

**Minutes of the 27th Special
Meeting of the Board of Studies
Faculty of Engineering Sciences
held on
24th September 2022
through Microsoft Teams**



Bahria University Islamabad

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**Minutes of the 27th Special Meeting of Faculty Board of Studies
Engineering Sciences held on 24th September, 2022 through Microsoft
Teams**

Attendance:

BUIC

Prof. Dr. Atif Raza Jafri	Dean ES	Chair
Assoc Prof. Dr. Said Akbar Khan	HoD(E&ES)	Member
Snr. Assoc. Prof. Dr. Arif ur Rehman	HoD(CS)	Member
Snr. Assoc. Prof. Dr. Awais Majeed	HoD(SE)	Member
Assoc. Prof. Dr. Shahzad Ahmed	HoD(CE)	Member
Assoc. Prof. Dr. Junaid Imtiaz	HoD(EE)	Member

BUKC

Snr. Assoc. Prof. Dr. Sohaib	Associate Dean	Member
Snr. Asst. Prof. Dr. Mukesh Kumar	HoD(EE)	Member
Assoc. Prof. Dr. Salma Hamza	HoD(E&ES)	Member
Assoc. Prof. Dr. Syed Safdar Ali	HoD(CS)	Member
Snr. Asst. Prof. Dr. Shoaib Mughal	HoD(CE)	Member
Snr. Asst. Prof. Dr. Osama Rehman	HoD(SE)	Member

BULC

Snr. Asst. Prof. Dr. Khawaja Qasim Maqbool	HOD(CS)	Member
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Proceedings

Preliminaries

FBoS-ES meeting took place on 24th September, 2022, with the quorum complete, the proceedings commenced at 1500 hrs, with recitation from the Holy Quran.

In his opening remarks, the Chair stressed the importance for participation in the proceedings while staying focused on the point under deliberation.

New Items:**Item 2701: Change in Policy Regarding Transfer Between CUs for Engineering Students**

Sponsor: Dean ES

Referral Authority: FBoS ES

Summary of the Case

- Recently PEC has raised an objection on BU policy regarding transfer between CU in light of Article 3(d) of PEC Regulations for Engineering Education in Pakistan. The Article 3 (d) of PEC regulations says that the transfer of credits shall not exceed 50% of programme total credits required even for student seeking transfer of credits within the same program from one campus to other campus or from one institution/college/university to another institution/college/university. This 50% credit transfer clause is not included in our policy and so far, students have been transferred without taking this limit into account.
- A case file was initiated in this regard where Honorable Rector BU concur the change in Transfer Between CUs policy for Engineering Students. However, it was directed to first discuss the matter in FBoS, then present in ACM followed by approval in ECM.

Discussion

The change in Transfer between CU was discussed in FBoS and following was decided:

1. The following clause may be added in clause 2.3.1 of academic rules:

For Engineering programs, only 50% of the overall program credits are allowed to be transfer in case of inter-campus transfer within the same program.

2. Following steps shall be added in the existing process of transfer between CUs for engineering students:
 - a. The application for transfer to another CU shall also include the transcript of applicant and the information initially sent to PEC (attached as Form-1 in [appendage 2701](#)) for registration in PEC SIS portal.
 - b. After receiving of application of the student willing to transfer to other CU, the concerned department at receiving CU shall constitute a ToC committee which will work on possibility of transfer as well as number of credits to be transferred on form attached as Form-2 in [appendage 2701](#).
 - c. The recommendation of the ToC committee, after the endorsement of HoD, shall be communicated to the applicant through Director Academics (campus)/Director Campus.
 - d. On acceptance of recommendation of ToC committee by the applicant, the case shall be sent to PEC by the concerned Principal of receiving CU.
 - e. Once NoC shall be obtained the student shall be transferred to intended CU while following existing transfer between CUs process.
3. For those engineering students which were transferred previously through existing BU policy, a consolidated case shall be sent to PEC for issuance of NoC for inter campus transfer.

Decision 2701

The case to be presented in 42nd ACM for the approval of change in policy related to transfer between CU for engineering students.

Item 2702: Launch of BS in GIS & RS at BUIC

Sponsor: HOD (E&ES) BUIC

Referral Authority: DBOS E&ES BUIC

Summary of the Case

In 41st ACM, under the decision 4109 (para- 125(c)) it was directed to launch BS in GIS & RS at BSEAS-IC from Spring 2023 semester, with the launch proposal presented in the next ACM.

