

**Masters in Disaster Risk Management**  
(M-DRiM)

Contact Address

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Centre for Disaster Studies  
Institute of Engineering  
Pulchowk Campus

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**Offered by**

Pulchowk Campus  
Lalitpur, Nepal

March 2011

## **Masters in Disaster Risk Management**

### Title of the course

Masters in Disaster Risk Management

### Course objective

The objective of the course is to develop and enhance the capability of managers and development practitioners for management and mitigation of disasters and link disaster risk management with contemporary development practices through advancement and imparting of multi-disciplinary knowledge.

### Duration of the course

The regular duration for completion of the course is four semesters (2 years) for full time students. The course is structured in 4 semesters in modular format. Provisions for part time students are made available as in other courses.

### Admission Requirements

Graduates of engineering and architecture discipline or other disciplines with at least 16 (10+2+4) years of formal education and successful attendance of entrance exam conducted by IoE are eligible to get admission in the program. Applicants from background other than engineering and architecture disciplines must have 2 years of experiences in disaster risk management.

Candidates fulfilling the program entry requirements will be selected for admission on the basis of merit as prescribed by the Faculty Board of IoE.

### Course requirements

A total of 60 credits are required in order to complete the course.

### Award of degree

Upon completion of the course, the following students will get the following degree.

1. Students from engineering background after completing all credits offered and successfully completing the thesis : M.Sc. in Engineering in Disaster Risk Management
2. Students from Science background after completing all credits offered and successfully completing the thesis: M. Sc. in Disaster Risk Management
3. Students from other backgrounds(humanities, law, commerce etc with the exception of science and engineering) after completing all credits offered and successfully completing the thesis: Masters in Disaster Risk Management

**Masters in Disaster Risk Management**  
**1st semester**

**Year: I**

**Part: A**

S.No	Course Code	Course Title	Teaching Schedule					Examination Scheme						Remarks	
			Credit Hours	L	T	P	Total	Theory			Practical				Total
								Assessment marks	Final		Assessment marks	Final			
									Duration Hour	Marks		Duration Hour	Marks		
1	core	Physical environment and Natural Hazards	4	3	1	0	4	40	3	60				100	
2	core	DRM principles and practices, Tools and techniques	4	3	1	0	4	40	3	60				100	
3	core	Research methodology	4	3	1	0	4	40	3	60				100	
4	Core	GIS and Remote Sensing Application	4	3	1	0	4	40	3	60				100	
5		Elective A/ B	4	3	1	0	4	40	3	60				100	Opt
<b>Total</b>			<b>16 to 20</b>	<b>11</b>	<b>4</b>	<b>0</b>	<b>15</b>	<b>160</b>		<b>240</b>				<b>400</b>	

**2nd semester**

**Year :I**

**Part:B**

S.No	Course Code	Course Title	Teaching Schedule					Examination Scheme						Remarks	
			Credit Hours	L	T	P	Total	Theory			Practical				Total
								Assessment marks	Final		Assessment marks	Final			
									Duration Hour	Marks		Duration Hour	Marks		
1	Core	Post-disaster assessment and response planning	4	3	1	0	4	40	3	60				100	
2		Elective A	4	3	1	0	4	40	3	60				100	
3	Core	Quantitative analysis tools	4	3	0	1	5	40	3	60				100	
4		Elective A	4	3	1	0	4	40	3	60				100	
5		Elective B	4	3	1	0	4	40	3	60				100	opt
<b>Total</b>			<b>12 to 20</b>	<b>11</b>	<b>3</b>	<b>3</b>	<b>17</b>	<b>160</b>		<b>240</b>				<b>400</b>	

**3rd semester**

**Year: II**

**Part: A**

S.No	Course Code	Teaching Schedule						Examination Scheme						Remarks	
		Course Title	Credit Hours	L	T	P	Total	Theory			Practical				Total
								Assessment marks	Final		Assessment marks	Final			
									Duration Hour	Marks		Duration Hour	Marks		
1		Elective B	4	3	1	0	4	40	3	60				100	
2		Elective B	4	3	1	0	4	40	3	60				100	
3		Project work	4	2	0	3	4	40		60				100	
<b>Total</b>			<b>4 to 12</b>	<b>11</b>	<b>3</b>	<b>3</b>	<b>17</b>	<b>120</b>		<b>180</b>				<b>300</b>	

