

Curriculum

Department of Geography and Environment

Graduate
Session: 2022-23



Shahjalal University of Science and Technology
Sylhet, Bangladesh

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OVERVIEW OF THE UNIVERSITY AND DEPARTMENT
(At a glance)

Name of the University

Shahjalal University of Science and Technology, Sylhet

Establishment of the University

25 August 1986

Founder Vice Chancellor of the University

Professor Dr. Sadruddin Ahmed Chawdhury

Current Vice Chancellor of the University

Professor Farid Uddin Ahmed

First Academic Session of the University

1990-1991

Website of the University

www.sust.edu

E-mail of the University

registrar@sust.edu

Name of the Department

Geography and Environment (GEE)

First Academic Session of the Department

2010-11

Website of the Department

www.sust.edu/d/gee

E-mail of the Department

gee@sust.edu

PAB Extension of the Department

2410

Founder Head of the Department

Professor Susanta Kumar Das

Current Head of the Department

Dr Md. Anowarul Islam

Programs Offering

BSc (Honors), MS

FACULTY LIST (Current)

SL. No.	Full Name	PAB	Cell Phone
Associate Professor			
01.	Dr. Md. Anowarul Islam	2410	01709109665
Assistant Professors			
02.	Md. Mueyed Hasan		01686580014
03.	Rony Basak		01715545225
04.	Md. Bahuddin Sikder		01714432134
05.	Nusrat Jahan Koley		01829671957
06.	Md. Tariqul Islam		01913077326
07.	Syeda Ayshia Akter		01616807573
08.	Zia Ahmed		01718978705
09.	Shetu Akter		01676586845
10.	Towfiqul Islam Khan		01674330886
11.	Shahnaj Shemul		01684652044
12.	Md. Najmul Kabir		01948878743
Lecturer			
13.	Afruja Begum		01719450048

Ordinance for the Graduate Program at SUST

Formation of Graduate Study Committee (GSC) will be the prerequisite to start a Graduate program in any Discipline. The GSC will be headed by the Head of the Discipline/ Institute consisting of all professors/Associate Professors of the discipline concerned with a minimum number of 3 professors/Associate Professors. When Professors and Associate Professors are not available in the discipline, the required number of Professors, Associate Professors will be included from the relevant Discipline/Institute by the proposal of the Board of Advanced Studies (BAS) & the Academic council.

1. Introduction

1.1 The graduate program consists of Masters (General), Masters (Thesis), M.Sc. (Engineering), Masters of Philosophy (M.Phil.) and Ph.D. degrees.

1.2 A graduate program may also be offered by a discipline in some specified field in collaboration with other disciplines.

1.3 Any student with (i) 4 year Bachelor degree (ii) 3-year Bachelor and 1-year Masters Degree or (iii) 5-year Bachelor of Architecture degree from a recognized university is eligible to get admitted into the graduate program at SUST.

1.4 Notification for the admission process will be published every year.

1.5 After admission every student will be assigned to a student advisor/supervisor from among the teachers of his/her discipline to guide him/her throughout the academic program.

2. Qualification

2.1 Masters and M.Phil.

2.1.1 Any student with a Bachelor's degree from SUST is eligible for admission to the Masters (General) Program.

2.1.2 Any student with a CGPA of 3.25 or more from SUST is eligible for admission to the Masters (Thesis), M.Phil. (Engineering) or M.Phil. Program.

2.1.3 Four-year Graduates from other recognized universities and institutions with a CGPA of 3.25 or more can apply for admission to the Masters (Thesis), M.Phil. (Engineering) or M.Phil. Program. A candidate who passed under the course system and seeks admission to M.Phil program has to have First class in Masters or 50% marks in Masters and at least 2nd division in all public examination.

2.1.4 Any student registered for Masters (General) or Masters (Thesis) may transfer to the M.Phil. program, offered by the relevant discipline, if he/she can maintain a CGPA of 3.25 or more during the first two semesters.

2.1.5 The GSC of a discipline will decide if a student from a related discipline will be allowed to apply to the graduate program of that discipline. In these cases, if necessary the GSC may ask the candidate to take extra undergraduate/graduate courses to ensure the basic foundation.

2.2 Ph.D.

2.2.1 Candidates with Masters (Thesis), M.Phil. or M.Sc. (Engineering) Degrees are eligible for application for Ph.D. and will be selected after a written and/or viva voce examination and the proper evaluation of academic records by the GSC. A candidate who passed under the course system and seeks admission to Ph.D. program has to have First class in Masters or 50% marks in Masters and at least 2nd division in all public examination.

2.2.2 A Masters (Thesis) or an M.Phil. or an M.Sc. (Engineering) student may be transferred to the Ph.D. program after the completion of first two semesters with a CGPA 3.25 and the recommendation of his/her supervisor certifying satisfactory progress of research work and with the approval of the GSC and BAS.

2.2.3 The following candidates are eligible for direct admission to Ph.D. if they have a CGPA of 3.25 or more at Bachelors and Masters Level and 3.00 or equivalent in all public examinations. (i) University teachers with two years teaching experience and one publication in standard academic journals. (ii) Teachers at colleges with three years of teaching experience and one publication in a standard academic journal (iii) Researchers of recognized research organizations with three years of research experience and at least three publications in standard academic journals. (iv) Candidates with an M.Phil degree.

3. Admission

3.1 Masters and M.Phil.

3.1.1 If a SUST graduate has the required qualifications he/she can be admitted to the Masters program (General, Thesis or Engineering) as per the recommendation of the GSC.

3.1.2 The candidates for Masters (Thesis and Engineering) and M.Phil. will be selected for admission after a written and/or viva voce examination conducted by the GSC. Full time teachers of SUST are not required to sit for the admission test. GSC will then recommend the candidates for admission to the academic council through the BAS. During the process of admission each candidate shall be assigned by the appropriate GSC and approved by BAS a supervisor from among the teachers of the relevant discipline/institute not below the rank of an associate professor or an assistant professor with a Ph.D. / M.Phil. / M.S.

3.2 Ph.D.

3.2.1 A candidate for admission to the Ph.D. degree program will apply in the prescribed form to the head of the discipline or the director of institute along with the recommendation from possible supervisor(s). The supervisor must be of the rank of professor or associate professor.

3.2.2 After approval from the GSC, the application will be forwarded to the BAS for the approval of the supervisor and co-supervisors (if any). Each candidate shall have not more than two co-supervisors; one co-supervisor may be from outside SUST. After scrutiny of the research proposal BAS will send it to the Academic Council for final Approval.

3.2.3 If necessary, a change of supervisor must also be approved by the BAS and the Academic Council.

4. Registration

4.1 Every selected candidate will be registered with the University and enrolled as a full-time or if allowed part time student with payment of prescribed fees and dues before the commencement of each semester.

4.2 A student must register for at least 50% or maximum 150% credits of the courses every semester in the prescribed syllabus. But for attaining a degree in the last semester above mentioned restrictions will not be followed.

4.3 A candidate may be admitted or change his status into a part time student with prior approval of the university and a written consent from the serving organization. A part time student may be assigned a minimum of 6 credit hours per semester.

4.4 A full time student must register for a minimum of 1(2.0 Credits) hours per semester. A full-time student shall not be allowed to be employed as a part-time employee in other organizations. However, he/she may be employed as teaching/research assistant at the University. A Ph.D. candidate shall have to be a full-time student for at least one year during his/her Ph.D. work.

4.5 The registration for the Ph.D. degree will remain valid for a period of four years and can be renewed for a further period of two years.

5. Academic Regulations

5.1 Duration

5.1.1 The minimum duration for the Masters, M.Sc. (Engineering), M.Phil. and Ph.D. degrees will be as followed:

Degree	Duration of Completion	Required Credits
Masters (General)	2 Semesters	Minimum 24
Masters (Thesis)	3 Semesters	36
M.Phil. / M.Sc. (Engg.)	4 Semesters	48
Ph.D.	6 semesters	72

5.1.2 Minimum duration of M.Phil will be 4 Semesters for students who completed 3 years Bachelors and 1 year Master's degree. The minimum duration of M.Phil will be 2 semesters for students who completed 4 years Bachelors and 1 year Master's degree.

5.2 Credit Requirement

5.2.1 For the graduate program a full-time student must register for at least 1(2.0 Credits) each semester. For course work 1 credit means one hour of contact hour per week and for research or project work 1 credit hour means at least three hours per week. A student will be allowed to take theoretical courses and research work simultaneously. Once the course requirement is completed, for the research work a graduate student must register for "independent study" as credit/no-credit basis to fulfill the 1(2.0 Credits) per semester requirement.

5.3 Course Requirement

5.3.1 Syllabus committee for the graduate program will be comprised of the GSC members and two external members from other universities nominated by the Dean.

5.3.2 Every year the syllabus committee will design the graduate level courses for the respective disciplines and recommend the courses for approval of the Academic Council through the School and BAS. GSC can review the curriculum from time to time and recommend any change to the syllabus committee as may be considered necessary.

Masters and M.Phil.

5.3.3 Every Masters (general, thesis and engineering) and M.Phil. student must complete at least 16 hours of theory course work during the first two semesters. GSC will propose the required courses to the students with consultation of respective supervisors. The course work for M.Phil Program may be reduced and relaxed according to the recommendation of GSC. In that case the duration may be reduced to 1 year.

Ph.D.

5.3.4 The GSC may suggest courses, if felt necessary, for the Ph.D. students.

5.4 Research Work Requirement

5.4.1 Research work for thesis shall be carried out under the supervision of the supervisor. Co-supervisors from within or outside the discipline / Institute may be appointed, if necessary. The topic of research proposal shall be approved by the BAS after the completion of the required course credits within six months/one year for M.Phil. / Ph.D. on the recommendation of the Head of the Discipline/Institute. A Ph.D. student must submit a progress report of his work to the supervisor(s) at the end of every semester who will present it to BAS.

5.4.2 The Ph.D. student will give at least one public seminar talk conducted by GSC at the Discipline / Institute every year on a topic of his own field of research.

5.4.3 The research work must be carried out in this University or at a place approved by the supervisor in consultation with the GSC.

6. Conduct of Examinations

6.1 Course Examination

6.1.1 The examination committee will conduct the course examinations as per the examination ordinance of graduate program.

6.2 Thesis Submission

6.2.1 The title of the thesis must be approved by the BAS on the recommendation of the Head of the Discipline / Institute. For Masters/M.Phil. It must be done for at least three months and for Ph.D. musts to be done at least six months before submitting.

6.2.2 Every student shall submit to the supervisor the required number of types written copies of his thesis in the approved format on or before a date to be fixed by the Head of the Discipline/ Institute in the consultation with the supervisor concerned.

6.2.3 The student shall declare that the research work was done by him/her and has not been submitted elsewhere for other purposes (except for publication).

6.2.4 The thesis should demonstrate evidence of satisfactory knowledge in the field of research undertaken by the student.

6.3 Master's Thesis Examination

6.3.1 There is no thesis requirement for Masters (General). The project (if any) and the thesis for Masters (Thesis) will be evaluated as per the examination ordinance of graduate program.

6.4 M.Phil. / M.Sc. (Engineering) Thesis Examination

Thesis Evaluation

6.4.1 The academic council will, based on the suggestion of the GSC and recommendation of the BAS, appoint for every thesis an examination committee consisting of two examiners of whom at least one shall be from outside this University.

6.4.2 The examiners of thesis will either accept it or reject it for the degree and then individually and separately submit one copy of their reports in sealed covers to the controller of examination and another copy to the GSC Chairman. The majority decision will be considered as the result.

6.4.3 If a thesis is adjudged inadequate for the award of the degree, the candidate will be allowed to resubmit his thesis within six months. If the candidate fails to resubmit or the thesis is adjudged inadequate again the examiners may recommend Masters (general) degree and the controller of examination will place such recommendation before the BAS for the approval of academic council.

Oral Examination and Open Presentation

6.4.4 The GSC in consultation with the supervisor shall suggest, to the Vice Chancellor through BAS, a committee of three members for oral examination consisting of: (i) Convener: Thesis supervisor (ii) A Professor in relevant field from outside the University (iii) One of the thesis examiners.