Discussion

The working on launch proposal of BS in GIS & RS was presented by HoD E&ES. It was decided to keep the same roadmap as approved in 41st ACM. Moreover, feasibility of launch of program at H-11 campus of BUIC is also discussed. After certain corrections, the feasibility was finalized which is attached as [appendage 2702](#).

Decision 2702

The feasibility to be forwarded to ACM as progress on agenda item 4109 and seek approval for launch of BS in GIS & RS at BUIC.

Item 2703: Implementation of HEC Undergraduate Education Policy 2020 (Item 4130 of 41st ACM)

Sponsor: HOD (E&ES) BUIC

Referral Authority: DBOS E&ES BUIC

Summary of the Case

In 41st ACM, under the decision 4130 (para- 194(c)) it was directed to all Deans to deliberate the following aspects of the UGE Policy for adoption methodology, resources requirement and adoption timeframe for respective academic programmes:

- i. Introduction of Practical Learning Lab (PLL).
- ii. Mandatory 9-weeks Internship for all UG programmes.
- iii. Establishment of Academic Advisement System at all CUs

Discussion:

In ES faculty, HEC UG policy is applicable on BS programs offered at E&ES department (other programs come under PEC and NCEAC and they have to follow the existing curriculum). In this regard, HoD E&ES BUIC presented the working on decision 4130 of 41st ACM. The working is attached at [appendage 2703](#).

Decision 2703:

The progress to be forwarded for 42nd ACM.

Closing of the Meeting

There being no further points, the Chair brought the meeting to close, thanking the participants for their wholehearted participation in both sessions.

Prof. Dr Atif Raza Jafri
Dean (ES), Head FBoS
24th September 2022

Distribution:

BUHQ:	Rector, Pro-Rector, Registrar DAA
BUIC:	DG BUIC, DIC HOD(EES), HOD(EE), HOD(CS), HOD(SE), HOD(CE)
BUKC:	DG BUKC, DKC HOD(EES), HOD(EE), HOD(CS), HOD(SE), HOD(CE)
BULC:	DLC, HOD(CS)

Appendages:

Appendage 2701

Form-1:

S. No	1	2	3	4
Student Name				
Father Name				
Mother Name				
Registration No.				
CNIC				
Permit of Residence (POR)				
Email ID				
Contact Name				
Gender				
FSc Pre-Engineering				
ICS				
A-Level				
DAE				
FSc Pre-Medical				
F.Sc Pre-Medical Additional Math				
B.Sc				
B. Tech (Pass)				
B.Tech (Hons)				
Marks Obtained in Entry Test				
Date of Birth				
Quota				
Religion				
Permanent Adress				
Postal Address				
Nationality				
Domicile				
City Domicile				
Passport NO.				
Next of Kin				
Remarks				

Form-2



Inter-Campus Transfer Evaluation Form Departmental Equivalence Committee

Name of Student: _____

Reg No: _____

Program: _____

Intake Batch: Fall _____

Semester to be transferred to: _____

Campus to be transferred to: _____

Comparison of Courses at CUs

COURSES ATTENDED AT BUKC/BUIC				RECOMMENDED TRANSFERRED COURSES AT BUKC/BUIC			
Sr	Subject	Credit Hours	Grade	Sr	Subjects	Credit Hours	Grade
Total Credits Hrs Already Taken				Credit Hrs to be Transferred			

Recommendations

- Seat Availability: Yes/No
- Total (_____) are already taken by the student which is **more than/equivalent to 50%** allowed credit hrs.
- In case of request of transfer of credit ~~hrs~~ is more than 50% of program credits credit hours, up to 50% credit ~~hrs~~ transfer is recommended for transfer which constitute (_____) Credit Hrs. Hence, above mentioned courses are recommended for transfer to (Program Name), BUKC/BUIC. While following courses shall not be transferred.

COURSES NOT TO BE TRANSFERRED FROM (Program) – BUKC/BUIC		
Sr	Subjects	Credit Hours
1		
Total Credit Hrs		

The student has studied on the same examination system governed by BU examination rules. So, respective grades will be maintained.

