convection, Introduction to viscous and non-viscous fluid flows, Boundary layers and heat transfer coefficient, Free and forced convection, Concepts of black body and gray body, Radiation exchange between black and gray bodies, Radiation network, Types of heat exchangers, Log Mean Temperature Difference (LMTD), Heat exchanger effectiveness, Intro to mass transfer, Fick's law of diffusion, Mean diffusion coefficient, Schmidt number, concept of force, free and mixed convection.

Recommended Books:

1. L. Theodore Bergman and Adrienne S. Lavine Fundamentals of Heat and Mass Transfer, (2011)
2. J. P., Holman, Heat Transfer, 10th edition, (McGraw-Hill) (1963).
3. Y. A. Cengel, Heat Transfer, A practical Approach, 2nd Edition, (McGraw-Hill) (1998).
4. A. Bejan, Heat Transfer, Wiley, ISBN: 978-81-265-3074-8, (2003).

MAT-725 Advanced Mathematical Techniques for Boundary Value Problems

Introduction to boundary value problems, linear and nonlinear models, Adomian's decomposition method, modified decomposition methods, solving linear and nonlinear bvp's by ADM and MDM, solutions of singular initial and BVPs by ADM and MDM, variational iteration method, modification in variational iteration method on the basis of He's polynomials, Adomian's polynomials and Padé approximation, calculation of approximate and exact lagrange multipliers, applications of variational iteration method and its modified versions on various linear and nonlinear problems, relation of approximate and exact Lagrange multiplier with the accuracy of solutions, solution of linear and nonlinear system of equations by VIM, MVIMS, solution of singular problems by VIM and MVIM, comparison of VIM, ADM and other techniques, Homotopy Perturbation Method (HPM) and modification, Applications of HPM. Homotopy Analysis Method (HAM) and modification, Optimal Homotopy Analysis Method (OHAM) and modification, Applications of HAM and OHAM.

Recommended Books

1. Abdul-Majid Wazwaz, Partial Differential Equations and Solitary Waves Theory, (2009)
2. S. Liao, Homotopy Analysis Method in Nonlinear Differential Equations, (2012)
3. R. Dennemyer, Introduction to Partial Differential Equations and Boundary Value problems, published by McGraw-Hill Book Company, (1968).
4. A. Nayfeh, Perturbation Methods, (1998).
5. I. Stakgold, Boundary Value Problems of Mathematical Physics, (1967).
6. S. Liao, Optimal Homotopy Analysis Method in Nonlinear Differential Equations, (2012).

MAT-726 Advanced Integral Equations and Applications

Introduction to integral equations, volterra integral equations, Fredholm integral equations, Volterraintegro-differential equations, Fredholmintegro-differential equations, Abel's integral equation and singular integral equations, Volterra-Fredholm integral equations, VolterraFredholmintegro-differential equations, systems of Volterra integral equations, systems of Fredholm integral equations, systems of singular integral equations, nonlinear Volterra integral equations, nonlinear Volterraintegro-differential equations, nonlinear Fredholm integral equations, nonlinear Fredholmintegro-differential equations, nonlinear singular integral equations, applications of integral equations: Volterra's population model, integral equations with logarithmic kernels, the Fresnel integrals, the Thomas-Fermi equation, heat transfer and heat radiation. Mellon transform, Hankel transform, Fox integral, Existence Theorems, Integral Equations with L_2 Kernels. Applications to partial differential equations. Integral transforms, Wiener-Hopf Techniques. Volterra's population model, integral equations with logarithmic kernels, the Fresnel integrals, the Thomas-Fermi equation, heat transfer and heat radiation.

Recommended Books

1. H. H. Stadl, Integral Equations, John Wiley, (1973).
2. I. Stakgold, Boundary Value Problems of Mathematical Physics, Macmillan, New York, (1968).

3. B. G. Pschpatte, Multidimensional Integral Equations and inequalities, (2011).
4. Abdul-Majid Wazwaz, Linear and Nonlinear Integral Equations: Methods and Applications (2011)

MAT-727 Riemannian Geometry

Vector spaces: Balanced sets, absorbent sets, convex sets, linear functionals, linear manifolds, sublinear functionals and extension of linear functionals. Topological vector spaces: Definitions and general properties, product spaces and quotient spaces, bounded and totally bounded sets, convex sets and compact sets in topological vector spaces, closed hyperplanes and separation of convex sets, complete topological vector spaces, metrizable topological vector spaces, normed vector spaces, normable topological vector spaces and finite dimensional spaces. Geodesics and their length minimizing properties; Jacobi fields; Equation of geodesic deviation; Geodesic completeness (Theorem of Hopf-Rinow); Curvature and its influence on topology (Theorem of Cartan-Myers and Hadamard); Geometry of submanifolds; Second fundamental form; Curvature and convexity; Minimal surfaces, Mean curvature of minimal surfaces; Calculus of differential forms and integration on manifolds; Theorem of Stokes; Elementary applications of differential forms to algebraic topology.

Recommended Books

1. Isaac Chavel, Riemannian Geometry: A Modern Introduction, Cambridge University Press, (2006)
2. Do Carmo, M.P., Riemannian Geometry, Birkhauser, (1992).
3. Gallot. S.; Lafontaine, J., Riemannian Geometry, Springer-Verlag, (1990).
4. Bott, R. and Tu, M., Differential forms in algebraic topology, Springer-Verlag, (1987).
5. D.Carmo, M.P., Riemannian Geometry, Birkhauser, Boston, (1992)

MAT-728 ODEs and Computational Linear Algebra

Introduction to ODEs, Existence and uniqueness theory for ordinary differential equations. Stability theory for linear and nonlinear ordinary differential equations. Stability and convergence of numerical techniques, and numerical schemes for stiff ordinary differential equations. Modelling with partial differential equations. Classical solution techniques and weak solutions. Numerical methods for partial differential equations, Fundamentals: matrix multiplication, orthogonal vectors, orthogonal matrices, norms; Gaussian Elimination and its variants: Cholesky decomposition, LU decomposition, pivoting strategies; Sensitivity of linear systems: conditioning and stability; The least squares problem and SVD; Eigen values and Eigen vectors III-posedness & Regularization.

Recommended Books

1. Granville Sewell, Computational Methods of Linear Algebra, Wiley, (2005).
2. G.H Golub and C.P Van Loan, Matrix Computations, (1989)
3. D.S Watkins, Fundamentals of Matrix Computations (1991)
4. Lloyd N. Trefethen and David Bau, Numerical Linear Algebra, (1997)
5. B.N Datta, Numerical Linear Algebra and Applications, (1995)
6. M.D. Raisinghania, Advanced Differential Equations, (1995)

MAT-729 Advanced Mathematical Physics

Maxwell's equations, electromagnetic wave equation, boundary conditions, waves in conducting and non-conducting media, reflection and polarization, energy density and energy flux, Lorentz formula, wave guides and cavity resonators, spherical and cylindrical waves, inhomogeneous wave equation, retarded potentials, Lenard-Wiechart potentials, field of uniformly moving point charge, radiation from a group of moving charges, field of oscillating dipole, field of an accelerated point charge.

Recommended Books

1. R.D. Richtmyer , Principles of Advanced Mathematical Physics - Volume 2, Springer (2012)
2. J. R. Reitz and F. J. Milford, Foundations of Electromagnetic Theory, published by Addison Wesley, (1969).
3. K. H. Panofsky and M. Phillips, Classical Electricity and Magnetism, published by Addison Wesley, (1962).
4. D. Corson and P. Lorrain, Introduction to Electromagnetic Fields and Waves, published by Freeman, (1962).

5. D. W. Jackson, Classical Electrodynamics, published by John Wiley. (1962).

MAT-730 Numerical Optimization

Introduction, Fundamental of unconstrained optimization, Line search methods, Trust-Region methods, Conjugate gradient methods, Quasi-Newton methods, Large scale unconstrained optimization, Calculating Derivatives, Derivative free optimization, Least square problems, nonlinear equations, theory of constrained optimization, linear programming, the Simplex method, interior point methods, fundamental of algorithms for nonlinear constrained optimization, quadratic programming, penalty and augmented Lagrangian methods, sequential quadratic programming, interior point methods for nonlinear programming.

Recommended Books

1. J. Nocedal and Stephen J. Wright, Numerical optimization, Second ed. Springer (2006).
2. Claudia A. Sagastizába, Numerical Optimization: Theoretical and Practical Aspects, Springer (2003)
3. Nocedal, Jorge, Numerical Optimization, Wright, S. Springer (2006)

MAT-731 Introductory Cryptography

Review of Number theory, Factoring Problems, An Introduction to Classical Cryptography, Hash Functions and Data Integrity, Symmetric Key Cryptography (private key cryptography) Classical Ciphers, One-Time Pad, Stream Ciphers, Asymmetric Key Cryptography/ Public Key Cryptography (RSA, Elgamal, Elliptic Curve, in brief), Digital Signatures Schemes (RSA, DSA) Key Establishment and Key Management (key transport and key agreement, symmetric and asymmetric techniques), Crypt Analysis, Algorithm Development using Matlab. Application range from (conceptually) simple tasks such as encryption, authentication, and key management to sophisticated task such as Internet security, electronic cash payments (using smart cards),and electronic voting.

Recommended Books

1. Johannes A. Buchmann, Introduction to Cryptography, Springer, second Edition, (2004)
2. DOUGLAS R.STINSON, Cryptography Theory and Practice, Chapman and Hall/CRC, Second Edition, (2006)
3. A.Salomaa, Public-Key Cryptography, Springer second enlarged edition, (1996)

MAT- 732 Probability Models and Application

Preview of Basic Concepts: probability, Classical Probability, Axioms of Probability, Conditional Probability and independence Markov Chains. Random Variables, Distribution functions in one or more dimensions, Expected value and moments, Moments of random vectors, Conditional moments, Moment generating function, Characteristic function, and their application, Inequalities of Markov, Chebyshev and Kolmogorov. Weak law of large numbers, Strong law of large numbers, Central limit theorem. Probability Models, Binomial distribution, Multinomial Distribution, Geometric and Negative Binomial Distribution, Hyper geometric distribution, Poisson Distributions, Exponential and Gamma distributions, Beta Distribution, Normal Distribution, Bivariate normal, Multivariate normal, Lognormal distribution, Cauchy distribution, Double exponential or Laplace distribution, Weibull distribution, Rayleigh distribution, Logistic distribution, Pareto distribution, Pearsonian system of distributions.

Recommended Books

1. J. GalambosAdvanced Probability Theory, 2nd Edition, Marcal Dekker Inc. New York. (1995)
2. Johnson N L and Kotz S, Continuous Univariate Distributions, John Wiley and Sons, (1994).
3. Stuart A. and Ord J.K, Kendall's Advanced Theory of Statistics, Vol 1, 5th edition, Charles Griffin and Co. Ltd. (1987).
4. Vincotis Y. Probability and Random Processes for Electrical Engineers, McGraw hill Companies, New York. (1998).
5. Durrett R. Probability, Theory and examples. Wads worth & Brooks/Cole Series, California. (1991).

MAT-733 Advanced Modern Algebra with Applications

This course examines the structures of modern algebra, including Boolean Algebras, groups, linear spaces, rings, polynomials, fields, Polya–Burnside Method of Enumeration, Monoids and Machines, Finite state machines and some of their applications to such areas as cryptography, coding theory, and other mathematical disciplines. Groups, Cyclic and Dihedral groups, Permutation groups, Quotient groups, Groups of Low Order, Action of a group on a set, Monoids and Machines, Finite state machines. Ideals and Quotient Rings, Computations in Quotient Rings, Quotient Rings that are Fields. Fields extensions, Galois Fields, Primitive Elements, Geometrical Constructions, Error – Correcting Codes.

Recommended Books

1. William J. Gilbert, W. Keith Nicholson , Modern Algebra with Applications, Wiley, (2004).
2. W.J Gilbert, Modern Algebra With Applications, J. Wiley and Sons, New York (1976).
3. G. Birkhoff and B.C. Thomas, Modern Applied Algebra, McGraw-Hill, New York (1970).
4. G.H Golub and c.P Van Loan, Matrix Computations (1989).

MAT-734 Spectral Methods in Fluid Dynamics

Introduction, Spectral Approximation: The Fourier System, Orthogonal Polynomials in (-1,1) Legendre Polynomials, Chebyshev Polynomials, Jacobi Polynomials, Fundamentals of Spectral Methods for PDE's: Spectral Projection of Burgers Equation, Convolution sum, Boundary conditions, Coordinates singularities, Temporal Discretization: The Eigenvalues of Basic Spectral Operators, Some Standard Schemes, Conservation Forms, Global Approximation Results: Fourier Approximation, Sturm–Liouville Expansions, Discrete norms, Legendre Approximations, Chebyshev Approximations, Jacobi Approximations, Theory of Stability and Convergence for Spectral Methods: Fourier Galerkin Method for Wave Equation, Chebyshev Collocation Method for Heat Equation, Legendre Tau Method for the Poisson Equation, General Formulation of Spectral Approximations to Linear Study Problems, Galerkin, Collocation and Tau Methods, Condition for Stability and Convergence: The Parabolic Case, Condition for Stability and Convergence: The Hyperbolic Case.

Recommended Books

1. C.Canuto, M.Y. Hussaini, AlfioQuarteroni and T.A, zang, Spectral Methods in Fluid Dynamics, Springer-Verlag, (1988).
2. D. Gottlieb and S.A. Orszag, Numerical Analysis of Spectral Methods: Theory and Applications, SIAM-CBMS, Philadelphia, (1977).
3. P.A.Davidson, An introduction to magnetohydrodynamics, Cambridge University Press, (2001).

MAT-735 Simple Linear Regression Models

Linear Regression with one Predictor variable, Inferences in Regression Analysis, Diagnostics and Remedial Measures, Simultaneous Inferences and other topics in regression analysis, Matrix approach to simple linear regression analysis.