6.4.5 If any examiner is unable to accept the appointment or must relinquish his appointment before/ during the examination, the Vice-Chancellor shall appoint another examiner in his place as per the recommendation of GSC.

6.4.6 After the oral examination the convener will send a consolidated report to the controller of examinations stating clearly whether the award of the degree is recommended, who will in turn place it to BAS for the approval of the Academic Council.

6.4.7 In case a candidate performs unsatisfactorily in oral examination even though the thesis is adjudged adequate the examiners may recommend to the Academic Council that the candidate may be permitted to appear at another oral examination within six months from the first oral examination. No candidate shall be allowed to appear at the oral examination of the same thesis more than two times.

Recommendation for Degree

6.4.8 After completion for the viva-voce examination, the convener of the viva examination committee will send a consolidated report, stating clearly whether the award of the degree is recommended, to the Controller who will in turn place it to BAS for the approval of the academic council.

6.5 Ph.D. Thesis Examination

Thesis Evaluation

6.5.1 The academic council will, based on the suggestion of the GSC and recommendation of the BAS, appoint for every thesis an examination committee consisting of three examiners of whom one shall be the supervisor and the other two from outside this University and at least one from a university from abroad.

6.5.2 One of the three examiners will be appointed by the academic council as the convener of the examination committee.

6.5.3 The examiner of thesis will individually and separately submit one copy of their reports in sealed covers to the controller of examination and another copy to the convener. Every examiner will have to explicitly state whether the award of the Ph.D. degree is recommended or not. The recommendations of all the three examiners must be explicit, unambiguous, and unanimous for the award of the degree.

6.5.4 If a thesis is adjudged inadequate for the award of the Ph.D. degree, the candidate will be allowed to resubmit his thesis after six months with proper modification. If the candidate fails to resubmit or the thesis is adjudged inadequate again the examiners may recommend the award of M.Phil. or M. S. degree and the controller of examination will place such recommendation before the BAS for the approval of academic council.

Oral Examination and Open Presentation

6.5.5 On receipt of the unanimous opinions of the examiners, the convener shall fix a date and a venue and suggest, to the Vice Chancellor through BAS, a committee of three members for oral examination consisting of the convener, supervisor/co-supervisor, and a thesis examiner. At least one of them must be from outside the university.

6.5.6 If any examiner is unable to accept the appointment or must relinquish his appointment before/during the examination, the Vice-Chancellor shall appoint another examiner in his place as per the recommendation of GSC.

6.5.7 In case a candidate is unable to satisfy the viva voice Board even though the thesis is adjudged adequate the Board may recommend to the Academic Council that the candidate may be permitted to appear at another oral examination after a lapse of six months from the first oral examination. No candidate shall be allowed to appear at the oral examination of the same thesis more than two times.

Recommendation for Degree

6.5.8 After completion of the viva voce examination, the convener will send a consolidated report to the controller of examinations stating clearly whether the award of the degree is recommended, who will in turn place it to BAS for the approval of the Academic Council.

7. Award of the Degree

7.1 Masters

7.1.1 Students will be awarded his/her degree as per the recommendation of GSC chairman after the completion of his required credits.

7.2 M.Phil. and Ph.D.

7.2.1 The vice chancellor shall place the reports of the Oral Examination committee for consideration of the academic council which shall recommend to the Syndicate for the award of the degree.

7.2.2 A hard copy of the thesis accepted by the academic council incorporating any correction and changes suggested by the examination committee shall be preserved in the central library of the university and the corresponding electronic version shall be preserved in the archive.

8. Academic Fee

8.1 To be decided by the Academic Council and the Syndicate.

Examination Ordinance for the Graduate Program

University authorities will administer and publish the results of Masters, M.Phil. and Ph.D. degree examinations under the graduate program. The graduate program will follow the same academic calendar of the undergraduate program for course delivery, the final examination and publication of results. The graduate courses are comprised of theory and lab courses and where applicable, the thesis for the research works. The evaluation of thesis is conducted as per the Ordinance for the Graduate Program at SUST. The theory and lab courses are conducted by the examination committee.

1. Examination Committee

1.1 The GSC of the Discipline/Institute will form the examination committee as per the rules of the University.

1.2 The examination committee will propose the examination schedule, prepare question papers, help the discipline conduct the examination, prepare results and will resolve the issues that may arise concerning the examination procedure.

2. Examination Dates and Routines

2.1 The examination routines will be designed by the respective disciplines and the Head of the disciplines will notify them and send copies to the other relevant disciplines and to the office of the Controller of the Examinations.

3. Theory Courses

3.1 Distribution of Marks

A student will be continuously evaluated during the semester through tests, assignments, mid-semester examinations, viva etc. conducted by the course teachers, and it will contain 30% of total marks. The rest 70% marks will come from the final written examination at the end of that semester.

3.2 Class Performance

After the end of the classes, the course teachers will make three copies of mark-sheets showing the marks from class participation and assignment and mid semester examination. He/she will display one copy in the notice board, send one sealed copy to the chairman of the examination committee and another sealed copy to the controller of examination.

3.3 Question Setting and Moderation

3.3.1 The examination Committee will appoint two question setters for each course at least four weeks before the date of commencement of the examination and inform the Controller of the examination. The controller of examination will send the necessary papers to the question setters and the examiners. If a question setter or examiner declines the responsibility, he/she will return all the papers and the examination committee will suggest an alternative question setter or examiner.

3.3.2 The chairman of the examination committee will receive all the manuscript of question papers; if no manuscript is received within the specified time the committee will suggest an alternative question setter.

Ref.: The clause 4.2 of this Ordinance was approved in the 119th Academic Council.

3.3.3 After receiving all the question papers the examination committee will moderate the question papers. Moderation will not be invalid if any member is absent during moderation. For the disciplines of the school of Applied Sciences and Technology the questions will be divided into two groups in the question paper so that two examiners can evaluate the answer script simultaneously. The examination committee will be responsible for the preparation of the necessary editing and printing of the question papers.

3.4 Final Examination

3.4.1 The controller of examination will be responsible to print the blank answer scripts, mark sheets and other relevant forms and will make necessary arrangements, so that these are available during the conduct of examination in the examination hall in due time.

3.5 Evaluation of Answer Script

3.5.1 The answer scripts from the disciplines of Applied Science and technology will be evaluated by two examiners simultaneously, of whom one would preferably be the course teacher. The answer scripts from the disciplines of other schools of studies will be evaluated by two examiners separately, of whom one should preferably be the course teacher. The examiners will examine the scripts thoroughly, mark the scripts properly and grade legibly within the specified time. The examiners will send a sealed copy of mark-sheet to the controller of examination and one sealed copy to the chairman of the examination committee.

3.5.2 The examination committee will assign members from the committee to scrutinize the answer scripts and if any discrepancy is found the committee will make the necessary arrangements to fix the problem and inform the controller of examination.

3.5.3 If the difference between marks given by two examiners be 20% or more than 20% GSC will recommend a third examiner for approval by the V.C and marks given by 3rd examiner & the marks of the first or 2nd examiner whichever is nearest to this will be considered for the average marks.

4. Lab Courses

4.1 Every lab course will be assigned to at least two course instructors, and they will grade the students through continuous evaluation.

4.2 For the projects, Masters (Thesis), Industrial assignments, monographs etc. the supervisor will give an overall assessment which will count as 30% of the total marks. Evaluation of the report by two external examiners, who are not involved in supervision/co-supervision will count as another 30% of the marks. The remaining 40% will come from the presentation and viva voce conducted by the examination committee. During the viva-voce examination the supervisor or co-supervisor, if present, will not participate in marking.

5. Publication of Result

5.1 Three original tabulation sheets will be prepared by the tabulators and checked by all the members and signed by the tabulators and members of the examination committee. The tabulation sheets will contain the grade point average obtained in the specific semester. The tabulation sheets will be sent to the Controller of Examinations for his signature and approval by the Vice-Chancellor.

5.2 The Controller of Examination shall keep up to date records of all the grades obtained by the student in individual Academic Record Card. Grades shall be announced by the Controller of Examination at the end of each semester.

Grade and grade points:

5.3 The letter grade and grade point will be awarded as follows:

Numerical Grade	Letter Grade	Grade Points
80% Or above	A+	4.00
75% to less than 80%	A	3.75
70% to less than 80%	A-	3.50
65% to less than 70%	B+	3.25
60% to less than 65%	B	3.00
55% to less than 60%	B-	2.75
50% to less than 55%	C+	2.50
45% to less than 50%	C	2.25
40% to less than 45%	C-	2.00
Less than 40%	F	0.00

6. Security and Ethics

6.1 Everyone involved in the process of examination must guard the security of the question papers, examination grades and the final results. An examinee can never try to influence the examiners and any such attempt must be brought to the controller of examination.

6.2 A student may never be asked a question so that he is hurt because of his religious or ethnic background.

6.3 If someone involved in the examination process has the following relatives as examinee, he/she should immediately inform in to the authority: (a) Husband/wife, (b) Son/Daughter, (c) Brother/Sister, (d) Brother-in-Law/ Sister-in-Law (e) Son-in-Law/ Daughter-in-Law, (f) Nephew/ Niece, (g) Uncle/ Aunt, (h) First Cousins.

Outcome Based Education (OBE) Curriculum

Department of Geography and Environment
Shahjalal University of Science and Technology Sylhet-3114, Bangladesh

Curriculum for MS Program
Session: 2022-23

Part A

1. Title of the Academic Program: Master of Science

2. Name of the University: Shahjalal University of Science and Technology

3. Vision of the University: To be a leading university of excellence in Science and Technology with a strong national commitment and significant international impact.

4. Mission of the University:

SUST M1: To advance learning and knowledge through teaching and research in science and technology.

SUST M2: To serve as a center for knowledge creation, technological innovation and transfer among academia, industry, and society.

SUST M3: To assist in transferring Bangladesh into a country with sustainable economic growth and equitable social development.

5. Name of the Program Offering Entity: Department of Geography and Environment

6. Vision of the Program Offering Entity: This department yearns to become a center of excellence in education and research to produce world class scholars, researchers and graduates that will lead the wider arena of Geography and Environment for building the sustainable physical and human environment.

7. Mission of the Program Offering Entity:

The missions of the Department of Geography and Environment are:

GEE M1: To enrich its students with academic experiences of the highest quality instructions and mentoring.

GEE M2: To conduct creative disciplinary and integrative research to lead the sustainable development of human and natural environment that benefits our national and global community by facing natural and human environmental challenges in the ever-changing world.

GEE M3: To promote leading capabilities with creativity, disciplinary knowledge, and effective teamwork.

GEE M4: To achieve personal academics, successful professionals, and effective researchers for time-demanding and technology-centered geo-world by use of modern technology in secondary and tertiary level, independent thought, collegial exchange of ideas and high ethical standards.

8. Objectives of the Program Offering Entity:

The objectives of Department of Geography and Environment are to:

- ✓ Acquiring knowledge in the wider arena of Geography and Environment.

- ✓ Mastering different types of tools and techniques used in higher education and research in traditional and emerging areas of Geography and Environment.
- ✓ Equipping students with the technical knowledge and practical skills required to work as an academic and professional geographer.
- ✓ Producing new knowledge through scientific research that have practical values.
- ✓ Building capacity in identifying and solving the problems in the relevant of Geography and Environment.
- ✓ Enhancing the ability of critical thinking and innovative skills.
- ✓ Improving documentation, presentation, and communication skills.
- ✓ Providing the highest quality professionals with strong morality and ethical values as well as committed to fulfill their social accountability.
- ✓ Motivating for higher studies and research and facilitating all programs that improve the skills of faculty members, students, and staffs.
- ✓ Increasing leading capabilities with ensuring effective teamwork.
- ✓ Applying knowledge for the welfare of the nation and the world.

9. Name of the Degree: Master of Science in Geography and Environment

10. Description of the Program:

The courses for Masters (General) in GEE are spread over two semesters – the first semester offers 15 credit courses, and second semester offers 17 credit courses. The courses for Masters (Thesis) in GEE are spread over three semesters with 15 credit courses in semester one, 17 credit courses in semester two, and 12 credit research courses in semester three. A student must complete 32 credits for the Masters (General) degree and 41 credits for the Master (Thesis) degree.