Evaluation Committee

Member: _____

Member: _____

(Name)

(Name)

Member: _____

(Name)

BACHELOR OF REMOTE SENSING & GIS (BS RS & GIS)

A	Academic Details
1	Faculty/Department: Bahria School of Engineering and Applied Sciences, Department of Earth and Environmental Sciences, Bahria University H 11 Campus Islamabad
2	Name of the Programme: Bachelor of Remote Sensing & GIS (BS RS & GIS)
3	Mission of the Programme: To prepare students who can learn emerging knowledge of Remote Sensing and GIS and develop their skills to serve in interdisciplinary research projects using geospatial sciences.
4	Objectives of the Programme (Programme Education Objectives) <ul style="list-style-type: none"> • To provide understanding of Remote Sensing and Geographical Information System (GIS) through theory, practical work/lab and field exercises using modern tools and techniques. • To provide computing, mathematical and logical skills critical for solving problems through Thesis/internship in technological projects. • To augment team work ethics for any industrial project. • To develop effective presentation, oral and written communication skills
5	Outcomes of the Programme: Graduates capable of fulfilling developmental and research needs in the domain of Remote Sensing and GIS.
6	Rationale for the Programme: The Department of Earth & Environmental Sciences (BUIC H-11 Campus) has proposed to offer BS RS & GIS (4 years). BS RS&GIS is designed to provide a platform for students getting knowledge about emerging geospatial technologies including Remote Sensing and GIS. This program provides a foundation to focus on the application of the Remote Sensing and GIS technologies for the management of Pakistan's natural and environmental resources. E&ES is aimed that the young scientists utilize the knowledge and skills of these disciplines towards identification and mitigation of the most profound challenges in the domains of RS and GIS Applications through research initiatives. It is envisioned that the graduates of BS RS&GIS may find their possible careers over a wide canvas that includes the following; Natural Resources and Environments (exploration, monitoring, management) Geosciences (minerals exploration, earthquake, tsunami mapping) Water Resources (river, lakes, flood mapping, monitoring, and prediction) Social Sciences (crime monitoring, revenue collection, health care, elections) Urban Planning (city planning, transportation & utility network planning) Agriculture (crop planning, crop health monitoring, yield forecasting) Meteorology and Climatology (monitoring, mapping, prediction) Navigation and Tracking Applications (mapping and modeling) Geographical location-based geospatial research projects etc.
7	Brief Description of the Programme: The curriculum of the BS RS & GIS program includes coursework in geography, remote sensing, GIS, computer sciences, modelling, and related courses. The courses are based on theoretical knowledge, practical, fieldwork, case studies, and research thesis. The program also encourages students to take courses in ethics and social responsibility, with the opportunity to participate in some of the internship programs at relevant organizations and industries to solve specific problems in various applications of both geospatial fields of Remote sensing and GIS.
8	Duration: 4 years
9	Venue(s): <input checked="" type="checkbox"/> On Site/Off Site/Both On & Off Site (Tick one; if Off Site, give details) Johar Block, Bahria University H-11 Campus, Islamabad
10	Programme Scheduling Format: Morning (Annual intake)