Recommended Books:

1. J.Neter, M. H. Kutner, C. J. Nachtsheim and W. Wasserman, Applied Linear Statistical Models, Fourth Edition WCB McGraw-Hill. (1974).
2. D.A.Belsley, E.Kuh, R.E, Welsch, Regression Diagnostics, Identifying Influential, Data and sources of collinearity, (1980).
3. H. E. Smith and N. R. Draper, Applied Regression Analysis, (Spring) (1966)
4. J. S. Simonoff, Analyzing, Categorical data, New York Univsf-USA. Ashish Sen and muni Srivastava, Regression Analysis Theory, Methods and Applications, Spring. (1985)
5. Montogomery D.C., E.A peck al G.G Vining, Introduction to Linear, Regression Analysis, Weily, (2001)

MAT -736 Lattice Boltzmann Method

Basic concepts of Lattice Gas Cellular Automata, Basic concepts about the derivation of hydrodynamics, The Boltzmann equation with BGK(Bhatnagar-Gross-Krook) approximation, Moments

of the equilibrium distribution function, Mass conservation, Momentum conservation, Energy conservation, The derivation of lattice Boltzmann equation using the Taylor series expansion and Chapman-Enskog expansion, One- and two-dimensional implementation of the Boltzmann equations, Isothermal Lattice Boltzmann models, Lattice Boltzmann methods for non-ideal fluids, Boundary conditions for Lattice Boltzmann method, Practical implementation of lattice Boltzmann method for laminar, turbulent, bluff-body flows and two-phase flows.

Recommended Books

1. D. A. Wolf-Gladrow, Lattice-Gas Cellular Automata and Lattice Boltzmann Models: An Introduction, Springer, (2000).
2. SauroSucci, The Lattice Boltzmann Equation for Fluid Dynamics and Beyond, Oxford University Press, (2001).
3. M. C. Sukop and D. T. Thorne, Jr., Lattice Boltzmann Modeling-An Introduction for Geoscientists and Engineers, Springer, (2006).
4. A. A. Mohamad, Lattice Boltzmann Method: Fundamentals and Engineering Applications with Computer Codes, Springer, (2011).

MAT-737 Fluid Dynamics-II

Introduction to fluid dynamics, Euler's equation of motion, Navier-Stoke's equation and exact solutions, Dynamical similarity and Reynold's number, Turbulent flow, Boundary layer concept and governing equations, Reynold's equations of turbulent motion. Unsteady duct flows; some exact analytic solution of BVP, similarity solutions; two dimensional solutions; thermal boundary layer. Some exposure will also be given from the recent literature appearing in the journals. Thermal boundary layers without coupling of velocity field to the temperature field: Boundary layer equations for the temperature field; forced convection; similar solution of the thermal boundary layers and coupling of Thermal boundary layer with velocity field to the temperature field: Boundary layer with moderate wall heat transfer; natural convection effect of dissipation; indirect natural convection; mixed convection. Different kinds of boundary layer control; continuous suction and blowing; massive suction and blowing; similar solutions.

Recommended Books

- 1 R. D. Bird, R. C. Armstrong, and O.Hassager, Dynamics of Polymeric Liquids, Vol. 1, Fluid Mechanics, 2nd ed., John Wiley & Sons, New York, (2013).
- 2 Landau Lifshitz, Fluid Mechanics, Pergamon Press, (1959).
- 3 G.K. Batchelor, Fluid Dynamics, Cambridge University Press, (1967).
- 4 J.A. Shercliff, Magnetohydrodynamics, Pergamon Press, (1965).
- 5 F.F. Chen, Introduction to Plasma Physics, Plenum Press, (1974).
- 6 N.A. Krall and A.W. Trivelpiece, Principles of Plasma Physics, McGraw-Hill Boo Company, (1973).

MAT-810 Advanced Elastodynamics

Strain potential, Galerkin vector, vertical load on the horizontal surface of a half space, Love's strain function, Biharmonic functions, Lamb's problem, Cagniard-de Hoop transformation. Transient waves in a layer, forced shear motion of a layer. Thermoelasticity: thermal stresses Chadwick's solution of thermoelastic solutions, Piezoelectricity. Tensor formulation of piezoelectricity, elastic waves in a piezoelectric solid, Bleustein-Gnlayev wave. Love's strain function, biharmonic function, Lamb problem and transient waves in a layer. The material on elastic waves in a piezoelectric solid and Bleustein-Gnlayev waves will also be covered. The students will also gain insight in the important area of thermoelasticity.

Recommended Books

1. J. D. Achenbach, Reciprocity in Elastodynamics, Cambridge University Press (2003).
2. Dieulesant D. and Royer, F., John, Elastic Waves in Solids, Wiley and Sons, New York, (1980).
3. Fung, Y.C., Foundations of Solid Mechanics, Prentice-Hall, Englewood Cliffs, 1995.

4. Achenbach, Waves Propagation in Elastics Solids, North-Holland, Amsterdam, 1990.

MAT-811 Modelling and Simulation of Dynamical Systems

This course is about modelling multidomain engineering systems at a level of detail suitable for design and control system implementation. It also describes Network representation, state-space models, multiport energy storage and dissipation, Legendre transforms, nonlinear mechanics, transformation theory, Lagrangian and Hamiltonian forms, Control-relevant properties. The application examples may include electro-mechanical transducers, mechanisms, electronics, fluid and thermal systems, compressible flow, chemical processes, diffusion and wave transmission.

Recommended Books

1. G.Petrone and G.Cammarata, Modelling and simulation, InTech,(2008).
2. S. Nakamura, Applied numerical methods with softwares, Prentice Hall (1991).
3. A. V.Wouwer, P.Sauzez, C. V.Fernández, Simulation of ODE/PDE Models with MATLAB, OCTAVE and SCILAB: Scientific and Engineering Applications, Springer, (2014)

MAT-812 Advanced Finite Element Analysis

Introduction to Sobolev spaces, Ritz-Galerkin approximation of Poisson's equation, weak form of Poisson's equation, variational form of Poisson's equation, Ritz-Galerkin approximation of Poisson's equation with hat functions, elliptic bilinear form, elliptic variational form, Ritz-Galerkin approximation of an elliptic variational problem, construction of FE basis, properties of basis function, basis function of multidimensional space, linear independence of basis function, basis function on uniform grid, condition number of Galerkin matrix, uniform Lagrange polynomial, extension of basis function, coefficients of extended basis, weight functions, R-functions, partial weight function, WEB-splines, stability and approximation with WEB-spline, Ritz-Galerkin system, applications of WEB-approximation.

Recommended Books

1. Introduction to the Mathematics of Subdivision Surfaces by Lars-Erik Andersson SIAM, (2010).
2. Numerical Models for Differential Problems by Quarteroni A., Springer, (2009).
3. Finite Element Method by Klaus-Jürgen Bathe, John Wiley & Sons, (2007).
4. *Splines and Variational Methods by Prenter, P. M.*, A Wiley-Interscience Publication, (2006).

MAT- 813 Advanced Multivariate Methods and Analysis

Principal component analysis: Definition and properties of principal components. Testing hypotheses about principal components. Correspondence analysis. Discarding of variables. Principal component analysis in regression. Factor analysis: The factor model. Relationships between factor analysis and principal component analysis. Canonical correlation analysis: Dummy variables and qualitative data. Qualitative and quantitative data. Discriminant analysis: Discrimination when the populations are known. Fisher's linear discriminant function. Discrimination under estimation. Multivariate analysis of variance: Formulation of multivariate one-way classification. Testing fixed contrasts. Canonical variables and test of dimensionality. Two-way classification.

Recommended Books

1. K.V.Mardia, J.T. Kent, J.M. Bibby, Multivariate Analysis, Academic Press, London, (1982).
2. A.M.Kshirsagar, Marcell Dekker, Multivariate Analysis, New York, (1972).
3. T. Raykov and G. A. Marcoulides, An Introduction to Multivariate Analysis, (2008).

MATH-814 Advanced Near Rings

Distributive generated near-rings, ideals isomorphism theorems, Free d.g. near rings, Representations of d.g. near-rings, Types of representations, upper and lower faithful d.g. near rings, Endomorphism

near-rings of groups, distributive generated Near Rings, Free d.g. Near Rings and endomorphism Near Rings of Groups. Also they will be able to apply the Isomorphism Theorems, to solve the problems in Near Rings. Further this course will also help the students while doing research work in near rings.

Recommended Books

1. G.Pilz, Near-Rings, North Holland, (1976).
2. D. S. Passman,A course in Ring Theory, Chelsea Pub. Co., 2004.
3. P. M. Cohn,An Introduction to Ring Theory, Springer 2002.

MAT-815 Advanced Quantum Theory

Lagrangian and Hamiltonian Formalisms; Hamilton-Jacobi Equations; Noether Theorem; Symmetries and Conservation laws; Lorentz Invariance and Relativistic Mechanics. Operators in Banach Space and Operator Calculus; Applications to Quantum Computing and Information Theory; Representation Theory (including Heisenberg; Schroedinger and Holomorphic Representations); Deformation Quantization. Classical Field Theory; Examples of Quantized Field Theories; Dirac Equation and Spinor Formulation; Electron Spin; Field Theoretic Methods in Quantum Statistics. Free Particle Scattering Problems; General Theory of Free Particle Scattering; Scattering by a Static Potential; Scattering Problems and Born Approximation. Feynman Path Integral Formalism and Related Wiener theory of Functional Integration; Perturbation theory and Feynman Diagrams; Regularized Determinants of Elliptic Operators Super symmetry and Path Integral Formalism for Fermions.

Recommended Books

1. J. J. Sakurai, Advanced Quantum Mechanics, Addison-Wesley, (2006).
2. A. Messiah, Quantum Mechanics, John Wiley & Sons Inc., (1961).
3. P.A. M. Dirac,The Principles of Quantum Mechanics, Oxford at the Clarendon Press, (1958).
4. J. von Neumann, Mathematical Foundations of Quantum Mechanic, Princeton University Press, (1955).
5. L. D. Landau and E. M. Lifshitz, Quantum Mechanics Non-Relativistic Theory, Pergamon Press, (1977).

MAT-816 Advanced Semigroup Theory

Basic definitions, Inverse semigroups, the natural order relation, Congruences on inverse semigroups, Anti uniform semilattices, Fundamental inverse semigroups; Bisimple and simple inverse semigroups. Orthodox semigroups; Basic properties; structure of orthodox semigroups; archimedean decomposition, free inverse semigroups, and solution of the word problem in free inverse semigroups.

Recommended Books

1. Predrag Cvitanovic, Group Theory: Birdtracks, Lie's, and Exceptional Groups, Princeton University Press (2008).
2. A.H. Clifford and G.B. Preston,The Algebraic Theory of Semigroups; Vol. I & II, AMS Math. Surveys, (1961) and (1967).
3. An Introduction to Semigroup Theory by J.M. Howie, Academic Press 1976.
4. J.M. Howie, Fundamental of Semigroup Theory, Oxford University Press, (1996).
5. C. Clement, Semigroup Theory and Application (Lecturer Notes on Pure and Applied Mathematics), CRC Press, (1989).

MAT-817 Nonlinear Waves

Fundamental of wave propagation. General classifications of dispersive and hyperbolic waves. Advection equation and characteristic curves. Nonlinear advection equation. Traveling wave solutions. Conservation laws. Quasi-linear wave equations. Age-structure models. Cauchy problem for nonlinear wave equations. Inverse-scattering methods. Shock dynamics in one, two and three dimensions. Nonlinearization and weak shock solutions. Solutions using wave-front expansion and N wave expansions. Nonlinear water waves equation. Exact solutions by variational techniques. Korteweg-de Vries equation. Shape preserving nonlinear waves. Solution waves. Asymptotic analysis, Solution solutions using inverse scattering method. Miura transforms and applications to cubic Schrödinger wave equation, sine-Gordon waves, Toda chain problems, nonlinear Born-Infeld wave equations.

Recommended Books

1. Elena Tobisch, New Approaches to Nonlinear Waves, Springer (2015).
2. G.B.Whitham, Linear and Nonlinear Waves, Wiley-Interscience, New York (1974).
3. P.L.Sachdev, Nonlinear Diffusive Waves, Cambridge University Press, Cambridge. (1987).
4. O. V.Rudenko, S. I. Soluyan , Theoretical Foundations of Nonlinear Acoustics, Plenum Press, New York (1977).
5. S.Leibovich, and A.R. Seebass, Nonlinear Waves, Cornell University Press, Ithaca (1972).

Ph. D in Law

Summary

1. Pursuant to the decision on Item 2517 of 27th ACM and having approved by the departmental board of studies on 23-12-2016, the road map/ curriculum of the mandatory course work for the proposed Ph. D in Law is presented for the approval of the Faculty Board of Studies.
2. The point was discussed in combined meeting of FBOS of all campuses of Bahria University. The members for FBOS discussed various program management issues. The input was obtained from all the campuses. Having seen the demand of PhD law in Islamabad, there was a consensus that point to be taken to ACM for approval.

Mission of the Program

"To contribute in global knowledge of law through the genuine research endeavors for the accomplishment of original findings".

Feasibility & Roadmap

(A) Academic details	
(1)	Faculty /institute /department Management and Social Sciences /BU Islamabad Campus/ Law
(2)	Name of program : Ph. D in Law
(3)	Duration : 3 – 5 Years
(4)	Venus(s): Islamabad Campus
(5)	Whether the proposed program will be offered in (morning/evening/weekend)?: Evening
(6)	Number of Extra Faculty Member(s) or skilled-worker(s) Required? : Keeping in view the needs, Visiting Faculty may be inducted.
(7)	Any extra class room(s) required? If yes, how many? and what will be their capacities required?(provide details) No 1 Seminar Room
(8)	Any extra laboratory /laboratories required? If yes, how many? And what additional equipment's will be required? (provide detail of equipment's ,use extra sheet if necessary): The Library may be upgraded as per needs.
(9)	Minimum Entry level: 18 Years Education
(10)	Admission criteria: LL.M with 1 st Division – as per HEC Rules
(11)	Proposed date of Commencement : Fall Semester – 2017 (if approved)
(12)	Mode of study/Examination: Semester System
(13)	Brief Description & Rationale of program: - Department of Law is running its LL.B and LL.M programs. With the existing faculty resources and infrastructure, the department is capable to launch the proposed program.
(14)	Complete Plan of studies (Attach complete roadmap with semester/year wise backup) Provided hereunder.
(15)	Course Outlines Provided hereunder.
(16)	Examination Policy As per BU rules for Engineering Sciences Faculty.
(17)	Number of admission expected for first intake: 10 (minimum)
(18)	Number of Admission Planned/Expected for Subsequent Intake: 17-25 students with two intakes per year (Fall and Spring semester)
(19)	Date of approval by the board of study?