- Defense / viva voice

**4th semester**

**Year: II**

**Part: B**

S.No	Course Code	Teaching Schedule						Examination Scheme						Remarks	
		Course Title	Credit Hours	L	T	P	Total	Theory			Practical				Total
								Assessment marks	Final		Assessment marks	Final			
									Duration Hour	Marks		Duration Hour	Marks		
1		Thesis	16				16	40	*	60				100	
<b>Total</b>			<b>16</b>				<b>16</b>	<b>40</b>		<b>60</b>				<b>100</b>	

- Defense

Semester	Core	Elective	Project	Thesis	Total
I	16 credits	(0-4 credits)			16 (16-20)
II	8 credits	8 credits (4-12 credits)			16 (12-20)
III		8 credits (0-8 credits)	4 credits		12 (4-12)
IV				16 credits	16
<b>TOTAL</b>					<b>60</b>

### Course structure

The courses are organized as Foundation Course (offered in first semester), Application Courses (offered in 2<sup>nd</sup> semester), Specialization Courses (Offered as Electives in 2<sup>nd</sup> and 3<sup>rd</sup> Semester) and Research work (as Project work and Thesis in 3<sup>rd</sup> and 4<sup>th</sup> Semesters).

### Electives

Electives in Group A are Technology focused and Group B are of General Nature.

#### Elective Group A (any one)

Earthquake Risk Engineering

Water induced disasters

Landslide

Disaster risk mitigation technology

Disasters, Environment and Risk Reduction – ECO-DRR

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#### Elective Group B (any Two)

Policy and legal framework for DRM

Community based disaster risk management

Conflict and society

Post Disaster WASH

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Humanitarian assistance

Urban Disaster Risk Management

Development Planning and Themes on Sustainable Development

Natural Resource Management

Disaster and climate change economics

Project Management

Culture and society

Climate change, impact and adaptation

Risk management of cultural heritage

Disaster Informatics

Cross Cutting Issues in DRM

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## Course Description

### 1<sup>st</sup> Semester

<b>Name of the Course/Module</b>	<b>PHYSICAL ENVIRONMENT AND NATURAL HAZARD</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
	X				
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	Students get an overview of the different hazard and their interactions with human. They shall understand the element of disaster management. A special focus is set on the disaster occurring in Nepal. Global environmental problems with a focus on climate change are presented with referenced to the impacts on human and their significance to societies.				
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Introduction to disaster and related terminology</li> <li>2. Disaster and emergency paradigms in first and third world</li> <li>3. Natural and human induced hazard</li> <li>4. Earthquake</li> <li>5. Water induced disaster (Flood, Landslide, GLOF)</li> <li>6. Concept of Hazard, Risk and Vulnerability</li> <li>7. Risk assessment and Vulnerability</li> <li>8. Global environmental problems               <ol style="list-style-type: none"> <li>a. Climate change</li> <li>b. Biodiversity loss</li> <li>c. Desertification</li> <li>d. Global water crisis</li> </ol> </li> <li>9. Fundamentals of: social cohesion and fragmentation, poverty, livelihoods and risk/vulnerability</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work and interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				

<b>Name of the Course/Module</b>	<b>DISASTER RISK MANAGEMENT PRINCIPLES AND PRACTISES, TOOLS AND TECHNIQUES</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
	X				
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	The objective is to develop an understanding of the principles governing disaster risk management which will be followed by information about the different activities that are performed with respect to the different stages of disaster risk management				
<b>Content Outline</b>	<ul style="list-style-type: none"> <li>• Evolution of disaster risk management concept</li> <li>• Disaster management cycle – Prevention, Preparedness, Mitigation, Relief Rescue and Recovery</li> <li>• Integrated and Comprehensive disaster risk reduction approach, Strategies and Policies</li> <li>• Hazard, risk and vulnerability: Physical, social and economic dimensions</li> <li>• Vulnerability in changing climate</li> <li>• Climate change and Disasters</li> <li>• Risk Analysis Techniques</li> <li>• Risk: Identification, reduction and transfer</li> <li>• Approaches to mapping social vulnerability</li> <li>• Participatory disaster risk assessment</li> <li>• Action plans, Strategy for survival</li> <li>• Tools <ul style="list-style-type: none"> <li>○ SIERA</li> <li>○ RADIUS</li> <li>○ HAZUS</li> <li>○ CRISIS</li> <li>○ .....</li> <li>○ .....</li> </ul> </li> </ul>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work and interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>Bibliography</b>	<ul style="list-style-type: none"> <li>▪ Wisner, B. Blaikie, P. Cannon, T. &amp; Davis, I., 2004. At Risk: Natural Hazards, People's Vulnerability and Disasters, (2nd Edition) Routledge</li> <li>▪ Venton, P. &amp; Hansford, B., 2006. Reducing risk of disaster in our communities, TEARFUND</li> <li>▪ Bankoff, G. Frerks, G. &amp; Hilhorst, D., 2004. Mapping vulnerability: disasters, development, and people, Earthscan</li> <li>▪ Leary, N., 2008. Climate change and vulnerability, Earthscan</li> <li>▪ Kreimer, A., Arnold, M., 2000. Managing disaster risk in emerging economies, World Bank Publications</li> </ul>				

