CURRICULUM

for

PROFESSIONAL MASTER OF DISASTER MANAGEMENT (PMDM)

SESSIONS: (2022-23 to 2027-2028, Onward)

INSTITUTE OF DISASTER MANAGEMENT AND VULNERABILITY STUDIES

UNIVERSITY OF DHAKA, DHAKA-1000, BANGLADESH

Curriculum and Courses for One-and-a-half-year

Professional Master of Disaster Management (PMDM) Degree Program

for the Sessions 2022-23 to 2027-2028, Onward

1.0 INTRODUCTION

With a steadfast vision to become a distinguished center for scientific research and training in pursuit of excellence, the Institute of Disaster Management and Vulnerability Studies (IDMVS), University of Dhaka along with its diverse academic endeavors offers a rigorous one-and-a-half-year (3 semesters) Professional Master of Disaster Management (PMDM henceforth) program wrapped with versatile approaches of learning. It is uniquely configured to pertinently educate various leaders who will shape the future. At the beginning, the program was launched with financial and technical support from Comprehensive Disaster Management Programme (CDMP) of the Government of Bangladesh; over the years, it has successfully partnered with many international academic institutions and some of the world's major development collaborators like UNDP, DFID, Oxfam, IFRC, European Union, and other development organizations.

The professional master's program has been designed as a multidisciplinary learning and research platform extending beyond conventional notions for a holistic grounding in calibrating innovative ideas in varied fields. The program welcomes prospective individuals from different disciplines and backgrounds who aspire to master a further specialization, acquire expertise, and craft a career in disaster and emergency management, climate change, and other development practices with specific focus on scientific and technological, economic, socio-cultural, environmental, political, gender, and social inclusion issues. The MDM program covers a wide range of academic research areas including natural and human-induced hazards and disasters; theories and approaches to disaster management; society, environment, and ecology; vulnerabilities and theories of vulnerabilities; cycles of disaster and emergency management; multiplicity of disaster management policies; institutional and regulatory frameworks; population, resources, and development; global warming, anthropogenic climate change, carbon management, limiting global mean surface temperature "well below 2^0C, and adaptation; disaster response and preparedness; structural and nonstructural measures to emergency; gender rights, gendered dimensions, and other issues; poverty and food security; coping and adaptation mechanisms; risk, early warning, and mitigation; mainstreaming disaster risk reduction, community risk, environmental and social impact assessment; damage, loss, and need assessment; public health, water security, sanitation, and drinking water management; urban-rural differences to disaster responses etc. The overall objective of the program is to provide students with some unique opportunities to

critically analyze the theories and conceptual approaches on the one hand and apply them in the practical world on the other.

1.1 Research and Learning Concentrations

The professional MDM Program is orchestrated to impart comprehensive scientific and technological learning on disaster, emergency, environment, development, and climate change related knowledge to the graduates coming from diverse disciplines. The specific objective as mentioned earlier is to create an expert talent pool of trained professionals with profound knowledge, skills, and innovative acumen to contribute further to the society. Encouraging relentless pursuits of creativity and innovations, inspiring breakthroughs, designing futuristic solutions, and producing original scholarships are the fundamental ethos and always remain at the central cores of the Institute. The degree, to be awarded by the University of Dhaka, is configured in the contexts of interdisciplinary spectra involving research concentrations in various areas of disasters, emergencies, and vulnerabilities; diverse impacts and implications of anthropogenic climate change; environmental science, policy, and management; ecology, ecosystems, and biodiversity; risk assessment, reduction, mitigation, and adaptation; sustainability, innovation, capacity building, leadership, and resilience; appropriate technology design, production, and transfer-diffusion dynamics; policymaking and effective planning engineering; crisis and emergency responses; science-policy-actions synergy. Along with, understanding predominant global trends and future possibilities, galvanizing solution mechanisms, incorporating state-of-the-art knowledge systems, and viable ideas are also emphasized.

1.2 Uniqueness of The PMDM Program

- One-and-a-half-year program
- Three semesters totaling 48 credits
- Best faculties and experts with relevant experiences
- World class curricula and modules
- Thesis/Research Monograph/ Internship
- Cutting edge research with filed visits

- Most advanced scientific lab facilities
- Academia-Industry/Organization collaboration

1.3 Course Structure of MDM Professional Degree Program

Semester	Distribution	Number of Courses	Total Marks	Earned Credits
1st	Theoretical	5	500	15
2nd	Theoretical and Practical	5	500	15
3rd	Theoretical and Practical	2	200	06
	Thesis Group	Thesis and Defense	200 (150+50)	06
		1 Course	100	03
	Non-Thesis Group	Monograph/ Internship	100 (75+25)	03
		Two Courses	200	06
	For all students	Comprehensive (Written & Oral)	50+50	03
Total			1,600	48

- Hours of lecture classes/contact hour per week are determined on the basis of the credit hours assigned to each course unit. Usually, 3-hour class per week is considered as 3 credit hours.

1.4 Expected Degree Outcomes

After successful completion of the degree with a rigorous training and learning, the intended students should:

- Have a thorough and proper theoretical understanding of the major paradigms, theories, perspectives, and issues; be well-versed in the poignant debates in disaster, environment, vulnerability, and climate change in the contexts of local, regional, and global economy and development.
- Instill highly professional knowledge and skills.
- Be able to apply and execute their earned knowledge and skills for a workable host of solutions of the existing problems; be apt enough to implement them into policy frameworks in collaboration with the community, development networks, government and NGOs/INGOs, global development partners, members of the civil society, and other non-Party stakeholders.

2.0 THE PROFESSIONAL MASTER OF DISASTER MANAGEMENT DEGREE

2.1 Admission Requirements

2.1.1 General Requirements for Application

The admission policy includes a very strict selection procedure based absolutely on merit i.e., performance solely in the admission test; the students are required to appear at the qualifying examinations, consisting of a written and an oral test.

2.1.2. Eligibility For Admission

Admission is open to prospective candidates, either Bangladeshi or foreign nationals, who have at least a Bachelor/Graduation degree or its equivalent from any recognized university or at least a four year MBBS/Engg./B. Arch./B Pharm./BDS degree from other institutions recognized by the University Grants Commission and the Ministry of Education, Government of Bangladesh such as medical colleges, engineering universities/colleges, police staff college/defense college, marine institute, agricultural universities/colleges or a Master's degree with graduation in Pass Course.

No candidate with a third division/class or GPA/ CGPA less than 2.5 at any stage of academic degree will be eligible to apply. Government officials, professionals from disaster and emergency management, environment, development, health, gender, population, and other viable fields with practical experiences are encouraged to apply. Students who have appeared in their Undergraduate final or master's final examination with Degree/Pass Course graduation or its equivalent may also apply with conditions that they will have to submit their certificates within the timeframe given by the Admission Committee of the Institute.

Candidates who have passed at least five (5) papers in GCE "O" level and two (2) papers of "A" level/ GED may also apply. Such candidates should obtain at least a B grade in five (5) papers and C grade in two (2) papers of the seven (7) papers at "O" and "A" levels/GED.

For candidates from foreign universities, eligibility will be determined by the equivalence committee of the University of Dhaka as per admission rules; students from foreign universities "might" be exempted from written admission test depending upon their performance at graduate level; the discretion of the Admission Committee of the Institute will

decide on this. However, they will have to produce at least three letters of recommendations from referees in the relevant field of study.

2.2 Application Procedure

Application form along with information brochure is available at the Office of the Institute on payment of fees. The filled-in application form should be submitted to the Office of the Institute before or within the date mentioned in the circular.

2.3 Selection of Students

2.3.1 Structure of the Admission Test

The admission test is designed to evaluate an aspirant's analytical ability, quantitative aptitudes, critical reasoning, and linguistic competencies. The students will be notified by IDMVS about the date and venue of the admission test to be held at the University of Dhaka. The admission test comprises 100 marks, of which 90 will be for Written Examination and 10 on oral test. A total of 40 (Forty) students will be admitted into the MDM Program, of which some positions are reserved for Professionals, and some are reserved for successful Postgraduate Diploma (PGDDM) /Training certificate holders of IDMVS on the basis of merits. The admission test will focus on the following three parts:

a) Quantitative Aptitude: The quantitative part is aimed at evaluating the candidates' aptitudes in arithmetic, algebra, and geometry in the form of mathematical comparison, problems, etc. The questions will most likely include the followings:

Arithmetic: Percentage, proportions, ratios, fraction, interest, simplifications, etc.

Algebra: Factors, series, functions, linear equations, graphs, etc.

Geometry: Coordinates geometry, loci, straight lines, angles, triangles, parallelograms, rectangles, squares, spheres, circles, areas, volumes, perimeters, planes, etc.

b) English Language: Questions in the MCQ part of this section will test the candidates' knowledge and understanding of English grammar, syntax, comprehension, etc. Writing skills, structural writing, short essay, comprehensive, précis, paragraph writing, sentence correction, etc.

c**) Critical Reasoning and Analytical Ability**

This part consists of two sections. The first tests the candidate's general knowledge and the second focuses on the candidate's analytical ability, logical reasoning, and ability to synthesize information to arrive at logical conclusions. Descriptive, analytical, and quantitative questions of various types might be asked.

d) Two-paragraph writing in the native language and/or in English is compulsory to evaluate the student`s narrative writing capacity, contemporary knowledge, and language skill.

2.3.2 Marks Distribution of Admission Test/Qualifying Examination

Topics	Marks
English Language and Grammar (MCQ)	20
Quantitative Aptitude (MCQ)	20
Critical Reasoning and Analytical Ability (MCQ)	30
Contemporary and Relevant issue-based Paragraph (Written)	20
Subtotal	(90)
Viva Voce	10
Grand Total	100

The duration of the written test will be eighty (80) minutes. Only the successful students who qualify in the written test will be called for viva voce/oral examination.

2.3.3 Final Selection and Registration

The final selection of a student will be determined based on the performance in the written test and viva voce examination. Applicants, finally accepted to the MDM program, should obtain the prescribed form for admission to the University from the office of the IDMVS and submit the completed form along with three (3) passport size and two (2) stamp size photographs with other required documents within the stipulated time. Candidates who complete the above formalities must pay the required fees as determined by the Institute's office. Enrollment in MDM is conditional to the completion of all admission procedures, including payment of all fees to the office of the Institute.

2.4 PMDM Curriculum

The one-and-a-half-year PMDM Program comprises a total of 1600 marks, which will be reflected and distributed into 48 credit hours. Important to note, after each semester until 3rd, all students are required to appear at their semester-end oral examinations.

First Semester: (500 Marks, 15 Credits)

Second Semester: (500 Marks, 15 Credits)

Third Semester: (600 Marks, 18 Credits)

Semester and Distribution of Courses

The distribution of course units, marks, and credit buildups for PMDM go as follows:

2.4.1. First Semester

Five (5) course units are taught in the first semester in order for the students to understand the necessary basics.

2.4.2 Second Semester

In the second semester, four (4) compulsory and one (1) area courses are offered. Among an array of diverse Area courses, students are free to pursue their choicest ones. These five (5) courses are made *mandatory* for all students, which provide a functional basis for analytical skills and a ground for consolidating the most important issues in disaster management. Important to note that, Area courses might be replaced/introduced based on the requirements/demand of the program and subject to course teacher`s availability.

2.4.3. Third Semester

In the third semester, two (2) mandatory courses are taught to "all" students. Students are divided into ***Thesis*** and ***Non-thesis*** groups based on their performance at first and second-semester final examinations (decided by the Academic Committee of the Institute) and their specific research interests.

For *Thesis Group,* every student under a supervisor will conduct an independent research on a specific problem; the thesis comprising 200 marks (containing 6 credits) is to be accomplished through field visits, data collection, data analyses, structured scientific writing, and a viva voce. Besides thesis, the students are required to select an elective courses from the offered area courses. On the other side, a students of *Non-thesis* group shall select either research monograph or internship options along with two electives from the offered area courses. At the end of this semester, all students from both *Thesis* and *Non-thesis* groups will have to appear in the Comprehensive Examination (written and oral).

2.5 Administering the Program

1. The Institute will provide a semester calendar before the beginning of a semester indicating the duration of class teaching, dates of Midsemester examination, date of submission of assignment/term paper, duration of the preparation week, dates for the semester final examinations and commencement of the next semester.

2. At the beginning of a semester, the assigned course teacher/instructor will provide the students with a course outline comprising the objectives, contents, and academic activities and schedules (teaching approaches such as labs, practical, case studies, field work, lecture, presentation etc.) related to the course, required texts to be followed, the dates for Midsemester examinations and submission of term paper (s)/home assignments(s).

3. All *Semester Final* Examinations will be conducted by the Institute, with the assistance of the Office of the Controller of Examinations, University of Dhaka.

4. The Controller of Examinations, University of Dhaka will be responsible to publish the result and issue the certificate/transcript of the Semester Final Examinations of the Program.

5. All students will have to fill in the examination entry form, provided by the Controller of Examinations, University of Dhaka on payment of dues, for appearing at the Semester Final Examination of the Third Semester.

6. The Controller of Examinations, University of Dhaka will publish the cumulative results of the PMDM Program and provide transcripts showing course-wise grades and the Cumulative Grade Point Average (CGPA) of the candidates for the degree concerned.

2.6 Evaluation And Grading Process

(a) Evaluation and grading will be determined on the basis of an overall evaluation of student's performance in Midsemester examination, Semester Final Examination, term paper(s)/home assignment(s), class attendance and active participation in the discussion class/tutorial class/group presentation/class test.

The Distribution of Marks for Theoretical Courses is as follows:

Schemes	Marks Distribution (%)
Class attendance	5%
Active participation in the discussion class/tutorial class/group presentation/Class Test	10%

Midsemester examination (duration of 75 minutes)	20%
Term paper(s)/Home assignment(s) and Presentation	15%
Semester Final Examination (duration of 3 hours)	50%
TOTAL	100%

Marks Distribution of Courses which Combines Theoretical with Practical will be divided as follows:

Sessional - 25%	Distribution (%)
Class attendance	5%
Active participation in the discussion class/tutorial class/group presentation/Class Test	10%
Midsemester examination (duration of 50 minutes)	10%
Practical - 25%	
Attendance	5%
Practical/Field work	20%
Semester Final Examination	50%
TOTAL	100%

Marks Distribution of for Thesis/Dissertation course (3rd semester) students [Thesis Group] will be divided as follows:

Thesis	**Distribution (%)**
Thesis Writing	150 Marks
Defense	50 Marks
Total	200 Marks

- Supervisor meeting reports and all raw data collected from the field must be submitted before the defense
- Article Publication/submission for publication in peer-reviewed / impact factor journal collaboration with the supervisor is a must to achieve the degree
- Thesis will be offered to top 10% of students based on previous semester results or gathering CGPA 3.50 in previous semester. In exceptional cases Academic Council will take the decision.

Marks Distribution of for Research Monograph/Internship course (3rd semester) students [Non-Thesis Group] will be divided as follows:

Research Monograph Or, Internship	Distribution (%)
Report Writing	75 marks

Viva-voce	25 Marks
TOTAL	100 Marks

2.6.1 Class Attendance

Class attendance carries only 5% marks of the course, but this part is very important to get a chance for attending semester final examination.

The course Teacher/ Instructor will maintain the Class Attendance Registrar and submit it to the Director at the end of class. A student will have to attend at least 75% of the classes held in a course to be eligible to sit for the Semester Final Examination. However, students with attendance of 60% to 74% will be treated as **Non-collegiate with a financial penalty**, and below 60 percent as **Discollegiate** students. Holding below 60% attendance students' application will be scrutinized in the AC meeting for giving and special permission to attend final examination.

Attendance range (in percent)	Marks
90% and above	5.0
85% to less than 90%	4.5
80% to less than 85%	4.0
75% to less than 80%	3.5
70% to less than 75%	3.0 with financial penalty
65% to less than 70%	2.5 with financial penalty
60% to less than 65%	2.0 with financial penalty
55% to less than 60%	0 not allowed to attend examination
50% to less than 55%	0 not allowed to attend examination
45% to less than 50%	0 not allowed to attend examination
Less than 45%	0 not allowed to attend examination

2.6.2 Class Test, Midsemester Examination, and Term Paper

1. Students will appear at a Class Test carrying 10% marks after a partial completion of the course

2. The course Teacher/Instructor will take a Midsemester examination, carrying 20% marks of the course

3. Before the end of the course, the students will submit a Term Paper/Assignment comprising 15% marks

4. The defaulter Students of Class Test/Mid Term/Assignment might get chance to sit with the permission and financial penalization set by Coordination team/Academic Committee/examination Committee.

The Class Test, Midsemester examination, and the Term Paper/Assignment will be evaluated by the concerned course teacher. S/he will announce the results of the Midsemester Examination and Term Paper/Home Assignment within two weeks of the examination/deadline and submit the marks to the Chairperson/Chief of the Examination Committee before the Semester Final Examinations start.

2.6.3 Semester Final Examination

1. After a successful completion of the course, at the end of the semester, the students will appear at the Semester Final examination. The duration of the examination will be three (3) hours containing 50 marks, and overseen by the Controller of Examinations, University of Dhaka.

2. The defaulters will have to pay fine for missing any Midsemester or Class Test upon verification of the causes of not appearing at the examination. Semester Final answer scripts will be evaluated by two examiners: *Internal* and *External* appointed by the concerned Examination Committee of the Institute. If the difference of marks between two examiners is more than 20 percent, the script(s) will be examined by a third examiner and the average of the nearest two marks will be accepted. The third examiner for a course will be appointed by the Examination Committee from a panel of examiners provided that they are not the tabulators or the members of the Examination Committee or an examiner of that course.