(B) Financial Analysis:

(1)	Any Agency (Public/private) Funding this Program (Fully/Partially)?: No
(2)	Expected Earning from First Intake : (1st Term) Rs. 10 x 84000 = 8,40,000/-
(3)	Projected Earnings for the Next Four Years:
(4)	Total Estimated Salaries of Visiting Faculty Members per Annum:
(5)	Cost of Extra Laboratory Equipment/tools (if required): Nil
(6)	Cost of Extra Books for the Library (if required): 0.5 to 01 Million
(7)	If the Venue is hired provide Annual Rental Expenses and Cost of other Fixtures: Nil
(8)	Miscellaneous Expenses Required for starting the program : Nil
(9)	Total Annual Recurring Expenditures Required in Subsequent Year (To be provided)

COMPLETE PLAN OF STUDIES**Semester-1**

	Course Title	Credit Hours
LLP-801	Advanced Research Methods in Law	03 (Compulsory)
LLP-802	Elective 2	03
LLP-803	Elective 3	03
Total Credit Hours for 1st Semester		09

Semester-2

Course Code	Course Title	Credit Hours
LLP-804	Elective 4	03
LLP-805	Elective 5	03
LLP-806	Elective 6	03
Total Credit Hours for 2nd Semester		09

- Course work of 18 credit hours will be complete after 2nd semester.

Semester-3

Comprehensive Exam
Approval Thesis Proposal

Semester-4

Research Work

Semester-5

Research Work

Semester-6

Research Work

Thesis

LLP-812	Thesis	36 Credit Hours
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Ph. D Faculty Strength		
1. Dr. Tauseef Iqbal	Sr. AP	Ph. D in Corporate Law
2. Dr. Nadia Khadam	Sr. AP	Ph. D in Criminal Law

Roadmap/ Curriculum**Details of Mandatory Course Work of 36 Credit Hours**

S.No	Course Code	Course Title	Credit Hours
1	LLP-801	Advanced Research Methods in Law	3
2	LLP-802	Legal History of the Subcontinent	3
3	LLP-803	Comparative Legal Theory/Philosophy	3
4	LLP-804	Law and Governance: Institutional Framework	3
5	LLP-805	Comparative Legal System and Procedure	3
6	LLP-806	Transformation of Sharia into Law: The Modern Application of Shariah	3
7	LLP-808	Technological Advancement in Law	3
8	LLP-809	Law and Regional Integration: With Focus On CPEC	3
9	LLP-810	Comparative Criminal Justice System	3
10	LLP-811	Comparative Human Rights Law	3
11	LLP-812	Thesis	36

*With reference to letter BU-DE/513/2015/2365 Ph. D program Code are start from 8 and last two numerals represents the unique course ID

Course Details**1. Advanced Research Methods in Law**

The course provides an advanced program of research training for students of proven academic ability. It provides structured and systematic examination of the nature, aims and methodologies of legal research as a foundation for dissertation design and writing. Included in the unit of study content are examinations of fundamental aspects of the legal research process, including problem definition, methodology, design of the research proposal, considerations of ethical issues, quantitative research in law, questionnaire and survey design, interdisciplinary approaches to investigating legal controversies, comparative research and the publication of legal research. Also included is a systematic review of the main online research tools for finding primary and secondary legal sources, including foreign legal materials. Overall, the unit provides students the opportunity to apply and modify investigative, analytical and critical skills gained and developed through the coursework units to the resolution of a legal problem.

Recommended Books:

Armstrong and Christopher A. Knott, Where the Law Is: An Introduction to Advanced Legal Research Fourth Edition, West Law School 2012.

2. Legal History of the Subcontinent**Topics of Study:**

- a. What is History? [a] The subject matter of history; [b] Knowability of the past; [c] Purpose of history; [d] Relationship between history and its neighbours; [e] Relationship between history and law.
- b. Historical Evolution of Indian Legal System
- c. Evolution of Hindu law: The stages of Hindu law in Indian history.
- d. *Dharma*: [a] Definition and meaning of *purusharthas*; [b] Definition and meaning of *dharma*; [c] Branches of *dharma*.

- e. Role of the State in Ancient Indian Society: [a] Early experiments, [b] Tribal polity; [c] Tribal assemblies; [d] Later-Vedic developments, especially the concept of kingship; [e] Royal functions; [f] Councilors and officials; [g] Oligarchies and republics.
- f. Colonial Law and Cultural Difference: Jurisdictional Politics and the Formation of the Colonial State
- g. Feudalism: [a] Quasi-feudalism; [b] Feudalism; [c.] Local administration; [d.] Working of the *Mahasabhas*.
- i. Social organizations in ancient India: [a] Varna system; [b] *Gotra* and *pravara*; [c] *Varna* and *jati*; [d] Family; [e] Status of women.
- j. Economic Structure of Ancient India: [a] Pastoralism; [b] Peasant phase; [c] Village; [d]
- k. Agriculture and stockbreeding; [e] Origin and types of property; [f] Urban centres; [g] Guilds; [h] Trade and finance; [i] Maritime trade.
- l. The Way India Was Conquered and Political Power Consolidated: Impact On Legal Traditions.
- m. The Judicial System of the East India Company
- n. The Administration of Justice in Medieval India: a study in outline of the judicial system under the sultans and the Badshahs of Delhi based mainly upon cases decided by medieval courts in India between 1206-1750 AD
- o. Codification of laws as statutory laws, except personal laws:
- p. Judicial system in Pre-Mughal Period
- q. History of Law Reporting in India
- r. History of Legal Profession

Recommended Readings:

1. Baxi, Upendranath, *Towards an Indian Sociology of Law*, [New Delhi, 1986]
2. Derret, Duncan M., *Religion, Law and the State in India* [New Delhi, 1999]
3. Fyzee, A.A.A., *Outlines of Mohammedan Law*, [Bombay, 1951]
4. Jain, M.P., *Outlines of Indian Legal History* [Delhi, 1997]
5. Jois, Justice M. Rama, *Legal and Constitutional History of India: Ancient Legal, Judicial and Constitutional System* [Delhi, 2001]
6. Lingat, Robert, *The Classical Law of India* [New Delhi, 1998]
7. Mathur, Ashutosh Dayal, *Medieval Hindu Law: Historical Evolution and Enlightened Rebellion* [New Delhi, 2007]
8. Mensky, Werner, *Comparative Law in a Global Context: The Legal Systems of Asia and Africa*, [Cambridge, 2006]
9. Singh, M.P., *Outlines of Indian Legal and Constitutional History*, [New Delhi, 1969]
10. Sreenivasa Murthy, H.V., *History of India Part I For Law Students*, National Law School of India, Bar Council of India, [Eastern Book Company, Lucknow, 2008]
11. Alschuler, Albert W., *Law without Values: The Life, Work and Legacy of Justice Holmes* [Chicago: Chicago University Press, 2000]
12. Embree, Ainslie T., [ed.], *Sources of Indian Tradition, Vol 1: From the Beginning to 1800* [New Delhi: Columbia Press, 1988]
13. Gordon, Robert W., *The Legacy of Oliver Wendell Holmes, Jr.* [Edinburgh, 1992]
14. Guha, Ranajit, *A Rule of Property for Bengal: An Essay on the Idea of Permanent Settlement* [Paris, 1963]
15. Habib, Irfan, [ed.], *Medieval India I: Researches in the History of India, 1200-1750*, [New Delhi, 1992]
16. Holmes, Oliver Wendell, *The Collected Works of Justice Holmes* [S. Novick, ed.], [Chicago, 1995]
17. Posner, Richard A., *The Essential Holmes: Selections from the Letters, Speeches, Judicial Opinions and Other Writings of Oliver Wendell Holmes, Jr.* [Chicago, 1992]
18. Pound, Roscoe, *Jurisprudence*, Vol. 1 [St. Paul, Minnesota, 1959]
19. Kane, P.V., *History of Dharmashastra*, Vols. 1-5 [Poona, 1968]
20. Kangle, R.P., *The Kautilya Arthashastra* [Bombay, 1969]
21. Kulshreshtha, V.D., *Landmarks in India Legal and Constitutional History*, [Lucknow, 2005]
22. Mahajan, V.D., *Jurisprudence and Legal Theory* [Lucknow, 2003]

23. -, *Hindu Law: Beyond Tradition and Modernity*, [Delhi: Oxford University Press, 2008; first published in 2003]
24. Novick, Sheldon M., *Honourable Justice: The Life of Oliver Wendell Holmes*, [Chicago, 1989]
25. Raychaudhuri, Hemchandra, *Political History of Ancient India*, [New Delhi: Oxford University Press, 2006; seventh impression; first published in 1923]
26. Rizvi, S.A.A., *The Wonder that was India, Part II: A Survey of the History and Culture of the Indian Sub-Continent from the Coming of the Muslims to the British Conquest, 1200-1700*, [New Delhi, 1993]
27. Saharay, H.K., *Legal and Constitutional History of India [A Legal Study of the Constitutional Development of India]* [Calcutta, 1985]
28. Schacht, Joseph, *Introduction to Islamic Law*, [Oxford: Clarendon Press, 1993; first published in, 1963]
29. Sharma, Arvind, *Hinduism and Human Rights: A Conceptual Approach*, [New Delhi, 2007]
30. Trautmann, Thomas R., *Aryans and British India*, [New Delhi: Yoda Press, 2004]
31. Qazalbash, Yawer, *Principles of Muslim Law*, Second Edition, 2005, [Allahabad: Modern Law House, 2005]

3. Comparative Legal Theory

Topics of Study

- a. Pre-Aristotle developments
- b. 2. Aristotle-His Social & Legal philosophy
- c. Law, Justice, Equity
- d. Post Aristotle and legal Philosophy
- e. Different Schools of Thought
- f. Modern Trends in Legal Philosophy
- g. International Law in Jurisprudence
- h. Law of Nature-as Propounded by Different Schools of Legal Philosophy

Recommended Readings:

1. Salmond on Jurisprudence.
2. Holland, The Elements of Jurisprudence.
3. Pollak Sir, Jurisprudence & Legal Essay.
4. Aristotle, Politics (Ed. E. Barker, London).
5. Politics (Benjamin Jowett. New York).
6. Hobbes, Leviathan (Chaps 13-26).
7. Locke, Of Civil Government (Book-II).
8. Austin, Lectures in Jurisprudence, Lec 1-6.
9. Bentham, Theory of Legislation.
10. Maine, Ancient Law.
11. M.D.A. Freeman, Introduction to Jurisprudence, London, Sweet &
12. Maxwell.
13. J.W.Harris, Legal Philosophies, London, Butterworths.
14. H.L.A. Hart, The Concept of Law, Clarendon Press, Oxford
15. Julius Stone, Province and Function of Law.
16. Hall, Readings in Jurisprudence.
17. Cohen & Cohen, Readings in Jurisprudence and Legal Philosophy.

4. Law and Governance: Institutional Framework

Topics of Study:

Recommended Readings:

5. Comparative Legal Systems and Procedures:

The comparison of legal systems has for a long time been an essential branch of legal research and jurisprudence. It has become even more important and relevant in our era of globalization, an era in which there is no field of law that can base its knowledge exclusively on national ideas and rules of

procedure. The law of any system is based on legal tradition. Generally, law changes very slowly. To study law without knowing something of its history is to study law in a vacuum. Indeed, it is often argued that legal history and comparative law have close links. The history of a legal system also explains some of its characteristics and peculiarities and the study of the historical development or background of legal ideas is sometimes referred to as historical jurisprudence – a study which is not much in fashion nowadays. All legal systems in the world today have reached the present through a process of evolution. Some comparatives would argue that you cannot begin to use the comparative method unless you thoroughly understand the history of a particular legal system. It may not always be possible to have a thorough grasp of the history of a system let alone several systems, but it is helpful to have at least a general knowledge, because this will help your understanding of why a system is as it is today.

This course will also include the theoretical aspects of legal procedure in both the civil and criminal contexts, and exposes a number of interesting issues that will be analyzed through comparative lenses. The primary purpose is to provide new ways of thinking about legal procedure and evidence. Procedural rules are often thought of as being secondary and technical in nature, bearing no normative significance and merely facilitative. A deeper enquiry will reveal that serious theoretical issues underpin many procedural rules and that, while most procedural regimes seek to achieve the same general purpose (resolving disputes over legal rights), they often do so in different ways that may signify philosophical difference as well as different balances between the various competing interests.