11. Graduate Attributes:

Code	The Graduates of the department will:	Domain
GA 1	possess extensive knowledge in their field of expertise in geography and the environment, particularly in the areas of physical geography and human geography.	PO 1 PO 2 PO 6
GA 2	be capable of continuing their own self-directed learning and be able to think critically and creatively.	PO 5 PO 9
GA 3	possess the capacity for evaluation across a wide range of fields.	PO 7 PO 8
GA 4	obtain a high level of proficiency in communication, problem-solving, research or project-related activities, and writing.	PO 3 PO 8
GA 5	be able to start and carry out positive change in their professions, workplaces, and communities.	PO 5 PO 9
GA 6	possess a strong sense of morality and intellectual integrity.	PO 4

11. Program Educational Objectives (PEOs)

Students should be well-versed in the subjects after successfully completing the Master of Science in Geography and Environment program. However, as part of the process of graduating in that particular topic, students go through a system that is intended to prepare them with the knowledge they need to succeed in the real world. The educational goals of the program, which center on the graduates' contributions to society, are as follows:

PEO 1. Acquiring knowledge in the wider arena of Geography and Environment.

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- PEO 2. Mastering different types of tools and techniques used in higher education and research in traditional and emerging areas of Geography and Environment.
- PEO 3. Equipping students with the technical knowledge and practical skills required to work as an academic and professional geographer.
- PEO 4. Producing new knowledge through scientific research that have practical values.
- PEO 5. Building capacity in identifying and solving the problems in the relevant of Geography and Environment.
- PEO 6. Enhancing the ability of critical thinking and innovative skills.
- PEO 7. Improving documentation, presentation, and communication skills.
- PEO 8. Providing the highest quality professionals with strong morality and ethical values as well as committed to fulfill their social accountability.
- PEO 9. Motivating for higher studies and research and facilitating all programs that improve the skills of faculty members, students, and staff.
- PEO 10. Increasing leading capabilities with ensuring effective teamwork.
- PEO 11. Applying knowledge for the welfare of the nation and the world.

13. Program Learning Outcomes (POs):

We emphasize foundational, social, intellectual, and personal skill development when designing the complete Master of Science in Geography and Environment curriculum. The following list of programs learning outcomes follows these areas of learning:

A. Fundamental Skill	
PO 1	Students will learn the fundamentals and core concepts of physical geography.
PO 2	The basics and fundamentals of human geography will be learned by the student.
PO 3	Students will gain proficiency with the lab instruments and computational software.
B. Social Skill	
PO 4	Students will be taught on matters of academic honesty, morality, and ethics.
PO 5	Students will learn how to communicate their ideas and thoughts clearly.
C. Thinking skill	
PO 6	In order to recognize and address issues in many fields of geography, students will be able to use the laws and principles of geography.
PO 7	With the necessary theoretical knowledge and skills, students will be adept at carrying out experiments, gathering and analyzing data to draw logical conclusions on their own or in teams, and conveying the scientific findings.
D. Personal Skill	
PO 8	The abilities of project management, collaboration, leadership, and communication will be taught to the students.
PO 9	Students will show reflection in their personal and professional development.

14. Mapping Mission of the University with PEOs:

PEOs	SUST M1	SUST M2	SUST M3
PEO 1	✓	✓	✓
PEO 2		✓	
PEO 3		✓	
PEO 4	✓		✓

PEO 5	✓	✓	✓
PEO 6	✓	✓	
PEO 7	✓	✓	
PEO 8	✓		✓
PEO 9		✓	
PEO 10	✓	✓	✓
PEO 11			✓

15. Mapping POs with the PEOs:

POs/ PEOs	PEO 1	PEO 2	PEO 3	PEO 4	PEO 5	PEO 6	PEO 7	PEO 8	PEO 9	PEO 10	PEO 11
PO 1	✓										✓
PO 2	✓										✓
PO 3		✓	✓								✓
PO 4								✓			
PO 5		✓				✓	✓				
PO 6				✓							
PO 7				✓	✓	✓			✓		
PO 8			✓		✓	✓	✓			✓	
PO 9			✓	✓	✓			✓	✓	✓	

16. Mapping Courses with the POs:

Course/ POs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
GEE 0314 5111	✓					✓			
GEE 0532 5113	✓					✓			
GEE 0532 5115						✓			
GEE 0314 5117						✓			
GEE 0314 5119							✓		
GEE 0532 5121						✓			
GEE 0532 5123				✓					
SPS 0532 5101		✓							
GEE 0314 5211								✓	
GEE 0532 5213						✓			
GEE 0532 5215						✓			
GEE 0532 5217	✓								
GEE 0314 5219			✓						
GEE 0314 5212									✓
SPS 0314 5201		✓							
GEE 0314 5112	✓			✓					
GEE 0314 5210							✓		
GEE 0532 5332			✓				✓		

Part B

17. Structure of the Curriculum:

- (a) Duration of the program:
 (i) Masters (General): Years: 1, Semesters: 2
 (ii) Masters (Thesis): Years: 1 Year and 6 Months, Semesters: 3
- (b) Admission requirements: Must have completion of B.Sc. (Honours) in Geography and Environment related discipline.
- (c) Graduating Credits: (i) Masters (General) – 40.00 and (ii) Masters (Thesis) – 47.00
- (d) Total class weeks in a semester: 14 classes per weeks in 1st semester and 11 classes per weeks in 2nd semester.
- Classes + Preparatory level: 16 weeks, Final Examination: 4 weeks
- (e) Minimum CGPA requirements for post-graduation: CGPA 2.00
- (f) Maximum academic years of completion: Years: 3, Semesters: 9
- (g) Category of courses:

Course Category	Course Type	Course Code	Course Title	Credit	Total credit
Core/ Optional Courses	Theory	GEE 0314 5111	Migration and Refugee Management	3.0	24
		GEE 0532 5113	Regional Planning and Development	3.0	
		GEE 0532 5115	Resource Management	3.0	
		GEE 0314 5117	Biodiversity and Conservation	3.0	
		GEE 0314 5119	Natural Hazards and Disaster Management	3.0	
		GEE 0532 5121	Haor Ecology and its Resources	3.0	
		GEE 0532 5123	Paleogeography and Paleoenvironment	3.0	
		GEE 0314 5211	Urban Environmental Management	3.0	
		GEE 0532 5213	Coastal Geography and Environment	3.0	
		GEE 0532 5215	Climate Change, Government Policy, and Action Strategy	3.0	
		GEE 0532 5217	Environment, Population and Sustainable Development in Bangladesh	3.0	
		GEE 0314 5219	Geography of Tourism	3.0	
	Lab	GEE 0314 5112	Advanced Research Methodology in Geography and Environment (Lab)	3.0	3.0
	Viva	GEE 0314 5210	Viva-voce	2.0	2.0

General Education (GED) Courses	Project (General)	GEE 0314 5212	Project on Bangladesh	5.0	5.0
	Thesis	GEE 0532 5332	Thesis	12.0	12.0
	Lab	SPS 0532 5101	Techniques in Physical Geography (Lab)	3.0	6
		SPS 0314 5201	Techniques in Human Geography (Lab)	3.0	

18. Semester wise distribution of courses:

M.S. Semester I

Theory (Offer 4 Courses out of 7) + Lab (2)

Course No.	Course Title	Hours/Week		Credits
		Theory	Lab	
GEE 0314 5111	Migration and Refugee Management	3	0	3.0
GEE 0532 5113	Regional Planning and Development	3	0	3.0
GEE 0532 5115	Resource Management	3	0	3.0
GEE 0314 5117	Biodiversity and Conservation	3	0	3.0
GEE 0314 5119	Natural Hazards and Disaster Management	3	0	3.0
GEE 0532 5121	Haor Ecology and its Resources	3	0	3.0
GEE 0532 5123	Paleogeography and Paleoenvironment	3	0	3.0
GEE 0314 5112	Advanced Research Methodology in Geography and Environment (Lab)	0	6	3.0
SPS 0532 5101	Techniques in Physical Geography (Lab)	0	6	3.0
Total		12	12	18.0

M.S. Semester II

M.S. (General) Students: Offer 4 Courses out of 5; **GEE 0314 5212** is Compulsory.

M. S. (Thesis) Students: Offer 4 Courses out of 5

SPS 0314 5201 and GEE 0314 5210 are compulsory for both **M.S. (General)** and **M.S. (Thesis)** students.

Course No.	Course Title	Hours/Week		Credits
		Theory	Lab	
GEE 0314 5211	Urban Environmental Management	3	0	3.0
GEE 0532 5213	Coastal Geography and Environment	3	0	3.0
GEE 0532 5215	Climate Change, Government Policy, and Action Strategy	3	0	3.0
GEE 0532 5217	Environment, Population and Sustainable Development in Bangladesh	3	0	3.0
GEE 0314 5219	Geography of Tourism	3	0	3.0
GEE 0314 5212	Project on Bangladesh	0	10	5.0

SPS 0314 5201	Techniques in Human Geography (Lab)	0	6	3.0
GEE 0314 5210	Viva-voce			2.0
Total		12	*	**

* M.S. (General) = 16 and M.S. (Thesis) = 6

** M.S. (General) = 22 and M.S. (Thesis) = 17

M.S. Semester III

Course No.	Course Title	Hours/Week		Credits
		Theory	Lab	
GEE 0532 5332	Thesis	0	24	12.0
Total		0	24	12.0

Part C

19. Description of all courses of the program including the following information for each course:

Course Profile

Course No: GEE 0314 5111	Credit: 3.0	Year: MS	Semester: First
Course Title: Migration and Refugee Management	Course Status: Theory		

Rationale of the Course:

Today, tens of millions of people are refugees, raising fundamental challenges for governments around the world. Throughout history, the rate of migration and refugees has been increasing and for this reason the demand and necessity of studying this subject is also increasing. The main purpose of this subject is to understand the nature of both internal and international forced migration in contexts of conflict, repression, security, natural disasters, environmental change, poverty, asylum, and policymaking.

Course Objectives:

The objectives of this course are –

1. To analyze the migration process, conditions, and policy of migration.
2. To evaluate the theoretical aspects of refugee protection and forced migration, whilst developing expertise through a choice of elective modules.
3. To discuss the previous and present trend of world migration and its consequences.

Course Contents:

Migration: concept and definition, scope of migration studies, classification, typologies, and selectivity of migration.

Data and Statistics: sources of data, nature of migration data and migration estimation procedure.

Theoretical Aspects of Migration Studies: Ravenstein's Law. Lee's hypothesis and Stouffer's intervening opportunity model. Mabugunj system approach and Zelinisky's mobility Hypotheses.

Internal Migration: determinants, types, causes and consequences.

International Migration: types, causes and consequences, selecting migration and overseas migration from Bangladesh.

Migration Policies: definitions, aims, objectives, historical background, migration policies in developed and developing countries, gender, and poverty issues in migration.

Population Redistribution: internal and international redistribution of population, refugee, and labor migration. Problems of urbanization. Internal displacement problems.