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11	Proposed Date of Commencement: Spring 2023										
12	Mode of Study/Examination: Mode of study for BS Remote Sensing & GIS is based on on-campus/online classroom teaching (subject to BU policies under COVID situation). The students' performance will be evaluated through Assignments, Quizzes, Mid-term, and Final exams for each course in each semester. Students will be required to undertake a 6 credit hours Thesis considering their keen interest in any subdomain of Remote Sensing or GIS.										
13	Additional Faculty Member(s) Required: For intake of one batche per annum at least 4 faculties. members are required for the BS RS & GIS program. Following 04 faculty members are already available, whereas, the rest of the experienced FM will be inducted as per the requirement. <ul style="list-style-type: none"> • Dr. Muhammad Iqbal Hajana, Ph.D. – Sr. Assistant Professor Research Interests: Geosciences, GIS and RS, Water Resource management • Dr. Fahad Mehmood, Ph.D.– Ph.D. – Sr. Assistant Professor Research Interests: Geophysics, Groundwater modelling, GIS & RS, Earthquakes • Dr Maryam Saleem, Ph.D. Lecturer Research Interests: Geology, GIS and RS. • Note: Total 05 FMs are required after Semester –IV (Year-3) therefore additional PFM will be inducted as per the following plan along with 08 core course for VFM offer at different semesters (1st to 8th semester). <table border="1"> <thead> <tr> <th>Year/Semester</th><th>No of Faculty</th></tr> </thead> <tbody> <tr> <td>Year 1</td><td>3</td></tr> <tr> <td>Year 2</td><td>3</td></tr> <tr> <td>Year 3</td><td>3+1</td></tr> <tr> <td>Year 4</td><td>3+1</td></tr> </tbody> </table>	Year/Semester	No of Faculty	Year 1	3	Year 2	3	Year 3	3+1	Year 4	3+1
Year/Semester	No of Faculty										
Year 1	3										
Year 2	3										
Year 3	3+1										
Year 4	3+1										
14	Additional Skilled-Worker(s) Required: <i>(Indicate if there is a requirement for additional Skilled Staff, full-time/part-time, along with their qualifications/skill sets.)</i> <ul style="list-style-type: none"> • 01 Lecturer with MS in GIS/Remote Sensing will be required as PFM in third year (Spring 2025). He/She will teach 04 courses per semester. • 01 Lab Engineer is required and with research experience in the domains of GIS/RS in third year (Fall 2025). He/she will help to maintain the lab and assist research students. • VFM will be required to teach 08 core courses offered in different semesters (1st to 8th semester) 										
15	Additional Classroom(s) required*: Total of four classrooms will be required along with a computer lab, with the following breakdown for a complete program. First Year: 2 Classrooms Second Year: 3 Classrooms Third Year: 3/4 Classrooms Fourth Year: 3/4 Classrooms * Class rooms are already available. If the program is successful, extra classes will accommodate with other programme.										
16	Additional Requirement for Laboratories: At E&ES, BUIC, GIS software and a computer lab are already present.										
17	Additional Requirement for Books, Subscriptions, Memberships to Online Research Sites/Repositories: At least 100 books, journals, and resources.										
18	Minimum Entry Level: Minimum 50% marks in Intermediate (HSSC) Examination (Pre-Medical/Pre-Engg./ICS/ General Science/Diploma of Associate Engineering) or equivalent qualification. Deficiency: For Pre-Medical students, the following one deficiency courses of mathematics will be taught during the first year.										