Recommended Readings:

1. Basil C. Bitas, Comparative Legal Systems, LexisNexis
2. René David, John E. C. Brierley, Major Legal Systems in the World Today: An Introduction to the Comparative Study of Law, Simon and Schuster, 1978
3. Justice(r) Fazal Karim. The Law of Criminal Procedure, Pakistan Law House 2010
4. New South Wales. Law Reform Commission, Studies in comparative civil and criminal procedure, Volumes 1-2
Studies in Comparative Civil and Criminal Procedure, New South Wales. Law Reform Commission 1978

6. Transformation of Shariah into Law: Modern Application of Shariah

Topics of Study

- a. Introduction to the course
- b. Codification of Sharia
- c. Evaluation of the Codification of Sharia
- d. The Attitude of Ullama and the Judiciary towards the Codification of Sharia
- e. Sharia Risk: Islamic Finance transformation into Islamic Contract Law
- f. Sharia and the Leadership of Muslim States
- g. Pre-Modern Governance: The Circle of Justice

Recommended Readings:

1. Nyazee, Imran Ahsan Khan. Theories of Islamic Law. Islamic Research Institute, 2009.
2. Anderson, N. Law Reform in the Muslim World. London 1976.
3. Anderson, N. and N.J. Coulson, Islamic Law in Contemporary Cultural Change. München 1967.
4. Bälz, K. "The Secular Reconstruction of Islamic Law: The Islamic Supreme Constitutional Court and the 'Battle over the Veil' in State-Run Schools."
5. Brown, N.J. and A.O. Sherif, "Inscribing Sharia in Arab Constitutional Law." Washington (unpublished). Chehata, Ch. Droit Musulman: Application au Proche-Orient. Paris 1970.
6. Coulson, N.J. Conflicts and Tensions in Islamic Jurisprudence. Chicago 1969.
7. The Political and Legal Theories of Muhammad. Abdullah and Rashid, Berkeley & Los Angeles 1966.
8. Khadduri, M. The Encyclopedia of Islam. New ed., VI (1991), 739.
9. Krawietz, B. "Cut and Paste in Legal Rules: Designing Islamic Norms with Talfiq." Die Welt des Islams I 42, 1 (2002), 3–40.
10. Layish, A. "The Contribution of the Modernists to the Secularization of Islamic Law." Middle Eastern Studies 14 (1978), 263–277.

11. "The Fatwa as an Instrument of Accommodation." In Masud, Messick & Powers, Islamic Legal Interpretation, 270–77.

7. Technological Advancement in Law

Topics of Study:

Recommended Readings:

8. Law and Regional Integration: With Focus On CPEC

Topics of Study

Recommended Readings:

9. Comparative Criminal Justice System

In this course, the evolution and operation of criminal justice systems in different societies and communities will be discussed. The emphasis of the course will be on the development of criminal justice in response to social, historical and political factors. This course will also provide comparative study of the major legal traditions (e.g., common law, civil law, socialist law) and analysis of the criminal justice system across the world, including police, courts, and prisons. The students will identify, analyze, and compare the criminal justice systems in the Pakistan with those of other countries. The course will explain the basic worldwide philosophies of law and justice, the arrangements for crime prevention and law enforcement, and the methods of dealing with convicted offenders throughout the world.

Recommended Readings:

1. Justice(r) Fazal Karim. The Law of Criminal Procedure, Pakistan Law House 2010
2. Pakes, Francis. Comparative Criminal Justice. Third Edition. Routledge Publishers 2014
3. Philip L. Reichel, Comparative Criminal Justice Systems: A Topical Approach (6th edition)

10. Comparative Human Rights

- a. Topics of Study:
- b. History
- c. Individual as-subject of International Law.
- d. Minority / Refugee Protection.
- e. Covenant / Charter Provisions on Human Rights
- f. Universal Declaration of Human Right.
- g. International covenants on human rights
- h. International Covenant on Civil and Political Rights.
- i. International Covenant on Economic Social and Cultural Rights.
- j. Optional Protocol
- k. Other International Convention / I.L.O. Conventions.
- l. Regional conventions in human rights
- m. European Convention on Human Rights.
- n. Helsinki Accord, 1975.
- o. The Role of National / Regional / International Organization in the
- p. Protection of Human Rights
- q. 15. Humanitarian intervention.

Recommended Books:

1. Oliver Schutter, International Human Rights Law
2. Edward Arnold, Human Rights, 1978.
3. Rhona K.M. Smith and Christien van den Anker, The essentials of... human rights.
4. M R Ishey, The Human Rights Reader, 2nd ed, Routledge London/New York, 2007.
5. Charles R. Beitz, The Idea of Human Rights, OUP, New York, 2007.
6. Henry, J & Philip Alston, Human Rights in Context, OUP, 2000
7. Mashood A Baderin, Human Rights and Islamic Law, OUP, 2003

Sponsored by: HOD Law (BUIC)

Referred by: (FBOS)

Title: Launch of Ph. D in Law, Approval of the Curriculum and Road Map

Background

Pursuant to the decision on Item 2517 of 27th ACM and having approved by the departmental board of studies on 23-12-2016, the road map/ curriculum of the mandatory course work for the proposed Ph. D in Law is presented for the approval of the Faculty Board of Studies. The roadmap/ curriculum is at **Appendage 1**.

HR Implications: Nil.

Financial Implications: Nil.

Conclusion

The point was discussed in combined meeting of FBOS of all campuses of Bahria University. The members fo FBOS discussed various program management issues. The input was obtained from all the campuses. Having seen the demand of PhD law in Islamabad, there was a consensus that point to be taken to ACM for approval.

Recommendations:

Hence, it is recommended that the agenda item may be approved by the worthy house.

New Course Registration Should be Allowed in Summer

Sponsor: HOD(EE)KC

Referral Authority: Decision on File BU/AD/76/S-17/PC

Summary of the Case

1. Timing clashes between courses are getting increased in regular semester once students wish to register in certain courses to clear their pre-requisite and to register new courses elective or core etc.,
2. As in Engg Sciences a course is offered once in a year, consequently, student must wait a whole year to get register in the desired or offered courses

Recommendation

3. New courses electives or core etc., can be allowed to offer in summer semester, capping of grade B is already there so students cannot deliberately skip regular semester, which is a major consequence.
4. FBoS approved the case for 3rd year and 4th year students of all BS programs and forwarded for ACM consideration.

Exam Retake Policy - Review

Summary of the Case

1. In current BU exam policy, re-take of mid-term and final term examination is only allowed in special circumstances, i.e. in case of severe illness with hospitalization or death of an immediate family member.
2. Considering following scenarios, the policy needs attention and shall be reviewed.
3. If a student is admitted in a hospital due to some illness or surgery issue, he/she may not be able to take exam right after he/she is discharged from hospital. Moreover, it is also observed that in case of hospitalization, doctors typically recommend bed rest for few days so that a patient can recover both physically and mentally before coming back to normal routine.
4. Similarly, in case of death of an immediate family member, a student requires time to fulfil his/her responsibilities of burial. Moreover, he/she requires sufficient time (e.g. 3 days as practiced in Islamic teachings) to come out of the shock and resume his/her routine work. Current policy allows retake for the day of death only and does not consider that a student may have to travel long distance to attend funeral and may not be able to get back next day for exam. Even in if one can reach back in time, he/she might not be able to revise the subject and prepare for the exam. Lastly, grand parents may kindly be included in immediate family members in this policy.
5. A suitable time (of 2 to 3 days) may be allowed after hospitalization or in case of death of immediate family member. Grandparents may also be included in immediate family members.
6. Furthermore, recommendations of departments for cases involving bed rest after medical examination (i.e. without hospitalization) may also be considered on case to case basis.

PRESENTATION MADE BY THE SPONSOR

BACKGROUND

- Re-take of mid-term and final term examination is only allowed in special circumstances:
 - Severe illness with hospitalization (only for the duration of hospitalization)
 - Death of an immediate family member (only for the day of the death)
- In current policy, genuine students not only face difficulties but suffer often.

CASE 1 - HOSPITALISATION

- In case of hospitalization esp. after surgery, a student may not be able to take exam right after he/she is discharged from hospital.
- Moreover, doctors typically recommend bed rest for few days so that a patient can recover both physically and mentally before coming back to normal routine.
- Our current policy doesn't cater this.

CASE 2 - DEATH OF IMMEDIATE FAMILY MEMBER

- A student requires time to fulfil his/her responsibilities of burial.
- Moreover, he/she requires sufficient time (e.g. 3 days as practiced in Islamic teachings) to come out of the shock and resume his/her routine work.
- A student may have to travel long distance to attend funeral.
- Grand parents are not considered as immediate family members.

RECOMMENDATIONS

- Affected students be permitted to retake examination 2-3 days after discharge from hospitalization/burial of the family member (as the case may be) to allow for recuperation/recovery from grief etc.
- Grandparents may be included in the definition of "immediate family members" for the purpose of examinations retake.
- Departmental recommendation on post-hospitalization recuperation may be given due consideration.

Permission for Continuation of Program where a Student has been dropped after being issued Probation Letter, Chance Letter and Dropped Out Letter

Sponsor: HOD(MS)IC

Referral Authority: FBOS

Summary of the Case

1. Existing policy of dropping a student is that a student are issued a Probation Letter, then a Chance Letter and then he is dropped for not scoring the minimum CGPA of his Program to complete his degree. In a situation like this, the student then is not allowed to continue in the same program. It would be in the interest of student and BU both that the earlier earned credit by the dropped students may be transferred to the same p[rogram after having new admission.
2. Only those subjects may be transferred where the grade is acceptable as per policy. The time lapsed may also be counted in the continuation of the program, allowing student to complete his degree in the remaining degree duration.

HOD MS IC's Presentation

- Weak Bahria University students are dropped from their admitted program due to Low CGPA
- Once dropped they are not allowed Re-admission in the same program

Recommendation

MS Project Management students may be allowed re-admission in the program after being dropped with no extra time and with the possibility of Transfer of credits

DKC's Presentation

RULE POSITION

Academic Rules 2016 (Article No 2.4, Page No 07)

If any student Dropped from a program on academic grounds, or otherwise wishing to change the academic program, shall be permitted to join any other program, in the same department or another department, provided he/she takes admission afresh, going through the entire admission process.

Student Handbook 2017 (Article No 2.7.7, Page No 32)

- A student dropped on academic grounds may be permitted to join other academic programs, provided he/she fulfill the eligibility criteria for admission to the concerned program. Change of academic discipline can also be allowed on students own choice / request.
- A re-admitted student shall be entitled to full transfer of credits in those common courses, or equivalent courses as determined by the Equivalence Committee, in which the student scored a minimum of C+ Grade.

IMPLICATIONS

- Dichotomy in both Documents i.e Student Handbook 2017 & Academic Rules 2016.
- A dropped student cannot appear for the admission test in subsequent semester, as the admission process is concluded much earlier than the announcement of the result.
- 1st Semester student if dropped due to illness or any other genuine reasons does not have any chance to repeat or change the program.
- Parents come with the request to allow their ward to continue the study to avoid time and financial losses.

PREVIOUS CHANGE OF DISCIPLINE RULE

13TH Academic Council Meeting (Article No 19, Page No 09)

- The student may be allowed to a lower merit program without entry test with the exemption of admission fee.
- The student is required to purchase the new application form.
- The caution money deposited by the student be refunded and be used for the new discipline.
- The student may claim exemption all the common courses with Grade 'C+' and above.

RECOMMENDATIONS

- The dropped students may be allowed to change the program without entry test.
- 1st semester dropped students may be given a chance to repeat the semester or option to change the program.

Shifting MS (Finance) Program from Evening to Weekend Session

Sponsor: HOD(MS)IC

Referral Authority: FBOS

Summary of the Case

1. All the MS programs of the Management Sciences department are run in the weekends. Since these programs are focusing the professionals in their respective domains, therefore, the response rate is higher in the weekend sessions. Keeping in view the success of these MS programs in the Weekend sessions, it is proposed that the MS (Finance) may also be shifted from the Evening session to the Weekend session from the Fall-2017 Semester.

2. In the light of background given above, consensus emerged that the program may be shifted to weakened if it adds value to BU because, approval for the MS programs is taken not on the basis of timing. Hence, program shifting from evening to weakened remains internal matter of BU.

Draft Rules of Business for Meetings of the Academic Council

1. Preamble

1.1. These Rules of Business for the Academic Council Meetings (short-titled to ACROB) govern conduct of the meetings of the Academic Council, University's top academic statutory body, formed iaw the BU Ordinance Section 19, read with BU Statute 3.5. The rules shall apply to all those who participate in the meetings of the Academic Council. These rules will obviate the need to generate a plethora of communication, pre- and post-meetings.

1.2. Reference to these Rules shall comprise the acronym ACROB followed by the Rule No; eg ACROB7, ACROB2.3, ACROB14.1.c etc.

2. Definitions

2.1. **Action by: XYZ.** XYZ is the Authority, Entity, Official, Person, Unit, Dept, Office, etc required to implement the decision of the Academic Council.

2.2. **Chair.** Chairman/Chairperson of the meeting, a responsibility vested with the Rector or, in his absence, the Pro-Rector.

2.3. **Council.** The Academic Council, formed under Section-19 of the Bahria University Ordinance.

2.4. **House.** The Academic Council in session.

2.5. **In Attendance.** Attendance status indicator for non-members of the Council. When a Council non-member attends the Council meeting, he/she is "In Attendance" at the meeting. Non-members, "In Attendance" at the meeting, shall not have the right to vote.

2.6. **Item.** A case, subject or point on the agenda of the Academic Council's meeting.

2.7. **Member.** Member of the Academic Council, with the right to vote at the meetings of the Academic Council.

2.8. **Motion.** A proposal made to the Council session intended to be considered and decided upon by vote.

2.9. **Point of Order.** An interjection by a member, who does not have the floor, to call the attention of the Chair to an alleged violation or breach of the Council's Rules of Business, or recording of the Decision on an Item. A Point of Order shall not be used to support and oppose the speaker who has the floor, or the item being deliberated.

2.10. **Present.** Attendance status indicator for members of the Council. When a Council member attends the Council meeting, he/she is "Present" at the meeting. Only members Present at the meeting shall have the right to vote.

2.11. **Responsibility of: XYZ.** XYZ is 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 the progress on the matter, through periodic progress reports and at the meeting of the Council.
- c. Be overall responsible to the Competent Authority, and the Council, for the case/issue/item he or she has been made responsible for.

2.12. **Secretary.** The Secretary to the Academic Council, a responsibility vested with the Director Academics.

2.13. **Sponsor.** Member of the Academic Council who moves a point.

3. Schedule & Venue of Meetings

3.1. The Council shall meet twice a year, in the first working weeks of April and October. Exact dates of the next meeting shall be announced in the meeting and minuted. Additionally, special meetings may be convened by the Rector at any time, as follows:

3.1.1 To deliberate on any urgent academic issue; or

3.1.2 At the request of the Council Members if they have an urgent academic issue to discuss, subject to a written requisition signed by at least one third of the Members.