3. Two tabulators will be appointed from the Institute by the Examination Committee for tabulating the results.

4. In other cases Dhaka University regular rules will be followed.

2.7 Grading Structure on A 4 Point Scale

For each course, the average marks awarded by the Semester Final examiners, and the marks awarded by the course teacher for the Midsemester examination, Term Paper(s)/Home Assignment(s), Class Attendance, and active participation in the discussion class/tutorial class

group presentation/Class Test will be totaled and converted into letter-grades following a 4.0-point grading scale presented below:

Marks Range (%)	Letter – Grade	Explanation	Grade Point
80% and above	A+	Excellent	4.00
75% to less than 80%	A		3.75
70% to less than 75%	A-		3.50
65% to less than 70%	B+	Very Good	3.25
60 to less than 65%	B		3.00
55% to less than 60%	B-		2.75
50% to less than 55%	C+	Good	2.50
45% to less than 50%	C		2.25
40% to less than 45%	D	Passing	2.00
Less than 40%	F	Failing	00
----------	I	Incomplete	
----------	R	Reported	
----------	W	Withdrawal	

Interpretation of the Grades

a. 'A+', 'A', and 'A-' grades are indicative of 'excellent' performance overall by a student, earning grade points of 4.0, 3.75, and 3.50 respectively.
b. 'B+', 'B', and 'B-' grades are indicative of 'very good' performance overall by a student, earning grade points of 3.25, 3.00, and 2.75 respectively.
c. 'C+' and 'C' grades reflect 'satisfactory' performance overall by a student, earning grade points of 2.50 and 2.75 respectively.
d. 'D' grade represents a minimally acceptable 'passing' performance overall by a student, earning a grade point of 2.00.
e. 'F' grade expresses an unacceptable 'failing' performance overall by a student, i.e., fail to earn any credit point.
f. 'I' grade indicates a situation where a student for non-academic reasons beyond his control, is unable to complete the full requirements of the course for not being able to sit for the Semester Final examination. With the submission of valid and authenticated evidence of such reason(s), and the recommendation of the course teacher (to be reported

to the Chairperson of the Examination Committee), that particular student will be allowed to complete the semester final examination with the next batch. Meanwhile, the student concerned will be promoted to the next semester. If an 'Incomplete' grade is not cleared with the next batch, the 'I' grade will automatically be changed to an 'F' grade. A maximum of two 'I' grades will be allowed to a student in one semester.

g. 'W' grade will be awarded when a student is permitted to withdraw/drop a course/semester without penalty. Withdrawal without penalties is not permitted after the Midsemester examination. A student may take readmission in the semester concerned with the next batch by paying the fees for the whole year.

2.8 Promotion

a) For promotion from one semester to the next, a student will require to earn a minimum SGPA and CGPA (Both) of 2.0 (subject to change as per the University of Dhaka authority provided rule).

2.9 Improvement

a) A student carrying "F" grade in any course will not be awarded the degree unless s/he improves it by appearing at the Semester Final Examination with following two batches. If the student gets an "F" in the improvement examination, s/he will be automatically dropped from the semester, will have to take readmission with the next batch, provided s/he is eligible for readmission.

b) For improvement of grade in a course, the student must apply to the Director of the Institute at least four (4) weeks before the start of the Semester Final Examination.

c) If a student obtains a grade lower than "B-" in a course, s/he will be allowed to repeat the Semester Final Examination only once with the next batch for the purpose of grade improvement by forgoing her/his earlier Semester Final marks.

d) If a student obtains "B-" or better grade in any course, s/he will not be allowed to repeat the course for the purpose of grade improvement.

e) Students earning "C" or "D" grade may also choose to improve the grade.

f) A student will be allowed to improve the grade of a course only once. Among the two marks, the better one will sustain.

g) A student earning “F” in more than two courses will be automatically dropped from the program.

h) No improvement will be allowed for the Midsemester Examination, term paper/home assignment and active participation in the discussion class/tutorial/group presentation/class test marks and the grades earned in written and oral comprehensive examinations, as well as in course(s) in which a student did not attend classes or appear in the Semester Final Examination.

i) If a student wants to improve the grade point earned in a course of Third Semester, s/he must apply for such improvement examination before the certificate is issued.

j) Absence in any course Semester Final Examination will not contribute to earn grade.

k) Improvement will not be allowed once the degree is awarded.

2.10 Readmission

a) A student failing to get the requisite grade points for promotion from one semester to the next may seek readmission with the following batch.

b) For readmission, a student will have to apply within one month after the announcement of result of the concerned semester.

c) On readmission, grades earned earlier by a student in the class or readmission will cease to exist and the student will have to retake all the course works and examinations.

d) A student will not be allowed readmission in more than two semesters during the entire MDM Program.

e) The students must complete the program within five years after getting offer of admission.

2.11 Dropout

A student failing to earn the GPA for promotion from one semester to the next after taking readmission in any semester will be dropped out of the program. A student earning ‘F’ grade in any course after taking improvement examinations or readmission in any semester class will also be dropped out of the program.

2.12 Complicated Decision

With the recommendation of Program Management Committee defaulter's examination, readmission, and any newly emerged critical issues will be solved and finalized in IDMVS Academic Committee.

2.13 Adopting Unfair Means

If any student adopts unfair means in any examination, the teacher/invigilator will report in writing to the Chairperson of the Examination Committee/Chief Invigilator for onward transmission to the Disciplinary Board of the University for proper action as per the University rules.

3.0 COURSE DISTRIBUTION, OUTLINES AND CONTENT DETAILS

Semester I: All Compulsory Courses (500 Marks, 15 Credits)			
Course Code	**Course Title**	**Total Marks**	**Earned Credits**
DMC 501	Introduction to Disaster Management	100	3
DMC 502	Science of Hazards and Disasters	100	3
DMC 503	Climate Crisis, Sustainability, and Resilience	100	3
DMC 504	Society, Ecology and Environment	100	3
DMC 505	Disaster Management Systems in Bangladesh	100	3
Total		**500**	**15**

Semester 2: A. Compulsory Courses (400 Marks, 12 Credits)			
Course Code	**Course Title**	**Total Marks**	**Earned Credits**
DMC 506	Disaster Risk and Vulnerability Assessment	100 (75+25)	3
DMC 507	Humanitarian Action and Project Management	100	3
DMC 508	Gender, disaster and Intersectionality	100	3
DMC 509	Advanced Research Methodology	100 (75+25)	3
Semester 2: B. Area Courses (100 Marks, 3 Credits) **[**Choose one (1) course from the alternatives]			
DMC 510	Disaster Mitigation and Preparedness	100	3
DMC 511	Disaster Response and Recovery	100	3
DMC 512	Water Security and Flood Management	100	3
DMC 513	Disaster Governance and Global Protocols	100	3
DMC 514	Disaster and Development	100	3
Total		**500**	**15**

Semester 3: A. Compulsory Courses (200 Marks, 6 Credits)			
Course Code	**Course Title**	**Total Marks**	**Earned Credits**
DMC 601	Public Health in Disaster Management	100	3
DMC 602	Geographic Information System and Remote	100 (75+25)	3

	Sensing		
Semester 3: B1 Thesis Group: Thesis and Defense (200 Marks, 6 Credits)			
DMC 603	Thesis	200 (150+50)	6
Semester 3: B2 Non-Thesis Group: Research Monograph or Internship (100 Marks, 3 Credits)			
DMC 604	Research Monograph	100 (75+25)	3
DMC 605	Internship	100 (75+25)	3
The students of the thesis group must choose 1 course (3 Credits) and the students of the non-thesis group must choose two (2) courses (3+3 Credits) from the alternatives. Alternative Course will be offered by the authority on basis of Course teacher's availability and subject demand.			
DMC 606	Urban Disaster Risk Reduction	100	3
DMC 607	Earthquake Preparedness and Management	100	3
DMC 608	Disaster and Risk Communication	100	3
DMC 609	Disaster Economics	100	3
DMC 610	Agriculture, Food Security and Disaster	100	3
DMC 611	Occupational Health and Safety	100	3
DMC 612	Child Protection in Emergencies	100	3
DMC 613	Disability, Autism and Disaster	100	3
Semester 3: C Compulsory for All students (100 Marks, 3 Credits)			
DMC 614	Comprehensive and Viva-voce	50+50	3

3.1 FIRST SEMESTER

DMC 501: Introduction to Disaster Management (100 Marks; 3 Credits)

Course Objectives

The principal objective of this course is to orient the students primarily with an overarching synopsis of disaster and emergency management; besides, introducing the advanced science, ideas, issues, the most important ideas, and concepts i.e., the basics of disaster, environment, climate change, vulnerabilities, and an overview of the necessary management policies, and implementation techniques. The students are expected to have necessary notions about overall disaster situations, damaging potentials, its impacts on human lives, environmental consequences, and other important spheres related to specific province. Conceptualization of varied knowledge from different aspects, viewpoints, perspectives, dimensions, and paradigms will also be explored critically with compelling organizations for a wider spectacle to make it scientifically viable as a discipline which is deemed to propel the learners to spread the lessons in a precarious world being frequently ravaged by unprecedented disasters.

Course Outline:

Introduction: Standard Definitions of Most Important Terminologies; Basic Concepts and Ideas of Hazard, Disaster, Catastrophe, and Debacle; History and Evolution of Knowledge Systems for Disaster and Emergency; Understanding the Changing Geologic and Environmental Paradigms from Holocene to Anthropocene; Increasing Frequency of Disasters and Climatic Hazards in the 21st Century

Types, Paradigms, and Perspectives: Various Types, and Diversity of Disasters and Emergencies; Health, Economic, Technological, Political, Social, Environmental, Demographic, Ecological and Other Perspectives; Assessment, Description, Information Systems, Analysis, and Mapping

Fundamentals of Disaster and Emergency Management: Fundamentals; Various Contours of Disasters and Emergency Scenarios; Its Diverse Management Systems; Distinctions among Hazard, Disaster, Emergency, and Catastrophes. Disaster Management Cycle; Overall Notions about Predicate, during Disaster, and Post disaster Management Techniques

Weather and Climate Extremes: A Prologue to the Most Frequent Weather and Climate Extremes, Natural Disasters; Catastrophes Exacerbated by Anthropogenic Causes; Grim Impacts and Implications of Worsening Global Warming and Climate Change

Risk and Vulnerability Analysis: Analytical Introduction of Risk, Multiplicity of Risk, Risk Assessment and Analysis, Risk Assessment Framework, Ideas and Options for Risk Reduction, Risk Management etc. Modifying Hazards, Reducing Vulnerability, Changing the Functional Characteristics of Settlements; Cost of Risk Reduction Measures, Social and Economic Costs; Risk Monitoring— Indicators, Framework; Notion of Loss and Damage

Policy and Management Imperatives: Basics of Adaptation, Mitigation, Recovery, and Rehabilitation processes; preliminary Notions of Policy and Management Imperatives; Innovation, Leadership, and Pathways for

Holistic Approaches: Understanding Technoscientific, Econopolitical, and Sociocultural Aspects and Angles of Disaster and Emergency; Addressing Policy Frameworks, Management Solutions, and Implementations Processes from Multidisciplinary and Interdisciplinary Perspectives; Overview of Preparedness, Capacity Building, Elements of Preparedness

Resilience and Sustainability: Encapsulating Resilience and Sustainability as the Ultimate Development Goals; Resilience and Its Mechanisms; Briefs on Sustainability and Development; Technological Innovations etc.

Suggested Readings

Abel, N., Cumming, D. H., & Anderies, J. (2006). Collapse and reorganization in social-ecological systems: Questions, some ideas, and policy implications. *Ecology and Society, 11*(1). Retrieved from http://www.ecologyandsociety.org/vol11/iss1/art17/.Accessed: October 20, 2017.

Bhandari, R. K. (2014). Disaster education and management: A joyride for students, teachers and disaster managers. New Delhi, India: Springer.

Bolin, B. (2007). A history of the science and politics of climate change: The role of the Intergovernmental Panel on Climate Change. New York, NY: Cambridge University Press.

Coppola, D. P. (2015). *Introduction to international disaster management* (3rded.). Waltham, MA: Butterworth-Heinemann.

Diaz, H. F., &Murnane, R. J. (Eds.). (2008). *Climate extremes and society*. New York, NY: Cambridge University Press.

Haddow, G. D., Bullock, J. A., & Coppola, D. P. (2014). *Introduction to emergency management* (5th ed.). Oxford, UK: Butterworth-Heinemann.

Hyndman, D., & Hyndman, D. (2016). *Natural hazards and disasters*(4thed.). Belmont, CA: Cengage Learning.

Jha, M. K. (Ed.). (2010). Natural and anthropogenic disasters: Vulnerability, preparedness and mitigation. New Delhi, India: Capital Publishing Company.

Keller, E. A., &DeVecchio, D. E. (2012). *Natural hazards: Earth's processes as hazards, disasters and catastrophes* (3rded.). Upper Saddle River, NJ: Pearson Prentice Hall.

Pinkowski, J. (Ed.). (2008). *Disaster management handbook.* Boca Raton, FL: CRC Press.

Rivera, F. I., &Kapucu, N. (2015). *Disaster vulnerability, hazards and resilience: Perspectives from Florida.* Basel, Switzerland: Springer International Publishing AG. https://doi.org/10.1007/978-3-319-16453-3

United Nations Disaster Relief Coordinator Office (UNDRO) (1980). *Natural disasters and vulnerability assessments.* Retrieved from http://www.preventionweb.net/files/resolutions/NL800388.pdf.Accessed: October 26, 2017.

United Nations Disaster Relief Coordinator Office (UNDRO) (1991). *Mitigating natural disasters phenomena, effects, and options: A manual for policymakers and planners.*Retrieved from http://cidbimena.desastres.hn/pdf/eng/doc1028/doc1028-indice.pdf.Accessed: October 26, 2017.

Waugh Jr., W. L. (2000). Living with hazards, dealing with disasters: An introduction to emergency management. New York, NY: M. E. Sharpe.

DMC 502: Science of Hazards and Disasters (100 Marks; 3 Credits)

Course Objectives

This course aims at providing an essential overview of the known disaster scenarios. The students will be introduced to all major natural as well as human-induced hazards, disasters, catastrophes, and debacles in minute details. A scientific synopsis of the major hazards and disasters frequently occurring across the globe, their causes, consequences, and variegated implications are studied to analyze the situations from diverse perspectives. The learners are expected to have a spectrum of insights of the frequently devastating hazards and disasters in Bangladesh and across the globe and their associated loss and damage. Besides, the physical scientific, economic, political, and sociocultural aspects of the disasters will be reviewed to make a fuller understanding. Moreover, the conceptual and theoretical understanding works as a primer for grasping the deeper functional dynamics of disasters of devastating potentials.

Course Outline

Basics of Hazard and Disaster: Meaning hazard and disaster; differences between hazard and disaster; Classification and causes hazard and disaster; Impacts and consequences of disaster

Flood and Riverbank Erosion: The hydrology of flood; classification and causes of flood; floods in Bangladesh; History, causes, impacts, implications of flood and its management.

River erosion: process, causes, and riverbank erosion in Bangladesh; Associated vulnerability and protection

Cyclone and Tornado: Understanding tropical cyclone, cyclone formation process, and its classification; Tropical storms; Cyclone in Bangladesh: history, causes, and vulnerability; case analysis and management system

Drought and Desertification: Nature, types, and causes of drought; Drought measurement and monitoring; Impacts of drought; Management and adaptation; Worldwide drought cases analysis; Aridification and desertification: process impacts and mitigation; Major deserts of the world

Earthquake and Tsunami: Geologic causes, Earth system dynamics; Parameters, categories, intensity, and magnitude of earthquake; Seismograph, earthquake zone; Risk assessment and capacity building; Tsunami: parameters, origin, cause, and implications; Risk, vulnerability, and mitigation

Landslide: Classification systems, type, and causes; Major causes of landslides in Bangladesh; Case analysis of landslide

Thunderstorm and Lightning: Ingredients and formation process, types and hazards from thunderstorm; Lightning, hailstorm, maelstrom, blizzards, downburst, and flash flood; Recent thunderstorm in Bangladesh: vulnerabilities, impacts, and mitigation measures

Volcanic Eruption: Magma generation; Products of volcanic eruptions; Secondary impacts and monitoring technologies

Arsenic Contamination: History of arsenic contamination, its causes, health implications, and other socioeconomic impacts; Protection measures and Bangladesh policy

Salinity and Waterlogging: Process of salinity intrusion, contributing factors, and their impacts; Causes of water logging in southwest Bangladesh; Impacts of water logging in urban spaces; Mitigation and adaptation and measures

Wildfire: Causes, conditions, and spreading mechanism of wildfire; Regions facing wildfire; Health and economic impacts of wildfire, safety measures and policy recommendations.

Human-Induced Disasters: Famine/Monga; Epidemic and contagious diseases like Ebola, Zika, bird flu, Chikungunya, structural collapse, oil spillage, accident, fire; Technological disasters: nuclear catastrophes such as Chernobyl, Fukushima, Three Mile Island, Kyshtym,

Windscale etc.; Industrial/chemical disasters like Bhopal, Rana Plaza, Halifax, Benxi, Oppau etc.; Genocides and war: great wars of the world, British colonization, and Bangladesh's Independence War; Terrorism and manufactured war

Climate Change and Climatic Disasters: Carbon emission and carbon compound as major control knobs of greenhouse effects; Global warming and anthropogenic climate change (ACC)

Suggested Readings

Abbott, P. L. (2008). *Natural disasters*. New York, NY: McGraw-Hill.

Bryant, E. (2005). *Natural hazard.* New York, NY: Cambridge University Press.

Choudhury, A. M. (2009). *Protecting Bangladesh from natural disasters*. Dhaka, Bangladesh: Academic Press and Publishers Library.

Griffey, H. (2011). *Earthquakes and other natural disasters*. London, UK: DK Publishing.

Hyndman, D., & Hyndman, D. (2016). *Natural hazards and disasters*. Belmont, CA: Cengage Learning.

Islam, R. (2008). *Sidr*. Dhaka, Bangladesh: Baroshik Press.

Keller, E. A., & DeVecchio, D. E. (2012). *Natural hazards: Earth's processes as hazards, disasters and catastrophes* (3rd ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Pender, J. S. (2008). *What is climate change?: And how it will affect Bangladesh*. Dhaka, Bangladesh: Church of Bangladesh Social Development Programme.