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	Action: we already have this model to cater students having pre-medical back ground. Mathematics MAT 105 (0 Credit Hours)																																																																																										
19	Admission Criteria: As per BU Policy related to Admission Matric/O-level: 10% Intermediate/A-level: 40% CBT/Entry Test Score: 50%																																																																																										
20	Additional/Different Examination Requirement (Indicate if there will be any examination requirement, additional to or different from the BU Academic Rules or Examination Policy in vogue). Nil																																																																																										
21	Number of Admissions Expected for consecutive two Intake: An effort will be made to enroll 20 students for the first two intakes (Spring 2023 and Fall 2023) however for first two intakes programme may be allowed to be started for 15 students.																																																																																										
22	Number of Admissions Planned/Expected for Subsequent Intakes: Minimum 20 admissions per intake.																																																																																										
23	Referred by: DBOS, FBOS																																																																																										
24	Complete Plan of Studies, inclusive of complete Roadmap: Complete plan for BS Remote Sensing and GIS Program is available with this document (Appendage 4109) of 41 st ACM																																																																																										
25	Course Outlines, Descriptions, Pre-Requisites & Readings (Compulsory & Recommended) Course outlines for BS Remote Sensing and GIS Program are attached with this document for reference.																																																																																										
B	FINANCIAL DETAILS																																																																																										
1	Source of Funding: BU Fully																																																																																										
2	Degree Duration: 4 years Annual or Semester System: Semester																																																																																										
3	Expected fee to be charged based on Cost & Benefits Analysis (B3): Rs. 35,635,860/- <table><tr><td></td><td colspan="3">Student</td><td colspan="2">Fee Per Student</td><td colspan="3">Total Fee</td></tr><tr><td>Semester</td><td>Fresh</td><td>Existing</td><td>Total</td><td>Fresh</td><td>Existing</td><td>Fresh</td><td>Existing</td><td>Total</td></tr><tr><td>Spring 2023</td><td>15</td><td>-</td><td>15</td><td>108,954</td><td>-</td><td>1,634,310</td><td>-</td><td>1,634,310</td></tr><tr><td>Fall 2023</td><td>15</td><td>15</td><td>30</td><td>108,954</td><td>82,000</td><td>1,634,310</td><td>1,230,000</td><td>2,864,310</td></tr><tr><td>Spring 2024</td><td>-</td><td>30</td><td>30</td><td>-</td><td>82,000</td><td>-</td><td>2,460,000</td><td>2,460,000</td></tr><tr><td>Fall 2024</td><td>20</td><td>30</td><td>50</td><td>108,954</td><td>82,000</td><td>2,179,080</td><td>2,460,000</td><td>4,639,080</td></tr><tr><td>Spring 2025</td><td>-</td><td>50</td><td>50</td><td>-</td><td>82,000</td><td>-</td><td>4,100,000</td><td>4,100,000</td></tr><tr><td>Fall 2025</td><td>20</td><td>50</td><td>70</td><td>108,954</td><td>82,000</td><td>2,179,080</td><td>4,100,000</td><td>6,279,080</td></tr><tr><td>Spring 2026</td><td>-</td><td>70</td><td>70</td><td>-</td><td>82,000</td><td>-</td><td>5,740,000</td><td>5,740,000</td></tr><tr><td>Fall 2026</td><td>20</td><td>70</td><td>90</td><td>108,954</td><td>82,000</td><td>2,179,080</td><td>5,740,000</td><td>7,919,080</td></tr></table> <p>* Rs. 4053/- per credit hour and 18 credit hours per semester (Total 135 credit hours) * For first semester: Rs. 21000 (Admission fee), Rs. 5000 (Miscellaneous) and Rs. 10000 (Security Depos Refundable) shall be applicable. * Increase of fee is not considered while compiling data</p>		Student			Fee Per Student		Total Fee			Semester	Fresh	Existing	Total	Fresh	Existing	Fresh	Existing	Total	Spring 2023	15	-	15	108,954	-	1,634,310	-	1,634,310	Fall 2023	15	15	30	108,954	82,000	1,634,310	1,230,000	2,864,310	Spring 2024	-	30	30	-	82,000	-	2,460,000	2,460,000	Fall 2024	20	30	50	108,954	82,000	2,179,080	2,460,000	4,639,080	Spring 2025	-	50	50	-	82,000	-	4,100,000	4,100,000	Fall 2025	20	50	70	108,954	82,000	2,179,080	4,100,000	6,279,080	Spring 2026	-	70	70	-	82,000	-	5,740,000	5,740,000	Fall 2026	20	70	90	108,954	82,000	2,179,080	5,740,000	7,919,080
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Fall 2026	20	70	90	108,954	82,000	2,179,080	5,740,000	7,919,080																																																																																			
4	Expected Number of students for 1st & 2nd Intakes: 30 students																																																																																										
5	Expected Earning from first Intakes (B5): Rs. 4,498,620/-																																																																																										

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		Student			Fee Per Student		Total Fee			
	Semester	Fresh	Existing	Total	Fresh	Existing	Fresh	Existing	Total	
	Spring 2023	15	-	15	108,954	-	1,634,310	-	1,634,310	
	Fall 2023	15	15	30	108,954	82,000	1,634,310	1,230,000	2,864,310	
								Total	4,498,620	
6	Expected Earnings for the Next Three Years (B6): Rs. 31,137,240									
		Student			Fee Per Student		Total Fee			
	Semester	Fresh	Existing	Total	Fresh	Existing	Fresh	Existing	Total	
	Spring 2024	-	30	30	-	82,000	-	2,460,000	2,460,000	
	Fall 2024	20	30	50	108,954	82,000	2,179,080	2,460,000	4,639,080	
	Spring 2025	-	50	50	-	82,000	-	4,100,000	4,100,000	
	Fall 2025	20	50	70	108,954	82,000	2,179,080	4,100,000	6,279,080	
	Spring 2026	-	70	70	-	82,000	-	5,740,000	5,740,000	
	Fall 2026	20	70	90	108,954	82,000	2,179,080	5,740,000	7,919,080	
								Total	31,137,240	
	7	Total Estimated Salaries of all Additional Human Resources (B7): Rs. 3,091,200/-								
		New PFM (Qualification)	Per Semester Salary		Core Courses		VFM			
	Semester	MS	New PFM	Lab Assistant	PFM Load	Visiting courses	3 Credit Hour course			
	Spring 2023	-	-	-	-	1	86,400			
	Fall 2023	-	-	-	-	1	86,400			
	Spring 2024	-	-	-	-	2	172,800			
	Fall 2024	-	-	-	-	3	259,200			
	Spring 2025	1	420,000	-	4	1	86,400			
	Fall 2025	-	420,000	240,000	4	-	-			
	Spring 2026	-	420,000	240,000	4	-	-			
	Fall 2026	-	420,000	240,000	4	-	-			
	Total	1	1,680,000	720,000	16	8	691,200			
								Total	3,091,200	
	<ul style="list-style-type: none">Employ a New PFM following the fourth semester to lighten the workload of current faculty. Monthly pay of newly hired PFM is 70,000/- per month									