3.2. Special meetings will usually be restricted to the purpose for which called; review of progress on action items from the previous meeting may not be taken up.

3.3. The Council meetings may be held at the BUHO or any CU of the University. The meetings may also be held through VLC. Venue and format of the meeting shall be decided by the Chairman. Unless communicated otherwise, VLC shall be default venue/format.

4. Chairmanship and Secretaryship

The Meetings of the Council shall be chaired by the Rector or, in his absence, by the Pro-Rector. The proceedings of the meeting shall be conducted by the Director Academics as the Secretary to the Council. In the absence of the Secretary, the Chairman will nominate a Member to conduct the proceedings.

5. Present

5.1. Members of the Council shall be “Present” at the meetings. Without prejudice to any superior statutory document, following authorities/officials shall act as the members of the Council:

a.	Rector	k.	Deans
b.	Pro-Rector	l.	HODs
c.	Heads of CUs	m.	DE
d.	DGs	n.	DAdm
e.	Advisors to the Rector	o.	DHS
f.	Registrar	p.	DQA
g.	DAcad	q.	DORIC
h.	Directors of CUs	r.	D(R&D)
i.	Principals of CUs	s.	DPGP
j.	Professors - as notified	t.	DLDC

6. In Attendance

6.1. Unless communicated otherwise, following officials from the BUHO shall participate in the meetings “In Attendance”:

a.	DF	f.	DDAcad
b.	DP&D	g.	DDREG/ADREG
c.	DHR	g.	IO
d.	DSA	i.	SO Coord
e.	DIT/DDIT		

6.2. For VLC meetings, the Heads of the CUs may invite any official or faculty member to attend the meetings “In Attendance”. For physical (non-VLC) meetings, “In Attendance” attendance shall require the Chair’s permission.

7. Leave of Absence

Any Member, or non-Member mentioned at clause **Error! Reference source not found.**, unable to attend meeting of the Council, is to seek leave of absence personally from the Chairman and, if approved, inform the Secretary.

8. Quorum

8.1. The quorum shall consist of 50% Members being Present. In the absence of a quorum, the Council shall not transact any business other than fixing the time for the next meeting and instituting measures to ensure a quorum. Thereafter, the meeting shall be adjourned for want of quorum for a specific period.

8.2. This is not to affect the Chair's authority to convene a meeting without regard to quorum.

9. Typical Meeting Timeline

9.1. Unless communicated otherwise, following timeline in run up to the meetings shall be followed (ACM represents the meeting day):

- ACM minus 3 months: 1st Progress Report on the Action Items from the previous meeting
- ACM minus 1 month:
 - a. 2nd Progress Report on the Action Items from the previous meeting.
 - d. Agenda Items for the next ACM.
- ACM minus 10 days: Despatch of Agenda Document to the Members

10. Agenda

10.1. An item/case can make agenda of the Academic Council meeting through any of the following channels only:

- a. Referral by the respective FBOS. These items are to be sent to the Secretary by the Deans. Minutes of FBOSs shall not automatically constitute ACM agenda.
- b. File decision by the Competent Authority. These items are to be sent by the authority who initiated the case on the file, along with the File No and scanned copy of the decision page.
- c. Meeting/briefing decision, but endorsed on file by the Competent Authority. These items are to be sent by the authority who sponsored the meeting/briefing, along with the File No and scanned copy of the decision page.

10.2. All the agenda items, referred by whatever means, are to be accompanied by a one-page working paper and supporting documents which should all be in the MS WORD format. Graphics, heavy fonts, tables-within-tables, borders and auto-styling are to be avoided from the working papers. Compressed graphics may be added to the supporting documents.

10.3. Urgent academic decisions/policies made by the Competent Authority in between Academic Council meetings shall be presented to the Council at the next meeting for consideration and ratification.

11. Order of Business

11.1. The Council shall conduct proceedings in the following order:

- a. Recitation from the Holy Quran
- b. Secretary's quorum report to the Chair and, if quorum is complete, request to the Chair to open the meeting.
- c. Chair's opening the meeting and opening remarks.
- d. Confirmation of the minutes of the previous meeting.
- e. Progress Review on the Action Items of the last meeting.
- f. Deliberations on the New Items on the Agenda.
- g. Any additional items, of urgent nature.

h. Chair's closing remarks and meeting closure.

12. Confirmation of the Minutes of the Previous Meeting

12.1. The Secretary shall brief the house if there were any post-issue observations on or amendments to the minutes of the last meeting and their outcome, and then table the minutes for confirmation. Any member could propose the confirmation, to be seconded by another member.

12.2. Since draft minutes of the Council are circulated amongst members prior issue and there are six months between two meetings for any amendments/observations, confirmation of the minutes of the previous meeting should be a smooth and quick process. Nonetheless, the Chair will still seek consent of the house. Any member having any reservation or amendment to offer, shall do so with cogent reason. The house shall then decide on the reservation/amendment and confirm the minutes either in their original form or with agreed amendments.

13. Review of Action Items from the Previous Meeting

13.1. The Secretary will present the last ACM's Decision on the Item and a summary of Progress made thence. The authority entrusted with "Responsibility" of the Item will then be invited to offer additional/ amplifying comments, if any. The House will then be opened for discussion and a decision made. The Secretary will read out the Decision to the House; any reservation to the Decision shall be raised as a Point of Order. Action on the Points of Order will be decided by the Chair and his decision shall be final.

13.2. The Chairman shall have the power to defer or give precedence to any Item.

14. New Items

14.1. The Secretary will present a Summary of the case. The Sponsor of the Item will then be invited to present the case wholesomely, or offer any additional, amplifying or reaffirming comments to what has already been presented by the Secretary. The House will then be opened for discussion and the rest of the procedure will be the same as for the Review Items with one difference that where there is lack of clarity or comprehension, the item will be referred to a committee for deliberation and recommendations.

14.2. The New Items will be presented in the following sequence, as far as possible:

- a. Amendments to Roadmaps and Syllabi.
- b. New Programmes Proposals.
- c. Amendments to Statutory Documents/Academic Rules.
- d. Other Points

14.3. The Chairman shall have the power to defer or give precedence to any Item or Motion.

15. Conduct of Discussion

15.1. All questions and comments shall be addressed through the Chair. Remarks must be courteous in language and deportment. Following shall be avoided:

- a. Personalising the issues.
- b. Rude or personal comments.
- c. Side conversation or cross-talk.
- d. Use of cell phones for whatever purpose.
- e. Interruptions or interjections.

15.2. Presentations, speeches and point of view shall be precise, confined to allocated time and focussing on the subject under discussion.

15.3. Points of Order shall be exceptions and not matters of routine. A Point of Order shall be raised by raising a hand, high enough to be visible to the Chair/Local Chair. At a remote site, the Local Chair will switch on the red light to indicate the Point of Order.

15.4. A Point of Order may be raised to point out:

- a. a deviation from the ROB;
- b. lack of quorum;
- c. the speaker using uncalled for comments or unparliamentary language;
- d. the speaker resorting to repetitions/wastage of time;
- e. the speaker exceeding the allocated time; or
- f. inaccuracy in recording the decision on an item.

15.5. A Point of Order shall not be raised for:

- a. challenging the veracity of the speaker's statement;
- b. disagreeing with the speaker;
- c. justifying own statements;
- d. asking the Chair to stop the speaker from saying something;
- e. expressing boredom with the speaker's presentation, speech or point of view;
- f. or pointing out audio difficulties.

15.6. When the Chair invites a Point of Order, the speaker shall stop his/her presentation, speech or point of view. The Chair will decide the Point of Order and his ruling shall be final. Thereafter, if unaffected by the Chair's ruling, the speaker will be asked to continue.

16. Decisions

16.1. Every effort will be made to take decisions by consensus. Where this is not possible due to opposing views or extreme positions, the item will be put to vote, in the form of a Motion. Only Members of the Council shall vote. The Secretary will record the vote count (Affirmative, Negative & Abstaining), and present it to the Chair who will announce the result. The motion will be carried or rejected by simple majority. In case of a tie, the Chair will use his casting vote to decide the case. The Chair shall reserve the right to over-rule any case or motion, or give his ruling thereon.

16.2. In VLC meetings, the local Chairs of the remote sites will record the vote count and present it to the Chair.

16.3. The decisions shall be appended with the terms "Action by" and "Responsibility of", as defined in ACROB2, and a list of downstream Statutory Documents affected by the decision and, therefore, requiring amendment, in the following typical format:

Action Required	Action by	Responsibility of
Implementation of the Decision	HODs MS	Dean MS
Statutory Documents affected:	Programme Roadmap & Prospectuses	

17. Recording and Issue of Minutes

17.1. Minutes shall be prepared in the form of a summary of proceedings, capturing only the essentials of the discussion.

17.2. Proceedings of the ACMs shall be video and audio recorded. The recordings shall be retained till the minutes of the meeting have been confirmed in the next ACM.

17.3. In addition to the Decisions of the ACM read out on the spot, by the Secretary, the Draft minutes of the meeting shall be circulated to all the members for any observations on correct recording of the

minutes. Any points raised by any member shall be checked with the audio-video recordings of the proceedings. If the observation is correct, the Secretary will amend the minutes.

17.4. The minutes will then be moved on file for approval by the Chair and issue.

17.5. After the minutes have been issued, any observation by any member will be checked against the audio-video recording. If the observation is correct, an amendment will be processed on file and issued subject to approval by the Chair.

18. Follow Up on Decisions

18.1. Formal progress reports, on the action items of the last ACM shall be made by the authority marked as "Responsibility of" in the minutes of the last ACM.

18.2. These progress reports shall be rendered at 3 months and 5 months on the timeline since the last ACM. The reports at 5 months shall be rendered even if the action is reported complete in the 3 month reports.

18.3. The reports shall be complied into one by the Secretary and processed on file.

18.4. The progress report at 5 months timeline shall be deemed to be the progress report to the Academic Council and reflected in the Agenda Document. These reports shall be taken up at the ACM and shall not be processed on file.

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

18.6. The progress reports shall be rendered on the following template:

Report Originator:	Date:	
Item No	Decision of the AC	Progress

19. Downstream Effect of Decisions

19.1. Most decisions of the Academic Council will imply amendments to the relevant statutory documents. These amendments shall be processed and incorporated into the said documents 4thwith 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 University's Notification on Ownership of Statutory Documents.

19.2. To that end, each decision of the Council shall be appended with a list of such documents, as enacted at ACROB16.3. However, this list is not exhaustive. Exclusion of a document from the said list shall not absolve the Owner of the document from his/her responsibility to amend the document law the decision of the Council and to keep the document up-to-date.

20. Additional Rules for VLC meetings

20.1. The Head of the CU shall act as the Local Chair of the remote site ensuring order at the site. The Local Chair will conduct the voting if and when asked by the Chair.

20.2. Red light will be used as alternative to raising the hand. The Local Chair will control the light.

20.3. Microphones at the remote and the local site shall remain off except the speaker's who will speak only when permitted by the Chair.

20.4. Remote sites shall record the proceedings, both audio and video.

21. Reference Designators for Documentation

21.1. Following standardised system of designators shall be used for Items and Decisions of the Academic Council:

Item Number	Item oonn where oo = ordinal sequence of the Academic Council Meeting. nn = serial number of Item in that meeting. Example: Item 2213 means item No 13 taken up by the 22 nd ACM
Decision on a New Item	Decision oonn 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 a Previous Item	Decision o ₂ o ₂ (o ₁ nn) Example: Decision 22(1930) means Decision taken by the 22nd 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'.

22. Admin & Logistics

22.1. The meeting will start at 0930 hrs unless declared otherwise. The meeting will take a one-hour break at 1300 hrs for Namaz and lunch.

22.2. At the BUHO, SO(Coord) will be responsible for lunch and refreshments to the meeting participants. At the remote sites, Heads of the CUs will make local arrangements. These ROB shall be the authority to requisition meals and refreshments, and no further sanction shall be processed on file.

Observation from BUKC	Response
1. All available in the meeting should be in the category of participants i.e members Plus in attendance.	The observation contradicts the universal Management Principle of Attendance at Meetings: Members are “PRESENT” at the meeting, Non-Members are “IN-ATTENDANCE”.
2. In addition to scheduled meetings, HERC may meet for any urgent issue. Who will decide about the urgent issue?	ROB state: “ <i>Additionally, Special Meetings may be convened by the Rector at any time, to deliberate on any Urgent Academic Issues.</i> ” So, clearly, Rector (the Chairman of Academic Council) will decide whether an issue is urgent enough to call a Special Meeting.
3. Meeting may be called upon signing of requisition by 1/3rd members. My point is, it would not be practicable as university is consisting of many campuses.	Council Membership is specified and the Secretary has the complete CU-wise list; he can work out the numbers. Number of locations is hardly a consideration.
4. In the absence of Rector, Pro Rector will chair the meeting. It means in the absence of Pro Rector; meeting will not be held. Para should be, acting Rector will chair the meeting during the absence of Rector.	<ul style="list-style-type: none"> a. No, in the absence of Pro-Rector, there is nothing stopping the meeting. The constraint is the availability of the Rector, not the Pro-Rector. If Pro-Rector is not available, then Rector will be. b. If both the Rector and the Pro-Rector are not available, then there is no end to argument. One could advance the extreme argument: what if the entire top management becomes unavailable? The normal practice is to have stand-ins for the Chairman and the Secretary only. c. Further, chairmanship and secretaryship of a high-level meeting cannot be compared to line of succession for a command or leadership post which can go down to multiple levels.
5. In the absence of Secy, his replacement should be pre-decided so that he should have enough time to prepare.	The ROB states: “ <i>In the absence of the Secy, the Chairman will nominate a Member to conduct the proceedings</i> ”. So, whenever Secy becomes non-available, whether before, during or after the meeting, someone will be nominated by the Chairman to prepare for the meeting, conduct the proceedings and take post-meeting actions.
6. A rep from HEC or other university may also be called as member.	<ul style="list-style-type: none"> a. There is no such provision in the BU Act. b. It is a risky proposition in any case. Universities compete with each other and competitors never invite each other to in-house meetings. The proposition is unheard of in the corporate world
7. One point is regarding presence of 50 % members to complete the Quorum and the next point says, this is not to affect the president’s authority to convene a meeting without quorum. These two points are contradictory to each other.	This is an “Exception”, not a “Contradiction”. The Chairman Academic Council should have this authority. Chairman BU BOG has it, and the ROB BOGM clearly states so. There can be an occasion when quorum is not complete and there is some urgent matter to address. This can happen during summer vacations when majority of the members may be away.
8. Agenda points should be forwarded by the HODs, instead of the Deans as HOD can present it in better way.	<ul style="list-style-type: none"> a. No agenda is “Forwarded”, it is “Referred”. “Referral” is by FBOS. Dean, as Head of FBOS, is to ensure that the Agenda “Referred” by FBOS to the AC, reaches the Council’s Secy.