Environmental migration and Refugee Problems: mitigation, adaptation, and management.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Explain the complex and varied nature of various types of migration and refugee studies.
- CO 2. Apply the theoretical knowledge for proper planning to solve refugee problems.
- CO 3. Evaluate and criticize migration policies as well as the legal norms, institutions, and procedures that have emerged from the international community's resolve to protect refugees and other forced migrants.
- CO 4. Apply the knowledge of migration studies to deal effectively with its challenges as well as addressing the causes of migration and for the management of effective programs to assist refugees.
- CO 5. Collaborate among the migration policies and negotiate trends of world migration.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	3		2						
CO 2						3	3		
CO 3				3	3				
CO 4						3		2	
CO 5	2							2	
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓				✓		✓	
CO 2	✓	✓		✓	✓		✓	
CO 3	✓	✓		✓	✓		✓	
CO 4	✓	✓		✓	✓		✓	
CO 5	✓	✓		✓	✓			
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓	✓	✓	✓	✓	✓	✓	✓
CO 2	✓	✓	✓	✓	✓	✓	✓	✓
CO 3	✓	✓	✓	✓	✓	✓	✓	✓
CO 4	✓	✓	✓	✓	✓	✓	✓	✓
CO 5	✓	✓	✓	✓	✓	✓	✓	✓

Books Recommended:

1. The Age of Migration (2nd Edition)-International Population Movements in the Modern World- Stephen
2. Castles, The Guilford Press, (2003)
3. The Refugees (1st Edition)-Viet Thanh Nguyen; Grove Press; (2017)

4. The Good Immigrant (1st Edition)- Nikeshe Shukla; Unbound; (2016)
5. Governing Refugees (1st Edition)-Kirsten Mc Connachie; Routledge; (2014)
6. Survival Migration (1st Edition)-Alexander Betts; Cornell university; (2013)
7. Refugee and Migration Flows (1st Edition)- Bimal Ghosh; Palgrave Macmillan; (2018)

Course No: GEE 0532 5113	Credit: 3.0	Year: MS	Semester: First
Course Title: Regional Planning and Development		Course Status: Theory	

Rationale of the Course:

This course examines regional planning in advanced economies and the relationship between regional planning and more conventional land use planning. The course considers the origin and development of regional planning as a discipline, as well as its contemporary applications. Regional planning has a long history within advanced economies and over recent decades has been advanced as a key strategy for ensuring the economic competitiveness of major urban centers. The need for regional planning has also been boosted by the increasing connectedness of regions, both locally and across territorial borders. This course will also examine Sustainable regional planning, regional regeneration processes, Transport systems, regional planning and global connectivity, The processes of regional planning, Consultation processes, planning tools.

Course Objectives:

The objectives of this course are –

1. To teach regional planning in advanced economies and the relationship between regional planning and more conventional land use planning.
2. To clarify the origin and development of regional planning as a discipline, as well as its contemporary applications.
3. The course will examine: Sustainable regional planning, regeneration processes, Transport systems, regional planning and connectivity, processes of regional planning.

Course Contents:

The Conceptual Basis of Regional Planning: Concept of region, planning and regional planning, Regionalization and the Administrative Regions, Nature and scope of regional planning, types, component and factors of region and regional planning.

Methods and Techniques of Regionalization: Mapping technique, Ranking method, Subjective and Objective Weighting technique, Other techniques.

Regional Analysis: Inter Regional Analysis, The Regional Framework, Regional Accounts.

Intra-Regional Analysis: The Location of Industry, Weber L Smith, Spatial Structure of Regions (i.e., Central Place Theory), The Growth Pole Theory

Regional Transport Network Analysis: Degree of connectivity, Alpha, Beta, Gamma indices, Degree of development (Pi Index), Detour Index, Degree of circuitry, Preparation of composite index to measure transport Development.

Regional Planning in Practice: Regional Planning in U.K., USA, Russia, France, Japan, and Singapore.

Regional Planning in Bangladesh.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Describe region and regional planning with highlighting the importance of studying regional planning in the development context.
- CO 2. Interpolate the basic concepts of regional planning and approaches to figure out the subject matter of regional planning and development.

- CO 3. Illustrate proper planning on economic development and consideration of the regional aspects during implementation of a development project.
- CO 4. Explain the techniques and nature of regional planning principles to ensure proper regional development in the context of sustainable development goal's strategies.
- CO 5. Evaluate the adopted planning for different regions to ensure a proper and even regional development.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	2	3					3		
CO 2									
CO 3	2				3				
CO 4							3		
CO 5									
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓	✓	✓	✓	✓			
CO 2	✓	✓	✓	✓	✓			
CO 3	✓	✓	✓	✓	✓			
CO 4	✓	✓	✓	✓	✓			
CO 5	✓	✓	✓	✓	✓			
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓	✓	✓	✓	✓	✓	✓	✓
CO 2	✓	✓	✓	✓	✓	✓	✓	✓
CO 3	✓	✓	✓	✓	✓	✓	✓	✓
CO 4	✓	✓	✓	✓	✓	✓	✓	✓
CO 5	✓	✓	✓	✓	✓	✓	✓	✓

Books Recommended:

1. Regional Planning and Development by R.C. Chandna
2. An Introduction to Development and Regional Planning by Jayasri Ray Chaudhuri
3. Regional Development and Planning: International Perspectives by A.R. Kuklinski
4. Weber, Alfred. 1929. (translated by Carl J. Friedrich from Weber's 1909 book). Theory of the Location of Industries. Chicago: The University of Chicago Press
5. Numerical experiments with central place theory and spatial interaction modelling- Openshaw S, Veneris Y, (2003), Environment and Planning A 35(8) 1389–1403
6. Growth poles and growth centers in regional planning--a review- David Derwent - Environment and Planning, vol. 1 (1969), pp. 5-32.

Course No: GEE 0532 5115	Credits: 2.0	Year: MS	Semester: First
Course Title: Resource Management		Course Status: Theory	

Rationale of the Course:

Sustainability is one of the most significant shifts in thinking and action in the environmental and resource management arenas. Resource Management emphasizes theoretical and

sustainable solutions from a social, economic, and environmental perspective. In this course, students will learn ecological principles, policies, and practices required for a sustainable future within four main themes that focus on natural resources management and conservation.

Course Objectives:

The objectives of this course are –

1. To explain to students about resource allocation and elaborate them about resource ecosystem.
2. To compare the relationship between population and resources.
3. To elaborate resource Conservation strategies and techniques.
4. To acquire knowledge on resource appraisal, forecasting and monitoring.
5. To describe conservation strategies with reference to Bangladesh.

Course Contents:

Fundamentals of Resource and its Management: Definition and concepts, scope, and approaches. The evolution of the field of resource management. Resource allocation.

Resource Classification: Resource ecosystem; basic terms; Marine resources, natural resources; renewable and nonrenewable resources. Nature of resources. Resource Appraisal, Forecasting and Monitoring; Methods and techniques.

Population-Resource Nexus: Concepts of sustainability, carrying capacity, perception, attitude, and adjustment in resource management.

Resource Conservation: Meaning; strategies and techniques, important resources, and their conservation strategies with reference to Bangladesh.

Resource Planning and Management: Concept and approaches. The planning cycle; Models in planning. Perspectives on Future Resources: salient trends; social order; institutional reforms; policy making; international order and co-operation.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Explain and compare the differences between different types of resource and allocation of resources.
- CO 2. Analyze and evaluate the different methods and techniques of resource monitoring and forecasting.
- CO 3. Determine the relationship between resources and man's development.
- CO 4. Evaluate strategies and techniques of resource conservation with respect to Bangladesh.
- CO 5. Apply the knowledge of planning cycle and construct a model for resource management of a region.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	3								
CO 2									
CO 3									
CO 4									
CO 5								1	
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓	✓						
CO 2	✓	✓					✓	
CO 3	✓							
CO 4	✓					✓		
CO 5	✓	✓				✓		
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓			✓		✓	✓	✓
CO 2	✓			✓		✓	✓	✓
CO 3		✓	✓			✓	✓	✓
CO 4				✓	✓	✓	✓	✓
CO 5				✓	✓	✓	✓	✓

Books Recommended:

1. Environment and economy: Property rights and public policy. - Bromley, D. W. Blackwell Pub (June 1, 1991)
2. Mathematical programming for natural resource management. - Dykstra, D. P. McGraw-Hill (January 1, 1984).
3. Command and control and the pathology of natural resource management- Holling, C. S., & Meffe, G. K. (October 31, 2003).
4. Human resource management: rhetoric's and realities (Management, work and organizations) (2004th Edition) - Legge, K. (1995).
5. Strategy and human resource management (4th Edition) - Boxall, P., & Purcell, J. (2003).

Course No: GEE 0314 5117	Credit: 3.0	Year: MS	Semester: First
Course Title: Biodiversity and Conservation		Course Status: Theory	

Rationale of the Course:

Biodiversity and its conservation are postgraduate courses that provide students with essential knowledge, skills, and experience in conservation biology and in the management and sustainable use of natural resources. It provides a cutting-edge practical approach to the ecological principles and methodologies that are fundamental to biodiversity management and the conservation of species and habitats. It will provide in-depth knowledge for those looking to further their career in various aspects of biodiversity and its conservation. It would produce those who can communicate and address the problems related to conservation projects. This course is suitable to make the professional aware of the social, political, and economic issues relevant to achieving the goal.

Course Objectives:

The objectives of this course are –

1. Understand biodiversity dimensions and the scope of biodiversity science, including genetic, species, ecological, landscape, and urban biodiversity.
2. Evaluate the values of biodiversity, such as instrumental, intrinsic, ethical, aesthetic, and intellectual, and recognize its role in addressing human demands and climate change.

3. Analyze conservation strategies, including techniques like protected areas, germplasm conservation, and seed banks, and comprehend the significance of species, genetic, and ecosystem diversity in conservation efforts.
4. Identify and address threats to biodiversity, such as habitat destruction, invasive species, pollution, and overexploitation, while examining species extinction processes, current and future extinction rates, and the IUCN threatened categories.

Course Contents:

Biodiversity: Concept and definition, Scope and Constraints of Biodiversity Science, Composition and Scales of Biodiversity: Genetic Diversity, Species/Organismal Diversity, Ecological/Ecosystem Diversity, Landscape/Pattern Diversity, Agro biodiversity, Bicultural Diversity and Urban Biodiversity

Values of Biodiversity: Instrumental/Utilitarian value and their categories, Direct use value; Indirect/ Non-consumptive use value, Introduction to Ecological Economics; Monetizing the value of Biodiversity; Intrinsic Value; Ethical and aesthetic values, Anthropocentrism, Biocentrism, Egocentrism and Religions; Intellectual Value; Deep Ecology.

Global Biodiversity: Components of biodiversity; Richness of life on the earth; Measures of diversity; A framework for managing biodiversity; Defining priorities for conservation and sustainable use; Protecting and restoring ecosystems, species, populations, and genetic diversity; Legal measures for sustainable use and protection of biodiversity; Building capacity for biodiversity management, Biodiversity prospecting.

Techniques and Methods of Biodiversity Conservation: management categories for conservation: Protected areas of Bangladesh. Germplasm conservation and seed banks: Uses of genetic information in conservation, Ex-situ and in-situ conservation, Species Diversity and Conservation, Genetic Biodiversity and Conservation, Ecosystem Diversity and Conservation. Forest and wildlife resources of Bangladesh: as a resource base and their conservation.

Wildlife Resources of Bangladesh and their Conservation: (a) Wildlife management in Bangladesh (b) Wildlife management principles: Ecological basis, hunting refuges, predator control, artificial stocking, Carrying capacity, habitat improvement, interspersions, territories, diseases (c) List of extinct wildlife of Bangladesh.

Threats to Biodiversity: Habitat Destruction, Fragmentation, Transformation, Degradation and Loss: Causes, Patterns and consequences on the Biodiversity of Major Land and Aquatic Systems Invasive Species: their introduction pathways, biological impacts of invasive species on terrestrial and aquatic systems Pollution: Impacts of Pesticide pollution, Water pollution and Air Pollution on biodiversity Overexploitation: Impacts of Exploitation on Target and Non-target Terrestrial and Aquatic species and Ecosystems,

Extinction: Types of Extinctions, processes responsible for Species Extinction, Current and Future Extinction Rates, IUCN Threatened Categories.

Importance of Conservation: In response to expanding anthropogenic demands, in response to global climate changes, Multidimensional aspects of conservation biology.

Biogeographic Classification Conservation Challenges in the Twenty First Century: Urbanization; Creating knowledge society, Conflict management and decision making Management of introduced species.

Sustainable Living in the Biosphere: Biodiversity under protection; International geosphere biosphere program (IGBP); World Conservation strategy; IBP and MAB Programs.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Explain the concept of biodiversity and its various dimensions, including genetics, species, ecological, landscape, and urban biodiversity.