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	<ul style="list-style-type: none"> After the fifth semester, hire a lab assistant to help students with their lab work. Monthly pay of Lab assistant is 40,000/- per month Need VFM to divide the workload of 08 courses. Visiting rate Rs. 1800/- per hour
9	Cost of Additional Laboratory Equipment/Tools (B8): N/A
10	Cost of Additional Classrooms (B9): N/A
11	Cost of Additional Books, Subscription & Memberships to on-line Sites/Repositories (B10): Year 1: Rs. 100,000/-
12	Off-Site rental Expenses and Cost of other Fixtures (B11): N/A
13	Miscellaneous Expenses required for Starting the Program (Spring – Fall 2023) (B12): Visiting Courses Payment: Rs. 172,800/- Advertisement: Rs. 2*100,000= 200,000/- Printing & Stationery: Rs. 2*50,000= 100,000/- Admin Cost: Nil Outreach visit: Rs. 2*50,000= 100,000/- Total: Rs. 572,800/-
14	Total Expenditures for four years (B13): Salaries: Rs. 3,091,200/- Rentals: Nil Subscriptions/Memberships: Nil Advertisements (5 intakes): Rs. 5* 100,000= 500,000/- Printing & Stationery: Rs. 5*50,000=250,000 Admin Cost: Nil Outreach visit: Rs. 5*50,000=250,000 Total: Rs. 4,091,200/-
15	Total Cost of the Programme (B15): [Add B(11) and B(14)] Rs. 4,191,200/-
16	Total first year cost of the Programme (B16): [Add B(11) and B(13)] Rs. 672,800/-
17	Net Earnings in First Year (B17): [Subtract B(16) from B(5)] Rs. 3,825,820 /-
18	Net Earnings in four Years (B18): [Subtract B(17) from B(3)] Rs. 31,444,660/-

General Education Courses (18 credit hours)

Pre-req	Course code	Course Title	Theory	Lab	CR
None	ENG 103	English-I	3	0	3
Eng-103	ENG 104	English-II	3	0	3
Eng-104	HSS 320	Technical Writing & Presentation Skills	3	0	3
None	PAK 102	Pak Studies	3	0	3
None	ISL 102	Islamic Studies/Ethics	3	0	3
None	CSC 102	Introduction to Computers and Programming	2	1	3

Mathematics and Science Foundation Courses (6 credit hours)

Pre-req	Course code	Course Title	Theory	Lab	CR
None	MAT 105	Mathematics	0	0	0
MAT-105	MAT 115	Calculus & Analytic Geometry	3	0	3
None	MAT 205	Statistics	3	0	3

Core Courses (75 credit hrs)

Pre-req	Course code	Course Title	Theory	Lab	CR
None	RGS 103	Fundamentals of GIS	2	1	3
None	RGS 104	Physical Geography	2	1	3
None	RGS 105	Fundamentals to Earth Sciences	2	1	3
RGS 104	RGS 106	Introduction to Remote Sensing	2	1	3
None	RGS 201	Introduction to Cartography	2	1	3
RGS 104	RGS 202	GPS & Surveying	2	1	3
RGS 106	RGS 204	Introduction to Photogrammetry	2	1	3
RGS 103	RGS 206	Database Management Systems	2	1	3
RGS 106	RGS 207	Active Remote Sensing & Space Law	3	0	3
RGS 104	RGL 251	Geospatial Field Work & Report-I	1	2	3
RGL 251	RGL 351	Geospatial Field Work & Report-II	1	2	3
None	RGS 315	Human Geography	3	0	3
RGS 207	RGS 316	Microwave & Hyper Spectral RS	2	1	3
RGS 206	RGS 317	Spatial Decision Support Systems	3	0	3
RGS 206	RGS 318	Spatial Data Infrastructure & Visualization	2	1	3
None	RGS 319	Multidisciplinary Applications of RS & GIS	2	1	3
RGS 103	RGS 360	Spatial Data Analysis	2	1	3
RGS 103	RGS 320	Geospatial Project Management	3	0	3
CSC 102	RGS 330	Web GIS	2	1	3
RGS 106	RGS 331	Digital Image Processing	2	1	3
RGS 202	RGS 332	Satellite Navigation Systems	3	0	3
RGS 360	RGS 361	Integrated Geospatial Technologies	2	1	3
None	RGS 471	Legal and Social Issues in Geospatial Sciences	3	0	3
GEO 324	RGS 490	Thesis	0	6	6