<b>Name of the Course/Module</b>	<b>RESEARCH METHODOLOGY</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
	X				
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>					
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Research definitions</li> <li>2. Methods and sources of data</li> <li>3. Research objectives</li> <li>4. Research paradigms</li> <li>5. Logic of enquiry</li> <li>6. Research process</li> <li>7. Analysis and interpretation of data</li> <li>8. Thesis writing</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work and interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>Bibliography</b>					



<b>Name of the Course/Module</b>	<b>GIS AND REMOTE SENSING APPLICATION</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
	X				
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>					
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Introduction and Overview of Geographic Information Systems</li> <li>2. GIS and Maps, Map Projections and Coordinate Systems</li> <li>3. Spatial Data Models</li> <li>4. Data Sources, Data Input and Data Quality</li> <li>5. Database Concepts</li> <li>6. Geo Processing</li> <li>7. Spatial Analysis (Geo spatial and Spatial Analyst)</li> <li>8. 3D Analyst</li> <li>9. GIS in DRM</li> <li>10. GPS</li> <li>11. Introduction to Remote Sensing</li> <li>12. Making Maps</li> <li>13. Project work</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work and interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>Bibliography</b>					

## 2<sup>nd</sup> Semester

<b>Name of the Course/Module</b>	<b>POST DISASTER ASSESSMENT &amp; RESPONSE PLANNING</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
	X				
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	The course will provide students with a practical and theoretical understanding of the need for management and coordination in complex and unpredictable disaster situations as well as the theoretical models and practical tools for effective assessment, planning and management. The course will enhance the student's ability to analyze and discuss various theoretical and practical aspects of post disaster assessment and response planning				
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Natural Disasters and Emergencies – Type and level of impact</li> <li>2. UNHCR Principles &amp; international law and guidelines on Humanitarian assistance</li> <li>3. Humanitarian Relief System             <ol style="list-style-type: none"> <li>3.1 United Nations Disaster Assessment and Coordination System. Declarations of Emergency and calls for assistance</li> <li>3.2 Agencies and coordination mechanism</li> </ol> </li> <li>4. Emergency response , early recovery and reconstruction phase</li> <li>5. Assessment and Planning             <ol style="list-style-type: none"> <li>5.1 Basic principle, process guidelines and tools on assessment and response – immediate and long term</li> <li>5.2 Principle of planning in emergencies and reconstruction and development of frame work</li> </ol> </li> <li>6. Emergency and long term Management             <ol style="list-style-type: none"> <li>6.1 Assessment and operational planning</li> <li>6.2 Coordination and local level organization</li> <li>6.3 Logistic planning</li> </ol> </li> <li>7. Implementation and operation of humanitarian assistance :             <ol style="list-style-type: none"> <li>7.1 Timely response and unhindered access;</li> <li>7.2 Donor and funding mechanism;</li> <li>7.3 Assessment, planning, logistics and distribution mechanism</li> <li>7.4 Search and Rescue</li> <li>7.5 Coordination and cooperation – The Cluster Approach</li> <li>7.6 Stakeholders and their role and responsibilities – Donor &amp; UN</li> <li>7.7 Agencies, National and local governments, IGOs IOs, NGOs PVOs</li> </ol> </li> <li>8. Case studies: Assessment and response planning of Major, medium and creeping disaster (Aceh, Haiti, west Sumatra, Pakistan etc)</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work, simulations, case studies, presentation</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>Bibliography</b>					

<b>Name of the Course/Module</b>	<b>DEVELOPMENT PLANNING AND THEMES ON SUSTAINABLE DEVELOPMENT</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
		*			
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>					
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Development and Development Planning</li> <li>2. Theories of Development</li> <li>3. Tools and Techniques of Planning, Problem Analysis</li> <li>4. Community Institution Building and Participatory Planning</li> <li>5. Concept of Sustainable Development</li> <li>6. Policy, Legal and Strategic Framework of Sustainable Development</li> <li>7. Development Planning Process in Nepal <ol style="list-style-type: none"> <li>7.1 National Plan</li> <li>7.2 Sectoral Plan</li> <li>7.3 Regional Plan</li> <li>7.4 Local Governance and Planning (Policies, Acts, Bylaws and Plans)</li> </ol> </li> <li>8. Mainstreaming of DRR and Climate Change Adaptations in Development Planning</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work and interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>Bibliography</b>					