- CO 2. Evaluate the values of biodiversity and articulate its instrumental, intrinsic, ethical, aesthetic, and intellectual importance for conservation and management.
- CO 3. Apply knowledge of conservation strategies and techniques, to effectively preserve and manage biodiversity at species, genetic, and ecosystem levels.
- CO 4. Assess the threats to biodiversity, including habitat destruction, invasive species, and overexploitation, and propose measures to minimize their impact.
- CO 5. Evaluate the current and future rates of species extinction, interpret the IUCN threatened categories, and propose strategies for prioritizing conservation efforts to protect and restore ecosystems.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	2	2					3		
CO 2									
CO 3	3				2				
CO 4							3		
CO 5									
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓	✓	✓	✓	✓			
CO 2	✓	✓	✓	✓	✓			
CO 3	✓	✓	✓	✓	✓			
CO 4	✓	✓	✓	✓	✓			
CO 5	✓	✓	✓	✓	✓			
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓	✓	✓	✓	✓	✓	✓	✓
CO 2	✓	✓	✓	✓	✓	✓	✓	✓
CO 3	✓	✓	✓	✓	✓	✓	✓	✓
CO 4	✓	✓	✓	✓	✓	✓	✓	✓
CO 5	✓	✓	✓	✓	✓	✓	✓	✓

Books Recommended:

1. Zoogeography: the geographical distribution of animals- DARLINGTON, J. Jr.(1957)
2. Biogeography: An Ecological Perspective – P. Denseveau, Roland Press.
3. Plant and Animal Geography – M.I. Newbigin, Mehtuen & amp
4. Biogeography – H. Robinson, Macdonald and Evans, London and Plymouth.
5. Animal Geography – George.

Course No: GEE 0314 5119	Credit: 3.0	Year: MS	Semester: First
Course Title: Natural Hazards and Disaster Management			Course Status: Theory

Rationale of the Course:

Natural hazards and the processes associated with the physical environment are some of the most prominent challenges that we face globally. This course will develop students' abilities to analyze and predict future events, as well as manage and mitigate their effects to support communities when they need it most.

Course Objectives:

The objectives of this course are –

1. To understand the concepts about hazards and disaster.
2. To explain the importance of disaster management.
3. To familiarize yourself with the procedure of disaster risk reduction.
4. To discern the disaster management approaches of Bangladesh.

Course Contents:

Natural Hazards: Definition and Concept of Hazard and Disaster.

Typology or Classification of Hazards and Disasters: Natural – Extra Terrestrial, Geologic/Seismic, Hydro – Meteorological, Biological, etc.; Human Induced (Anthropogenic) – War, Fire, Industrial Pollution, Accidents (Transport, Industrial, Technological, etc.), Oil Spills, HIV/AIDS, Drug Addicts, Communal/Political Riots; Mixed (Natural and Human Induced Together) – Bird – Flu, Water Logging, Pollution, Landslide, etc.

Natural Hazard in Bangladesh: Classification/Types, Geographical Extent of Major Hazards, and Their Characteristics/Impacts.

Disaster Management: Conceptual Framework, Aims, Scope, Subject Matter and Approaches.

Fundamental Approach of Disaster Management of Bangladesh: History of Disaster Management, Paradigm Shift, Disaster Management Framework, and Institutions.

Elements of Disaster Management: Prevention, Mitigation, Adaptation, and Migration.

Disaster Risk Reduction (DRR) and Disaster Resilience:

Risk – Concepts, Factors, Risk Level, Relation with Hazards, Vulnerability and Capacity, Risk Profile Risk Estimation, Risk transfer.

Vulnerability – Vulnerability Profile (Physical, Environmental, Social, Economic, and Environment), Hazard Analysis and Mapping.

Response, Recovery, and Rehabilitation – Framework and Approaches of Response and Recovery, Pre-Disaster Phases (Warning, Evacuation, Practice, etc.), Post Disaster Phases (Search and Rescue, First Aid Medical Treatment, Rehabilitation and Reconstruction), Dimension of Disaster Recovery (Debris Management, Environmental Recovery, Protecting Historical and Cultural Resources, Retrofitting, Built Back Better).

Capacity – Definition, Relation with other DRR Elements.

Disaster Preparedness – Basic Concepts of Preparedness, Forecast and Warning System, Coping Mechanisms (Indigenous and Modern), Preparedness at different Levels (Family, Community/Local, National, Regional, and International), Rescue, Relief, Rehabilitation and Reconstruction.

Disaster Mitigation – Definition and Concepts of Mitigation, Various Approaches of Disaster Mitigation, Environmental Control and Land Use Planning, Structural and Non-Structural, Community Participatory Approach, Partnership Building and Networking (Regional and Global), Disaster Relief and Rehabilitation, Disaster Management Training and Education, Role of Media in Disaster Risk Reduction, Institutional Capacity Building.

Adaptation to Disaster: Adaptive Capacity and Its Determinants (Economic Resources, Technologies, Information and Skills, Infrastructure, Institution, Equity), Enhancing Adaptive Capacity, Migration as an Adaptation with Disaster.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Distinguish between hazards and disasters.
- CO 2. Classify different types of hazards occurring in different regions of the world.
- CO 3. Recognize the approaches of disaster management.
- CO 4. Illustrate the steps to reduce the risk of disaster.
- CO 5. Analyze the scopes and approaches regarding disaster in Bangladesh.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	3								
CO 2	3								
CO 3	2								
CO 4	3								
CO 5								1	
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓				✓			
CO 2	✓				✓			
CO 3	✓				✓			
CO 4	✓				✓			
CO 5	✓				✓			
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓					✓		
CO 2	✓					✓		
CO 3		✓			✓	✓		
CO 4		✓						
CO 5				✓		✓		

Books Recommended:

1. Center, A. D. (2012). Comprehensive Disaster Management Programme (CDMP-II).
2. Coppola, D. P. (2006). Introduction to international disaster management. Elsevier.
3. Goel, S.L. (2006). Encyclopedia of Disaster Management. Deep & Deep Publications.
4. Paul, B. K. (2011). Environmental hazards and disasters: contexts, perspectives and management. John Wiley & Sons.
5. Smith, K (2013). Environmental hazards: assessing risk & reducing disaster.

Course No: GEE 0532 5121	Credit: 3.0	Year: MS	Semester: First
Course Title: Haor Ecology and Its Resources		Course Status: Theory	

Rationale of the Course:

A Haor is a wetland ecosystem in the northeastern part of Bangladesh which physically is a bowl or saucer shaped shallow depression. Understanding the physical setting of Haor and effective management of the natural resources of Haor is a necessary component of dealing with the challenges of resource depletion and global environmental change because Haor basin is an internationally important wetland ecosystem. The purpose of this course is to help students understanding the freshwater wetlands from the perspective of physical and social dynamics especially physical setting of Haor area, its biological resources and help to identify the process that degrade the wetland environment. This course contains freshwater wetland status and issues, dynamics of wetland soil, ecological characteristics of wetland, flora and fauna of Haor area and wetland management policies of Bangladesh.

Course Objectives:

The objectives of this course are –

1. Understanding the fundamental characteristics (physical, chemical, and biological) of Fresh water wetlands and their importance for the management of Haor.
2. Determined the possible impacts (both positive and negative) of the proposed interventions/projects.
3. Analyze the crop and fish production, protection of homesteads and infrastructure and conservation of biodiversity in the vast Haor area.
4. Identify the measure that prevent degradation of Haor resources and ensure sustainable management.
5. Recognizing the sources of pollution and Mineralization of perennial water during the dry season from residual fertilizer has led to eutrophication of the water bodies.
6. Identify the causes which are responsible for the extinction of flora and fauna diversity.

Course Contents:

Haor: Nature, Characteristics, Major Haors Classification

Haor Environment: Ecology, Ecosystem, Regions, Ecosystem services.

Resources of Haor: Sector wise resources, livelihoods, and benefits

Problems of Haor Regions: Environmental and man-made, Degradation, Pollution, Floods, and others.

Management System, Policy, and Strategies: Natural System; Innovated; International, National Govt Policies and Laws)

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Recognize fresh water wetlands fundamental characteristics and management issues and strategies in the context of Bangladesh.
- CO 2. Assess and interpret information, knowledge and arguments about Haor management issues and its environment.
- CO 3. Analyze and present data on Haor river system, soil characteristics, dynamics of Haor, flora and fauna diversity and apply knowledge for better management.
- CO 4. Communicate the principles of managing natural resources of Haor with specialist and non-specialist audiences including practitioners and stakeholders.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	3								
CO 2					2		3		
CO 3							2	2	
CO 4					3				
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05	TL 06
CO 1	✓					✓
CO 2	✓	✓				
CO 3			✓	✓		✓
CO 4				✓	✓	✓

COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓				✓	✓	✓	✓
CO 2				✓	✓	✓	✓	✓
CO 3		✓		✓		✓	✓	✓
CO 4				✓	✓	✓	✓	✓

Books Recommended:

1. Batzer, D.P. and Sharitz, R.R. eds., 2014. Ecology of freshwater and estuarine wetlands. Univ of California
2. Mitsch, W.J. and Gosselink J.G. (2007) Wetlands. 4th Edition, John Wiley & Sons, Inc.
3. Thomas R. Biebighauser, Wetland Drainage, Restoration, and Repair, Lexington, KY, University Press of Kentucky, 2007.
4. Mitsch, W.J., J. G. Gosselink, C. J. Anderson, and L. Zhang. 2009. Wetland Ecosystems. John Wiley & Son, Inc., New York.
5. Wetland of Bangladesh, Md. Salar Khan, Bangladesh Centre for Advanced Studies, Nature Conservation Movement, 4 Aug 2009.

Course No: GEE 0532 5123	Credit: 3.0	Year: MS	Semester: First
Course Title: Paleogeography and Paleoenvironment			Course Status: Theory

Rationale of the Course:

This course is intended for advanced graduate students who are interested in learning about the history of the earth's climate, environment and how paleoenvironmental studies can help them to learn more about the workings of the climate system and past environment. This course is an introduction to the methods of paleoclimate reconstruction and the current state of knowledge about the paleoclimate history of the Earth- from the early Earth to the last two millennia.

Course Objectives:

The objectives of this course are –

1. To explain to them about Paleogeomorphology and Paleoclimatology.
2. To make them understand the duration and characteristics of the quaternary environment.
3. To provide knowledge on how to reconstruct the biological, chemical, and physical nature of the environment.
4. To acquire information on the temporal and spatial characteristics of climate variability.
5. To describe and evaluate the past environment of Bangladesh with context to lithology, coastal stratigraphy, microfossil analysis.
6. To provide information on a series of cases and lessons upon which our understanding of environmental change can be constructed and tested.

Course Contents:

Paleogeomorphology and Paleoclimatology: meaning, scope and importance to study.

Quaternary Environment: its extents, duration, characteristics, and framework

Geomorphological Evidence: Glacial Landform; Periglacial landform, River terraces; dunes; weathering crust.

Lithological Evidence: Fluvial Deposits: - Facies and Beddings; Paleosols; Lake, Mire and Bog sediments; Loess sediment; Marine sediments; and Ice-core stratigraphy.

Biological Evidence: Pollen analysis; Diatom analysis; Foraminifera Analysis; Plant and Animal Macrofossils.

Chronological Evidence: C14 dating; Uranium series dating; Dendrochronology, varve chronology; Oxygen-isotope.

Climatic changes in the Past: Causes and significance; glacial periods; sea-level changes; human evolution and migration.