	<p>b. At the ACM, the Agenda Item is “Presented” by the Member who “moved it”. ROB define this Member as the “Sponsor”. Sponsor of the Item is indicated prominently in the header of each Item of the Agenda Doc. Sponsor can be an HOD, a Cluster Head, even a faculty member, a Director at the BUHO, Head of the CU, etc, anyone who moved the point, whether at the FBOS or in a meeting or on file.</p> <p>c. Nowhere in the ROB there is any suggestion that Dean is to present the agenda item.</p>
9. Points already approved on file shall be sent to HERC for ratifications. If the Decision has already been taken by the competent authority than no members can go against it.	<p>a. That is where the values of Integrity, Conscience and Personal Courage count.</p> <p>b. Council does not act as a post office. There have been precedents where it overturned or modified the decisions taken on file. For example, vide its Decisions 2104 and 2012, the Council overturned and modified, respectively, the decisions on file.</p> <p>c. So, a decision on file is no guarantee to its ratification by the Council.</p>
10. Time line for sending draft minutes has not been mentioned.	Timeline can be mentioned. Within 15 Working Days after the ACM seems a reasonable time.
11. Decision by voting is not practicable in BU as it is multi campus university situated in multi cities. It is also contradictory that decision will be taken with majority vote.	Number of Campuses and their Geography have nothing to do with the concept of “Decision by Majority Vote”, which is an established Decision Making tool. The Council used it with effect on some items in the 14 th , 16 th , 17 th , 18 th and 21 st ACMS. Minutes of these meetings clearly refer to a number of decisions being taken by Majority Vote.
12. Action and responsibilities should be the same. The person/ authority who is to take action, should also be responsible for it. No need to make two separate columns for Action to be taken by and Responsibility.	<p>a. These are not new terms; ROB has merely documented one of ACM’s many successful practices for some years now</p> <p>b. Difference between “Action” and “Responsibility”, and indeed “Accountability”, is well understood by all Scholars and Practitioners of HRM. Where “Action” and “Responsibility” reside in the same authority, it is merged into one column.</p> <p>c. Difference is also articulated on the first page of both the Agenda Doc and the Minutes of the ACM and will not, therefore, be reproduced here.</p> <p>d. The differentiation has greatly improved follow-up on ACM decisions</p>
13. There should be only one progress report. We should reduce the written work.	<p>a. Again nothing new here. The 2-Progress Report is a University policy which was notified on 9th Nov 2015, along with the full rationale for adopting it. The system is meeting the objectives it was set to achieve.</p> <p>b. As for ‘written work’, nothing of that sort is involved. The Secretary emails an online template of action items to each authority “Responsible” for a particular item. The said authorities fill in the template with progress on the their respective item and email the template back to the Secy.</p>
14. Para regarding the conduct of Discussion should be deleted as we are mature enough and know how to conduct.	<p>a. HRM gurus state: <i>“Maturity does not mean Age. It means Sensitivity, Manners and how you React”</i>. <i>“Maturity is not Age. It is Attitude.”</i></p> <p>b. The rule in question is in the ROB of every Corporate Body. Our own BOG ROB:</p>

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| | <ul style="list-style-type: none">(1) <i>"All questions and comments shall be addressed through the Chair. Remarks must be courteous in language and deportment.</i>(2) <i>Members shall avoid personalizing the issues, passing rude personal comments and never allude to others by name or motives.</i>(3) <i>Interruptions must be avoided and any member making a statement should be allowed to complete it.</i>(4) <i>Debates must be kept precise, short and limited to the subject under discussion.</i>(5) <i>The Chairman shall have the power to ask any member to withdraw his remarks or observations which are unwarranted by him."</i> <p>c. Surely, our BOG members are as mature as us, if not more.</p> |
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Reduction of Course Load for PhD Faculty Members

Sponsor: HOD(MS)IC

Referral Authority: FBOS

Summary of the Case

1. HOD MS BUIC explained that during DBOS, FMs were of the view that they have been engaged in 4 courses per semester, in addition, they are supervising MS/MPhil and PhD scholars of MS department, due to which they could not spare quality time for writing research articles. It was suggested that course load for the PhD faculty members of the MS department may be reduced from its existing course load of 4 courses to 3 courses under following conditions:
 - a. One course exemption may be given to the PhD Faculty Members for publishing one Research Article in any of the Impact Factor (JCR), ISI Indexed journal, or HEC x, y, w Category journal. Exemption be given to the PhD FM from Spring-2017. However, Article must be getting published in Academic Year 2017.
 - b. Non-Compliance will make the FM ineligible for future exemption under this policy in 2018.
 - c. The above policy be open for all PhD FMs and would have option to opt for it or otherwise.
2. All the members agreed to the proposal of one course reduction for the PhD FMs if they produce one Research Article in one academic year.
3. One Course Reduction would result in offering the reduced course to Visiting FM.
4. 14 PhD FMs in MS Department = $14 \times 100,000 = 1400,000/-$ Per Semester = Rs. 3,000,000 per Year Approximately..
 - a. One course exemption may be given to the PhD Faculty Members for publishing one Research Article in any of the Impact Factor (JCR), ISI Indexed journal, or HEC x, y, w Category journal. Exemption be given to the PhD FM from Spring- 2017. Article must be getting published in Academic Year 2017.
 - b. No visiting course at Bahria University for such FMs.
 - c. Non-Compliance will make FM ineligible for future exemption in 2018.
 - d. The above policy be open to all PhD FMs to opt for it or otherwise.
5. However members raised questions about its implications if not adhered to by the concerned faculty. Dr. Hafiz Mushtaq from BUIC argued its applicability for enhancing research works. Director PGP highlighted that the concern is already under considerations. After deliberations it was agreed to that for such relaxation, the concerned faculty will not opt for additional course as visiting faculty.
6. The point is recommended for approval by the worthy house with a condition that necessary improvements in the proposal as under will be carried out:
7. The proposal should clearly define parameters of its application including bar on such faculty members that they shall not be asking for additional course as visiting faculty in any capacity.
8. The department would also carry out cost benefit analysis more precisely including faculty with already exemption of course by virtue of their appointments.

Inter-Campus Internship Opportunities for one Female Students from each BBA / MBA Programs of BUIC and BUKC Background

Sponsor: HOD(MS)IC

Referral Authority: FBOS

Summary of the Case

1. BBA and MBA programs have a mandatory 6-week internship for the students after their 6th and second last semester, respectively. Bahria University should encourage the high performers of the BBA and MBA students by providing them inter-campus facilitated internship opportunity fully sponsored by the host campus. Initially, this will be applicable for the BBA and MBA students only, however, after its success it can be extended to other academic programs of the Bahria University. Both the Islamabad and Karachi Campuses are having in-house hostel facility for the female students, which could be used to accommodate the female student from the other campus. Therefore, this inter-campus internship facility will be only for female students.

2. It is proposed that following arrangement may be provided to the high performing students of BBA / MBA programs. The conditions of the inter-campus internship facility will be governed as follows:

- a. Only female students are eligible for this inter-campus 6-week internship program.
 - b. One female student from BBA program with highest CGPA in the sixth semester and one female student from MBA programs with highest CGPA in the second last semester of each of BUIC and BUKC.
 - c. In case of tie, university's policies for awarding academic awards would apply.
 - d. Total duration of the internship will be 6-week, as per road map of the BBA and MBA program.
 - e. Students from the BUIC will be accommodated in the Girls hostel of BUKC and student of BUKC will be accommodated in the Girls Hostel of BUIC. All the boarding and lodging facility will be provided by the host campus.
 - f. Each selected student shall be paid Rs 5,000/- per week for a total period of six weeks by the home campus.
 - g. Economy class Return Air ticket to travel between ISB – KHI will be provided by the home campus.
 - h. The host campus will arrange the internship facility for the students either off-campus or on-campus internship.
3. The selected students will be the nominated by the HOD (MS) of the concerned campus.
4. There is a consensus that opportunities for passed out students may be created to interact amongst the students and management across the campuses and learn in this process.

Collaboration with ABK, UK, for joint programmes

Sponsor: HOD(MS)IC

Referral Authority: FBOS

Summary of the Case

1. Mr. Usman Akram, who is an ABE representative, based in UK, met with the Pro-Rector, Director LDC and DD(FCP) in November 2016, to discuss possibility of joint programmes in collaboration with Bahria University. ABE is an international UK based academic body that offers international diplomas and certificates. The discussion held in regards to possible collaboration was as follow:
 - ABE presently is offering international diplomas/certificates for undergraduate and postgraduate students in the field of Business Management, Financial Management, HR, Marketing, Travel Tourism & Hospitality Management, Health & Social Care Management and Business Start-up & Entrepreneurship.
 - The diplomas are usually awarded against a roadmap of 1 to 2 semesters, whereas certifications are available against a single course (presently for the course of Business Start-up only).
 - The subjects that are generally covered in the diplomas or certification of ABE are also covered in the BBA and MBA road maps of Bahria University.
 - ABE has its own set of course outlines and course material that they have prepared after thorough scrutiny and evaluation by group of senior international academics. These course outlines, after reviewing one or two, seems to be very comprehensive, advanced and updated, involving more activity based learning. A sample course outline for a level 3 qualification (i.e. Bachelors year 1 & 2 in Bahria University) on Entrepreneurship/Business Start-up is enclosed for perusal.
 - ABE has recommended that for similar courses, if BU is able to follow the same course outline, as prepared by ABE, then BU students can be given exemption against these courses that can ultimately contribute towards award of international diploma by ABE. The student will only have to pay the fee for ABE qualification i.e. approximate GBP100 for certification against 1 course (available for the course of Business Startup only) and approximate GBP450 against International Diploma.
 - In simple words, a BU student on completion of their BBA & MBA programme, can get exemptions for the courses similar to that of ABE towards award of their diploma and can also become eligible for award of International Certification, in case of Business Startup course. The requirement on behalf of BU is to ensure that the course outline prepared by ABE is followed for getting exemption.
2. Just like BU students can get exemption of courses against the award of ABE International diplomas, similarly they are interested to seek exemption from BU for their other registered students for courses that are similar in BU. So for example if a student registered with ABE is interested to join BU, BU is to award exempt the courses for that student against the degree programme he wants to join provided that they are available in his/her roadmap. This will ensure a two way flow of students as a result of this partnership.
3. There is a consensus that it can be taken as a test case, BU shall begin with the adaption of course outline of the Certification for Business Startup course of ABE against the course of Entrepreneurship at BU. This will require adaption of ABE course outline for this subject. The students will be given option to pay an addl GBP100 for attainment of International Certification.
4. Later, provided there is sufficient value addition and interest from the students, BU can consider adapting course outlines for other ABE courses that can contribute towards award of their diplomas.

PRESENTATION MADE BY THE SPONSOR

(excluding the points covered in the working paper)

COURSE OUTLINE OF BUSINESS STARTUP CERTIFICATION OF ABE

- **Element 1**
 - Analyse entrepreneurial and market potential
 - Ability to assess the marketing environment and how it impacts and influences your business idea
 - Ability to assess your own capability against the needs of the proposed business venture.
- **Element 2**
 - Build the business idea
 - Ability to scope and refine a business idea – what it might look like, feel like, act like and be like and the ability to research the market to make sure the business idea is of interest to your customers
- **Element 3**
 - **Developing the marketing approach**
 - Ability to build the unique selling proposition, to know who the customer and market is and how to approach them
 - Ability to create the scope of the product and/or service and the ability to price it, promote it, sell it and service it whilst building brand recognition
- **Element 4**
 - Plan the operations
 - Ability to identify the need for the right legal set-up for the new business venture, while identifying the right people, operational processes and resources for the new business start-up
- **Element 5**
 - Plan the budget
 - Ability to develop a funding and operational budget for the new business start-up, including a daily cash flow along with setting key business performance indicators to monitor performance
- **Element 6**
 - Create the business plan and pitch
 - Ability to develop a business plan that incorporates all of the above
 - Ability to pitch and present effectively for business funding from a range of sources

HEC Course Outline	ABE – Course Outline
Develop an idea for a new venture Research its potential and	Analyze entrepreneurial and market potential Assess the marketing environment and how it impacts and influences the business idea. Assess own capability against the needs of the proposed business venture.

understand the risks associated	Build the business idea Ability to scope and refine a business idea – what it might look like, feel like, act like and be like and the ability to research the market to make sure the business idea is of interest to your customers.
Undertake marketing, positioning, and customer development	Developing the marketing approach Ability to build the unique selling proposition, to know who the customer and market is and how to approach them. Ability to create the scope of the product and/or service and the ability to price it, promote it, sell it and service it whilst building brand recognition
Plan for the execution and management of all the relevant functional areas of new venture including operations, supply chain, information systems, and human resources etc. Identify and prepare legal documents, IP policy, contracts, etc.	Plan the operations Ability to identify the need for the right legal set-up for the new business venture, while identifying the right people, operational processes and resources for the new business start-up.
Prepare an analysis of the financial requirements and build a financial strategy for the new venture, including incremental appreciation of the equity base.	Plan the budget Ability to develop a funding and operational budget for the new business start-up, including a daily cash flow along with setting key business performance indicators to monitor performance
Develop a comprehensive business plan for their venture.	Create the business plan and pitch Ability to develop a business plan that incorporates all of the above Ability to pitch and present effectively for business funding from a range of sources

CONSIDERATIONS:

- ABE has recommended that for similar courses, if BU is able to follow the same course outline, as prepared by ABE, then BU students can be given exemption against these courses that can ultimately contribute towards award of international diploma by ABE. The student will only have to pay the fee for ABE qualification i.e. approx GBP100 for certification against 1 course (available for the course of Business Startup only) and approx GBP450 against International Diploma.
- In simple words, a BU student on completion of their BBA & MBA programme, can get exemptions for the courses similar to that of ABE towards award of their diploma and can also become eligible for award of International Certification, in case of Business Startup course. The requirement on behalf of BU is to ensure that the course outline prepared by ABE is followed for getting exemption.