<b>Name of the course</b>	<b>QUANTITATIVE ANALYSIS TOOLS</b>			<b>Course code</b>	
<b>Course Type</b>	<b>Core</b>	<b>Elective</b>	<b>Project</b>	<b>Thesis</b>	
	X				
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	3				
<b>Objective</b>	<p>Help students understand the value of Statistics in acquiring knowledge and making decisions in Disaster Risk management research.          To make familiar with statistical software in decision making</p>				
<b>Content outline</b>	<ol style="list-style-type: none"> <li>1.Descriptive statistics</li> <li>2.Relation between two and more than two variables             <ol style="list-style-type: none"> <li>2.1. Random Variables</li> <li>2.2. Correlation</li> <li>2.3. Regression</li> <li>2.4. Multiple regression</li> <li>2.5. Chi square test</li> </ol> </li> <li>3.Probability distribution             <ol style="list-style-type: none"> <li>3.1. Binomial distribution, Poisson distribution, Normal distribution</li> </ol> </li> <li>4.Inferential statistics:             <ol style="list-style-type: none"> <li>4.1. Estimation for mean, proportion</li> <li>4.2. Sample size determination</li> <li>4.3. Hypothesis testing for mean and proportion</li> </ol> </li> <li>5.Non-parametric test             <ol style="list-style-type: none"> <li>5.1. Sign Test</li> <li>5.2. Mann-Whitney U test</li> <li>5.3. Kruskal-Wallis H test</li> </ol> </li> <li>6.Computer application in statistical computation             <ol style="list-style-type: none"> <li>6.1. Solving statistical problem using SPSS, EXCEL</li> </ol> </li> <li>7.Case study with statistical analysis</li> </ol>				
<b>Teaching Methods</b>	<ul style="list-style-type: none"> <li>▪ Lecture, group work and Interaction</li> </ul>				
<b>Assessment Methods</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/examination</li> </ul>				
<b>Bibliography</b>					

<b>Name of the Course/Module</b>	<b>EARTHQUAKE RISK ENGINEERING</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
		X			
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	<p>The primary goal of the course is to build a fundamental understanding of earthquake engineering basics related with seismic hazard, seismic vulnerability and seismic risk, as well as to impart knowledge on analytical tools for the seismic risk reduction. After completing this course, students should be able to:</p> <ul style="list-style-type: none"> <li>Understand mechanism of earthquakes, effects in terms of earthquake induced hazards</li> <li>Carry out seismic hazard analysis</li> <li>Understand the need and ways of seismic risk of a region</li> <li>Understand the earthquake disaster mitigation strategy</li> </ul>				
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Seismology and Earthquakes</li> <li>2. Seismic hazard Analysis</li> <li>3. Site Response Analysis</li> <li>4. Liquefaction</li> <li>5. Earthquake-induced Landslide</li> <li>6. Emergency response and recovery</li> <li>7. Earthquake protection strategies</li> <li>8. Earthquake resistance of structures</li> <li>9. Damage estimation, Risk and vulnerability assessment</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work and Interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>Bibliography</b>	<ul style="list-style-type: none"> <li>▪ Kramer, S.L., 1996. "Geotechnical Earthquake Engineering", Prentice Hall, Upper Saddle River, New Jersey</li> <li>▪ Dowrick, D., 2009. "Earthquake Resistant Design and Risk reduction", 2009, John Wiley &amp; Sons, Ltd</li> <li>▪ Chen, W.F. (Editor), Lui, E.M. (Editor), November 2, 2005. "Earthquake Engineering for Structural Design", CRC</li> <li>▪ Bolt, B., October 17, 2003. "Earthquake" Fifth Edition W. H. Freeman</li> <li>▪ Chopra, A. K., 2007." Dynamics of Structures: Theory and Application of Earthquake Engineering", Prentice-Hall, Upper Saddle River, New Jersey</li> <li>▪ Clough, R. W and Penzien, J., 1993. "Dynamics of Structures", McGraw-Hill, New York</li> <li>▪ Elnashai, A. &amp; Sarno, L. D., 2008. "Fundamentals of Earthquake Engineering", Copyright @2008 by John Wiley &amp; Sons, Ltd. ISBN: 978-0-470-02483-6</li> <li>▪ Paulay, T. &amp; Priestley, M.J.N., 1992. "Seismic Design of Reinforced Concrete and masonry Buildings", Wiley Interscience, New York.</li> <li>▪ Wakabayashi, M., 1986. "Design of Earthquake Resistant Buildings", McGraw-Hill, New York.</li> </ul>				