Rahaman, A., Alam, M., Mainuddin, K., Ali, L., Alauddin, S. M., Rabbani, M. G., Amin, S. M. A. (2009). The probable impacts of climate change on poverty and economic growth and the options of coping with adverse effect of climate change in Bangladesh, support to monitoring PRS and MDGs in Bangladesh. Retrieved from http://www.climatechange.gov.bd/sites/default/files/GED_policy_report.pdf.Accessed: October 26, 2017.

Rahman, A. A., Huq, S., & Conway, G. R. (Eds.). (1990). *Environmental aspects of surface water systems of Bangladesh.* Dhaka, Bangladesh: The University Press Limited (UPL).

Ramkumar, M. (Ed.). (2009). *Geological hazards: Causes, consequences & methods of containment*. New Delhi, India: New India Publishing.

Simpson, R., Anthes, R., &Garstan, M. (Eds.). (2003). *Hurricane! Coping with disaster: Progress and challenges since Galveston, 1900*.Washington, DC: American Geophysical Union.

Singh, V. P. (Ed.). (1987). Flood hydrology: Proceeding of the international symposium on flood frequency and risk analyses, 14-17 May 1986, Louisiana State University, Baton Rouge, USA. Dordrecht, the Netherlands: Springer.

Smith, K. (2013). Environmental hazards: Assessing risk and reducing disaster. London, UK: Routledge.

DMC 503: Climate Change, Sustainability, and Resilience (100 Marks; 3 Credits)

Course Objectives

The central objective of this course is technically sketched to translate the students' basic understanding of the overarching issues of climate change and sustainability viz. fundamentals of climate science, scientific consensus on anthropogenic climate crises, and ongoing debates over climate politics to a framework of workable actions and solutions for sustainability and resilience. With IPCC's predictions as a threshold, the urgent immediacy of practical climate actions and its exigency should be understood by the students who are the future leaders of a nation. The subsequent policy frameworks, governance, and implementation mechanics must be optimized likewise. Sustained sustainability and resilience are the desirable states for a future world where economic growth and development are expected to be harmoniously married with them. We will focus on the blueprints of sustainability and resilience-centric development strategy which can best serve our much-longed climate and sustainability goals.

Course Outline

How Science and Climate Science Work: Functional dynamics of STEM (Science, Technology, Engineering, and Mathematics) research; relativism, subjectivity of science. Bruno Latour's construction of science. From Newton, Einstein, Heisenberg (Uncertainty

principle) to Fourier, Keeling, and Hansen. Ideas of Naomi Oreskes, David Archer, and Clive Hamilton

Basics of Climate Science: Weather, atmosphere, and climate; climate variability and climate change; Radiative forcings, greenhouse and global warming; Santer's Fingerprinting, albedo effects, CO2 uptake and ocean acidification, Kyoto GHGs, comparison between CO2 and CH4. Scientific consensus on anthropogenic climate change from 1850-2017

Global Politics of Climate Change: Anthropogenic Global Warming (AGW); Anthropogenic Climate Change (ACC); basic arguments of climate denialism; psychology of climate denialism; nationalism, neoliberal capitalism, and climate skepticism; climate denialism as investment forces; politicization of science, scientization of politics; GCF, climate accountability, and responsibility; Conservatives and climate politics; UNFCCC-COPs

Sustainable Development and Fossil Capitalism: Western development models at the origins of discontent; ExxonMobil's deception since 1977; Climate politics and fossil funding; how fossil capitalism is hindering the energy transition; IPCC's recommendations; fossil and electronic capitalism; and capitalism-driven scientific and technological innovations in the West

Energy Transition: From Fossils to Renewables and Sustainability*:* Understanding Brundtland Commission's core statements and *Our Common Future;* redefining sustainability from all possible broader perspectives like STEM, Economic growth, economic equality, and equity, Development imperatives, political economy of sustainability-innovation relationships among climate-sustainability-energy; energy transition trends. UN SDG and beyond)

Innovation, Sustainability, and Climate Leadership: Innovations and sustainability; economics of innovation and sustainability. Future paradigms of sustainability. Technological proliferation, revival of technological determinism, and sustainability-centric development; Climate leadership and innovations from China, EU, and India for sustainability

Resilience Mechanisms: Resilience and its perspectives; sustainability and resilience options with technology and economy; resilience leadership; stewardship in sustainable technology and design, new economic possibilities, pro-science policymaking, research, development,

and excellence, innovation in climate actions for a green world. BCCSAP; Seventh Five Year Plan, GoB; Climate Change Policy; National Conservation Strategy

Future of Climate Change and Sustainability: Next technological revolution; Sustainable engineering and Design for cost-effective solutions, More Renewables efficiency research; Engineering limitations; innovations in sustainable Development

Suggested Readings

Archer, D., & Rahmstorf, S. (2012). *The climate crisis: An introductory guide to climate change.* New York, NY: Cambridge University Press.

Becker, P. (2014). Sustainability science: Managing risk and resilience for sustainable development. Amsterdam, the Netherlands: Elsevier

Colucci, A., Magoni, M., &Menoni, S. (Eds.). (2017). Peri-urban areas and food-energy-water nexus: Sustainability and resilience strategies in the age of climate change. Basel, Switzerland: Springer International Publishing AG.

Companion, M., & Chaiken, M. S. (Eds.). (2017). Responses to disasters and climate change: Understanding vulnerability and fostering resilience. Boca Raton, FL: CRC Press.

Giddens, A. (2009). *The politics of climate change.* Cambridge, UK: Polity Press.

Klein, N. (2014). *This changes everything: Capitalism vs. the climate*. New York, NY: Simon & Schuster.

Ministry of Environment and Forests, Government of Bangladesh. (2009): *Bangladesh climate change strategy and action plan*. Retrieved from https://www.iucn.org/downloads/bangladesh_climate_change_strategy_and_action_plan_2009.pdf.Accessed: October 26, 2017.

Oreskes, N., & Conway, E. M. (2010). Merchants of doubt: How a handful of scientists obscured the truth on issues from tobacco smoke to global warming. New York, NY: Bloomsbury Press.

Parr, A. (2013). The wrath of capital: Neoliberalism and climate change politics. New York, NY: Columbia University Press.

Pelling, M. (2011). Adaptation to climate change: From resilience to transformation. London, UK: Routledge

Shaw, R., & Sharma, A. (Eds.). (2011). *Climate and disaster resilience in cities.* Bingley, UK: Emerald.

United Nations World Commission on Environment and Development (1987). *Our common future.* Oxford, UK: Oxford University Press.

DMC 504: Society, Ecology, and Environment (100 Marks; 3 Credits)

Course Objectives

This course is pertinently tailored to primarily address varying issues of disaster and its management processes from social, more specifically sociological perspectives which are believed to be a vital focus in the study of holistic disaster management. The students will learn thoroughly about the interconnected and intra-contributory nature of environment, ecology, and human society to their existential sustenance. From risk reduction, preparedness, capacity building to assorted social behaviors, physical vulnerabilities, and other coping mechanisms— all these preponderant strategies will be expatiated with social tenors. How a society responds to a disaster and how it necessarily manages to cope up with the severities and aftermaths will be compellingly dealt with. And this will in turn enable the students to calibrate their academic acumen.

Course Outline

Introduction*:* Definitions of society and community, ecology, and environment and their relationships with disaster

Ecology, Ecosystems, and Biodiversity: Relationships among ecosystems, biodiversity, human society, and human beings; Their codependency.

Environmental Paradigms: HEP and NEP, Anthropocentrism; Biocentrism; Ecocentrism; Ecofeminism

Key Environmental Issues: Deep Ecology; Social Ecology; Ecological Wisdom; Environmental Sociology: Key Perspectives and Controversies; Social Construction of Environmental Issues and Problems; Science, Knowledge

Environmental Problems and Impacts: Environmental Pollution; Unplanned Industrialization and Urbanization for Development; Displacement.

Poverty and Society: Famine; Towards a Safer environment; Society, The voice and social choice; Famines and social response

Development, Opportunity, Inequality, and Environment: Economic Development and Social Opportunity; Public Action and Social Inequality.

Environmental Movements: Chipko; Wangari Mathai; David Suzuki; Bill McKibben; Blueprint for Survival etc.

Environmental Conservation: The coexistence of society's consumption role, ecological balance, and environmental response. Ecological conservation and its impacts.

Suggested Readings

Alexander, D.C. (1993). *Natural disasters*. New York, NY: Routledge.

Beatley, T. (2009). Planning for coastal resilience: Best practices for calamitous times. Washington, DC: Island Press.

Barr, S. (2008). Environment and society: Sustainability, policy, and the citizen. Hampshire, UK: Ashgate Publishing.

Burby, R. J., Deyle, R. E., Godschalk, D. R., &Olshansky, R. B. (2000). Creating hazard resilient communities through land-use planning. *Natural Hazards Review, 1*(2), 99-106. https://doi.org/10.1061/(ASCE)1527-6988(2000)1:2(99)

Cudworth, E. (2003). *Environment and society.* London, UK: Routledge.

Drabek, T. E. (1986). Human system responses to disaster: An inventory of sociological findings. New York, NY: Springer-Verlag.

Drèze, J., & Sen, A. K. (1989). Hunger and public action. Oxford, UK: Oxford University Press.

Hannigan, J. (2006). *Environmental sociology* (2nd ed.). London, UK: Routledge.

Kaushik, A., &Kaushik, C. P. (2010). *Basics of environment and ecology.* New Delhi, India: New Age International.

Kütting, G. (2000). Environment, society and international relations. London, UK: Routledge.

Lash, S., Szerszynski, B., & Wynne, B. (Eds.). (1998). *Risk, environment and modernity: Towards a new ecology*. Thousand Oaks, CA: Sage Publication.

Monson, R. K. (Ed.). (2014). *Ecology and the environment.* New York, NY: Springer Science & Business Media.

Sen, A. (2011). *The idea of justice*. Cambridge, MA: Harvard University Press.

Shiva, V. (1989). *Staying alive: Women, ecology and development*. New Delhi, India: Zed Books.

The International Bank for Reconstruction and Development/The World Bank (2004). *Responsible growth for the new millennium: Integrating society, ecology, and the economy*. Washington, DC: The World Bank.

DMC 505: Disaster Management Systems in Bangladesh (100 Marks; 3 Credits)

Course Objectives

The course aims to make understand of Disaster Management Scenario in Bangladesh through the knowledge on evolution of Disaster Management in Bangladesh, to understand the institutional and legal framework for Bangladesh, Policy and Programmers for Disaster in Bangladesh, Roles, and Responsibilities of Local and national bodies in Disaster Management

Course Outline

Evolution /Paradigm shift of Disaster Management systems in Bangladesh: Starting from pre and post-independence disaster management policies, Comprehensive Disaster Management Programme and Model, Current evolution in DM system

Disaster Management Framework of Bangladesh: Regulatory and institutional framework for disaster management, Standing Orders on Disaster 2019, Disaster management

institutions and committees, Role of different institutions, committees, and groups in disaster management under Standing Orders on Disaster (SOD)

Plan and Policies: Disaster Management in the Five-Year Plans of Bangladesh, National Disaster Management Policy 2015, National Plan for Disaster Management, 2021-2025. Policy and Plan on Disaster Management: SAARC Countries.

Disaster Management Act: Disaster Management Act 2012. Comparative analysis of DM act of Bangladesh, India, Sri Lanka and other countries.

Role of Organizations: Implementation of Disaster Management Regulatory Frameworks:

(i) Role of Government (local and national)

(ii) Collaboration between Government and Development Partners

(iii) Non-Government and International Non-Government Agencies

(iv) Private sector/Corporate Social Responsibility (CSR)/Public-Private Partnership.

(v) CSR in DRR activities,

(vi) Government and Development Partner Collaboration in Disaster Management.

Community Based Disaster Management: Community, empowerment, community resilience and preparedness for disaster, community-based organizations (CBO) and non-profit organizations (NPO) role in Disaster Management.

Critical Issue Management : Disaster and Climate Risk Management in Bangladesh Delta Plan 2100, Strategy on Internal Displacement Management 2021, Refugee Management, Disaster Management (Fund Management) Rules 2021.

Suggested Readings

Asian Disaster Preparedness Center (ADPC). (2000). "Community Based Disaster Management (CBDM): Trainer's Guide, Module 4: Disaster Management". Bangkok, Thailand.

ADPC. (2006). Critical Guidelines: Community Based Disaster Risk Management. Asian Disaster Preparedness Centre, Bangkok.

Action against Hunger UK (2001) NGO Initiative in Risk Reduction Case Study No. 14: Preparation for Flood-Related Disasters. London, Red Cross.

Banu N. (2015) Disaster Management in the Five-Year Plans of Bangladesh: An Assessment. In: Ha H., Fernando R., Mahmood A. (eds) Strategic Disaster Risk Management in Asia. Springer, New Delhi. https://doi.org/10.1007/978-81-322-2373-3_2

Bangladesh Disaster Management Reference Handbook. (2020). Center for Excellence in Disaster Management & Humanitarian Assistance (CFE-DM). https://reliefweb.int/sites/reliefweb.int/files/resources/disaster-mgmt-ref-hdbk-bangladesh_1.pdf

Comprehensive Disaster Management Programme, Bangladesh. Phase I & II

Government of Bangladesh, United Nations Development Programme (UNDP), UN Women and United Nations Office for Project Services (UNOPS). (2017). National Resilience Programme.

Ministry of Disaster Management and Relief (MoDMR), Government of the People's Republic of Bangladesh (GOB), (2013). Disaster Management Act (DMA) (2012). Dhaka: MoDMR, https://reliefweb.int/sites/reliefweb.int/files/resources/disaster-mgt-act-2012-english.pdf

Ministry of Disaster Management and Relief (MoDMR), Government of the People's Republic of Bangladesh (GOB), (2019). *Standing Orders on Disaster* (first published in 1997)

Ministry of Disaster Management and Relief (MoDMR), Government of the People's Republic of Bangladesh (GOB), (2017). National Plan for Disaster Management (2021-2025). 2020. Action for Disaster Risk Management Towards Resilient Nation. Government of the People's Republic of Bangladesh, Ministry of Disaster Management and Relief. https://modmr.portal.gov.bd/sites/default/files/files/modmr.portal.gov.bd/page/a7c2b9e1_6c9d_4ecf_bb53_ec74653e6d05/NPDM2021-25%20DraftVer5_23032020.pdf

Ministry of Disaster Management and Relief (MoDMR), Government of the People's Republic of Bangladesh (GOB), (2015). Disaster Management Policy.

Ministry of Disaster Management and Relief (MoDMR), Government of the People's Republic of Bangladesh (GOB), (2011). Cyclone Centre Maintenance & Management Policy.

Inter Works. (1998). Model for National Disaster Management Structure, Preparedness Plan and Supporting Legislation. Madison, InterWorks.

Matin, N. and Taher, M. (2001) 'The Changing Emphasis of Disasters in Bangladesh NGOs'. Disasters, Vol. 25, No. 3.

Pandey, M. (2014). Disaster Management,Wiley India Pvt. Ltd.

Standing orders on Disaster Management (SOD). Dhaka, DMB.

Ministry of Planning, GoB. Seventh Five Year Plan (FY2016–FY2020) and Eighths Five Five Year Plan (FY2021–FY2025) and beyond

3.2 SECOND SEMESTER

DMC 506: Disaster Risk and Vulnerability Assessment (100 Marks; 3 Credits)

Course Objectives

The salient features of this course are meant to offer a comprehensive scientific understanding to the students about the key concepts of disaster risk management, and risk and vulnerability assessment. The outlines of the course consist of three key objectives: (i) to provide a clear and holistic framework of scientific learning on vulnerability and nature of vulnerability along with its adverse effects on society; (ii) to train and to develop skills of students on vulnerability assessment through providing theoretical and practical knowledge; (iii) to empower the students as a potential emergency manager by honing knowledge on vulnerability reduction mechanisms. The course will also help the graduates to open a multidisciplinary spectrum from a critical viewpoint.

Course Outline

Concepts: Vulnerability, Risk, Resilience, Vulnerability and Disaster, Internal and External Processes of Vulnerability

Types, Causes and Impacts of Vulnerability: Powerlessness and Vulnerability, Types and Profiles of Vulnerability: Physical, Social, Economic, Environmental, Organizational, Political; Causes, and detrimental effects and potential impacts of vulnerability

Theories and Models of Vulnerability: Synthesizing vulnerability theories, Theorizing Vulnerability in a Globalized World; **Models:** Watts and Bohle Model of Vulnerability, Capacity and Vulnerability Assessment (CVA); Pressure and Release Model of Vulnerability (PAR Model) - Progression of Vulnerability; Hazards of Place Model of Vulnerability, Access Model

Vulnerability Indices: Defining Index; Construction of vulnerability index; Livelihood Vulnerability Index (LVI); Disaster and Social Exclusion Index (DSoEI), Social Vulnerability Index (SoVI); Climate Vulnerability Index (CVI); Resilience Capacity Index (RCI); Community Disaster Resilience Index (CDRI)

Disaster Preparedness and Vulnerability Reduction: Public Preparedness-Public Education and behavior, Social Marketing, Media as public educator; Household Level Preparedness; Obstacles to effective public education and preparedness

Disaster Response and Vulnerability Reduction: Response and phases; Recognition-Pre disaster Actions; Recognition- Post disaster Actions- Search and Rescue, First Aid Treatment, Evacuation, Post disaster Needs Assessment, Provision of Water, Food and Shelter; Health and Sanitation, Safety and security; Critical Infrastructure Resumption; Donation Management; Coordination and Incident Command System (ICS); Forecast, Information and Warning Systems, community based early warning system, EW message dissemination; Humanitarian Appeals for Disaster Response: Flash Appeal, Consolidate appeal to national and international bodies.

Vulnerability Reduction and Recovery: Public assistance, housing, economic recovery, family and social or community recovery, cultural recovery, psychological recovery, education; Special considerations in recovery; Rehabilitation and Reconstruction**:** Holistic recovery, Seven Enablers for Holistic Disaster Recovery, Planning for Holistic Recovery; Restoration of critical services, Nine Obstacles to Holistic Disaster Recovery

Relief Management and Vulnerability Reduction: Disaster and Development relief, emergency relief, selection of relief items and relief standards, selection of relief

beneficiaries, duplication control, coordination, accountability, and governance in relief management system

Vulnerability Reduction and Empowerment: Vulnerability to resilience; Monitoring of risk reduction interventions and evaluation; Development and implementation of sectoral and individual action plans.