Paleogeomorphology and Paleoclimatology of Bangladesh: Quaternary Lithology. Coastal Stratigraphy; Climate change; Paleo-monsoon, Quaternary sea-level changes; Paleo shorelines; landforms and correlation, human occupancies.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Explain the characteristics and framework of the quaternary environment.
- CO 2. Demonstrate geomorphological, lithological, biological, and chronological evidence used in revealing paleoenvironmental changes.
- CO 3. Reconstruct past climate changes and issues associated with it from those evidence.
- CO 4. Project future climate change through the analysis of paleoclimate of Bangladesh
- CO 5. Model quaternary sea-level change of Bangladesh

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	3								
CO 2						3			
CO 3							3		
CO 4						3			
CO 5							3		
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓	✓	✓	✓	✓			
CO 2	✓	✓	✓	✓	✓			
CO 3	✓	✓	✓	✓	✓			
CO 4	✓	✓	✓	✓	✓			
CO 5	✓	✓	✓	✓	✓			
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓	✓	✓	✓	✓	✓	✓	✓
CO 2	✓	✓	✓	✓	✓	✓	✓	✓
CO 3	✓	✓	✓	✓	✓	✓	✓	✓
CO 4	✓	✓	✓	✓	✓	✓	✓	✓
CO 5	✓	✓	✓	✓	✓	✓	✓	✓

Books Recommended:

1. Reconstructing Quaternary Environment (2nd Edition)- J. J. Lowe, M.J.C. Walker, Routledge (1997).
2. The Holocene; An environmental History (3rd Edition)- Neil Roberts, Wiley-Blackwell (1989).
3. An Introduction to the Quaternary Geology of Bangladesh- M.H. Monsur (1995).
4. Sea-Level Changes of Bangladesh: Last Ten Thousand Years- MS Islam, Asiatic Society of Bangladesh (2001).
5. Paleoclimatology- Reconstructing Climates of the Quaternary (3rd Edition)- Raymond Bradley, Academic Press (2014)

Course No: GEE 0314 5112	Credits: 3.0	Year: MS	Semester: First
Course Title: Advanced Research Methodology in Geography and Environment (Lab)			Course Status: Lab

Rationale of the Course:

This course will be a pre-preparation for the advanced research in graduation level, where the students will learn to conduct research in proper ways. Development of a research proposal and constructing research design with focus on the relation between topics, problem statement, research questions and relevant theory and methods will be discussed thoroughly. Requirements for conducting advanced research regarding methodology development, data collection and analysis, report writing, language, use of references and theory will be guided. Various ethical issues and other related problems will be evaluated also. The course will be completed by submitting an assignment report focusing on an individual project work that forms the basis for the advanced research with the background, problem, theoretical framework, and methods.

Course Objectives:

The objectives of this course are –

1. To learn the ethical issues and consideration of research work.
2. To develop the research proposal with a timeframe and budget fixation.
3. To construct a research design.
4. To adopt the methods and methodology for research.
5. To accomplish the writing of a research report.

Course Contents:

Ethical Issues and Consideration for Research in the Field of Geography and Environment.

Define Key Concepts: Topics selection, Background of the study, Problem statement, Research questions, Objectives, Study area selection, Rationale of the study, Significance and outcomes of the study, Limitations.

Research Proposal: Development of a research proposal, Fixation of timeline, Budget, Submission and Evaluation.

Research Design: Purpose statement, Techniques, Hypothesis, Methodology, Settings for the research study, Objections, Timeline, Measurement of analysis.

Literature Review: Search for relevant literature, evaluate sources, identify themes, debates and gaps, evaluate relevant definitions, theories and models, Outline the structure.

Methodology in Geography and Environment: Methodological approach, Methods of data selection and collection, Methods of analysis, Evaluate and justify methodological choices.

Data Collection and Analysis in the Field of Geography and Environment: Types of data: primary and secondary, Survey design for data collection, Quality assurance and control, Data processing, Data analysis techniques, Barriers to effective analysis, Software for data analysis.

Report Writing: Title page, Abstract, Table of contents, List of table and figures, Acknowledgement etc., Introduction, Background study, Material and methods, Analysis, Results and discussion, Conclusion, Recommendations, References, Appendices.

Appendix.

Presentation of the Thesis.

Students will submit an individual assignment that forms the basis for the master thesis with the background, problem, theoretical framework, and methods.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Recognize the basic concepts of a thesis study and construct a research proposal.
- CO 2. Develop a research design for theoretical framework of a thesis.

- CO 3. Develop methodology as well as explain/analyze the data with proper techniques.
CO 4. Apply key knowledge to write a thesis report along with presentation techniques and evaluate the ethical issues and consideration related to a thesis.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	3	3							
CO 2	3	3							
CO 3			3		2				
CO 4					3	3	3	2	1
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓	✓	✓	✓	✓		✓	
CO 2	✓	✓	✓	✓	✓		✓	
CO 3	✓	✓	✓	✓	✓		✓	
CO 4	✓	✓	✓	✓	✓		✓	
CO 5	✓	✓	✓	✓	✓		✓	
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1				✓	✓	✓	✓	
CO 2				✓	✓	✓	✓	
CO 3				✓	✓	✓	✓	
CO 4				✓	✓	✓	✓	
CO 5				✓	✓	✓	✓	

Books Recommended:

- How to Do Your Dissertation in Geography and Related Disciplines- Tony Parsons, Peter G Knight; Routledge (2015).
- How to Write Your First Thesis- Paul Gruba, Justin Zobel; Springer Nature (2017).
- How to Write a Thesis- Umberto Eco; The MIT Press (1977).
- Research Methods in Geography: A Critical Introduction- Basil Gomez (Editor), John Paul Jones III (Editor); (2010).
- The Dissertation Journey: A Practical and Comprehensive Guide to Planning, Writing, and Defending Your Dissertation- Carol M. Roberts; SAGE (2010).

Course No: SPS 0532 5101	Credits: 3.0	Year: MS	Semester: First
Course Title: Techniques in Physical Geography (Lab)		Course Status: Lab	

Rationale of the Course:

This course provides an advanced understanding of the modern paleo environment as a multidisciplinary subject spanning the interface between geology and environment. It focuses on the importance of integrating knowledge about fossils, climate, and artifacts to fully understand the history of life and environment. Students will discover the types of modern scientific approaches used to contextualize and interpret fossil records, including the techniques used to determine the age of fossils and undertake paleo environmental reconstructions from fossil deposits.

Course Objectives:

The objectives of this course are –

- To make them able to analyze microclimate of a region.
- To analyze soils at a microscopic level.
- To give the students an understanding of macrofossils and microfossils.
- To analyze the way objects and artifacts reflect culture.
- To analyze macrofossils and microfossils.

Course Contents:

Study of Microclimate: Definition, Factors & Examples. Microclimatic Elements

Study of Micro Morphology

Study of Macro Fossil: PRO✓Y Indicator, Vegetation Proxy indicators, Pollen, Plant Macrofossils, Tree Rings -- Dendrochronology

Study of Micro Fossil: study of Foraminifera, diatom, plant, and animal microfossils.

Study of Artifacts

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Apply the techniques of studying microclimate.
- CO 2. Identify macrofossil and microfossil at species level.
- CO 3. Draw basic stratigraphic conclusions about micro and macrofossils assemblages.
- CO 4. Interpret biostratigraphy and paleoenvironmental information.
- CO 5. Identify popular cultural objects from the past and see how they can be used as clues to interpret the culture of their time.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1			3						
CO 2							3		
CO 3							3		
CO 4						3			
CO 5						3			
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓	✓	✓	✓	✓			
CO 2	✓	✓	✓	✓	✓			
CO 3	✓	✓	✓	✓	✓			
CO 4	✓	✓	✓	✓	✓			
CO 5	✓	✓	✓	✓	✓			
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓	✓	✓	✓	✓	✓	✓	✓
CO 2	✓	✓	✓	✓	✓	✓	✓	✓
CO 3	✓	✓	✓	✓	✓	✓	✓	✓
CO 4	✓	✓	✓	✓	✓	✓	✓	✓
CO 5	✓	✓	✓	✓	✓	✓	✓	✓

Books Recommended:

1. Techniques in Physical Geography - Gouide A, Routledge, London (1990).
2. Microfossil- Braiser, MD., Chapman and Hall, London (1979).
3. Encyclopedia of Quaternary Science (2nd Edition)- Elias, S.A, Elsevier (2013).
4. Paleocology Past, Present and Future- Bottjer, D.J. (2016).
5. Reconstructing Quaternary Environments (2nd Edition)- Lowe, J.J., Routledge (January 27, 1997)

Course No: GEE 0314 5211	Credit: 3.0	Year: MS	Semester: Second
Course Title: Urban Environmental Management	Course Status: Theory		

Rationale of the Course:

Urban Environmental Management (UEM) responds to urban growth and environmental problems from the management and planning perspectives to contribute to the development of sustainable, inclusive, and resilient cities. The core objectives are understanding dynamics of urban regions and developing effective interventions using various decision support systems and instruments in multi-stakeholder settings. UEM draws on and integrates approaches and perspectives in established disciplines of urban planning, urban and regional development, urban economics, sustainable development, and urban policy and management studies into a distinctive framework of problems, issues and questions concerning the urban environment, in a developing country/city context.

Course Objectives:

The objectives of this course are –

1. To recognize the impact of urban environmental problems as well as environmental in justice.
2. To explain urban environmental management with some theoretical approaches such as sustainable development, ecological footprint urban environmental transition.
3. To analyze the approaches and tools in urban environmental management with the institutional setting and
4. To concern about the assessment of urban environmental issues and options, reduction of natural disaster risk in cities and global initiatives.
5. To acquire knowledge about urban environmental problems in Bangladesh with guiding principles

Course Contents:

Introduction to Urban Environment: Definition and concepts of urban environment, urban environmental systems and risks in the urbanizing world, Factors affecting the urban environment, Interaction between urban development and the urban environment, Disproportionate impacts of urban environmental problems, fighting poverty and environmental injustice in cities, and Contrasting Brown, Grey and Green priorities.

Introduction to Urban Environmental Management: Definition and concepts of environmental management, the complexity of urban environmental management. Comparison with other theoretical approaches, such as political ecology, ecological modernization, ecological footprint, urban governance, environmental governance, sustainable development, and urban environmental transition.

Approaches and Tools in Urban Environmental Management: The institutional setting for urban environmental management, Constraints, and opportunities of urban environmental

management in the world, The concept of sustainable city, the good city, the inclusive city, the unruly cities, neoliberal environment, and urban agriculture.

Urban Environmental Management in the Context of Third World: Assessing urban environmental issues and options, providing environmental services and housing, Reducing natural disaster risk in cities, global initiatives of urban environmental management.

Urban Environment Problems in Bangladesh.

Guiding Principles of Urban Environmental Management: Ecological, economic, social and management.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Recognize basic concepts of urban environment, environmental systems and urban development along with its problems and environmental injustice in cities.
- CO 2. Discuss urban environmental management including the complexity of it as well as some theoretical approaches of it.
- CO 3. Illustrate various types of cities, neoliberal environment, urban agriculture and solve environmental problems in Bangladesh. .
- CO 4. Apply urban environmental management in the context of third world and global initiatives of urban environmental management.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1		2	1						
CO 2				2					
CO 3							3		
CO 4								2	
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓	✓	✓	✓	✓		✓	
CO 2	✓	✓	✓	✓	✓		✓	
CO 3	✓	✓	✓	✓	✓		✓	
CO 4	✓	✓	✓	✓	✓		✓	
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓			✓		✓	✓	✓
CO 2	✓		✓		✓	✓	✓	✓
CO 3		✓	✓	✓	✓	✓	✓	✓
CO 4		✓		✓	✓	✓	✓	✓

Books Recommended:

1. Urban Geography – J.H. Johnston.
2. Readings in Urban Geography – H.M. Mayer and C. F. Kohn.
3. Urban Geography – J.H. Johnston.
4. Urban Research Method – J.P. Gibbs.
5. Urban Bangladesh: Geographic Studies ed. – N. Islam and R.M. Ahsan.

Course No: GEE 0532 5213	Credit: 3.0	Year: MS	Semester: Second
Course Title: Coastal Geography and Environment		Course Status: Theory	

Rationale of the Course:

This course has been designed to make the students specialize in coastal environments. This type of specialization will develop their ability to understand the coastal environment and solve various problems of the coastal environment.

Course Objectives:

The objectives of this course are –

1. To familiarize with basic concepts of coast
2. To introduce with coastal resources and their management
3. To understand the coastal processes
4. To know the coastal problems and their management

Course Contents:

Coastal and Marine Environment: Meaning, Multidisciplinary scope, Importance of study.

Relief of the Ocean: Continental shelves and slope, Ocean floor, coral reef relief of the Atlantic, Pacific and Indian Ocean

Ocean Sediments: Source of sediments, types, characteristics, depositional environments.

Marine Environment: Temperature; salinity; causes, changes, vertical and horizontal distribution, Implication. Marine climatic Zone, EL-Nino

Sea-level Change: Definition, causes, past, present, and future trends of sea level changes, Consequences of sea level changes.

Coast: Definition, classification Delineation, and characteristics,

Coastal Landform: Cliff, Sand dunes, Shores, beaches, Tidal flat Mud flat, lagoons.