RECOMMENDATIONS

- It is believed that as a test case, BU shall begin with the adaption of course outline of the Certification for Business Startup course of ABE against the course of Entrepreneurship at BU. This will require adaption of ABE course outline for this subject. The students will be given option to pay an additional GBP100 for attainment of International Certification.
- Later, provided there is sufficient value addition and interest from the students, BU can consider adapting course outlines for other ABE courses that can contribute towards award of their diplomas.

SOP FOR STUDENTS' EXCHANGE WITH IZMIR UNIVERSITY OF ECONOMICS AND ISTANBUL
KEMERBURGAZ UNIVERSITY

Background to the Case:

In line with the Strategic Plan of Bahria University; two new agreements for exchange of students have been signed with following Universities in Turkey:

- a) Izmir University of Economics (IUE), Izmir
- b) Istanbul Kemerburgaz University (IKBU), Istanbul

According to the exchange agreements, Bahria University can send up to 4 students in a year on exchange basis to IUE and 5 students in a year on exchange basis to IKBU. There is no tuition fee that is to be paid by the student to these Universities. The students will only have to bear their travel and living expenses in Turkey.

Bahria University already has similar exchange agreement with Yasar University (Turkey), York St. John University (UK) and AIMST University (Malaysia), with the SOPs for selection and credit transfer process, approved by the ACM.

Keeping in view the practice followed for the other three universities, an SOP has been prepared on the similar lines defining the students' selection and credit transfer mechanism under the exchange programme.

The SOP for Exchange of Students with IUE and IKBU is presented for the approval of ACM.

Recommendation:

It is recommended that the SOP prepared for the Exchange of Students with IUE & IKBU, Turkey, to be approved for initiating the exchange activity with IUE & IKBU.

SOP FOR OUTBOUND EXCHANGE STUDENTS FOR IZMIR UNIVERSITY OF ECONOMICS,
TURKEY

- a) Based on the maximum provision of students to be sent in an academic year i.e. 4, as set by Izmir University of Economics, Turkey; there shall be students selected from each campus of Bahria University including, Islamabad, Karachi & Lahore, to go on the exchange program to Izmir University of Economics. 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:

<u>CAMPUSES</u>	<u>Nominating Authority</u>
------------------------	------------------------------------

- | | |
|--------------------|---------------------------|
| • Islamabad Campus | Director Campus Islamabad |
| • Karachi Campus | DG Karachi Campus |
| • Lahore Campus | 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.
- 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	-	Chairperson
ii.Registrar	-	Member
iii.Advisor/Director Academic Affairs	-	Member
iv.Director Admissions	-	Member
v.Director Examinations	-	Member
vi.Director Students Affairs	-	Member
vii.Dy. Director (FCP)	-	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 Turkey, 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.

g) The student will defer their semester prior going to Izmir University Economics, Turkey, 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 Izmir University of Economics under exchange program. The student must adhere to departure and return dates as specified by his/her department.

h) The duration of the semester(s) studies abroad will not be counted towards the calculation of time bar.

Eligibility for Honors & Awards:

i) Students availing the exchange programme at the Izmir University Economics will be eligible for academic honors & awards, as long as they are taking full semester loads in their studies at Bahria University.

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 Program:

I) Student interested in registering for the courses at Izmir University of Economics, 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 Izmir University of Economics 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 program 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 Izmir University of Economics 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 for final approval to Advisor/Director Academic Affairs. There shall be no fee charged from the student for **credits transfer**.

ii. **Credits transfer** of courses will only be allowed for Degree level programs (*equivalent to similar level program at Bahria University*) offered on campus.

iii. **Credits transfer** for only those courses will be allowed for which a course with similar standard, credit hours and matching description is available in the relevant academic program of Bahria University. As the marking criteria at Izmir University of Economics is different from what is followed at Bahria University, therefore following grade mapping mechanism is to be followed:

	Grade at Izmir University of Economics	GPA Points at Izmir University of Economics	Equivalent Grade at Bahria University
a	AA	4.0	A
b	BA	3.5	B+
c	BB	3.0	B
d	CB	2.5	C+
e	CC	2.0	C
f	DC	1.5	C
g	DD	1.0	D
h	FD	0.5	F
i	FF	0	F

iv. The courses must equate in description and laboratory work, if any, with the similar course of the relevant academic program of Bahria University.

v. **Credits transfer** of courses equating to maximum of 50% of the total credit hours of the relevant academic program of Bahria University will be allowed.

SOP FOR INBOUND EXCHANGE STUDENTS FROM IZMIR UNIVERSITY OF ECONOMICS

- a) Bahria University will accept four students from Izmir University of Economics under the exchange program in any given academic year.
- b) Only students recommended by the International office of Izmir University of Economics will be entertained under this arrangement.
- c) The inbound students from Izmir University of Economics 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 Izmir University of Economics under student's Exchange program. An admission fee for the relevant programme would be applicable to the selected students.
- f) On successful completion of the course work at Bahria University, the student will be responsible to meet the **credits transfer** requirements of Izmir University of Economics, 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.

**SOP FOR OUTBOUND EXCHANGE STUDENTS FOR ISTANBUL KEMERBURGAZ UNIVERSITY,
TURKEY**

- a) Based on the maximum provision of students to be sent in an academic year i.e. 5, as set by Istanbul Kemerburgaz University, Turkey; there shall be students selected from each campus of Bahria University including, Islamabad, Karachi & Lahore, to go on the exchange program to Istanbul Kemerburgaz University. 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:

<u>CAMPUSES</u>	<u>Nominating Authority</u>
------------------------	------------------------------------

- | | |
|--------------------|---------------------------|
| • Islamabad Campus | Director Campus Islamabad |
| • Karachi Campus | DG Karachi Campus |
| • Lahore Campus | 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.
- 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 | - | Chairperson |
| ii. Registrar | - | Member |
| iii. Advisor/Director Academic Affairs | - | Member |
| iv. Director Admissions | - | Member |
| v. Director Examinations | - | Member |
| vi. Director Students Affairs | - | Member |
| vii. Dy. Director (FCP) | - | 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 Turkey, 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.

- g) The student will defer their semester prior going to Istanbul Kemerburgaz University, Turkey, 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 Istanbul Kemerburgaz University under exchange program. The student must adhere to departure and return dates as specified by his/her department.
- h) The duration of the semester(s) studies abroad will not be counted towards the calculation of time bar.

Eligibility for Honors & Awards:

- i) Students availing the exchange programme at the Istanbul Kemerburgaz University will be eligible for academic honors & awards, as long as they are taking full semester loads in their studies at Bahria University.
- 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 Program:

- o) Student interested in registering for the courses at Istanbul Kemerburgaz University, 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.
- p) The student must inform their Head of Department about the possible courses they wish to take at Istanbul Kemerburgaz University 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 program he/she is studying.
- q) 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 Istanbul Kemerburgaz University 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 for final approval to

Advisor/Director Academic Affairs. There shall be no fee charged from the student for **credits transfer**.

- ii. **Credits transfer** of courses will only be allowed for Degree level programs (*equivalent to similar level program at Bahria University*) offered on campus.
- iii. **Credits transfer** for only those courses will be allowed for which a course with similar standard, credit hours and matching description is available in the relevant academic program of Bahria University. As the marking criteria at Istanbul Kemerburgaz University is different from what is followed at Bahria University, therefore following grade mapping mechanism is to be followed:

	Grade at Istanbul Kemerburgaz University	GPA Points at IKBU	Equivalent Grade at Bahria University
a	A	4.0	A
b	BA	3.0	B+
c	BB	2.0	B
d	CB	1.0	C+
e	CC	N/A	C
f	DC	N/A	D
i	FF	0	F

- iv. The courses must equate in description and laboratory work, if any, with the similar course of the relevant academic program of Bahria University.
- v. **Credits transfer** of courses equating to maximum of 50% of the total credit hours of the relevant academic program of Bahria University will be allowed.

SOP FOR INBOUND EXCHANGE STUDENTS FROM ISTANBUL KEMERBURGAZ UNIVERSITY

- a) Bahria University will accept five students from Istanbul Kemerburgaz University under the exchange program in any given academic year.
- b) Only students recommended by the International office of Istanbul Kemerburgaz University will be entertained under this arrangement.
- c) The inbound students from Istanbul Kemerburgaz University 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 Istanbul Kemerburgaz University under student's Exchange program. An admission fee for the relevant programme would be applicable to the selected students.
- f) On successful completion of the course work at Bahria University, the student will be responsible to meet the **credits transfer** requirements of Istanbul Kemerburgaz University, 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.

Launch of PHD(Media & Communication Studies) Program from Spring 2018

Introduction

- As discussed in the departmental presentation and directed by the Rector for launching of PhD Program following is submitted.
- The Pakistani Media Industry has witnessed unprecedented growth in the past two decades. Presently 120 TV Channels and 180 FM Radio Stations are operating in Pakistan. There are around 5000 Cable TV Networks functioning in the country as well.
- Introduction of new digital technology such as 3G and 4G by the Telecom companies have further provided great opportunities to the mobile users to have easy access to unlimited information coming from various parts of world. Due to this scenario universities in Pakistan have provided higher education facilities in media studies to those students who are aspirant to contribute in academia and industry.
- Human resource for the media industry and Academia.

PhD Intake in Two Universities in Islamabad

- The Bahria University also created a separate Media Studies Department and introduced MS Program.
- It is pertinent to mention that in twin cities only two universities i.e AIOU and Islamic International University Islamabad are offering PhD degree program in Media Studies. During current year 150 candidates applied in AIOU for seeking admission in PhD Media Studies Department out of which 50 were short listed for the test while only 5 were selected for the enrolment. Similarly in Islamic International University 60 candidates applied for PhD out of which only 5 were admitted for PhD program.

Candidates available for PHD Program

- This information suggests that there is an ample requirement for another higher education institute to offer PhD program in media and communication studies for accommodating the aspiring candidates.

Program Overview

- Two PHD available
- 1. Existing Faculty will get degree in june 2016.
- 2. Weekend program.
- 3. Classes available.
- 4. three years program.
- 5. Intake Once in a year.
- The Course outline and road map will be finalize in few weeks time.

Subject: Fee Structure for PhD Scholars Exceeding Regular Duration of the Programme**1. Background to the Case**

- PhD programs, offered by BU, has a minimum duration of 3 years and maximum duration of 6 years which can further be extended to 8 years by granting 1 year time-bar waiver by FRC and another 1 year after the approval of competent authority.
- Currently, PhD scholar has to pay for the tuition fee for minimum duration (54 credit hours). If the PhD scholars need more time to complete, he/she can continue without paying any fees for the extended period. This PhD fee payment structure has been approved in 22nd meeting of ACM vide agenda item 2219 which states in the decision

"PhD Candidates shall not be charged extra fee during the research phase even if it extends beyond normal time frame with stays with the time bar limit."

- Policy of no fees for PhD Scholar for extended duration was supported due to:
 - Previously inability of BU to offer all relevant courses to PhD Scholar (This problem is mitigated by increase in admission in PhD programme and availability of level 700 and above courses in MS/MPhil programmes for PhD scholar).
 - It is normally not able to foresee exactly how much time it will take to solve or enhance the solution of a given research problem. Delay may not be due to lack of efforts from scholar but due to the complexity of the research problem.
- On the other hand, PhD scholars sometime take more time beyond their regular duration due to lack of commitment, PhD scholar not full time or Non-research aptitude of PhD scholar

2. Recommendations

- PhD scholars pay the fees against their credit hours as they register over the period of time.
- There shall be no extra fee for the fourth year of PhD since it is quite normal to extend the PhD duration to fourth year due to complexity for research problems and minor delays in administrative processing.
- The student needs to pay an incremental extension fee (in addition to credit hour registration fee, if still to register) for each semester from 5th year and onward as suggested below:

Year in PhD Program	Recommended extension fee per semester
4	Nil
5	Rs. 10000
6	Rs. 15000
7-8 (requiring time-bar waiver)	Rs. 20000

3. Establishments/HR Effect if any NIL**4. Financial Effect**

Revenues generated per semester = $(X * 10000) + (Y * 15000) + (Z * 20000)$

Where

X = Number of Scholars in 5th year of PhD Programme

Y = Number of Scholars in 6th year of PhD Programme

Z = Number of Scholars in 7th and 8th year of PhD Programme

Working Paper Agenda Item

1. PhD programs, offered by BU, has a minimum duration of 3 years and maximum duration of 6 years which can further be extended to 8 years by granting 1 year time-bar waiver by FRC and another 1 year after the approval of competent authority.

2. Currently, PhD scholar has to pay for the tuition fee for minimum duration (54 credit hours). If the PhD scholars need more time to complete, he/she can continue without paying any fees for the extended period. This PhD fee payment structure has been approved in 22nd meeting of ACM vide agenda item 2219 which states in the decision

"PhD Candidates shall not be charged extra fee during the research phase even if it extends beyond normal time frame with stays with the time bar limit."

3. The base of this decision was that the number of PhD scholars are normally less and it becomes difficult to complete class of 10 PhD scholars to offer a course. Although, there are some MS courses which are level 7 and above where the PhD scholars can also attend, it is still not possible to ensure offering all the required course for the PhD scholar although efforts are underway to synchronize the roadmaps of PhD and relevant programs to enable offering of mature MS courses to the PhD scholars as well. Resultantly, it takes more time to complete the course work in one year.