Hazard and Risk Assessment: Hazard identification, Hazard analysis, Vulnerability analysis, Threat and Hazard Identification and Risk Assessment (THIRA), Emergency risk management

Suggested Readings

Azad, A. K., Hossain, K. M., &Nasreen, M. (2013). Flood-induced vulnerabilities and problems encountered by women in northern Bangladesh. International Journal of Disaster Risk Science, 4(4), 190-199. https://doi.org/10.1007/s13753-013-0020-z

Balica, S. F., Douben, N., & Wright, N. G. (2009). Flood vulnerability indices at varying spatial scales.Water Science and Technology, 60(10), 2571-2580.https://doi.org/10.2166/wst.2009.183

Bankoff, G., Frerks, G., & Hilhorst, D. (Eds.). (2004). Mapping vulnerability: Disasters, development, and people. London, UK: Earthscan.

Birkmann, Jorn, Kienberger, Stefan, Alexander, David. E "Assessment of vulnerability to natural hazards: a European perspective". (2014) Elsevier. ISBN 978-0-12-410528-7

Blaikie, P., Cannon, T., Davis, I., & Wisner, B. (2014). At risk: Natural hazards, people's vulnerability and disasters. New York, NY: Routledge.

Carter, W. N. (1991). Disaster management: A disaster manager's handbook. Manila, Philippines: Asian Development Bank.

Charlotte Benson, John Twigg, and Tiziana Rossetto "Tools for Mainstreaming Disaster Risk Reduction: Guidance Notes for Development Organisations", 2007, Provention Consortium Secretariat.

Coppola, D. P. (2007). Introduction to international disaster management. Burlington, MA: Butterworth-Heinemann.

Hagihara, K., &Asahi, C. (Eds.). (2016). Coping with regional vulnerability: Preventing and mitigating damages from environmental disasters. Tokyo, Japan: Springer.

Islam, Tanveer and Ryan, Jeffrey "Hazard Mitigation in Emergency Management" (2016) Elsevier, ISBN: 978-0-12-420134-7

Iyengar, R.N. (1997). Natural hazards in the urban habitat: Proceedings of the golden jubilee year conference, Central building research institute, Roorkee, New Delhi, November 10-11, 1997. New Delhi, India: Tata McGraw-Hill.

Jie Cao, Li Zhu, He Han, Xiaodong Zhu, "Modern Emergency Management" 2018, Springer, ISBN 978-981-10-5720-5

John C. Pine "Natural Hazards Analysis", , 2009, Taylor & Francis Group, LLC, ISBN 978-1-4200-7038-5

Jonathan Rougier, Steve Sparks, Lisa J. Hill "Risk And Uncertainty Assessment For Natural Hazards", (2013) Cambridge University Press, ISBN 978-1-107-00619-5

Maiwald, E., & Sieglein, W. (2012). Security planning & disaster recovery. New York, NY: McGraw-Hill.

Merriman, P. A., & Browitt, C. W. A. (Eds.). (1993). Natural disasters: Protecting vulnerable communities: Proceedings of the conference held in London, 13-15 October 1993. London, UK: Thomas Telford.

Nasreen, M. (2019). Women and Girls-Vulnerable or Resilient? Dhaka, Bangladesh: Institute of Disaster Management and Vulnerability Studies, University of Dhaka, 2nd Edition.

Pelling, M. (2003). The vulnerability of cities: Natural disasters and social resilience. London, UK: Earthscan

Perry, R. W., & Lindell, M. K. (2007). Emergency planning. London, UK: Wiley.

U.S. National Research Council (2012). Disaster resilience: A national imperative. Washington, DC: The National Academies Press. https://doi.org/10.17226/13457

The European Commission-The World Bank-The United Nations Development Programme (2013). Post-disaster needs assessments: Volume A, Guidelines. Retrieved from http://www.undp.org/content/dam/undp/library/Environment%20and%20Energy/Climate%20

Strategies/PDNA%20Volume%20A%20FINAL%2012th%20Review_March%202015.pdf.Accessed: November 12, 2017.

Thomas, D. S. K., Phillips, B. D., Lovekamp, W. E., & Fothergill, A. (2013). Social vulnerability to disasters (2nd ed.). Boca Raton, FL: CRC Press.

Turnbull, M. Sterrett, C. L., & Hilleboe, A. (2013). Toward resilience: A guide to disaster risk reduction and climate change adaptation. Warwickshire, UK: Practical Action Publishing.

DMC 507: Humanitarian Action and Project Management (100 Marks; 3 Credits)

Course Objectives

The key objective of this course is to orients its students with the humanitarian actions carried out by different humanitarian organizations during dire situations. Humanitarian response and humanitarian assistance however are mostly project based and hence this course will also impart knowledge regarding basic concepts of project management to its students. Furthermore, this course will allow students to learn about different stages about disaster and humanitarian action along with the management of different projects.

Course Outline

Introduction to Humanitarian Action and Intervention: Definition and Principles of Humanitarian Actions; The Changing Context of Humanitarian Action; World Politics and Humanitarian Action; Key Actors and Agencies; Core Humanitarian Standards

Legal and Political Aspects in Humanitarian Action: The political and moral aspects of humanitarian intervention; International Human Rights Law; International Humanitarian Law; Protection of Refugees and Minorities; Coping with the constraints pertaining to humanitarian intervention; Politics of Humanitarian Assistance

Humanitarian Response and Assistance: Nature of Humanitarian Response and Assistance; Types of Assistance; Humanitarian Response Planning; Protection, Gender, and Inclusion during Emergencies; Common Challenges; Reporting and Documentation

Project Planning and Proposal Development in Humanitarian Setting: Project Identification; Situational and Stakeholder Analysis; Operationalization into Indicators – The Logical Framework or Log Frame; Financing the Project; Impact Analysis; Project Review Appraisal; Piloting; Writing a Project Proposal

The Humanitarian Programme Cycle: Accountability for Collective Results; Components of Programme Cycle; Humanitarian Coordination at Field Level; Consortium and Cluster Approach; Joint Need Assessment and Analysis; Project Implementation; Major Tasks Within the Project Implementation Phase; Implementation: A learning process; Monitoring and Evaluation; Auditing Humanitarian Projects; Overcoming external challenges during humanitarian implementation

Humanitarian Logistics and Supply Chain Management: Particularities of Humanitarian Logistics; Logistics and Coordination; The Humanitarian Supply Chain; Procurement of Relief Goods and Services; Warehousing

Ethical Considerations in Humanitarian Actions and Project Management: Ethical Principles in Humanitarian Actions; Ethical Guidelines for Humanitarian Project Management; Data and Information Privacy and Ethical Obligations; Challenges and Dealing with Fraudulent Activities; Compliant and Feedback Mechanism

Suggested Readings

Alexander, J. (2013). Chasing chaos: My decade in and out of humanitarian aid. New York, NY: Broadway Books.

Beristain, C. M. (2008). Humanitarian aid work: A critical approach. Philadelphia, PA: University of Pennsylvania Press.

Carbonnier, G. (2016). Humanitarian economics: War, disaster and the global aid market. New York, NY: Oxford University Press.

Christopher, M., &Tatham, P. (Eds.). (2014). Humanitarian logistics: Meeting the challenge of preparing for and responding to disasters (2nd ed.). London, UK: Kogan Page.

Development Assistance Research Associates (DARA) (2010). The humanitarian response index 2009: Whose crisis? clarifying donor priorities. New York, NY: Palgrave Macmillan.

Heintze, H.-J., &Zwitter, A. (Eds.). (2011). International law and humanitarian assistance: A crosscut through legal issues pertaining to humanitarianism. Berlin, Germany: Springer-Verlag.

Hilhorst, D. (Ed.). (2013). Disaster, conflict and society in crises: Everyday politics of crisis response. New York, NY: Routledge.

Klumpp, M., de Leeuw, S., Regattieri, A., & de Souza, R. (Eds.). (2015). Humanitarian logistics and sustainability. Basel, Switzerland: Springer International Publishing AG.

Meier, P. (2015). Digital humanitarians: How big data is changing the face of humanitarian response. Boca Raton, FL: CRC Press.

Retamal, G., & Aedo-Richmond, R. (Eds.). (1998). Education as a humanitarian response. New York, NY: Continuum International Publishing Group.

Sahay, B. S., Gupta, S., &Menon, V. C. (Eds.). (2016). Managing humanitarian logistics. New Delhi, India: Springer. https://doi.org/10.1007/978-81-322-2416-7

Smillie, I., &Minear, L. (2004). The charity of nations: Humanitarian action in a calculating world. Bloomfield, CT: Kumarian Press.

The Sphere Project. (2004). Humanitarian charter and minimum standards in disaster response. Retrieved from http://www.ifrc.org/PageFiles/95530/The-Sphere-Project-Handbook-20111.pdf. Accessed: October 31, 2017.

DMC 508: Gender, Disaster and Intersectionality (100 Marks; 3 Credits)

Course Objective

The core aim of the course is to orient the students with the concepts and ideas of gender and intersectionality, and applicability of in the field of disaster and emergency management. However, the course will also try to focus on how gender, intersectionality and inclusive ideas addressed in the national and international polices and organizations programs special attention to relevance with disaster and vulnerability studies.

Course Outline

Course Contents

Key Concepts on Gender, Disaster & Intersectionality: Basic Concepts of Disaster, Gender and Sex, Persons with Disability, Intersectionality; Climate Change, Gender and Disaster

Gender based Vulnerability and Intersectionality: Gender aspects and Vulnerability: Social, Physical, Environmental and Psychological. Implications of Gender Factors for Children, Men, Women, Persons with Disability; Transgender, Elderly and others in Disaster Situations.

Gender-Sensitive, Intersectional Risk Assessment: Hazard Assessment, Participatory Vulnerability and Capacity Assessment, Gender Sensitive Community Risk Assessment

Gender Analysis: Steps of Gender Analysis, Gendered Analysis of Capacity and Vulnerability, Other Useful Tools for Assessing Capacity and Vulnerability.

Gendered Response, Livelihood and Resilience: Coping Mechanisms, Adaptation and Resilience of Women & Strategies developed over time: food security and household consumption; water; health security; social network; draw upon assets; indigenous knowledge base

***Gender Sensitive Indicators for DRR*:** -Sensitive Policy, Risk Assessment and Early Warning Systems, Dissemination of Meaningful Warnings to at Risk intersectional group

Gender Mainstreaming & Intersectionality in building Resilience: Local, Regional and Global initiatives for Mainstreaming Gender and Intersectionality in DRR. Gender in Program Planning and Implementation, Integrating CCA-DRR

Mapping of Agencies: Mapping of INGOs, NGOs, Private sectors and their roles in Gender and DRR in Bangladesh; Strengths and Challenges of each approach. Case Studies from National and International initiatives.

Social Inclusion, Intersectionality and DRR: Disability Inclusive DRR; Dhaka Declaration of 2015+1 and Implementation; Ageing and DRR; Intersectional group and DRR

Suggested Readings

Ariyabandu, M.M. and Foenseka, D., 2006. Do disasters discriminate. *South Asia network for disaster mitigation: Tackling the tides and tremors*, pp.23-40.

Azad, A.K., Hossain, K.M, and Nasreen, M. 2014. 'Flood induced Vulnerabilities and Problems Encountered by Women in Northern Bangladesh', International *Journal of Disaster Risk Science,* China: Springer, 2014

Blaikie, P., Cannon, T., Davis, I. and Wisner, B., 2014. *At risk: natural hazards, people's vulnerability and disasters*. Routledge.

Enarson, E. and Chakrabarti, P.D. eds., 2009. *Women, gender and disaster: global issues and initiatives*. SAGE Publications India.

Enarson, E.P., 2012. *Women confronting natural disaster: From vulnerability to resilience*. Boulder, CO: Lynne Rienner Publishers.

Byrne, B. and Baden, S., 1995. *Gender, emergencies and humanitarian assistance* (Vol. 33). Institute of Development Studies.

Cannon, T., 2002. Gender and climate hazards in Bangladesh. *Gender & Development*, *10*(2), pp.45-50.

Dasgupta, Samir; Siriner, ismail and De, Partha Sarathi (eds) (2010) *Women's Encounter with Disaster:* Frontpage Publication Ltd.

Enarson, E. and Morrow, B.H. (eds) (1999) *The Gendered Terrain of Disaster: Through Women's Eyes*. Westport (CT), Greenwood Publishing.

Fothergill, Alice (1996) "Gender, Risk and Disasters". *Mass Emergencies and Disasters*, Vol. 14, No. 4.
Ginige, K., Amaratunga, D. and Haigh, R., 2009. Mainstreaming gender in disaster reduction: why and how? *Disaster Prevention and Management: An International Journal*, *18*(1), pp.23-34.

Nasreen, M. 2019 (2nd Edition). *Women and Girls: Vulnerable or Resilient?* Institute of Disaster Management and Vulnerability Studies (IDMVS), University of Dhaka

Nasreen, M., 2014. 'Ten Years of Disaster Risk Reduction in Bangladesh', *sothasiadisasters.net*, Special issue No.113, June, 2014

Nasreen, M., 2010. *Comparing Food and Cash Transfer to the Ultra Poor in Bangladesh*, published by the International Food Policy and Research Institute (IFPRI), 2010

Nasreen, M. 2008. *Violence Against Women during Disaster and Post-Disaster Situations in Bangladesh*, 2008. Dhaka: ActionAid International and ActionAid Bangladesh.

Nasreen, M, 2007. *Social Inclusion: Gender and Equity in Education SWAPs in South Asia*, Bangladesh Case Study, published by United Nations Children's Fund, Regional Office for South Asia, (UNICEF ROSA).

Nasreen. M., 2016. Bangladesh National Conservation Strategies: Gender Issues. Dhaka: MOEF-IUCN.

DMC 509: Advanced Research Methodology (100 Marks; 3 Credits)

Course Objectives

This course provides students with understanding of the distinct character of both quantitative and qualitative research process and its roles in scientific research. The main objective is to provide students with hands on training of various research methods used in the research related to disaster management. The course deals with the general logic of scientific inquiry, research design, sampling, measurement, questionnaire design, as well as qualitative and quantitative data-analysis and presentation. By the end of this course, students will be able to conceptualize a research problem and will be able to design and conduct his/her research project.

Course Outline

Foundations of Research: Defining research; Aspects, issues, and perspectives of research; epistemology and empiricism; Commonsense vs. research and role of methodology in scientific enquiry, History of Disaster Research.

Logic and Methodology: Inductive and Deductive Logic Theoretical Congruity of a Theory, Relationships between Theory and Research; analytical frameworks, Various matrices, Positivist, Interpretative and Critical schools, Relationships between theory and research, Theoretical and conceptual frameworks

Research Question and Hypothesis: Qualitative Research Questions— A qualitative central question from an ethnography, a qualitative central question from a case study. Quantitative Research Questions— null hypothesis, directional and nondirectional hypothesis, standard use of language in hypothesis. Mixed Methods Research Questions and Hypothesis

Quantitative and Qualitative approach: Quantitative Approach— Central principles of quantitative methodology, types of variables, causal relationships & hypotheses, Quantitative measurement, operationalization, validity & reliability, Quantitative Research Design, and process in Disaster Research. Qualitative Approach— Concept of qualitative research, general criteria, qualitative research design, sampling strategies, qualitative data management and analysis

Population and Sampling: Meaning of sample and sampling, types of sampling, Sampling Methods, Sample Size determination, population—target population, accessible population,

Data Collection and Analysis: Quantitative Tools and Data Collection— Census, Survey Method, Questionnaire and Interview, Content Analysis; Qualitative Tools and Data Collection: Unstructured interview; Participatory research approach (PRA, PLA, PLE); Focus Group Discussion; Key Informants' Interview (KII); Case study; Ethnography; Content Analysis; Discourse Analysis; Observation Method; Qualitative Data Analysis using software e.g., ATLAS, NVIVO; Quantitative Data Analysis using software e.g., SPSS, STATA

Indexes, Scales, and Typologies: Level of measurement; Indexes versus scales; Index construction: Item selection, Examination of empirical relationships, Index scoring, Handling missing data, Index validation, Construction; Scale construction: Bogardus Social Distance Scale, Thurstone scales, Likert Scaling, Semantic differential, Guttman Scaling; Typologies.

Research Proposal Development: Why proposal writing - Different types of Proposal Writing, Structure of different proposal

Thesis and Report Writing: Organizing a thesis – Thesis writing: Introduction, Literature review, methodology, result and discussion, and conclusion writing, Referencing. Organizing a report - report writing.

Scientific Paper Writing: Organizing a scientific paper - scientific paper writing. Journal selection, Impact factor of journals. Basic techniques of scientific paper writing: abstract or summary, introduction, methodology, result, discussion, acknowledgements, references, and notes writings for scientific paper; figures and figure legends, Tables contraction, Submission of your paper.

Suggested Readings

Babbie, E. R. (2013). *The practice of social research*. Belmont, CA: Cengage Learning.

Bazeley, P. (2013). *Qualitative data analysis: Practical strategies*. London, UK: Sage Publication.

Creswell, J. W. (2007). Qualitative inquiry and research design: Choosing among five approaches. Thousand Oaks, CA: Sage Publication.

Creswell, J. W. (2014). Research design: Qualitative, quantitative, and mixed methods approaches. London, UK: Sage Publication.

Denzin, N. K., & Lincoln, Y. S. (2008). *Strategies of qualitative inquiry*. Thousand Oaks, CA: Sage Publication.

Field, A. (2009). *Discovering statistics using SPSS*. London: UK: Sage Publication.

Healey, J. (2013). *The essentials of statistics: A tool for social research*. Belmont, CA: Wadsworth Publishing Company.

Neuman, L. W. (2011). Social research methods: Qualitative and quantitative approaches. London, UK: Pearson Education.

Patten, M. L., & Newhart, M. (2018). *Understanding research methods: An overview of the essentials*. New York: NY: Routledge.