<b>Name of the Course/Module</b>	<b>POLICIES AND LEGAL FRAMEWORK OF DRM</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
		X			
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	<p>To familiarize with the concept of law, act, regulation, directives</p> <p>To provide knowledge about the historic development of law</p> <p>To give information about the national and international legislation, agreements and laws related to Disaster Risk Management</p>				
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Definition of Law, Equality to the law, Concept of Law</li> <li>2. History, Mesopotamian Law, Roman Law, English Saxon Law, Muluki Ain</li> <li>3. Legislation, Ordinance, Bill, Act, Regulations and Bye Laws, Importance of Law and its relationship to Disaster Risk Management</li> <li>4. Nepal Constitution, Concept and Contents, Provision regarding disaster risk Management</li> <li>5. Natural Calamity Act, 1982, Policies on Disaster Risk Management, Act on Disaster Risk Management, Strategy on Disaster Risk Management</li> <li>6. Hyogo Framework of Action, National Platform</li> <li>7. International Legal Provision and Experience on Disaster Risk Management</li> <li>8. Disaster Risk Management in different Five Year Plans of Nepal</li> <li>9. Disaster Risk Management in SAARC Countries</li> <li>10. National, Regional, District as well as Local institutions in Disaster Risk Management, Emergency Operation Center, Standard Operating Procedures</li> <li>11. Mainstreaming of Disaster Risk Management in the Periodic Plans and Programs of Local Government in Nepal</li> <li>12. Acquisition of Land for Pre Disaster and Post Disaster Situations and the concerned Legal Tools</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work and Interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment report/Seminar/Examination</li> </ul>				
<b>Bibliography</b>					

<b>Name of the Course/Module</b>	<b>COMMUNITY BASED DISASTER RISK MANAGEMENT</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
		X			
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	The objective of the course is to introduce the students with communities, their dynamics and their potential roles and responsibilities in disaster risk management. Similarly, the course deals with the participation theory and process of social learning.				
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Introduction to community, livelihood and Capacity of different social groups</li> <li>2. Participation theory</li> <li>3. Importance of Community based Disaster Risk Management and processes</li> <li>4. Understanding social learning and rapport building with the communities</li> <li>5. Importance of Community based Disaster Risk Management and processes</li> <li>6. Participatory Disaster Risk Assessment and Management Planning</li> <li>7. Participatory monitoring and evaluation</li> <li>8. Disaster Risk Communication at community level</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group/field work and Interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>Bibliography</b>					

<b>Name of the Course/Module</b>	<b>POST DISASTER WATER SANITATION AND HYGIENE</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
		X			
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	To introduce the wash activities pre, during & post disaster, national and international guidelines, related diseases and outbreak of epidemics and technical aspect for emergency wash management				
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Introduction in disaster scenario</li> <li>2. Health and diseases transmission in emergency setting</li> <li>3. Technicalities of Wash</li> <li>4. Construction of WASH facilities in Emergency Planning Practical experience</li> <li>5. Post emergency and rehabilitation</li> <li>6. Case studies</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work and Interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>Bibliography</b>	<ul style="list-style-type: none"> <li>▪ Sphere handbook</li> </ul>				

### 3<sup>rd</sup> Semester

<b>Name of the Course/Module</b>	<b>DISASTER RISK MITIGATION TECHNOLOGY</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
		X			
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	<p>To provide a broad knowledge about mitigation and mitigation technology</p> <p>To familiarise the students with the benefit of technology</p> <p>To enable the students to use suitable technologies in different disaster situation</p>				
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Disaster Mitigation-             <ol style="list-style-type: none"> <li>1.1 Definition, Concept, Importance, Guiding Principles,</li> <li>1.2 Tools, Approaches, Strategies,</li> <li>1.3 Sustainable Development, Sustainable Land Use Planning,</li> <li>1.4 Epidemiological Surveillance, Team Work, Conflict Resolution</li> </ol> </li> <li>2. Technology,             <ol style="list-style-type: none"> <li>2.1 Definition, Brief History, Technological Society,</li> <li>2.2 Technology and the Environment</li> </ol> </li> <li>3. Emerging Technologies in Disaster Mitigation,             <ol style="list-style-type: none"> <li>3.1 Remote Sensing, GIS, Disaster Mapping, Aerial Photography, Land Use Zoning,</li> <li>3.2 Emergency Communication, Wireless and Radio, HAM Radio</li> <li>3.3 Worst Scenario Analysis, Emergency Operations Centre</li> <li>3.4 Cost Benefit Analysis, Environment Impact Assessment</li> </ol> </li> <li>4. Hazard Specific Technologies,             <ol style="list-style-type: none"> <li>4.1 Flood, Landslide, Earthquake, Fire</li> </ol> </li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Field visit, Group work and Interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>Bibliography</b>					