Coastal Sediments: Basic Concept of Sediment transport, Sediment sources, sizes, distribution

Estuaries: Definition, types, processes, and morphology

Marine and Coastal Resources: Flora and Fauna, Coral Reef, Mineral Resources,

Marine and Coastal Disaster: Cyclone, Storm Surges, Tsunami, Bank Erosion, Salinity Intrusion

Coastal Zone Management: Concept, Policies, ICZM, Land Reclamation, Coastal Zoning Protection and Defense, Management techniques, Community Participation, Coastal Conservation

Coastal Geography of Bangladesh: Classification, characteristics, human intervention

Bay of Bengal with Emphasis on EEZ of Bangladesh and Estuaries: Resource Utilization, Sea level change. Government policy on Bay of Bengal.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Define various concepts related to the coast.
- CO 2. Demonstrate the coastal environment.
- CO 3. Explain coastal processes.
- CO 4. Analyze coastal problems.
- CO 5. Develop solutions for coastal problems.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	3								
CO 2							2		

CO 3							2		
CO 4						3			
CO 5					3		3		
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓	✓	✓	✓	✓			
CO 2	✓	✓	✓	✓	✓			
CO 3	✓	✓	✓	✓	✓			
CO 4	✓	✓	✓	✓	✓			
CO 5	✓	✓	✓	✓	✓			
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓	✓	✓	✓	✓	✓	✓	✓
CO 2	✓	✓	✓	✓	✓	✓	✓	✓
CO 3	✓	✓	✓	✓	✓	✓	✓	✓
CO 4	✓	✓	✓	✓	✓	✓	✓	✓
CO 5	✓	✓	✓	✓	✓	✓	✓	✓

Books Recommended:

1. D. Raffaelli and S. Hawkins Intertidal Ecology (1999) 2nd, Kluwer Academic Publisher
2. J. Pathick A. Introduction to Coastal Geomorphology (1986) Edward Arnold
3. E.C. Birds, Submerging Coast (1993) John Wiley
4. MS Islam, Sea-Level Changes of Bangladesh: Last Ten Thousand Years, (2001) Asiatic Society of Bangladesh

Course No: GEE 0532 5215	Credit: 3.0	Year: MS	Semester: Second
Course Title: Climate Change, Government Policy, and Action Strategy			Course Status: Theory

Rationale of the Course:

This course begins with climate and its elements and components, and the local impact of sea-level rise due to climate change. To understand how excess carbon dioxide is rapidly changing the climate, the Earth's energy budget and then focus on greenhouse gases. Carbon dioxide and its ability to absorb and re-radiate heat are key in understanding climate change. Climate change requires global action with solutions. Global climate change and its impacts on people and resources pose serious global challenges and adaptations should choose mitigation strategies to reduce climate change. Students will be able to analyze the impact of climate change by studying different national, regional, and international responses to climate change. Students will be able to compare climate change mitigation and adaptations strategies.

Course Objectives:

The objectives of this course are –

1. To improve the knowledge of climate change and its elements and components.
2. To introduce government policy, adaptation strategies, NGO activities, action plan etc.
3. To concern about the impacts of climate change in migration pattern, land use change, crop production and food security, change in forest and coastal biodiversity along with Bangladesh.

- To explain the national, regional, and international response and international dialogues on climate change, mitigation, adaptation, and conflict on Climate Change.
- To recognize the ideas of world climate politics and climate politics.

Course Contents:

Climate Change: Concept, historical perspective, present condition.

Elements of Climate Change: Basic; (Temperature, Humidity, Precipitation, Sky conditions (presence or absence of clouds), Solar radiation, Wind, Vegetation) and Physical; (Lithosphere, hydrosphere, atmosphere, and biosphere).

Climate Change Components: Global warming, sea-level change, carbon emission, glacial change, green-house gas, ozone depletion, El Nino and La Nina.

Climate Change in the Context of Bangladesh.

Climate Change and Bangladesh (Temperature/rainfall pattern, drought, flood, and cyclone).

Government Policy: Adaptation, government and local level participation in adaptation strategies NGO activities, Bangladesh Climate Change Strategic and Action plan, National Adaptation Program of Action (NAPA),

Climate Change and its Possible Global impacts along with Bangladesh: Migration pattern, land use change, crop production and food security, change in forest and coastal biodiversity.

National, Regional and International Response to Climate Change: International Treaties, Protocols, IPCC, and UNFCCC (COP: historical development, success, and failure).

International Dialogues on Climate Change Mitigation, Adaptation, and Conflict: Stockholm Declaration, Rio Summit, and decisions in other successive international meetings until now.

Climate Change and World Climate Politics: Grouping among Countries (Annex I, Annex II, Non-Annex, OECD, EIT, AOSIS, LDC, etc.), Clean Development Mechanism (CDM), Carbon Trading, National and Individuals Interest, Climate Ethics and Justice.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Recognize the historical perspective, present condition of climate change and discuss the elements and components of climate change.
- CO 2. Characterize climate change and its pattern in the context of Bangladesh and recognize government policy, adaptation, government strategies, and NGO activities.
- CO 3. Evaluate climate change and its possible global impacts and analyze the rules of international treaties, protocols, IPCC, and UNFCCC to climate change.
- CO 4. Assess the importance of Stockholm Declaration, Rio Summit in and decisions in other successive international meetings in climate change until now.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	2	2							
CO 2	1	2							
CO 3					3			2	
CO 4		2			3				
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓	✓	✓	✓	✓		✓	
CO 2	✓	✓	✓	✓	✓		✓	
CO 3	✓	✓	✓	✓	✓		✓	
CO 4	✓	✓	✓	✓	✓		✓	
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓		✓	✓	✓	✓	✓	✓
CO 2	✓			✓		✓	✓	✓
CO 3	✓	✓	✓			✓	✓	✓
CO 4	✓	✓	✓	✓	✓	✓	✓	✓

Books Recommended:

- Mapping Vulnerability: Disasters, Development, and People (2004), Bankoff G., Frerks G. & Hilhorst D. Earthscan. UK.
- The Development of Atmospheric General Circulation Models: Complexity, Synthesis and Computation (2011). Donner L., Schubert W. & Somerville R. Cambridge University Press. UK.
- Climate Change Vulnerability and Adaptation in Asia and the Pacific (1996). Erda L., Bolhofer W.C., et al. Springer. Netherlands.
- Climate Change Science: A Modern Synthesis. Farmer G.T. & Cook J. (2013) Volume -1. Springer. Netherlands.

Course No: GEE 0532 5217	Credit: 3.0	Year: MS	Semester: Second
Course Title: Environment, Population and Sustainable Development in Bangladesh		Course Status: Theory	

Rationale of the Course:

This course has been designed to enrich the students with up-to-date knowledge about the contemporary environmental issues of Bangladesh. Thus, it will help them to develop skills to contribute in ensuring sustainable development of Bangladesh.

Course Objectives:

The objectives of this course are –

- To introduce the students with current environmental problems/issues in the context of Bangladesh
- To familiarize the students with the concept of sustainable development
- To make the students capable in understanding the relationship between environmental change and sustainable development in Bangladesh

Course Contents:

Environmental Problems: Definition, classification.

Current Environmental Problems/Issues in Bangladesh: Water pollution, Air pollution, Deforestation, Soil erosion and degradation, Drought, Depletion of biodiversity, Natural hazards and disaster, Climate change, Flood, Salinity, Coastal degradation, Sea-level rise, Severe overpopulation.

Sustainable Development: Concept, historical perspective.

Relationship between Environmental Change and Sustainable Development: Environmental change and Sustainable Development in Bangladesh.

The Impact Syndromes: Effects of Natural Environment, Environmental Degradation, Effects on Biological Environment, Effects on Flora and Fauna, Lessening of Biodiversity, Deforestation, Desertification, etc., Structural Intervention of Man on Environment, Dams, Polders, Embankment, etc.

Environmental Situation of Bangladesh including Discussion on National Conservation Study on Bangladesh.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Define different environmental problems and sustainable development.
- CO 2. Outline the impacts of different environmental problems.
- CO 3. Evaluate the environmental situation of Bangladesh.
- CO 4. Discuss national conservation study on Bangladesh.
- CO 5. Prepare pragmatic solutions for contemporary environmental problems.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	3								
CO 2	3								
CO 3	2								
CO 4	3								
CO 5								1	
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓				✓			
CO 2	✓				✓			
CO 3	✓				✓			
CO 4	✓				✓			
CO 5	✓				✓			
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓					✓		
CO 2	✓					✓		
CO 3		✓			✓	✓		
CO 4		✓						
CO 5				✓		✓		

Books Recommended:

1. SEHD (Society for Environment and Human Development). (2002). Bangladesh Environment Facing the 21st Century.
2. Selim, S. A., Saha, S. K., Sultana, R., & Roberts, C. (Eds.). (2018). *The Environmental Sustainable Development Goals in Bangladesh*. Routledge.
3. Harper, C., & Snowden, M. (2017). *Environment and Society: Human Perspectives on Environmental Issues* (6th ed.). Routledge.
4. Momtaz, S., & Shameem, M. (2015). *Experiencing climate change in Bangladesh: Vulnerability and adaptation in coastal regions*. Academic Press.

5. Rahman, M. M. (2020). Achieving Sustainable Development Goals in Bangladesh: An Organizational Analysis. Available at SSRN 3779081.
6. Roy, S. (2019). *Climate change impacts on gender relations in Bangladesh: socio-environmental struggle of the Shora forest community in the Sundarbans Mangrove Forest* (Vol. 29). Springer.
7. Martin, M. (2017). *Climate, Environmental Hazards and Migration in Bangladesh*.

Course No: GEE 0314 5219	Credit: 3.0	Year: MS	Semester: Second
Course Title: Geography of Tourism		Course Status: Theory	

Rationale of the Course:

The tourism phenomenon has its roots in the human need to see other places and discovering the unknown areas and the geography refers to the research on spatial dispersions, climatic conditions, and physical conditions of an area. Human beings seek and try to see things they do not have in their geography, and for this reason they try to visit different geographies. Hence, geographical features of a destination may become the main attraction for tourists. Tourism and Geography are so closely related that the success of tourism activities is dependent on the geographical conditions. So, tourism needs a physical geography for its ventures.

Course Objectives:

The objectives of this course are –

1. To discover the unknown areas on spatial dispersions, climatic conditions, and physical conditions of an area.
2. To know the success of tourism activities is dependent on the geographical conditions.

Course Contents:

Introduction to Tourism: Definition, concept, scope and Approaches.

Classification of Tourism: Land Base, Ocean Base, Forest Base.

Tourist Attraction: Natural and Man-made or Cultural elements.

Global Tourism: East and West world and South Asia.

Tourism and Economy: Environment; Prospect of Ecotourism.

Tourism and Blue Economy.

Tourism of Bangladesh: History, Scope, Economic, Ecological challenges, Coastal Tourism of Bangladesh.

Communication Skills in Tourism: Developing Effective Communication Skills, Non-Verbal Communication Skills, Verbal Communication Skills, The Choice of Words,

Hospitality and Tourism: What Makes Good Hospitality, Benefits of Hospitality in Tourism, Ways of Expressing Hospitality, where is Hospitality needed in Tourism? Transportation Hospitality, Airline Hospitality Cruise, Ship Hospitality, Car Rental Hospitality, Accommodation Hospitality, Restaurant Hospitality.