Saris, W. E., & Gallhofer, I. N. (2007). *Design, evaluation, and analysis of questionnaires for survey research*. Hoboken, NJ: John Wiley & Sons.

Thomas, R. M., & Brubaker, D. L. (2000). *Theses and dissertations: A guide to planning, research, and writing*. Westport, CT: Bergin & Garvey.

DMC 510: Disaster Mitigation and Preparedness

Course Objectives

This course consists of two important phases of disaster management cycle: mitigation and preparedness. The first part deals with the structural aspects involving architectural and engineering considerations for a resilient structural aegis to protect habitats and vulnerable zones from damage and destructions due to disasters. The contents and contexts aim at providing extensive knowledge on methods of constructing safer buildings in disaster-prone areas, erecting disaster shelters, and provision of post disaster emergency housing. The major

objective is to offer a comprehensive academic understanding for developing physical structures that address the vulnerability issues accrued from disasters and creating awareness about the key aspects of building design and construction that can contribute to the broader mitigation mechanism with hazard-resistant habitats before, during and after disasters. This course will also help students to think of the negative impacts of development projects and use of environment friendly mitigation measures, to know about best practices of mitigation strategies of the world. Another part, preparedness, will give an overview of the range of strategies for preparedness in the pre-impact stage in disaster-prone areas and correspondingly reducing vulnerability of communities. The purpose is to instill awareness of the importance of disaster preparedness for damage prevention and vulnerability reduction, and associated risk reduction strategies such as insurance.

Course Outline

Overview of Disaster Mitigation and Preparedness: Concept; aims, goals, objectives, significance, scope, and relationship with other parts of the disaster continuum, types, major components, and elements of preparedness. Mitigation trough natural resource protection and sustainability-centric development and structures

Major Theories, Approaches and Models of Disaster Mitigation and Preparedness: Social cognitive theory, Education and preparedness knowledge theory, social marketing perspective on disaster preparedness, Demographic preparedness theory, Preparedness and motivation theory (Psychological perspective), Stakeholder approach, Community preparedness theory on conservation resource approach, Marketing and public policy perspective, Lockdown Theory etc. Preparedness and mitigation Models and Guidelines

Assessment and planning for disaster preparedness: Hazard, vulnerability and risk assessment in preparedness stage, prerequisites for preparedness planning, types of planning, General planning process for national and community level, major steps of mitigation plan, organizational or institutional plan, sectoral plan for different hazards, contingency plan for emergency response, developing an action plan frameworks and challenges

Preparedness and Mitigation against Slow onset and Sudden onset disasters: Structural engineering protection of hydro-climatic and coastal hazard mitigation measures: embankment, dam, reservoir etc., flood insurance and community capacity enhancement

projects, flood warning system safer building shelters for the frequently affected peoples especially in the coastal belts; land use planning system; sheltering, non-traditional storm water management and others, relocation, acquisition, wet flood proofing, landslide hazard and riverbank erosion mitigation measures, drought and desertification mitigation strategies

Urban Building Protection and Livelihood Security: Hazard resistance building and strengthening building with various measures, soil test, piling, building codes, retrofitting, nonstructural reinforcement of existing building, fire hazard mitigation, thunderstorm mitigation, future proofing development city housing cases from developed cities. green architecture and design, sustainable structures and new age engineering, technology for sustainable and green buildings

Institutional Preparedness and Mitigation measures: School disaster preparedness, Hospital disaster preparedness, Airport disaster preparedness, Industry, and business preparedness measures

Preparedness and Mitigation Concern for Vulnerable Group and Disadvantaged Community: Home/family preparedness, community preparedness, disabled, women, children, trans gendered, Bede community, Dalit Community, elderly people, refugees, IDPs and ethnic minorities focused preparedness and mitigation mechanisms.

Suggested Readings

Agarwal, P., & Shrikhande, M. (2006). *Earthquake resistant design of structures*. New Delhi, India: Prentice-Hall of India.

Allenby, B., & Fink, J. (2005). Toward inherently secure and resilient societies.*Science, 309*(5737), 1034-1036. https://doi.org/10.1126/science.1111534

Alessanadra, Jerolleman and Keifer (eds). (2013). *Natural Hazard Mitigation*, CRC press.

Aysan, Y., Clayton, A., Cory, A., Davis, I., & Sanderson, D. (1995). Developing building for safety programmes: Guidelines for organizing safe building improvement programmes in disaster-prone areas. London, UK: Intermediate Technology Publications.

Bauer, M., Mösle, P., & Schwarz, M. (2010). *Green building: Guidebook for sustainable architecture*. Berlin, Germany: Springer-Verlag. https://doi.org/10.1007/978-3-642-00635-7

Cuny, F. (1988) Disaster Preparedness Recommendations for Bangladesh. Dhaka, UNDP.

Grover and Islam (eds). (2021), Case studies in Disaster Mitigation and Preservation. Elsevier

David. R. Good Shalk et al, (1999). Natural Hazard Mitigation: Recasting Disaster Policy and Planning. Washington: ISLAND Press,

Davis, I. (1978). *Shelter after disaster*. Oxford, UK: Oxford Polytechnic.

Duggal, S. K. (2013). *Earthquake-resistant design of structures* (2nded.). Oxford, UK: Oxford University Press.

Godschalk, D. R. (2003). Urban hazard mitigation: Creating resilient cities. *Natural Hazards Review*, *4*(3), 136-143. https://doi.org/10.1061/(ASCE)1527-6988(2003)4:3(136)

Hamada, Masonori. (2013). Engineering for Earthquake Disaster Mitigation. Springer

Haque. C. Emdad (2005). . Mitigation of Natural Hazards and Disasters. Springer

Medina, J.C. (1992) "Community Awareness and Participation Programme in Disaster Preparedness and Rural Development" in Integrated Approach to Rural Development and Disaster Management in Bangladesh, Vol. II. Nagoya, UNCRD.

Nakabayashi, I. (1993) "Urban Planning Based on Disaster Risk Assessment" in Disaster Management in Metropolitan Areas for the 21st Century. Nagoya, UNCRD.Pardeep, Dharmeja and Medury (eds) (2010). *Disaster Mitigation Experiences and Reflection.* PHI Learning LTD. New Delhi.

Schwab, Sandler and Brower (eds) (2017). *Hazard Mitigation and Preparedness*. CRC press.

Taranath, B. S. (2005). Wind and earthquake resistant buildings: Structural analysis and design. New York, NY: Marcel Dekker.

Tomaževič, M.(1999).*Earthquake-resistant design of masonry buildings*. London, UK: Imperial College Press.

Vale, L. J., &Campanella, T. J. (Eds.). (2005). *The resilient city: How modern cities recover from disaster.* New York, NY: Oxford University Press.

DMC 511: Disaster Response and Recovery

Course Objectives

This course is designed to develop knowledge in the area of disaster response and recovery – and its planning and management. The course would be able to make the students understand about the theoretical approaches to response and recovery and its practical implications. The course will also provide significant practical knowledge on the process of disaster response and recovery.

Course Outline

Introduction to Disaster Response: Concepts and Terminologies in Disaster Response; Principles, Frameworks and Models of Disaster Response; Emergency Response vs Disaster Response; Emergency Management: Principles and Practices; Key People and Advocacy Groups

Incident Response: Preparation, Organization and Prevention; Preparing for Incident Response; Incident Response Policy; Building the Security Incident Response Team; Incident Response Planning; Assembling and Maintaining the Final Incident Response Plan; Coordination and Collaboration across responsible agencies

Implementing Initial Response Measures: Hazard Detection; Issuing Warnings; Evacuation: Means, Behaviour, Considerations and Procedure; Sheltering: Types and Characteristics

Caring for the Injured, Dead and Distraught: Search and Rescue Operations; Emergency Medical Care and Triage; Mass Fatality Management; Stress Management; Donation and Volunteer Management; Hospital Management

Harnessing Technology and Organization: Communication Equipment and Interoperability; Decision Support System**;** Incident Command System: Principles, Strengths, and Weaknesses; EOC: Usage and Characteristics; Comparisons of EOC and ICS

Immediate Needs and Moving Beyond Immediate Needs: Relief Distribution and Management - emergency relief, selection of relief items and relief standards, selection of relief beneficiaries, duplication control, coordination, accountability, and governance in relief management system; Flash appeal, emergency assistant requests to national and international bodies; Damage Assessment Procedures; Humanitarian Response – UN Agencies, NGO-INGO response interventions during crisis and disasters

Response in different contemporary emergencies and disasters: Responding to disasters and emergencies in Bangladesh; Global Disaster Response System and Practices; Best Practices and Case Studies

Understanding Disaster Recovery: Key concepts and Terminologies in Disaster Recovery; Recovery as a process; Framework and Approaches of Disaster Recovery; Challenges of Recovery; Disaster Recovery Planning; Short Term Recovery; Long Term Recovery

Dimensions of Disaster Recovery: Debris Management; Environmental Recovery; Historic and Cultural Resources; Housing; Business Recovery; Infrastructure and Lifelines; Social Psychological Recovery; Public Sector Recovery

Recovery Resources: Donations, Community Resources, Voluntary Organizations, Financing Recovery

Holistic Recovery: Linking recovery, rehabilitation, and reconstruction; Build Back Better; Restoration and Revitalization; Foreseeing the future; Increasing Resilience of the Community and People

Suggested Readings

Drabek, Thomas. (2013). The Human Side of Disaster, Second Edition. New York: CRC Press

Myers, D. G. (1994). *Disaster response and recovery: A handbook for mental health professionals*. DIANE Publishing.

McEntire (2014) Disaster Response and Recovery: Strategies and Tactics for Resilience, New Jersey, Willey

Paton, D., Smith, L., & Violanti, J. (2000). Disaster response: risk, vulnerability and resilience. *Disaster Prevention and Management: An International Journal*, *9*(3), 173-180.

Whiteman and Mattord (2007). Incident Response and Disaster Recovery. Boston, Course Technology.

Schlegelmilch, J., Sury, J., Brooks, J., & Chandler, T. (2020). A philanthropic approach to supporting emergent disaster response and recovery. *Disaster medicine and public health preparedness*, *14*(1), 158-160.

Zhang, Q. (2016). Disaster response and recovery: Aid and social change. Annals of Anthropological Practice, 40(1), 86-97.

DMC 512: Water Security and Flood Management (100 Marks; 3 Credits)

Course Objectives

Water security appears to be one of the core components in disaster risk reduction studies. As water resources involve a significant dynamics in the broader perspective of resilience and sustainability, this course will orient students (i) to understand the basic concepts of surface and groundwater and its movement; (ii) to identify causes of water scarcity and water pollutions; (iii) to get knowledge of various national and global water laws and introduces to some of the central challenges of water governance and politics. This course will also explore the links between water sanitation and health; to become familiar with various water resource management schemes for sustainable uses of surface and groundwater in future and to identify. The relationship among gender, water, and social inclusion will also be focused.

Course Outline

Introduction to Hydrology: Surface Water- Hydrological Cycle; Hydro Meteorology; Types and Forms of Precipitation; Evaporation, Evapotranspiration, and Infiltration; Runoff and Its Components; Rainfall-Runoff Models; Ground Water- Origin of Groundwater, Rock Properties Affecting Groundwater, Types of Aquifer, Darcy's Law, Coefficient of Permeability, Groundwater Flow Rates, Permeability Formulae, Groundwater Movement; Ground Water Assessment

Water Usage: Agricultural, Domestic, Industrial, Municipal, Electric Power Generation; Navigation

Water Pollution and Hazards: Agricultural; Industrial; Waterlogging; Salinity Intrusion; Arsenic Contamination; Urban Water Pollution

Gender, Social Inclusion and Water Management: Rights to Water; Gender Issues in Agriculture and Irrigation; Specific Impacts of Water Insecurity on Women, Men, Children and Socially Excluded Group; Intra-Household Water Management and Water Use Behavior; Mainstreaming Gender into Water Sector; Gender and Water Conservation

Water, Sanitation and Health: Drinking Water Standards; Global Water-Sanitation (Watsan) Initiatives; Global and National Water-Sanitation Trends: Water-Sanitation Link; Water-Health Link; Water and Health Related Human Rights; Water Related Diseases

Water Based Conflicts and Global Politics: World's Water Resources; Sharing of International Water Bodies and Conflicts Case Studies of Water Politics in South Asia: Kaptai Dam; Farakka; Tista; Liver Linking Project; Maritime Industry Conflicts

Water Law and Governance: National and Global (Constitutional provisions, National and International Water Policy, Riparian Rights / Ground Water Ownership, Acquisition and Use of Rights, Scope for Privatization); Water Policy and Its Operation at the Local, National, and International Levels; Water Economics; Agriculture as the Chief Consumer of Water Resources

Water Resources Management: Dimensions of Integrated Water Resource Management; Institutional Framework of Water Resources Management, Conservation Farming, Watershed Management Planning and Engineering; Economic, Social, Ecological, and Legal Aspects. Models of Water Security in Emergencies, Water Relief Management

Suggested Readings

Barthel, S., & Isendahl, C. (2013). Urban gardens, agriculture, and water management: Sources of resilience for long-term food security in cities. *Ecological Economics, 86*, 224-234. https://doi.org/10.1016/j.ecolecon.2012.06.018

Coles, A. & Wallace, T. (Eds.). (2005). *Gender, water and development.* New York, NY: Bloomsbury Publishing.

Gleick, P. H. (1993). Water and conflict: Fresh water resources and international security. *International Security, 18*(1), 79-112. Retrieved from http://www.jstor.org/stable/2539033.Accessed: November 11, 2017.

Grey, D., & Sadoff, C. W. (2007). Sink or swim? Water security for growth and development. *Water Policy, 9*(6), 545-571. https://doi.org/10.2166/wp.2007.021

Harrington, L. W., & Fisher, M. J. (Eds.). (2014). Water scarcity, livelihoods and food security: Research and innovation for development. New York, NY: Routledge.

Hlavinek, P., Kukharchyk, T., Marsalek, J., &Mahrikova, I. (Eds.).(2006). *Integrated urban water resources management*. Dordrecht, the Netherlands: Springer.

Huntjens, P., Pahl-Wostl, C., Rihoux, B., Schlüter, M., Flachner, Z., Neto, S.,...Kiti, I. N. (2011). Adaptive water management and policy learning in a changing climate: a formal comparative analysis of eight water management regimes in Europe, Africa and Asia. *Environmental Policy and Governance, 21*(3), 145-163. https://doi.org/10.1002/eet.571

Lawrence, D. S. (2015). *Physical hydrology*. Long Grove, IL: Waveland Press.

Maharaj, N. (2003). *The gender approach to water management: Lessons learnt around the globe*. Delft, the Netherlands: Gender and Water Alliance.

Meinzen-Dick, R. S., &Bruns, B. R. (Eds.). (2000). *Negotiating water rights*. New Delhi, India: VistaarPublications.

Oki, T., &Kanae, S. (2006). Global hydrological cycles and world water resources.*Science, 313*(5790), 1068-1072. https://doi.org/10.1126/science.1128845

Patra, K. C. (2008). *Hydrology and water resources engineering*. Oxford, UK: Alpha Science International.

Reddy, V. R., & Dev, M. S. (Eds.). (2006). *Managing water resources: Policies, institutions, and technologies*. Oxford, UK: Oxford University Press.

Pahl-Wostl, C., & Sendzimir, J. (2005). *The relationship between IWRM and adaptive water management: NeWater Working Paper no. 3*. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.84.7963&rep=rep1&type=pdf.Accessed: November 10, 2017.

Subramanya, K. (1994). *Engineering hydrology*. New Delhi, India: Tata McGraw-Hill Education.

Sultana, F., & Loftus, A. (Eds.). (2012). *The right to water: Politics, governance and social struggles*. New York, NY: Earthscan.

Tortajada, C. (2014). IWRM revisited: from concept to implementation. *International Journal of Water Resources Development, 30*(3): 361-363. https://doi.org/10.1080/07900627.2014.937085

Trenberth, K. E. (2011). Changes in precipitation with climate change. *Climate Research, 47*(1/2), 123-138. https://doi.org/10.3354/cr00953

Pangare, V., Pangare, G., Shah, V., Neupane, B. R., &Rao, P. S. (2007). *Global perspectives on integrated water resources management: A resource kit*. New Delhi, India: Academic Foundation.

Vörösmarty, C. J., McIntyre, P. B., Gessner, M. O., Dudgeon, D., Prusevich, A., Green, P., Davies, P. M. (2010). Global threats to human water security and river biodiversity.*Nature*, *467*(7315), 555-561. https://doi.org/10.1038/nature09440

DMC 513: Disaster Governance and Global Protocols (100 Marks; 3 Credits)

Course Objectives

In this course will orient students on the global treaties and protocols related to environment, disaster management and climate change and will be able to relate those clauses with national policies. Furthermore, the course will focus on the practices of governance in the field of disaster and risk management.

Course Outline

Introduction to Governance: Definition, indicators, actors of governance; application of the concept of governance to environment, risk, and disaster; global governance: meaning and its relevance to disaster management; Smart Disaster Governance— Meaning, spheres and elements of smart disaster governance, strategies of implementing smart disaster governance.

Origin and meaning; indicators of good disaster governance; resource mobilization in disaster governance; relevance of governance in different phases of disaster management (mitigation, preparedness, response, and recovery); disaster governance opportunities and challenges; significance of governance in DRR, Accountability in DRR (Evolving interpretations of accountability, role of accountability); transparency in DRR (meaning, role of transparency)

Theories and Approaches to Disaster Governance: Theories-**t**heory of planned behavior**,** protection motivation theory**,** theory of collective action; Approaches - **t**op-down centralized approach**,** bottom-up community-based management approach, community management plus approach, partnership approach

Actors, Community and Disaster Governance: Role of state actors- public agencies, local government; Role of non-state actors- NGOs, civil society, donor, and international organizations, Community participation in DRR, role and responsibilities of women, role of local knowledge, capacity-building of community, community mobilization, external agency support

Risk Governance Conventions and declaration: Conceptualization of environmental and risk governance; indicators and modes of environmental governance. Ramsar Convention (1971), UNCLOS (1982), Vienna Convention (1985), Convention of Biological Diversity (1992), UNFCCC (1992), Inter-Governmental Panel on CC. The Dhaka Declaration, 2015+1 on Disability and Disaster etc.