<b>Name of the Course/Module</b>	<b>Humanitarian Assistance</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
		X			
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	This course is intended to provide students with a thorough introduction to international humanitarian assistance covering legal aspects and major practical and policy considerations with regard to implementation. This module provides students insight on how the world responds to disaster, crisis and deprivations and enhances their understanding on basic working structure of humanitarian assistance programs and the theoretical, ethical and legal basis for contemporary humanitarian practice.				
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Natural Disasters and Complex Emergencies: Differences and commonalities</li> <li>2. Emergencies and Humanitarianism</li> <li>3. Humanitarian principles, human security and right to protect</li> <li>4. Aim and principles of Response</li> <li>5. Framework of international human rights law and international law relevant to humanitarian assistance including international humanitarian law and refugee law</li> <li>6. Guidelines and mandate on Humanitarian Assistance</li> <li>7. United Nations Disaster Assessment and Coordination System.</li> <li>8. The Legal basis for humanitarianism, and the practical applications of national sovereignty</li> <li>9. Declarations of Emergency and calls for assistance.</li> <li>10. Humanitarian crises and specific approaches to respond situations.</li> <li>11. Humanitarian assistance ranging from the United Nations to the International Committee of the Red Cross (ICRC) to non-governmental actors.</li> <li>12. Brief introduction on Implementation and operation of humanitarian assistance</li> <li>13. Case studies – Major, medium and creeping disaster and Response</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work, Interactive Presentations</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>Bibliography</b>					

<b>Name of the Course/Module</b>	<b>URBAN RISK MANAGEMENT</b>		<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>
		X		
<b>Characteristics</b>	<b>Description</b>			
<b>Language</b>	English			
<b>Credit Points</b>	4			
<b>Objectives</b>	<p>The main objective of this module is to introduce urban disaster risk diagnosis and comprehensive disaster risk-management approach for urban planning. Specifically, the module will:</p> <ul style="list-style-type: none"> <li>Enhance understanding of Urban Disaster Risk Management principles</li> <li>Impart knowledge about tools for identifying, assessing and mitigating urban risks</li> <li>Provide insights on pre-emptive planning and action on prevention and management of urban risk</li> </ul>			
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Nature of risks in urban areas <ol style="list-style-type: none"> <li>1.1 Review of historic disasters in urban areas</li> <li>1.2 Urban and rural risks; Urban-rural continuum</li> </ol> </li> <li>2. Disaster risk and cultural heritage</li> <li>3. Urban landscape and climate change</li> <li>4. Risk management <ol style="list-style-type: none"> <li>4.1 Risk management tools</li> <li>4.2 Risk sharing and insurance/ Risk sharing models</li> <li>4.3 Financing the risk</li> </ol> </li> <li>5. Urban institutions, policies and planning for risk reduction <ol style="list-style-type: none"> <li>5.1 Compliance and control for risk mitigation</li> <li>5.2 CBDM</li> </ol> </li> <li>6. Post-disaster response and relief <ol style="list-style-type: none"> <li>6.1 Mitigation, preparedness and response planning for disasters</li> </ol> </li> <li>7. Case studies</li> </ol>			
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work, Interaction, Case studies, Presentation</li> </ul>			
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>			
<b>Bibliography</b>	<ul style="list-style-type: none"> <li>▪ Wisner, B. Blaikie, P. Cannon, T. &amp; Davis, I., 2004. At Risk: Natural Hazards, People's Vulnerability and Disasters, (2nd Edition) Routledge</li> <li>▪ Yozo, F. &amp; Takafumi F., 2009. Stock Management for Sustainable Urban Regeneration (cSUR-UT Series: Library for Sustainable Urban Regeneration) , Springer</li> <li>▪ Shaw, R. Srinivas, H. &amp; Sharma, A., 2009. Urban Risk Reduction: An Asian Perspective, Emerald Group Publishing</li> <li>▪ Kreimer, A. Arnold, M. &amp; Carlin, A., 2003. Building Safer Cities: The Future of Disaster Risk , The World Bank</li> <li>▪ Capola, D., 2006. Introduction to International Disaster Management, Elsevier</li> <li>▪ Cheng F. Y. , 1995 Urban disaster mitigation: the role of engineering and technology, Elsevier</li> <li>▪ Özerdem, A. Jacoby, . Tauris, J. B., 2006, Disaster management and civil society: earthquake relief in Japan, Turkey and India</li> <li>• Enhancing urban safety and security: global report on human settlements 2007, United Nations Human Settlements Programme, Earthscan, 2007</li> </ul>			