Tourist Security & Safety: Travel Preparation, Other Pre-travel Security Measures, Steps to a successful personal security program, International Travel Security, Personal Travel Safety.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Define and clarify the tourism system, resources, and its relative phenomenon.
- CO 2. Acquire the unknown areas on spatial dispersions and eco-tourism.
- CO 3. Classify tourism and economy from geographic perspectives.
- CO 4. Interpretation between tourism management and human resource management.
- CO 5. Develop a strategy for making enriched tourism management to serve the nation much more effectively.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	3	2							
CO 2					2				
CO 3		3				2			
CO 4							3		2
CO 5							2	1	3
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓	✓	✓	✓	✓			
CO 2	✓	✓	✓	✓	✓			
CO 3	✓	✓	✓	✓	✓			
CO 4	✓	✓	✓	✓	✓			
CO 5	✓	✓	✓	✓	✓			
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓	✓	✓	✓	✓	✓	✓	✓
CO 2	✓	✓	✓	✓	✓	✓	✓	✓
CO 3	✓	✓	✓	✓	✓	✓	✓	✓
CO 4	✓	✓	✓	✓	✓	✓	✓	✓
CO 5	✓	✓	✓	✓	✓	✓	✓	✓

Books Recommended:

1. The Content of Tourism. -Airey, d. And Johnson, s. (1999). Tourism Management 20(2)
2. Hopes, Dreams and Reality: An Investigation into the Expectations and Experiences of the Tourism Graduates. -Dewar, k. Sayers, j. And Meyer, d. (2002). Journal of Teaching in Travel and Tourism 2(1): 1-18.
3. Sustainable Tourism Supply Chain Management: Influences, Drivers, Strategies and Performance by Shudhanshu Joshi
4. A Geographical Approach: From Invention to Gourmet Tourist Destinations by Olivier Etcheverria
5. Cultural and Tourism Innovation in the Digital Era by Vicky Katsoni, Thanasis Spyriadis

Course No: GEE 0314 5212	Credits: 5.0	Year: MS	Semester: Second
Course Title: Project on Bangladesh			Course Status: Project

Rationale of the Course:

The course designed for the students to conduct a project on Bangladesh in the field of Geography and Environment. This is a process-oriented course, where students will compile with reading, research, writing, and presentations. Students will carry out a project for better understanding of geographical problems. Students will be able to apply theoretical knowledge in real life. The students will accomplish his/her research project under the supervision of the assigned supervisor.

Course Objectives:

The objectives of this course are –

1. To make the students capable of conducting a geographical research scientifically
2. To develop the practical skills for applying latest tools and techniques in research
3. To produce competent graduates for the professional field.

Course Contents:

Designing a Scientific Geographic Research
Preparing the Proposal for a Research Project
Generating and Working with Data in Physical/Human Geography
Representing and Interpreting Geographical Data

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Develop research project.
- CO 2. Prepare project proposal.
- CO 3. Determine in what manner is sampling/measurement to be done.
- CO 4. Analyze and process data using appropriate quantitative/representation techniques.
- CO 5. Present their findings verbally or in publication.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	3								
CO 2	3								
CO 3	2								
CO 4	3								
CO 5								1	
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓				✓			
CO 2	✓				✓			
CO 3	✓				✓			
CO 4	✓				✓			
CO 5	✓				✓			
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓					✓		
CO 2	✓					✓		
CO 3		✓			✓	✓		
CO 4		✓						
CO 5				✓		✓		

Books Recommended:

To be determined in consultation with the supervisor(s).

Course No: SPS 0314 5201	Credits: 3.0	Year: MS	Semester: Second
Course Title: Techniques in Human Geography (Lab)		Course Status: Lab	

Rationale of the Course:

This course provides advanced training in research methods used by human geographers. Accordingly, it is designed to prepare the students for undertaking research within and beyond the university context and seeks to equip them with key employability attributes for professional careers. In so doing, the module will introduce a range of quantitative, qualitative, and spatial methods that human geographers use in research and their applications for wider society. The course will be taught using lecture-based classes, workshops, and tutorials, as well as taking the students on a human geography field trip. Research methods are presented considering how they are utilized in practice, drawing on examples from human geography research projects.

Course Objectives:

The objectives of this course are –

1. To execute the ontological and epistemological aspects of human geography using various data techniques of research methods.
2. To enable the students to think critically about the role and function of different types of research methods within epistemological frameworks.
3. To assist in the practical application of specific research methods, including quantitative, qualitative, and spatial approaches.
4. To support the students in translating their learning about research methods into identifiable and tangible graduate attributes to enhance their employability.

Course Contents:

- Research Literacy and Design
- Qualitative Research Approaches
- Quantitative Research Approaches
- Dissertation

Advanced Quantitative Methods: Point-Pattern Analysis, Spatial Modeling of Point Distributions, Measures of Spatial Dependence (Global & Local), Geographically Weighted Regression (GWR), Applied Time-Space Clustering Statistics, and Hot-Spot Analysis (K-functions, Kulldorff, Getis G, Rogerson's method, etc.)

Advanced Qualitative Methods: Multiple Regression, Factor Analysis, Cluster Analysis, and Spatial Analysis.

Advanced Qualitative Field Methods:

Planning A Research Project - from Topics to Research Questions and Research Problems; Identifying, Utilizing and Evaluating different Sources of Data, and Reporting Research Findings.

Evaluating Research Publications, particularly their Methodological Rigor.

Reflect on and Deal with Ethical Issues.

Critically Discuss the Effects of Positionality upon Research Process

Collecting and Analyzing Qualitative Research Data: different types of Interviews, Participatory and Non-Participatory Observation, Textual Analysis, and Visual Methods.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Estimate the relevance and significance of different forms of geographic knowledge and approaches in human geography.
- CO 2. Evaluate the issues involved in research design and its application in the context of human geography using different statistical techniques.

CO 3. Analyze specialized techniques and approaches involved in collecting, analyzing and presenting geographical information - qualitative, quantitative and spatial.

CO 4. Summarize the role of research methods to develop a coherent graduate attribute.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1		3			3		3		
CO 2				3					
CO 3			2		3				
CO 4							3		
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓	✓		✓	✓		✓	
CO 2	✓	✓	✓	✓			✓	
CO 3	✓	✓	✓		✓		✓	
CO 4		✓	✓	✓	✓		✓	
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓	✓	✓	✓	✓	✓	✓	✓
CO 2	✓	✓	✓	✓	✓	✓	✓	✓
CO 3	✓	✓	✓	✓	✓	✓	✓	✓
CO 4	✓	✓	✓	✓	✓	✓	✓	✓

Books Recommended:

1. Clifford, N. and Valentine, G., (2003) Key Methods in Geography. Sage.
2. Denzin, N. and Lincoln, Y. (1994) Handbook of Qualitative Research.
3. Flick, U. (1998) Introduction to Qualitative Research. Sage
4. Frew, J. (1986) Geography fieldwork. Macmillan
5. Holliday, A. (2002) Doing and Writing Qualitative Research. Sage
6. Limb & Dwyer (2001) Qualitative Methodologies for Geographers: Issues & Debates
7. Shurmer-Smith, P. (2002) Doing Cultural Geography. Sage.
8. Silverman, D. (1993) Qualitative Data – Methods for Analyzing Talk, Text and Interaction. Sage
9. Berry, B.J.L. and Marble, D.F. (eds.) (1968) Spatial Analysis: a Reader in Statistical Geography. Prentice-Hall.
10. Clifford, N. and Valentine, G., (2003) Key Methods in Geography. Sage. Cole, J.P. and King, C.A.M. (1968)
11. Diamond & Jeffries (2001) Beginning Statistics: An Introduction for Social Scientists.
12. Ebdon, D. (1985) Statistics in Geography, Blackwell; Oxford).
13. Frew, J. (1986) Geography fieldwork. Macmillan.
14. Gregory, S. (1973) Statistical Methods and the Geographer. Longman.
15. Griffith, D. & Amrhein, C. (1991) Statistical Analysis for Geographers. Prentice-Hall.
16. Hammond, R. and McCullagh, P. (1978) Quantitative techniques in Geography: an introduction. Clarendon Press, Oxford.

Course No: GEE 0314 5210	Credits: 2.0	Year: MS	Semester: Second
Course Title: Viva-voce		Course Status: Oral	

Rationale of the Course:

Viva-voce is an academic examination and assessment method. The course is a valid and novel method of assessing learning outcomes such as application of deep learning, application of theory to practice, and problem-solving skills. This is possible only when this tool is used thoughtfully, rationally, objectively, and relevantly.

Course Objectives:

The objectives of this course are –

1. To evaluate a student's MS study.
2. To enable dialectic communication between the examiner and student.
3. To develop the attitude, thoughts, concepts, and convincing power of a student.
4. To provide invaluable experience for career interviews.

Course Contents: MS Curriculum.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Analyze, create, and evaluate the depth of knowledge in Geo-environment.
- CO 2. Create better communication skills for sharing knowledge and views.
- CO 3. Increase the convincing power to take proper decision.
- CO 4. Characterization of the attitude for well-behaved and manner.
- CO 5. Sharing thoughts and concepts for application of knowledge in future profession.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	3								
CO 2			3					3	
CO 3		2						3	
CO 4	3								
CO 5	3						3		3
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓				✓			
CO 2	✓							
CO 3					✓			
CO 4		✓						
CO 5	✓							
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓			✓		✓		
CO 2	✓			✓		✓		
CO 3		✓		✓		✓		
CO 4		✓		✓		✓		
CO 5				✓		✓		

Books Recommended: MS Curriculum.

Course No: GEE 0532 5332	Credits:12.0	Year: MS	Semester: Third
Course Title: Thesis		Course Status: Research	

Rationale of the Course:

This research-based thesis course designed for the students of this MS program, offers students the opportunity to work on a comprehensive, individual project that demonstrates mastery of interaction between man and environment in relation to time and space. The student will conduct research on a self-chosen subject in the field of Geo-Environment, but they will always be encouraged to choose such a research topic in consultation with the supervisor(s) that is significant for Bangladesh and compliable within the given duration.

Course Objectives:

The objectives of this course are –

1. Provide platform for hands-on practice with geo-environmental issues.
2. Assess and evaluate students' skill and capability in the field of Geo-Environment.
3. Produce competent graduates for higher education.
4. Help students to have their publications.
5. Produce competent graduates for the professional field.

Course Contents:

The student conducts research on a topic within the field of Geo-Environment. Students can choose their own subject, if it fits in with the area of research of the department. The student asks one of the teachers of the department to supervise him or her. The student's research can have maximum two supervisors at a time.

Course Learning Outcomes (COs):

After the successful completion of the course, students will be able to –

- CO 1. Acquire in-depth knowledge in the specific field of study that they choose for their thesis subject.
- CO 2. Apply knowledge and skills that they learned in the master classes, as well as knowledge and skills from independently found sources of knowledge.
- CO 3. Use their knowledge and skills to design and execute research independently.
- CO 4. Interpret the results of their research, also in the context of theoretical and empirical research reported by others in scientific literature.
- CO 5. Report their research to the academic community through scientific papers and presentations, but also to public.

Mapping Course Learning Outcomes (COs) with the POs:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9
CO 1	3								
CO 2	3								
CO 3	2								
CO 4	3								
CO 5								1	
Numeric numbers represent: 3. Strong 2. Moderate 1. Weak									

Mapping Course Learning Outcomes (COs) with the Teaching Learning (TL) and Assessment Strategy:

COs/TL	TL 01	TL 02	TL 03	TL 04	TL 05		TL 06	
CO 1	✓				✓			
CO 2	✓				✓			
CO 3	✓				✓			
CO 4	✓				✓			
CO 5	✓				✓			
COs/CA/SA	CA 01	CA 02	CA 03	CA 04	CA 05	SA 01	SA 02	SA 03
CO 1	✓					✓		
CO 2	✓					✓		
CO 3		✓			✓	✓		
CO 4		✓						
CO 5				✓		✓		

Books Recommended:

To be determined in consultation with the supervisor(s).

Appendix I

Teaching Learning (TL) and Assessment Strategy:

Code	Teaching Learning (TL) Strategy	
TL 01	Lecture using board/ LCD projectors/ OHP projectors.	
TL 02	Assignment/ Project/ Seminar/ Workshop/ Tutorial.	
TL 03	Laboratory/ Other teaching aids (Audio-visual: film and documentaries, virtual classroom etc.	
TL 04	Guest lectures/ Industrial visit/ Field visit.	
TL 05	Self-learning using reference books/ Research articles/ Case study/ Other online materials.	
TL 06	Simulation/ Field documentation.	
Code	Assessment Strategy	
CA 01	Midterm Examination 1	Continues Assessment (CA)
CA 02	Midterm Examination 2	
CA 03	Quiz	
CA 04	Assignment	
CA 05	Presentation (Individual/ Group)/ Viva voce	
SA 01	Semester end examination	Summative Assessment (SA)
SA 02	Semester end oral examination	
SA 03	Semester paper evaluation	