Protocols to Environment, Disaster Management and Climate Change:

a) UN Conference on Human Environment, RIO Earth summit, RIO + 20
b) Yokohama Strategy, HFA, SFDRR
c) Montreal Protocol, Kyoto Protocol, Paris Agreement

Suggested Readings

Ahrens, J. and Rudolph, P.M. (2006) "The Importance of Governance in Risk Reduction and Disaster Management". *Journal of Contingencies and Crisis Management* 14(4): 207-220.

Amaratunga, D., Haigh, R., & Hettige, S. (2016). The role of accountability within disaster risk governance. In *The 6th International Building Resilience Conference 2016: Building Resilience to Address the Unexpected* (pp. 688-698). Massey University.

Arts, B. and Leroy, P (eds.) (2006) *Institutional Dynamics in Environmental Governance*. Springer: Dordrecht. Handmer, J.W. and Dovers, S. 2007.

Driessen, Peter PJ, et al. "Towards a conceptual framework for the study of shifts in modes of environmental governance–experiences from the Netherlands." *Environmental policy and governance* 22.3 (2012): 143-160.

Gall, M., Cutter, S. L., & Nguyen, K. (2014). Governance in disaster risk management (IRDR AIRDR Publication No. 3). *Beijing: Integrated Research on Disaster Risk*.

Jones, S., Manyena, B., & Walsh, S. (2015). Disaster risk governance: evolution and influences. In *Hazards, risks, and disasters in society* (pp. 45-61). Academic Press.

Lemos, Maria Carmen, and Arun Agrawal. "Environmental governance." *Annual review of environment and resources* 31.1 (2006): 297-325.

Miller, M. A., & Douglass, M. (2016). Disaster governance in an urbanising world region. In *Disaster governance in urbanising Asia* (pp. 1-12). Springer, Singapore.

Pierre, Jon (eds) (2000). Debating Governance, Oxford University Press

Shahat, E., Hyun, C. T., & Yeom, C. (2020). Conceptualizing smart disaster governance: An integrative conceptual framework. *Sustainability*, *12*(22), 9536.

Shaw, R. (2012). Overview of community-based disaster risk reduction. In *Community-based disaster risk reduction*. Emerald Group Publishing Limited.

Thompson, D. D. (2019). *Disaster risk governance: Four cases from developing countries*. Routledge.

Tierney, K. (2012). Disaster governance: Social, political, and economic dimensions. *Annual Review of Environment and Resources*, *37*(1), 341-363.

The Handbook of Disaster and Emergency Policies and Institutions (2004) Earthscan: London. Henderson, L.J. 2004.

DMC 514: Disaster and Development (100 Marks; 3 Credits)

Course Objectives

The course is meant to provide a consolidation of awareness that what we consider a disaster can be interpreted in terms of development, and that the right type of development reduces disasters. This course will impart lessons related to reasons why we should focus on disaster reduction and sustainable development as part of the same agenda. Furthermore, it will introduce many of the key ideas, terminologies, implications, and applications that are part of the interconnected world of disaster and development.

Course Outline

Introduction to Development Studies: The Meaning of Development— Introduction to development: definitions and interpretations of development, various dimensions, key aspects, Milestones in developmental thinking; Development Studies— Origin, evolution

(from development economics to development studies), nature, focus, utility, and trends; Common Characteristics of Developing Nations— Defining the developing world, the structural similarity and diversity of developing countries.

Classic Theories of Growth and Development: Development as Growth and the Linear-stages approach, Structural Change model, the International Dependence Revolution, and the Neoclassical Counterrevolution with Market Fundamentalism; Classic Theories of Growth and Development: Balanced and Unbalanced Growth, Rostow's Stages of Growth, Harrod-Domar Growth Model, The Lewis Theory of Development, Slow Model, Endogenous Growth Theories

Social Development- Theories and Approaches: Defining social development; Comparative Society; Social and Cultural Change; Comparative Social Security Approach; Comparative Gender Systems; Human Ecological Relationships; Social risk, social capital and social security; Social development and markets; Equity and social exclusion; Social development and poverty alleviation; NGOs and civil society in Social Development; The social development policy process

Poverty- Concept, Strategies and Programming: Understanding Poverty— The Meaning of Poverty, Vicious Circle of Poverty, Causes of Poverty, Income Vs Multidimensional Concept of Poverty, Absolute and Relative Poverty, Subjective and Objective Approach of Poverty, Chronic Poverty, Social Exclusion; Measuring Poverty— Operationalizing the Definition of the Poor, Determination of Poverty Lines, Measurement of Absolute Poverty: Head Count Index, Income Gap Index, Sen Index, Foster-Greek-Thorbecke (FGT), Measurement of Relative Poverty: Income Inequality, Gini Coefficient, Lorenz Curve; Composite Indicators— Human Development Index (HDI), Human Poverty Index (HPI), Physical Quality of Life Index (PQLI), Relation Between HDI & HPI, Compare GNP and HDI, Happiness Index; Entitlements, Poverty and Famines; Micro Credit – as a Tool of Poverty Alleviation: Experience from Bangladesh; Poverty Reduction through supporting international trade, aiding economic growth, and SME facilitation activities

Sustainable Development: Principles of Sustainability; History and Evaluation of the Concept; Global Development Frameworks; Sustainable Development Goals (SDGs)**;** SWOT Analysis of the SDGs**;** Linking SDGs with Disaster Risk Reduction Agendas; Key Actors;

National Development Plans— Five Year Plans, Poverty Reduction Strategy Paper, Delta Plan 2100 etc.; The future of sustainable development

Disaster, Environment and Development: Development opportunities in post disaster scenarios; Viewing disasters from perspectives of development; How do disasters influence development; global environmental change, vulnerability, disaster; Changes in capitalism and global shifts in the distribution of hazard and vulnerability; Gender, disaster, and development: the necessity for integration; Natural disasters, adaptive capacity, and development in the twenty-first century

Local Contexts and Global Pressures: The social construction of natural disaster; Vulnerability reduction and the community-based approach; Risk regimes change and political entrepreneurship; Disaster as manifestation of unresolved development challenges; Ecological reconstruction

Mainstreaming Disaster Risk Reduction for Sustainable Development: Principles of Mainstreaming; Strategic Approach of Mainstreaming; Mainstreaming in Development Sector; Mainstreaming within Project Cycle Management; Mainstreaming within Subnational Planning; Mainstreaming Disaster Risk Reduction when implanting the new global frameworks

Macroeconomic Risk and Resilience: Disaster and Development Debate; Developmental Implications of Natural Disasters; Developmental Drivers of Disaster Impact; Impacts of Disaster on Macroeconomic Growth; Way Forward

Public Policy, Disaster and Development: Historical Roots of Public policy and Analysis (Trends in Policy Analysis); Policy Analysis as Policy Science; Public Policy – The Players and Ideas in Disaster and Development; Policy Analysis and Globalization in Disaster and Development Agendas; Disaster and Development Diplomacy; The future of Disaster and Development Policies

Suggested Readings

Meir, G. and Rauch,.J.E (2000), Leading Issues in Economic Development. 7th Edition. Oxford: Oxford University Press.

Potter, Robert, B. (2004), 'The Provenance of Progress in Development Studies', Progress in Development Studies, 4(2): 95-98.

Rapley J. (2002), Understanding Development: Theory and Practice in the Third World. Boulder and London: Lynne Rienner Publishers.

Robinson, Joan (1979), Aspects of Development and Underdevelopment. London: Cambridge University Press

Taylor, L., S. Mehrotra, and E. Delamonica (1997), "The Links Between Economic Growth, Poverty Reduction and Social Development: Theory And Policy", in S. Mehrothra and R. Jolly (Eds.) Development with a Human Face. Oxford: Oxford University Press, 435-467.

Collins, A (2009), Disaster and Development. Canada and USA, Routledge Publication.

Pelling (2003), Natural Disasters and Development in Globalizing World. London and New York, Routledge Publication.

UN ESCAP (2017) Mainstreaming Disaster Risk Reduction for Sustainable Development: A Guidebook for the Asia-Pacific

THIRD SEMESTER

DMC 601: Public Health in Disaster Management (100 Marks; 3 Credits)

Course Objectives

This course will cover necessary knowledge and skills for understanding basic epidemiology, public health emergencies and preparedness of disasters for improving capacities and resilience to disasters.

Course Outline

Introduction to epidemiology and public health: Basic epidemiology including definition of epidemiology, and public health; Introduction to prevalence, incidence, rates, ratio, proportion; Measurements of mortality and morbidity.

Disaster epidemiology: Disaster epidemiology and factors to consider; Health problems common to all natural disasters; Immediate health problems and needs related to the type of disaster; Primary health care in emergencies

Disaster and public health: Identify, assess & monitor disaster risks; Public health emergency preparedness and management; Develop mental health services; Vaccination and Vaccination Programs; Impact of disaster on public health—Risk of Outbreaks Following Disasters; Long-Term Health Effects Caused by Disasters; Setting Up a Disease Surveillance System; Presentation and Interpretation of Collected Data

Disaster, vulnerability, and health (migrants): Planning Settlements and Camps; Educational and protection issues; Livelihood, food, and shelter issues; Health care services and access.

Disaster, vulnerability, and health (General people): Gender and disaster; Child protection in disaster; Persons with disabilities and intersectionality, and disaster

Disaster and WASH: Water supply; Standard WASH; Importance of WASH in disasters; WASH Summary indicators; WASH intervention and its impact

Disaster and disease outbreak: Communicable and non-communicable diseases; Infectious diseases following disasters; Traits and risk factors; Preparedness, response, and control

Health care services in disasters: Human resource management; Infrastructure and logistic; Emergency medical support for disaster survivors; Surveillance and outbreak investigation; Hospital responses in disasters; Telecommunication; Transportation

Food and Nutrition: Expected Consequences of Disasters on the Food Chain**;** Possible Adverse Effects of Large-Scale Food Distribution**;** Setting Priorities**;** Immediate Relief**;** Food insecurity and Surveillance

Public health policy in disasters: Preparedness in the health sector**;** Health Policy and Legislation on Disasters**;** Action plan for public health in disasters; National planning for disaster management

Suggested Readings

Ciottone, Darling; Auf Der Heide, Anderson; and Suner, Jacoby Noji (2006) Disaster Medicine, 1600 John F. Kennedy Boulevard, Suite 1800, Philadelphia, PA 19103-2899, ISBN-13: 978-0-323--03253-7

Dori B. Reissman, Merritt D. Schreiber, James M. Shultz, and Robert J. Ursano (2010) 'Disaster Mental and Behavioral Health'. In Koenig, Kristi L. and Schultz, Carl H. (ed) Disaster Medicine

Frazier, T. G., Wood, E. X., & Peterson, A. G. (2020). Residual risk in public health and disaster management. *Applied Geography*, *125*, 102365.

Koenig, Kristi L. and Schultz, Carl H. (2010) Disaster Medicine: Comprehensive Principles and Practices. Cambridge University Press, Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo, Delhi, Dubai, Tokyo, ISBN-13 978-0-511-90175-1

Math, S. B., Nirmala, M. C., Moirangthem, S., & Kumar, N. C. (2015). Disaster management: mental health perspective. *Indian journal of psychological medicine*, *37*(3), 261-271.

Shoaf, K. I., & Rottman, S. J. (2000). The role of public health in disaster preparedness, mitigation, response, and recovery. *Prehospital and Disaster Medicine*, *15*(4), 18-20.

DMC 602: Geographic Information System and Remote Sensing (100 Marks; 3 Credits)

Course Objectives

This highly specialized course has architectonically been designed to bolster the learners' technical and quantitative acumen for a deeper and fuller understanding of the physicality of climate and weather extremes and other aspects of any disaster of gigantic magnitude. With GIS, GPS, and Remote Sensing, the students will be introduced with some of the most important tools and techniques that crucially helpin mapping, zoning,imaging, designing, figuring, pinpointing out solutions and many critical interventions of disaster responses. The students will learn how most important warning systems, prediction and projections, decision making sciences, mitigation and recovery strategies are significantly engineered with increasing assistance from these tools and how a more appropriate application of them with more technological advancement can contribute to the whole disaster management cycle. The hands-on practical sessions help the intended learners practically deal with simulations for applying their theoretical knowledge.

Course Outline:

Basic Concepts of GIS: Definition of GIS, Definition of data, database and information, Database management in GIS environment, Various technique of data input into computer, Digitizing Geographical features like points, lines and polygons, Problems of digitizing and scanning data, Vector and Raster data types, their advances and disadvantages in GIS application, Conversion of Vector data into Raster data and vice versa, Masking to separate a particular area for intensive study Application of GIS in various fields, History of GIS**.**

Remote Sensing: Fundamental of Remote Sensing, platform and sensors, image interpretation, digital image processing, microwave remote sensing, remote sensing application, Indian space programme, future satellites for disaster management; Case studies

Data Manipulation Techniques: Interpolation and its use, Buffer, application of buffer and their problem, Distance and its, application, Reclass and its application in GIS environment and Overlay techniques and their potential uses in various fields, Sub-model formation, Weighting and Multi-criteria Evaluation (MCE) for selecting suitable site for various establishments to safeguarding the environment.

Mapping Concepts: Definition of map and map features, Characteristics of Map, Scale of map and its importance, Concept of layer, topographical maps, thematic maps, attribute information and display information.

Application of GIS for Resource Identification and Management: Concept of image enhancement such as colour composite preparation, Unsupervised and Supervised Image Classification technique, Image classification for land use, Land use change detection over time, Application of satellite image in combination with sea surface temperature, GPS, GIS and fish catch data to maximize the fish catch in minimum time and effort.

Remote Sensing and GIS for Disaster Management: Geological and human made disasters; flooding, earthquakes, tsunamis, cyclones, volcanic, thermal, landslides, wildfires (urban and forest), coal fires, droughts, land degradation, deforestation, coastal hazards, air and water pollution, oil spills in water.

GIS and RS - Practical (01 Credit)

Hands-on Tutorial How to Incorporate Geographical Features: (a) Digitizing Geographical features like points, lines, and polygons; (b) Conversion of Vector data into Raster data and vice versa; (c) Making window to have a particular area as study of interest; (d) Mask preparation to separate a particular area for intensive study; (e) Preparation of continuous surface map from tabular data (preparation of water quality, pollution, temperature, rain fall map etc.); (f) Application of Buffer, Distance, Reclass, weighting procedure and Overlay technique in GIS environment to safeguard the environmentally sensitive areas.

Concept of Image Classification and Enhancement for Resource Identification: (a) Preparing false color composite image for better visual discrimination; (b) Unsupervised and Supervised Image Classification technique to classify various land use pattern (water body, mangrove, other forested land and agricultural crop separation technique); (c) Land use change detection over time (Time series analysis).

Suggested Readings

Bernhardsen, T. (2002). *Geographic information systems: An introduction.* New Delhi, India: Wiley.

Bonham-Carter, G. F. (1994).Geographic information systems for geoscientists: Modeling with GIS. Burlington, MA: Pergamon.

Burrough, P. A., McDonnell, R. A., Lloyd, C. D. (2015). *Principles of geographical information systems* (3rded.). Oxford, England: Oxford University Press.

Chang, K. (2012).Introduction to geographic information systems. New York, NY: McGraw-Hill.

DeMers, M. N. (2000). *Fundamentals of geographic information systems* (4thed.). Hoboken, NJ: John Wiley & Sons.

Gibson, P. J. (2000). Introductory remote sensing: Principles and concepts. New York, NY: Routledge.

Heywood, I., Cornelius, S., & Carver, S. (2006). *An introduction to geographical information systems* (3rd ed.). Essex, England: Pearson Education.

Jensen, J. R. (2007): *Remote sensing of the environment: An Earth perspective*(2nd ed.). Essex, England: Pearson Education.

Lillesand, T. M., Kiefer, R. W., &Chipman, J. W. (2000). *Remote sensing and image interpretation* (5th ed.). Hoboken, NJ: John Wiley & Sons.

Nayak, S., & Zlatanova, S. (Eds.). (2008). *Remote sensing and GIS technologies for monitoring and prediction of disasters.* Berlin, Germany: Springer-Verlag. https://doi.org/10.1007/978-3-540-79259-8

Sabins, F. F. (1987). *Remote sensing: Principles and interpretation.* Long Grove, IL: Waveland Press

Yeung, A. K. W., & Lo, C. P. (2004). *Concepts and techniques of geographic information systems.* New Delhi, India: Prentice-Hall.

DMC 603: Thesis (200 Marks; 6 Credits)

The thesis will be supervised by the faculty member(s). As part of the defense, a thesis student must attend in a thesis seminar which will be organized by Institute before submitting the final report.

DMC 604: Research Monograph (100 Marks; 3 Credits)

A student who belongs to non-thesis group can work for research monograph which will be supervised by a faculty member. After submitting the report student shall appear in the viva-voce.

DMC 605: Internship (100 Marks; 3 Credits)

A student willing to engage in disaster management or relevant organizations as part of academic work can choose Internship. The internship work will be supervised by a faculty member and a top-level employee/shift in charge working in the organization. During the submission of internship report, student must submit an attachment/engagement certificate from the organization signed by the top management or head of human resource management. After submitting the report student shall appear in the viva-voce.

DMC 606: Urban Disaster Risk Reduction (100 Marks; 3 Credits)

Course Objectives

The aim of the course is to provide knowledge on rapid urbanization in developing countries and the management of urban disasters. The aim is to create understanding of the link between uncontrolled urban growth and its potential for resulting in disasters and strategies to manage such disasters. A proper urban and regional planning, architectural design of buildings, water and sanitation management, and other issues of urban resource management will be discussed here. The risks of urban expansions and indiscriminate growth along with the migration and massive pressure on urban spaces and the subsequent dangers of disasters will also be focused. The widespread vulnerabilities associated and projected in an increasing urbanized world from diverse perspectives especially in Bangladesh will also be analyzed critically.