<b>Name of the Course/Module</b>	<b>Disaster and Climate Change Economics</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
		X			
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	<p>The course aims to teach for robust analysis on the economy-development and climate nexus with application to disaster and climate change. The emphasis will be on understanding different approaches to the economics of disaster and climate change, such as traditional economics with its sub-discipline of environmental economics, ecological economics, and elements shaping a new economics trans-disciplinary approach with corresponding policy implications.</p> <p>This course examines the role of economics in the formation of disaster and climate policy. Starting with an introduction into the basics of disaster and climate change, course will discuss basic concepts of environmental economics like efficiency, externalities, and environmental policy instruments.</p>				
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Introduction: Fundamentals of Economics related to Climate Change Issues</li> <li>2. Economics of Climate Change / Disaster</li> <li>3. System dynamics of the energy-environment-economy nexus applied to Climate Change/ Disaster</li> <li>4. Cost-Benefit Studies of Global Climate Change/ Disaster</li> <li>5. The treatment of values in the economics of Climate Change/ Disaster</li> <li>6. Economic and Policy instruments to promote adaptation Climate Change/ Disaster</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work and Interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment report/Seminar/Examination</li> </ul>				
<b>Bibliography</b>					

<b>Name of the Course/Module</b>	<b>PROJECT MANAGEMENT</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
		X			
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	<p>After the completion of this course the student will be able to:</p> <p>Understand what project management is, what it does and how it works</p> <p>Plan, organize, direct and control activities in addition to motivating what is usually the most expensive resource on the project – people</p> <p>Understand project management within the context of a life cycle and systems approach</p>				
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Tools and techniques for project definition, work breakdown, estimating, resource planning</li> <li>2. Critical path development</li> <li>3. Scheduling, project monitoring and control, time management</li> <li>4. Conflicts, cost and resource control</li> <li>5. Trade-off analysis and scope management</li> <li>6. Responsibilities, skills and effective leadership styles of an effective leadership styles of a life cycle and a systems approach</li> <li>7. Responsibilities, skills and effective leadership styles of an effective and efficient project manager</li> <li>8. Labour laws and role of labour union</li> <li>9. Case studies – Linkage of project management with disaster risk management</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work and Interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>Bibliography</b>	<ul style="list-style-type: none"> <li>▪ Anderson, E. S., Grude, K. V. And Turner, J. R., 1987. Goal Directed Project Management, Kogan</li> <li>▪ Baguley, P., 2008. Managing Successful Projects: A Guide for Every Manager. Pitman Publishing, London</li> <li>▪ Kor, R. &amp; Wijnen, G., 2000. 50 Checklists for project and Programme Managers. Gower Publishing limited, Hampshire, England</li> <li>▪ Mayor, H., 1999. Project Management. Financial Times, Pitman Publishing, London</li> <li>▪ Turner, J. R., 1999. The Handbook of Project-Based Management. McGraw Hill International (UK) Limited, Berkshire, England</li> </ul>				

<b>Name of the Course/Module</b>	<b>CLIMATE CHANGE, IMPACTS AND ADAPTATION</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
		X			
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	<p>To facilitate students understand climate dynamics, elements that induce changes, their potential impacts on natural systems</p> <p>To analyze linkages of impacts vis-à-vis vulnerability assessment techniques</p> <p>To facilitate understanding dynamics of adaptation, adaptive strategies and Adaptation measures and orient students on integration of climate foresights into development initiatives</p>				
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Climate and Climate dynamics</li> <li>2. Factors Inducing Climate Change</li> <li>3. Climate Sensitive Sectors</li> <li>4. Climate change impacts and analysis of linkages of impacts</li> <li>5. Vulnerability – understanding, assessment and techniques of vulnerability assessment</li> <li>6. Understanding Adaptation, Mode of Adaptation, Preparation of Adaptation Plans</li> <li>7. Integrating Climate Foresights into Development Planning</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work and Interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>Bibliography</b>					