4. Another genuine reason for extension of PhD beyond the normal time frame is that it is normally not able to foresee exactly how much time it will take to solve or enhance the solution of a given research problem. Scholar may be putting his/her best efforts but the complexity of the research problem sometimes become the driving factor for the amount of time required.

5. On the other hand, PhD scholars sometime take the time beyond their minimum duration as a normal time. Although putting best efforts may reduce the time duration of PhD, they take it light thus resulting in increase in the time duration which may be reduced given certain overhead is imposed for the delay.

6. PhD fee structure analysis of other universities is presented at Annexure 'A'.

7. Based on the pros (mentioned in para 3-4) and cons (mentioned in para 5) and the Fee Structure Analysis presented at Annexure 'A', following are the recommendations for the fee structure of PhD programs:

a. PhD scholars pay the fees against their credit hours as they register over the period of time.

b. There shall be no extra fee for the fourth year of PhD since it is quite normal to extend the PhD duration to fourth year. Sometimes the BU is unable to offer all the required course for PhD scholar during the course work stage. Missing of one course will result in extension of research duration by 6 months. This reason coupled with the analysis presented in para 3 and 4 results in extension of PhD duration to 4th year.

c. The student needs to pay an incremental extension fee (in addition to credit hour registration fee, if still to register) for each semester from 5th year and onward as suggested below:

Year in PhD Program	Recommended extension fee per semester
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4	Nil
5	Rs. 10000
6	Rs. 15000
7-8 (requiring time-bar waiver)	Rs. 18000

Annexure 'A'

PhD Fee Analysis of Competitor Universities

Sr. #	University Name	PhD Tuition Fees	Charge Fee after Minimal Duration
1	NUST	<ul style="list-style-type: none"> • Semester wise fee instead of fee computed based on credit hours • Feed taken for 3 years • No extra fees for the extended duration 	NO
2	QAU	<ul style="list-style-type: none"> • Rs. 26400 semester wise fee for 3 years 	YES
3	FAST	<ul style="list-style-type: none"> • Charge fees per semester for extended duration @ Rs. 8000 per semester • In the semester where student defend his thesis, Rs. 45000 is charged for the semester 	YES
4	UET	<ul style="list-style-type: none"> • Charge fees per semester for extended duration @ Rs. 14000 per semester 	YES
5	COMSATS	<ul style="list-style-type: none"> • Rs. 3,600 per credit hour and Rs. 32,400 per semester for normal duration. • Charge fees per semester for extended duration @ Rs. 15000 per semester afterwards 	YES
6	PIEAS	<ul style="list-style-type: none"> • PhD scholar need to register for research Credit hours even after completion of normal 36 Research Credit hours • Registration of research credit hours after minimum duration is @ Rs. 1800 per credit hour.. 	YES

Proposal for the Launch of MBA 1.5 YRS (WE/EVE) at BULC

Background of the Case

1. Following management science programs are being offered by MS department at BULC since the inception of BULC in Fall-2013.

- I. MBA 3.5 YRS
- II. MBA 2 YRS (WE)
- III. BBA 4 YRS

At present, the first batch of BBA students are studying in 8th semester and will be graduating in Sprig-17.

2. In order to facilitate the graduating student of BBA with relevant post graduate degree, MBA 1.5 Years program needs to be offered in Fall-17. In addition the same program will also be offered to graduates of other universities in accordance with Decision No.2631 of 26th ACM dated 12-13 April 2016. Copy of the decision is placed opposite of F/A.

3. A detailed survey of the graduating students was conducted to know about the willingness of BULC students in joining MBA 1.5 years at BULC. Survey form along with survey result is placed opposite at F/B. The result indicates the expressive interest of 05 graduating students of BBA at BULC in joining MBA 1.5 Years (Weekend/Evening). It is expected that with the enrollment of BBA students of BULC and external students, the student strength of MBA 1.5 Years will be 15 students. The case for launch of MBA 1.5 YRS (WE/EVE) is tabled for approval as weekend/evening program. Roadmap of the program is placed at Appendix "A".

HR Implications

Semester	PFM	Visiting Faculty	NQ
Fall 2017	1	2	1

Financial Implications

<u>Revenue</u>		<u>Fall 2017</u>	<u>Spring-2018</u>	<u>Fall-2018</u>	<u>Total (Million Rupee)</u>
<u>Fee</u>		<u>1.64</u>	<u>1.64</u>	<u>1.64</u>	<u>4.92</u>
<u>New</u>		<u>1.64</u>	<u>1.64</u>	<u>1.64</u>	<u>4.92</u>
<u>Existing</u>		<u>-</u>	<u>1.13</u>	<u>1.73</u>	<u>2.86</u>
<u>Total Revenue</u>		<u>1.64</u>	<u>2.77</u>	<u>3.37</u>	<u>7.78</u>
<u>Expenditure</u>					
<u>Visiting Faculty</u>					<u>1.59</u>
<u>PFM/Weekend Coordinator</u>					<u>1.62</u>
<u>Student Expenses/Misc.</u>					<u>1.8</u>
<u>Admin Staff (Naib Qasid)</u>					<u>0.27</u>
<u>Avg. Building Rent</u>					<u>0.15</u>

<u>Library Books</u>	<u>0.5</u>
<u>Total Expense</u>	<u>5.93</u>
<u>Profit</u>	<u>1.85 (M)</u>

Recommendation

It is recommended that launch of MBA 1.5 (Weekend/Evening) programme from Fall 2017 semester at Lahore campus with two intakes per year i.e. 15 students in fall and 15 in Spring semester respectively may please be approved.

Appendage "A"

Semester-1		
MGT 662	Strategic Management	3
FIN 611	Corporate Finance	3
MKT 600	Contemporary Issues in Business	3
MKT 653	Corporate Leadership and Social Responsibilities	3
	Specialization-I	3
Semester-2		
MGT 626	Project Management	3
	Specialization-II	3
	Specialization-III	3
MGT 655	Business Decision Modeling	3
RMT 697	Dissertation (Proposal (Development))	2
	Internship	
Semester-3		
RMT 698	Dissertation (Thesis Write-Up and Defense)	4
	Specialization-IV	3

BBA Programme – Inclusion of a Foreign Language in Curriculum**Discussion:**

In the wake of globalization, many universities around the globe are opting for adding the courses of foreign language in their curriculum. In present context, our increased collaborative projects with China and other countries will require students know how of the concerned countries languages. Many Pakistani universities have also added additional language courses in their curriculum. To start with we would offer Chinese language as newly created Confucius Center at University of Karachi has offered services of Chinese faculty.

Recommendation:

Keeping in view of the above, there is a consensus that offering a foreign language each semester will be beneficial for the students' career growth and facilitation for their scope of movement and understanding culture other than local and western. Hence, it is submitted that the point may be approved for offering foreign language course all across the BU.

MS MEDIA & COMMUNICATION AT BUKC

- Efforts are already in progress to revitalize the Department of Media Studies in BUKC through a multi faceted strategy devised by honorable Rector, Bahria University. Launching of MS Program in Media and Communication Studies is part of the same endeavors.
- MS Program is important to introduce students with advance concepts and theoretical framework that is not possible in undergraduate level.
- Moreover, it will contribute towards expansion and enhancement of academic standard of department
- Media Studies Department is planning to launch its MS Media and Communication Studies from Fall 2017(subject to NOC from HEC)

PROGRAMME DESCRIPTION

- MS in Media and Communication Studies spread over 30 credit hours to be completed in two years.
- Core and elective course work of 24 credit hours.
- Thesis of 6 credit hours.

ELIGIBILITY CRITERIA:

- 1. 16 years education with Bachelors/ equivalent degree from HEC- recognized university in Media Studies/ Political Science/ International Relations or any other discipline of Social Science with the minimum CGPA of 2.5/4.00,or 50% marks where CGPA is not given.
- 2. HEC's attestation on the candidate's local degrees
- 3. A GAT- General test with a minimum 50% cumulative score, or pass Bahria University's admission test

ROADMAP

- We will follow the HEC's and approved BUIC's road map for our program :

HEC's Structure:

S.N	Categories	No. of Courses	Credit Hour
1	Compulsory Courses	5	15
2	Optional Courses(03 out of 8)	8 (3 out of 8)	9
3	Thesis	-	6
	Total	8	30

• Total No. of Credit Hours	• 30
• Duration	• 2 Years
• Semesters	• 4
• Course Load per semesters	• 12
• No. of Courses per semester in 1 & 2	• 4

Compulsory Courses	Optional Courses	Thesis
Approaches to Mass Communication 1	Mass Media, Culture and Society	Compulsory
Approaches to Mass Communication II	International Communication	
Communication Research Method 1	Advanced Development Communication	
Communication Research Method II	Philosophy of Social Sciences	
M.Phil. Seminar	Theories of Influence on Media Content	
	Media and Politics	
	Digital Media	
	Semiotics	

HEC's ROADMAP**SEMESTER-1**

Course Code	Course Title	Credit Hours
-	Approaches to Mass Communication 1	3
-	Communication Research Method 1	3
-	Elective (To be chosen from 8 courses)	3

-	Elective (To be chosen from 8 courses)	3
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SEMESTER-2

	Approaches to Mass Communication II	3
	Communication Research Method II	3
	Elective (To be chosen from 8 courses)	3
	MPhil Seminar	3

SEMESTER-3 & 4

	Thesis	6
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BUIC's ROADMAP

SEMESTER-1

Course Code	Course Title	Credit Hours
MSM 600	Approaches to Mass Communication 1	3
MSM 602	Communication Research Method 1	3
MSM 604	International Communication	3
MSM 605	Pakistan Media: Prospects and Challenges	3
MSM 607	M.Phil. Seminar	1

SEMESTER-2

MSM 601	Approaches to Mass Communication 1	3
MSM 603	Communication Research Methods 2	3
MSM 606	Peace Journalism	3
MSM 607	M.Phil. Seminar	2

SEMESTER-3

MSM 608	Thesis Proposal Writing/ Literature Review	Mandatory
MSM 609	Thesis Writing	6

SEMESTER-4

MSM 609	Thesis Writing	6
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WE WILL FOLLOW THE HEC's GUIDLINE AND BUIC'S ROAD MAP WITH MINOR CHANGES:

- I. We will introduce M.Phil. Seminar in 2nd Semester with full 3 credit hours.
- II. We will offer electives according to our markets demand for example we may select Digital Media instead of Pakistan Media: Perspective and Challenges

PROJECTED EARNING (SEMESTER- WISE INTAKE/EARNING)

Course work		8 Courses (24 Credit Hours)
Fee per Course		Rs. 12000/=
Thesis		6 Credit Hours
Thesis Fee		Rs. 70000

S.N	Intake	Semester	No. of Sections	Strength	No. of courses	Earning (No. of students x No. of courses x course fee)
1	Fall 2017	1	1	8	4	$8*4*12000 = 384,000$ Total= 384,000
2	Spring 2018	2	Fall 2017 (1) Spring 2018 (1)	16	4+4	$8*4*12000 = 384000$ $8*4*12000 = 384000$ Total=768,000
3	Fall 2018	3	Fall 2017(1) Spring 2018 (1) Fall 2018 (1)	24	4+4+1	$8*4*12000 = 384000$ $8*4*12000 = 384000$ $8*1*70000 = 560000$ Total= 1,328,000

4	Spring 2019	4	Fall 2017 (1) Fall 2017(1) Spring 2018 (1) Fall 2018 (1)	32	4+4+1+0	$8*4*12000 = 384,000$ $8*4*12000 = 384000$ $8*1*70000 = 560000$ $8*0*70000= 0$ Total= 1,328,000
Grand Total Pk.Rs.3,808,000 (Pak RupeesThirty Eight Lacs and Eight Thousands)						

- Estimated cost of hiring New faculty member (PFM/VFM)
- Required 1X Ph.D PFM (Pk.Rs. 175,000) additional
- Required 2 X MS VFM (Pk.Rs. 99,000 each semester @ 2200 Rs/hr)
 - VFM will be required from 2nd Semester

S.#	Semester	No.Of FMs (PFM+VFM)	Salary Expense (Pk.Rs.)
1	Fall 2017	2 (1XNew Hired+1X Existing)	300,000
2	Spring 2018	3 (1XNew Hired+1X Existing+1X VFM)	400,000
3	Fall 2018	3 (1XNew Hired+1X Existing+2X VFM)	500,000
4	Spring 2019	3 (1XNew Hired+1X Existing+2X VFM)	500,000
Grand Total Pk.Rs.17,00,000 (Pak Rupees Seventeen Lacs)			

PROJECTED EARNING

- **Estimated miscellaneous expenses (Maintenance, Over heads etc)**
Approx. Rs. 400,000/-
- **Earning vs Expenses**
Approx. gross profit of Pk.Rs.17,00,000/-

ANALYSIS

- A promising MS program is need of the time now as most of our competitors are already running their MS Program in Media Studies
- It will also benefit our undergrad students. As per survey results many of our students are joining our competitors for further studies.
- As per survey results,many of our PFMs at Bahria and VFM also shown their interest in our MS program, they are willing to join our MS Program in Fall 2017.
- A Research Journal of Department of Media Studies is also in pipe line we have presented the idea before the Director General, BUKC, Director BUKC, and Dean Management and Social Sciences.
- We are working on the minor changes suggested by the honorable forum.
- It will also contribute towards sustaining the endeavors to create an environment conducive to rigorous research.

CONCLUSION

- MS Program in Media and Communication Studies has a potential to attract students from the market.
- The growing need of MS Faculty in Universities, is also a contributing factor to make this program successful.
- None of the University here at Karachi is offering MS with this title "Media and Communication Studies" hence we will be having an edge on other universities as well.

RECOMMENDATION

- Permission may be granted to launch the MS Program in Media and Communication Studies in Fall 2017(Subject to the NOC from HEC)
- Financial Implication : Nil
- Hiring of 1 PhD Faculty is in process.