Course Outline

Introduction: Cities and Disaster, Urban, Rapid Urbanization in Bangladesh and Urbanism, Theories and Models in Urban Planning, Urbanization and Disasters

Configuring Urban Disasters: The Problems in Dealing with Urban Disasters; Application of Building Codes Disaster Management- A Case of Bangladesh, Cities and Catastrophe: Risk, Vulnerability, and Urban Disaster, Trends in Disaster Occurrence, Impact, Frequency and Regional Distribution, Elements of Risk and Vulnerability in Cities (Social, Physical, Institutional, Economic), Urbanization, Climate Change and Risk Reduction, Roles of Urban Governance and Disaster Management- Like RAJUK, DCC, WASA, etc.

Theories and Perspectives: Theories Involving Urbanization and Related Disasters; Urban Safety, Comprehensive Theory of Urban Disaster Management

Risk Assessment: Advanced Methods frisk Assessment; Damage Estimation in the Cities, Post disaster Recovery etc.

Seismic Hazards and Management: Outline of Natural Disasters in the World, Mechanisms of Earthquake Occurrence and Seismic Activities in the World; Earthquake in Urban Areas, Probabilities in Dhaka City, Earthquake and Disaster Risk assessment, Earthquake and Postdisaster Management

Urban Flood, Waterlogging, and Disaster Management: Definition of Urban Flood, Urban Waterlogging, and Disaster Risk Reduction; Urban Planning as Tools of Risk Reduction

Roles of Different Actors and Drivers: Disaster Risk Management, Urban Governance Structures and Function, Urban Disaster Governance, Trends in Local-level DRM Practice, Key Concepts of Disaster Risk Management, and the Role of Local Institutions

Tools and Techniques: Technological Tools for Urban Disaster Management, Institutional Arrangements and GIS Mapping, Application of Satellite Image Remote Sensing and Disaster Management

Suggested Readings

Aalbers, M. B. (2012). Subprime cities: The political economy of mortgage markets. Chichester, UK: Wiley-Blackwell.

Asian Disaster Preparedness Center (ADPC) (2004). *The Asian urban disaster mitigation program (AUDMP)*. Retrieved from http://www.adpc.net/igo/category/ID193/doc/2013-n63Uly-ADPC-AUDMP.pdf.Accessed: November 8, 2017.

Bulkeley, H. (2012). *Cities and climate change*. Abingdon, UK: Routledge.

Cheng, F. Y., &Sheu, M.-S. (2011). Urban disaster mitigation: The role of engineering and technology. New York, NY: Elsevier.

Donovan, J. (2013). Designing to heal: Planning and urban design response to disaster and conflict. Collingwood, Australia: CSIRO Publishing.

Fainstein, S. S. (2010). *The just city*. New York, NY: Cornell University Press.

March, A., Kornakova, M. (Eds.). (2017). *Urban planning for disaster recovery*. Oxford, UK: Butterworth-Heinemann.

Miller, M. A., & Douglass, M. (Eds.). (2016). *Disaster governance in urbanizing Asia*. Singapore, Singapore: Springer. https://doi.org/10.1007/978-981-287-649-2

Shaw, R., Atta-ur-Rahman, Surjan, A., &Parvin, G. A. (2016). *Urban disaster and resilience in Asia*. Oxford, UK: Butterworth-Heinemann.

Shaw, R., Srinivas, H., & Sharma, A. (Eds.). (2009). *Urban risk reduction: An Asian perspective.* Bingley, UK: Emerald.

Kreimer, A., Arnold, M., & Carlin, A. (Eds.). (2003). *Building safer cities: The future of disaster risk.* Washington, DC: World Bank.

DMC 607: Earthquake Preparedness and Management (100 Marks; 3 Credits)

Course Objectives

This course focuses primarily on the geologic causes and physical effects of earthquakes and understanding of strategies for reducing potential damage and loss of life due to this destructive hazard. The objective is to extend skills and know-hows to be able to contribute to the development of organized approaches for earthquake vulnerability reduction. Vulnerability and risk assessment, preparedness and awareness building, rehabilitation issues, structural and nonstructural vulnerability reduction methods along with the major Earth system dynamics will be elucidated here. Evolution of the early warning systems and mitigation techniques along with a detailed post-earthquake management procedure will be discussed in a systematic way to enable the students a hands-on experience.

Course Outline

Introduction to Earthquake: Defining Earthquake and Understanding Its Scientific Basis; Critical Areas of Concern in Earthquake Management, Overview of Past Initiatives in Bangladesh, Recent Initiative in Bangladesh, Earthquake Engineering Education, the Approach to Earthquake Management, Framework for Earthquake Management

Guidelines for Earthquake Management: Guidelines for Earthquake Management, Mainstreaming Earthquake Mitigation, Six Pillars of Earthquake Management, Timeline for Implementation. Disaster Management Plans, Institutional Mechanisms for Implementation

Earthquake-Resistant Design and Construction of New Structures: Need for Making All New Constructions Earthquake-Resistant, Time Frame and Milestones, Institutionalization of Earthquake-Resistant Design and Construction, Compliance Review, Time Frame for Compliance of Seismic Safety of New Constructions

Seismic Strengthening and Retrofitting of Lifeline and Priority Structures: Need for Seismic Strengthening of Existing Structures, Prioritization of Structures, and Structural Safety Audit of Critical Lifeline Structures. Public Awareness Campaigns, Seismic Strengthening and Retrofitting, Financial Allocations for Carrying out Selective Retrofitting.

Regulation and Enforcement: Building Codes and Other Safety Codes, Techno-Legal Regime, Licensing and Certification of Professionals, Compliance Review, Techno-Financial Regime, Earthquake Resistant Construction in Rural and Semi-urban Areas, Schedule for Regulation and Enforcement.

Awareness and Preparedness: Public Awareness, Awareness Drives for Specific Target Groups, Earthquake Preparedness, Medical Preparedness, Disaster Management Plans, Schedule for Awareness and Preparedness Activities.

Capacity Development: Earthquake Education, Capacity Development, Training, Capacity Building for Professionals, R&D, Documentation. Schedule for Capacity Building (including Education, Training, R&D, and Documentation)

Earthquake and Response: Earthquake Response, Emergency Search and Rescue (SAR), Emergency Relief, Incident Command System (ICS), Community Based Disaster Response, Involvement of the Corporate Sector, Specialized Teams for response. Improving Earthquake Response, Emergency Logistics, Emergency Medical Response, Schedule for Response Activities

Suggested Readings

Adger, W. N., Hughes, T. P., Folke, C., Carpenter, S. R., &Rockström, J. (2005).Social-ecological resilience to coastal disasters.*Science*, *309*(5737), 1036-1039. https://doi.org/10.1126/science.1112122

Al-Hussaini, T., Chowdhury, I, N., &Noman, M. N. A. (2015). *Seismic hazard assessment for Bangladesh: Old and new perspectives.* Paperpresented at the First International Conference on Advances in Civil Infrastructure and Construction Materials (CICM-2015) Conference, MIST, Dhaka, Bangladesh.

Behnam, B. (2017). Post-earthquake fire analysis in urban structures: Risk management strategies. Boca Raton, FL: CRC Press.

Dowrick, D. J. (2003). *Earthquake risk reduction*.Chichester, England: Wiley.

Dowrick, D. J. (2009).*Earthquake resistant design and risk reduction* (2nded.). Singapore, Singapore: John Wiley & Sons.

El-Sabh, M. I., Venkatesh, S., Lomnitz, C., &Murty, T. S. (1998). *Earthquake and atmospheric hazards: Preparedness studies* (*Vol. 16, No. 2-3*). Dordrecht, the Netherlands: Springer Science & Business Media. https://doi.org/10.1007/978-94-011-5034-7

Gasparini, P., Manfredi, G., &Zschau, J. (Eds.).(2007). *Earthquake early warning systems.* Berlin, Germany: Springer-Verlag.

Kisslinger, C., &Rikitake, T. (1985). *Practical approaches to earthquake prediction and warning*. Dordrecht, Holland: Springer Science &Business Media.

Özerdem, A., & Jacoby, T. (2006). Disaster management and civil society earthquake relief in Japan, Turkey and India. London, UK: I. B. Tauris& Co.

Shaw, R., Kobayashi, K. S. H., & Kobayashi, M. (2004). Linking experience, education, perception and earthquake preparedness. *Disaster Prevention and Management: An International Journal*, *13*(1), 39-49. https://doi.org/10.1108/09653560410521689

Smith, K., & Petley, D. N. (2009). *Environmental hazards: Assessing risk and reducing disaster* (5th ed.). London, UK: Routledge.

Thomalla, F., Downing, T., Spanger-Siegfried, E., Han, G., &Rockström, J. (2006). Reducing hazard vulnerability: Towards a common approach between disaster risk reduction and climate adaptation. *Disasters*, *30*(1), 39-48. https://doi.org/10.1111/j.1467-9523.2006.00305.x

U. S. Federal Emergency Management Agency (2002).*Earthquake hazard mitigation handbook*.Retrieved from https://www.fema.gov/media-library-data/20130726-1712-25045-5307/eq_hazmit_handbook_for_publick_facilities.pdf.Accessed: October 20, 2017.

Wasti, S. T., &Ozcebe, G. (Eds.). (2006). *Advances in earthquake engineering for urban risk reduction.* Dordrecht, the Netherlands: Springer.

DMC 608: Disaster and Risk Communication (100 Marks; 3 Credits)

Course Objectives

The principal objective of this course is to introduce concepts and ideas dealing with appropriate communication strategies to address unprecedented immediacy, for communication plays vitally in the whole gamut of emergency management. Early warning dissemination mechanism, proper communication for situational actions, and other communication practices will be detailed here to orient the students to communication dynamics of disasters and emergencies. From science communication to emergency management, this tailor-made course will offer scientific notions of risk, crisis, emergency, and disaster communication aspects viz. emergency handling, extempore actions, probability of exposure to disasters, further communication strategies and planning, communication tools and techniques in disasters, disaster reporting, new communication mechanism, disaster information management, and public awareness program. Students are expected to acquire specialized knowledge through theoretical and practical means by assimilating the mainstays of the communications.

Course Outline

Understanding Disaster Communications: Definition and Types of Communication, Nature of Communication, Communication Context, Communication Skills, Communication Apprehension, Perception, Audience, Development Communication, Definition of Disaster Communications, Communication Science in Disaster Management.

Theoretical Approaches and Model: Agenda Setting theory, Cultivation Theory, Social Cognitive Theory, Social Learning Theory, Representation Theory, Co-cultural Communication Theory, Diffusion of Innovation, Convergence Theory, Communication Model, CERC Model.

Tools and Techniques for Disaster Communications: Use of Communication Tools in Disaster Management, Information Dissemination Techniques, Telecommunication, Satellite Communication, Submarine Communication, Internet, Mobile Technology, New Communication Mechanism, Alternative Communication Solutions, Communication Challenges and Best Practices.

Disaster Information Management: Nature of Information in Disaster Situations, Information Management Planning, Data Sources, Data Collection and Organization, and Disaster Management Information Systems.

Communication Strategy and Plan: Principles of Disaster Communication Strategy, Prerequisite for Communication Planning, Stages of Communication Planning, Selection of Media and Media Plan, Communication Plan and Disaster Risk Reduction, Disaster phases and Communication, Disaster Communication Ethics

Early Warning and Communication: Early Warning of Disasters, Prediction and Forecasting, History of Early Warning Systems [EWS], Recent Development of EWS, Elements of Early Warning, Community Based EWS, Early Warning and Communication Team, Developing Early Warning Systems, Application of Warning Operations, Interactive Voice Response.

Disaster, Internet, and Social Media: Use of Internet in Emergencies, Resilient Disaster Network, Wireless Network Technology, Internet and Social Networking, Social Media Use in Disaster Situations, Future of Social Media Use During Emergencies, Techniques of Social Media Use in Emergencies, Citizen Journalism and the Social Web.

Working with Media: Media in Modern Society, Functions of Media, Role of Media in Disaster Management, Disaster Reporting and Editing, Disaster Coverage, News Source, Interview Techniques, Collaboration and Coordination, Media Handling Techniques

Developing Messages and Materials: Messages and Disaster phases, Techniques of Developing Effective Message, Message Content, Language, Message format, Managing Myths and Rumors, Production of Communication and Information Materials, Risk and Crisis Mapping

Communication Campaign and Programs: Purpose and Goals of Communication Campaign and Programs, Planning for Disaster Communication Programs; Developing a Campaign Strategy, Training Program, Implementing and Evaluating the Program, Counseling for Disaster Prone People, Raising Public awareness, Disaster Education Program

Suggested Readings

Barrantes, S. A., RodrIguez, M., & Pérez, R. (2009). Information management and communication in emergencies and disasters: Manual for disaster response teams. Washington, DC: Pan American Health Organization.

Center for Disaster Control and Prevention (2014). *Crisis emergency risk communication.* Retrieved from https://emergency.cdc.gov/cerc/resources/pdf/cerc_2014edition.pdf. Accessed: October 31, 2017.

Coppola, D. P., & Maloney, E. K. (2009). Communicating emergency preparedness: Strategies for creating a disaster resilient public. Boca Raton, FL: CRC Press.

Walaski, P. (2011). *Risk and crisis communications: Methods and messages*. Hoboken, NJ: John Wiley and Sons.

DeVito, J. A. (2016). *Essentials of human communication* (9thed.). Essex, England: Pearson.

Harrison, S. (Ed.). (1999). *Disasters and the media: Managing crisis communications.* Hampshire, UK: Palgrave Macmillan.

Haddow, G. D., & Haddow, K. S. (2009). *Disaster communications in a changing media world*. Burlington, MA: Butterworth-Heinemann.

Kapur, G. B., Bezek, S., & Dyal, J. (2016). Effective communication during disasters: Making use of technology, media, and human resources. Oakville, Canada: Apple Academic Press.

Littlejohn, S. W., Foss, K. A., & Oetzel, J. G. (2016). *Theories of human communication* (11th ed.). Long Grove, IL: Waveland Press.

Potts, L. (2014). Social media in disaster response: How experience architects can build for participation. New York, NY: Routledge.

DMC 609: Disaster Economics

Course Objective

The objective of this course is to make the students comprehend about the economic aspects of hazards, disasters, risks, vulnerability, response, and management, which is essential for economic analysis, designing strategies, policymaking, developing, and implementing project or program. The students will learn how economic issues inevitably matter absolutely and remain at the epicenter of any disaster analysis, policy, and action plans. Assessing the economic risks associated with a disaster helps us devise better policies which offers a better edge for maintaining economic health of a disaster-prone society. This course will shed light

on the basics of disaster and climate economics, effects and costs analysis, market dynamics, techniques of measurement, insurance schemes, political economy of disaster management, and alternative disaster scenarios.

Course Outline

Introduction: Basic concepts in economics; Relationship between disaster management and economics: Concepts of disaster economics, Scopes and subject matters of disaster economics, Primary and secondary economic effects from disasters, Direct and indirect economic effects from disasters.

Economic growth, Development and Disaster: Concepts of economic growth and development; Indicators of growth and development; Disasters and economic effects; Disaster incidences and their implications on economic growth and development; Case studies on disasters and their consequences on growth and development; Types of disaster incidents and their effects; Estimating costs of disaster effects; Methods to measure disaster effects: tangible costs, Physical destruction, Intangible costs: health and psychological costs, Costs related to destruction of household disruption, Loss of memorabilia; National, regional, Local and global costs; Cost of migration: internal and external; Stimulus and productivity effects; costs of disaster risk reduction activities; Economic benefits from disaster mitigation; Economics of disaster preparedness and vulnerability reduction; Economics of disaster response; Economics of disaster recovery.

Index and Indicators: Disaster risk index: Disaster prevalent index, Disaster risk measurement index, Disaster deficit index, and Local disaster index, Disaster needs assessment, Indicators for measuring economic vulnerability; Multi response vulnerability assessment

Analysis, Planning, and Mainstreaming: Impact assessment of alternative resilience and adaptation investment; Resiliency investment equilibrium; Approaching human vulnerability-parametric model; Multiple risks and categories, Market analysis; Planning for disaster management: short and long term; Mainstreaming disaster management as a development challenge.

Market Analysis and Disaster: Market, functions and types of market, Market systems, Impacts of disaster on market systems, Market integration, Market modeling, Pre-Crisis

market analysis, Emergency market mapping and analysis, Market development for disaster risk reduction, Global aid market

Finance in Disaster Management: The traditional route, Debt swaps, Blocked funds, Triangular food aid, Trust funds, Disaster insurance, Revolving funds, Central bank assistance, Roles of public and private sector players in disaster management, foreign disaster assistance, Investment, and disaster finance.

Disaster and Political Economy: The nexus between disaster incidents and political economy; The political economy of disaster funds, relief goods, and materials.

Suggested Readings

Benson, C., & Clay, E. J. (2004). Understanding the economic and financial impacts of natural disasters. Washington, DC: World Bank.

Carbonnier, G. (2015). Humanitarian economics: War, disaster and the global aid market. New York, NY: Oxford University Press.

Chakrabarti, P. G., & Bhat, M. R. (2005). M*icro-finance and disaster risk reduction.* New Delhi, India: Knowledge World.

Hallegatte, S. (2014). *Natural disasters and climate change: An economic perspective.* Basel, Switzerland: Springer International Publishing AG. https://doi.org/ 10.1007/978-3-319-08933-1

Hochrainer, S. (2006). Macroeconomic risk management against natural disaster: Analysis focussed on governments in developing countries. Frankfurt, Germany: Deutscher Universitats-Verlag.

Kern, W. (Ed.). (2010). *The economics of natural and unnatural disasters.* Kalamazoo, MI: W.E. Upjohn Institute for Employment Research.

Klein, N. (2014). The shock doctrine: The rise of disaster capitalism. New York, NY: Picador.

Nath, B. N. (2010). *Macroeconomics risk management against natural disaster* (1st ed.). Delhi, India: Navyug Books International.

Oliver, M. J., & Aldcroft, D. H. (2007). *Economic disasters of the twentieth century.* Cheltenham, UK: Edward Elgar.

Pearson, C. S. (2000). *Economics and global environments.* New York, NY: Cambridge University Press.