Distribution Courses (27 credit hours)

Pre-req	Course code	Course Title	Theory	Lab	CR
None	GEO 324	Research Methodology	3	0	3
None	ENV 425	Occupational Health & Safety	3	0	3
CSC 105	GEO 321	Computing with MATLAB	2	1	3
None	GSC 340	Chemistry	2	1	3
None	PHY 103	Physics	2	1	3
None	HSS 111	Introduction to International Relations	3	0	3
None	GEO 223	Urban and Town Planning	3	0	3

None	PSY 107	Introduction to Psychology	3	0	3
None	MTB 111	Introduction to Film Making & Analysis	2	1	3

BS RS & GIS Electives (9 Credit Hours)

Pre-req	Course code	Course Title	Theory	Lab	CR
CSC 102	AIC 201	Artificial Intelligence	2	0	2
CSL 102	AIL 201	Artificial Intelligence Lab	0	1	1
CSC 102	AIC 301	Machine Learning	2	0	2
CSL 102	AIL 301	Machine Learning Lab	0	1	1
CSC 102	AIC 303	Artificial Neural Networks	2	0	2
CSL 102	AIL 303	Artificial Neural Networks Lab	0	1	1
RGS 201	RGS 451	Computer Aided Drafting/Drawing	2	0	2
RGL 201	RGL 451	Computer Aided Drafting/Drawing Lab	0	1	1
RGS 206	RGS 452	Data Structures and Algorithms	2	0	2
RGL 206	RGL 452	Data Structures and Algorithms Lab	0	1	1
RGS 319	RGS 453	GIS for Disaster Management	3	0	3
RGS 317	RGS 454	Spatial Data Modelling	2	0	2
RGL 317	RGL 454	Spatial Data Modelling Lab	0	1	1
RGS 319	RGS 455	Land & Water Information System	2	0	2
RGL 319	RGL 455	Land & Water Information System Lab	0	1	1
RGS 330	RGS 456	GIS Programming & Python	2	0	2
RGL 330	RGL 456	GIS Programming & Python Lab	0	1	1

Implementation.**i. Introduction of Practical Learning Lab (PLL).**

4 hours per week PLL will be implemented for every student as per policy. The breakdown of implementation will be as under:

Semester	Activity	Duration
2 nd	Sports activities within campus	Allocation of 2+2 hours (per week) in timetable respectively
4 th	Sports activities + youth club activities	Allocation of 2+2 hours (per week) in timetable respectively
6 th	CSP + Sports activities	Allocation of 40+ 24 hours in timetable respectively
8 th	youth club activities + Entrepreneurship training	Allocation of 1+3 hours (per week) in timetable respectively

ii. Mandatory 9-weeks Internship for all UG programmes.

Internships are offered to students after their 6th semester and are handled by placement coordinator of the department in coordination with DSA/Manager SSC (Campuses) will arrange internships. Department can arrange 9 weeks internship program for students using its industrial linkages. The internships will be offered in summer breaks.

iii. Establishment of Academic Advisement System at all CUs.

Academic Advisement already exists at BU. Following four types of advisements are already in place and it is recommended to maintain these setups.

1. **Advisory related to Roadmap of a program:** Advisor Students Affairs (ASA) are appointed in every department. These ASA provide necessary guidance to the students regarding course registration, options to select, drop and withdraw from courses, repeat courses and utilize summer semesters.
2. **Mentorship:** Mentorship is practiced in the department where a permanent faculty member is appointed as mentor for a group of students and the mentor remains with the same class till its graduation. Mentors are responsible for the grooming of students on religious, moral and ethical values. A monthly report on mentorship is submitted by department to Manager LDC.
3. **Tutorial Session:** This mechanism is practiced to address course related difficulties to certain weak students. Based on the request of the student these sessions are arranged.

Psychological/Stress related advisory: Wellbeing center administered by Department of Professional Psychology provide assistance to those students who face the issues related to psychological/stress related problems.