Rose, A., Prager, F., Chen, Z., Chatterjee, S., Wei, D., Heatwole, N., & Warren, E. (2017). *Economic consequence analysis of disasters: The E-CAT software tool.* Singapore, Singapore: Springer.

United Nations/World Bank (2010). Natural hazards, unnatural disasters: The economics of effective prevention. Washington, DC: World Bank.

DMC 610: Agriculture, Food Security and Disaster

Course Objectives

This course primarily aims at addressing various aspects and dimensions of agriculture, food security, and related key indicators along with their possible pitfalls. It also has a special focus on the role of economic and agricultural growth in eliminating hunger and malnutrition around the world in general and developing economies. The national and international courses of actions and priorities will also be visited in respective chapters to develop a comprehensive understanding of agriculture, food security, and hunger issues. Besides, the important complex of agriculture, food insecurity, and disaster— their correlation in determining sustainability is another major objective.

Course Outline

Introduction: Defining agriculture and food security; Undernourishment around the world; High food price and food security

Measuring Different Dimensions of Food Security: The four dimensions and indicators; beyond undernourishment indicators; the national level food security dimensions with country contexts

Growth, Agriculture and Hunger*:* Income growth and food consumption; contribution of growth to reduce hunger; Role of agriculture growth to economy, poverty, and hunger; smallholder contribution and rural non-farm economy; hunger, agriculture, and sustainable development; Steps towards hunger elimination, ensuring food security in protracted crisis; the key drivers to change hunger situation; adapting climate change in smallholder agriculture

National and International Responses: Aid flow to countries suffering from hunger; humanitarian response to food insecurity; social protection for the poor; short and long-term responses; famine and social response; Bangladesh agricultural policy

Food Security- The Way forward: Enabling environment to reduce hunger; revisiting policies and institutional capacity; financing and the way forward

Conflict, Food Security, and Nutrition: Nexus among conflict, food security, and nutrition; progress and new concerns regarding food security; role of food security in building peace

Suggested Readings

Bohle, H. G., Downing, T. E., & Watts, M. J. (1994). Climate change and social vulnerability: Toward a sociology and geography of food insecurity. *Global Environmental Change*, *4*(1), 37-48. https://doi.org/10.1016/0959-3780(94)90020-5

Del Ninno, C., Dorosh, P. A., & Smith, L. C. (2003). Public policy, markets and household coping strategies in Bangladesh: Avoiding a food security crisis following the 1998 floods. *World Development*, *31*(7), 1221-1238. https://doi.org/10.1016/S0305-750X(03)00071-8

Drèze, J., &Sen, A. K. (1989). *Hunger and public action*. Oxford, UK: Oxford University Press.

Drèze, J., &Sen, A. K. (1999). *India: Economic development and social opportunity*. Oxford, UK: Oxford University Press.

Faaland, J., & Parkinson, J. R. (1976). *Bangladesh: The test case of development*. Boulder, CO: Westview Press.

FAO, IFAD, & WFP. (2015). *The state of food insecurity in the world 2015: Meeting the 2015 international hunger targets: taking stock of uneven progress*. Retrieved from http://www.fao.org/3/a-i4646e.pdf.Accessed: November 10, 2017.

Gastwirth, J. (1975). The estimation of a family of measures of economic inequality. *Journal of Econometrics, 3*(1), 61-70. https://doi.org/10.1016/0304-4076(75)90067-6

Habiba, U., Abedin, M. A., Hassan, A. W. R., & Shaw, R. (Eds.). (2015). *Food security and risk reduction in Bangladesh*. Tokyo, Japan: Springer.

Hardin, C. M. (Ed.) (1969). *Overcoming world hunger*. Cliffs, NJ: Prentice-Hall.

Hossain, M., Naher, F., &Shahabuddin, Q. (2005). Food security and nutrition in Bangladesh: progress and determinants. *Electronic Journal of Agricultural and Development Economics, 2*(2), 103-132. Retrieved from https://EconPapers.repec.org/RePEc:fao:tejade:v:2:y:2005:i:2:p:103-132. Accessed: November 11, 2017.

International Food Policy Research Institute (2015). *2014–2015 global food policy report*. Retrieved from http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/129072. Accessed: November 10, 2017.

Kumar, M. D., Sivamohan, M. V. K., &Bassi, N. (2013). Water management, food security and sustainable agriculture in developing economies. New York, NY: Routledge.

Lobell, D. B., Burke, M. B., Tebaldi, C., Mastrandrea, M. D., Falcon, W. P., & Naylor, R. L. (2008). Prioritizing climate change adaptation needs for food security in 2030. *Science, 319*(5863), 607-610. https://doi.org/10.1126/science.1152339

Sen, A. (1981). Poverty and famines: An essay on entitlement and deprivation. Oxford, UK: Oxford University Press.

Sivakumar, M. V. K., Motha, R. P., & Das, H. P. (Eds.). (2005). *Natural disasters and extreme events in agriculture: Impacts and mitigation*. Berlin, Germany: Springer-Verlag.

DMC 611: Occupational Health and Safety (100 Marks; 3 Credits)

Course Objectives

This course will provide the students a fundamental understanding of occupational health and safety. Besides, introducing the core ideas, it aims at addressing the roles and responsibilities of occupational health and safety practitioners including risk management, hazard recognition, control, and prevention, safety management systems in the workplace. The nature and types of hazards associated with workplaces and their specific management techniques will be elucidated. By acquiring knowledge through the course, the students will develop theoretical and technical skills required to create, implement, and evaluate corporate health and safety programs and systems focused on the prevention of occupational injury, illness, and loss. The course incorporates a multidisciplinary approach in contributing to the development of a health and safety culture.

Course Outline

Historical Perspective and Overview: Safety and Health Movement Accidents and their Effects; Theories of Accident Causation; Roles and Professional Certifications for Safety and Health Professionals; Safety, Health, and Competition in the Global Marketplace

Laws and Regulations: The OSH Act, Standards, and Liability, Workers' Compensation; Accident Investigation and Reporting; Product Safety and Liability; Bangladesh Labour (Amendment) Act, 2015

The Human Element: Ergonomic Hazards: Musculoskeletal Disorders (MSDs) and Cumulative Trauma Disorders (CTDs); Stress and Safety; Safety and Health Training; Violence in the Workplace

Hazard Assessment, Prevention, and Control: Mechanical Hazards and Machine Safeguarding; Falling, Impact, Acceleration, Lifting, and Vision Hazards; Hazards of Temperature Extremes; Pressure Hazards; Electrical Hazards; Fire Hazards and Life Safety; Industrial Hygiene and Confined Spaces; Radiation Hazards; Noise and Vibration Hazards; Computers, Automation, and Robots

Occupational Diseases and Conditions: Occupational Diseases; Employment Medical Advisory Service; Occupational Health Schemes; Benefits of Occupational Health Services; Sickness Absence; Smoking, Air Pollution

Hazardous Substances: Meaning of Hazardous Substances; Classification; Principles of Toxicology; Assessment of Health Risk; Workplace Exposure Limits; Control Measures; Safe Handling and Storage of Waste; Health Surveillance

Management of Safety and Health: Preparing for Emergencies and Terrorism; Ethics and Safety; Hazard Analysis/Prevention and Safety Management; Promoting Safety; Environmental Safety and ISO 14000 (Environmental Management); Therapeutic Spiral Model (TSM): Safety Management in a Quality Management Setting; Establishing a Safety-Friendly Corporate Culture; Blood-borne Pathogens and Bacterial Hazards in the Workplace.

Suggested Readings

Alli, B. O. (2008). Fundamental principles of occupational health and safety. Geneva, Switzerland: ILO.

Bakker, A. B., Schaufeli, W. B., Leiter, M. P., &Taris, T. W. (2008). Work engagement: An emerging concept in occupational health psychology. *Work & Stress*, 22(3), 187-200. https://doi.org/10.1080/02678370802393649

Erikson, P. A. (1996). *Practical guide to occupational health and safety*. San Diego, CA: Academic Press.

Goetsch, D. L. (2014). Occupational safety and health for technologists, engineers, and managers. London, UK: Pearson.

Hopkins, A. (1995). Making safety work: Getting management commitment to occupational health and safety. St. Leonards, Australia: Allen &Unwin.

Hughes, P., & Ferrett, E. (2011). *Introduction to health and safety at work*. New York, NY: Routledge.

Lingard, H.& Rowlinson, S. (2005). Occupational health and safety in construction project management. New York, NY: Spon Press.

Schneid, T. D. (2008). Corporate safety compliance: OSHA, ethics, and the law. Boca Raton, FL: CRC Press.

Stranks, J. (2010). Health and safety at work: An essential guide for managers (9thed.). London, UK: Kogan Page.

Taylor, G., Easter, K., &Hegney, R. (2004). *Enhancing occupational safety and health*. Oxford, UK: Butterworth-Heinemann.

DMC 612: Child Protection in Emergencies (100 Marks; 3 Credits)

Course Objectives

The main objectives of the course is (i) to know causes of vulnerability of children to disasters around the world especially in developing countries;(ii) to analyze the vulnerabilities of children from physical, mental, educational, and other perspectives, (iii) to know the process and guidelines to ensure the children's need, special support, and care in emergencies, (iv) to examine how the international drivers and national policies assist in this

regard, (v) understand the protection mechanisms followed by different organizations/countries/ communities in addressing the practical and strategic need of the children in emergencies, (vi) to explore the community and children`s capacity to protect themselves from inclusion point of view by child protection programming. Apart from providing knowledge about protecting children in emergencies, this course pinpoints on calibrating our attitudes towards children in a more intimate way.

Course Outline

Basics of Child Protection in Emergencies: Basic terms and concepts, critical debates in social-science approaches to childhood and youth development and protection, myths and facts of child protection issues. Brief history of CPiE approaches. Nature of vulnerability related to child from gender and sex perspective, National and International safeguard policies and Compliances for CPiE, critical debates and theories in approaches to childhood and youth development, national and international compliances for the child protection in emergencies. The role of humanitarian response in addressing children's distress; Humanitarian response and region-specific minimum standards for children; emergency,
Impacts and Implications: Physical impacts and violence against children during disasters, emergencies, and climate extremes. Psychological vulnerability of children in emergencies, addressing their stress and trauma; applying a holistic approach for their management and protecting mental health.

Educating Children in Emergencies: Provisions and options for providing necessary education for children during and post-emergency; creating an environment and encouraging the children for that. National and international guideline for EiE under education cluster, good practices and way forward.

Child Protection Rapid Assessment: MIRA guideline and child friendly tools and mechanism assessment. Children's disaster services (CDS) analysis.

Mechanisms of Child Protection in Emergencies: Community based Child Protection, Case management, Child-Friendly Space etc. Best interest of Child.

Special Need Children's Protection and Social Inclusion: Prioritizing children's interests during emergencies; consideration of gender, disability, race, and other psychosocial perspectives; precautionary measures for contingency. Emergency and refugee child protection mechanism separated and unaccompanied children, best interests of children for their mental faculties.

Child Protection for Resilience: Child protection development, planning, policymaking, and challenges to emergency responses; child-centric action program for resilience and child protection in 21st century.

Suggested Readings

Beckett. C. (2009). *Child protection: An introduction*. London, UK: Sage Publication.

Bullock, J. A., Haddow, G. D., & Coppola, D. P. (2011). *Managing children in disasters: Planning for their unique needs*. Boca Raton, FL: CRC Press.

Child Protection Working Group. (2012). *Minimum standards for child protection in humanitarian action*. Retrieved from https://www.unicef.org/iran/Minimum_standards_for_child_protection_in_humanitarian_action.pdf. Accessed: November 11, 2017.

Cleaver, K., & Webb, J. (Eds.). (2007). *Emergency care of children and young people*. Oxford, UK: Blackwell Publishing.

Gordon, N. S., Farberow, N. L., & Maida, C. A. (1999). *Children and disasters*. Philadelphia, PA: Brunner/Mazel.

Masson, J., McGovern, D., Pick, K., & Oakley, M. W. (2007). *Protecting powers: Emergency intervention for children's protection*. Chichester, UK: John Wiley & Sons.

Meece, L. J., & Daniels, H. D. (2008). *Child and adolescent development for educators*. New York, NY: McGraw-Hill.

Peek, L. (2008). Children and disasters: Understanding vulnerability, developing capacities, and promoting resilience— an introduction. *Children Youth and Environments, 18*(1), 1-29. Retrieved from http://www.jstor.org/stable/pdf/10.7721/chilyoutenvi.18.1.0001.pdf. Accessed: November 11, 2017.

Saylor, C. F. (Ed.). (2013). *Children and disasters*. New York, NY: Springer Science & Business Media.

Shaw, J., Espinel, Z., & Shultz, J. M. (2012). *Care of children exposed to the traumatic effects of disaster*. Washington, DC: American Psychiatric Association Publishing.

United Nations Children's Fund (UNICEF). (2010). *Core commitments for children in humanitarian action*. Retrieved from https://www.unicef.org/publications/files/CCC_042010.pdf. Accessed: November 11, 2017.

DMC 613: Disability, Autism and Disaster (100 Marks; 3 Credits)

Course Objectives

Aiming at meeting the needs of a growing body of information, knowledge, and expertise on disaster, autism, and disabilities form interdisciplinary perspectives, this course predominantly focuses on the disability, psychology. The course has three main objectives: a) to familiarize students with autism and disability b) to provide a theoretical and methodological background on disaster, disability, and autism and c) to make the learners knowledgeable about the magnitudes of disasters, autism, and disability from global and national contexts. The importance of this course is multifold. There is a growing academic syllabus on natural disasters and hazards, but disability and autism consciousness has not been at the forefront of these efforts. At the international level, Article 11 of the UN Convention on the Rights of Persons with Disabilities provides a basic standard to supplement about the role and responsibility of international organizations, governments, and development partners. Therefore, there is a growing demand to share the academic knowledge on disasters and disability. This course therefore aims at meeting the growing knowledge on.

Course Outline

Basics of Disability and Autism: Basic concepts of disaster, Hazards, Disability and Autism; pervasiveness of disaster, hazard, disability, and autism; Global importance in studying disaster, hazard, autism, and disability

The Theoretical Perspectives: sociocultural on disaster, disability, and autism: Social, psychological, environmental, cultural, and political

Diversity of Actions: The social, psychological, cultural, and economic constructions of disaster, autism, and disability. How they affect each other and their ameliorations

Dynamics of Disability, Gender, and Autism: The dynamics of gender, disaster, autism, and disability: Bangladesh and Global perspective. Their interconnections and policy implications in materializing equity shares

Challenges for Disability and Autism: Challenges posed by disasters to disabled and autistic people in maintaining their lives and livelihood during emergencies; access to health care, education, income, employment, and other basic services. Issues and challenges

knowledge, good practices, promising solutions; building a disability inclusive risk resilient strategy and community

Policy Overviews: Overviews of policies on disaster, autism, and disabled persons; state policy, social policy, regional and international policies, programs, and actions disable people. Critical appraisal of United Nations' Convention on the Rights of Disabled and autistic People during disasters. Analysis the risks factors for disabled and autistic people. Rehabilitation program for autistic and disables

Roles of Development Partners: The role of international development partners, their interests, and NGOs in addressing the social, economic, and cultural challenges of disabled and autistic people during disasters

Towards a Disability Inclusive Framework: National and international policy frameworks aimed to espouse disability and autism in the processes of disaster management; developing better concepts to promote disability friendly policies

Post disaster Psychology and Trauma Management: Disaster psychology to bounce back; encountering the unimaginable blowbacks, getting over the mental bouts. Dealing with trauma and other psychological repercussions

Suggested Readings

Carll, E. K. (2007). Trauma psychology: Issues in violence, disaster, health, and illness. Westport, CT: Praeger Publishers.

Charman, T., & Stone, W. (2006). Social and communication development in autism spectrum disorders: Early identification, diagnosis, and intervention. New York, NY: The Guilford Press.

Cipani, E. (2011). *Children and autism: Stories of triumph and hope.* New York, NY: Demosmedical.

Eisenman, D. P., Zhou, Q., Ong, M., Asch, S., Glik, D., & Long, A. (2009). Variations in disaster preparedness by mental health, perceived general health, and disability status. *Disaster Medicine and Public Health Preparedness*, *3*(1), 33-41. https://doi.org/10.1097/DMP.0b013e318193be89

Kelman, I. &Stough, L. M. (2015). *Disability and disaster: Explorations and exchanges.* New York, NY: Palgrave Macmillan.

López-Ibor, J. J., Christodoulou, J., Maj, M., & Okasha, A. (2005). *Disasters and mental health*. Chichester, UK: John Wiley & Sons.

Marsella, A. J., Johnson, J. L., Watson, P., & Gryczynski, J. (Eds.). (2008). *Ethnocultural perspectiveson disaster and trauma: Foundations, issues, and applications*. New York, NY: Springer Science & Business Media.

Morgan, P. (2017). Child protection and parents with a learning disability: Good practice for assessing and working with adults. London, UK: Jessica Kingsley Publishers.

Nasreen, M. (2008). *Violence against women during flood and post-flood situations in Bangladesh*. Retrieved from http://www.actionaid.org/sites/files/actionaid/vaw_during_disasters.pdf. Accessed: November 19, 2017.

Peek, L., & Stough, L. M. (2010). Children with disabilities in the context of disaster: A social vulnerability perspective. *Child Development, 81*(4), 1260-1270.https://doi.org/10.1111/j.1467-8624.2010.01466.x

Rotatori, A. F., Obiakor, F. E., &Burkhardt, S. (2008). *Autism and developmental disabilities: Current practices and issues*. Bingley, UK: Emerald.

Saari, S. (2005).*A bolt from the blue: Coping with disasters and acute traumas* (Silver, A. Trans.). London, UK: Jessica Kingsley**.**

Ursano, R. J, & Norwood, A. E. (Eds.). (2003). *Trauma and disaster: Responses and management.* Washington, DC: American Psychiatric Publishing.

DMC 614: Comprehensive and Viva-Voce

At the end of final semester, the students will appear a general viva voce (oral) containing 50 marks before examination committee and a written comprehensive examination (written) containing 50 marks where a general evaluation will be done based on all appeared compusary courses in last 3 semesters.