<b>Name of the Course/Module</b>	<b>RISK MANAGEMENT OF CULTURAL HERITAGE</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
		X			
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	<p>To provide a broad knowledge about mitigation and mitigation technology</p> <p>To familiarise the students with the benefit of technology</p> <p>To enable the students to use suitable technologies in different disaster situation</p>				
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Introduction to cultural heritage</li> <li>2. Disaster and cultural heritage</li> <li>3. Risk to heritage, heritage values, human lives, livelihood &amp; disasters</li> <li>4. Significance of risk management of CH/UCH &amp; core principles</li> <li>5. Disaster mitigation and preserving cultural values</li> <li>6. Integrating preparedness with planning</li> <li>7. Comprehensive Inventory of movable and immovable properties and associated intangible and associate people.</li> <li>8. Risk management and user, partner and stakeholder sensitization and public awareness</li> <li>9. Legal framework for disaster risk management of cultural heritage</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Field visit, Group work and Interaction</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>Bibliography</b>					

<b>Name of the Course/Module</b>	<b>DISASTER INFORMATICS</b>		<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>
		X		
<b>Characteristics</b>	<b>Description</b>			
<b>Language</b>	English			
<b>Credit Points</b>	4			
<b>Objectives</b>	The main objective of this module is to study and use information and information technology in the preparation for, mitigation of, and recovery from the effects of disasters.			
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Nature of data for DRR: Mitigation, Preparedness and Response</li> <li>2. Data management for DRR</li> <li>3. Information management in disaster response</li> <li>4. Web 2.0: Application and future of internet in DRR</li> <li>5. Early warning systems</li> <li>6. Multi-criteria decision support system for Emergency Management</li> <li>7. Case studies <ol style="list-style-type: none"> <li>7.1 How information can save lives?</li> <li>7.2 Data management and information sharing</li> <li>7.3 Role of social media</li> </ol> </li> </ol>			
<b>Teaching Method</b>	Lectures, Group work, Interaction, Case studies, Presentation			
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>			
<b>Bibliography</b>	<ul style="list-style-type: none"> <li>▪ Asimakopoulou, E., &amp; Bessis, N., 2010. Advanced ICTs for Disaster Management and Threat Detection: Collaborative and Distributed Frameworks Edited, IGI Global</li> <li>▪ National Research Council (U.S.), 2006. Facing hazards and disasters: understanding human dimensions by Committee on Disaster Research in the Social Sciences: Future Challenges and Opportunities, National Research Council (U.S.). Division on Earth and Life Studies, National Academies Press, - Social Science</li> <li>▪ Kimball I. Maull, Mazin A. Turna, and Husham Abdelrhahn Informatics in Disaster, Terrorism, and War by in Telemedicine for Trauma, Emergencies, and Disaster Management by Rifat Latifi</li> <li>▪ Cheng, F. Y., 1995. Urban disaster mitigation: the role of engineering and technology, Elsevier</li> <li>▪ National Research Council (U.S.), 2007. Improving disaster management: the role of IT in mitigation, preparedness, response, and recovery by Committee on Using Information Technology to Enhance Disaster Management, Ramesh Ragothama Rao, National Academies Press (U.S.), National Academies Press</li> </ul>			

<b>Name of the Course/Module</b>	<b>CROSS-CUTTING ISSUES IN DRM</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
		X			
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	4				
<b>Objectives</b>	<p>The main objective of this module is to introduce cross cutting issues in disaster risk management. urban disaster risk diagnosis and comprehensive disaster risk-management approach for urban planning. Specifically, the module will:</p> <ul style="list-style-type: none"> <li>Enhance understanding of Urban Disaster Risk Management principles</li> <li>Impart knowledge about tools for identifying, assessing and mitigating urban risks</li> <li>Provide insights on pre-emptive planning and action on prevention and management of urban risk</li> </ul>				
<b>Content Outline</b>	<ol style="list-style-type: none"> <li>1. Practice, policy and gaps: Review of implementation of DRM</li> <li>2. Climate Change, Disaster Risk Management, Millennium Development Goals</li> <li>3. Cross-cutting issues in DRM</li> <li>4. Gender sensitivity</li> <li>5. Special issues: HIV, old age, children and lactating mothers</li> <li>6. Conflict sensitivity</li> <li>7. Beneficiary accountability</li> <li>8. Environmental sensitivity</li> <li>9. Case studies</li> </ol>				
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work, Interaction, Case studies, Presentation</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar/Examination</li> </ul>				
<b>References</b>	<ul style="list-style-type: none"> <li>▪ TEARFUND, 2007. Disaster Management Team Good Practice Guidelines, HIV &amp; AIDS Mainstreaming Conflict sensitive Gender sensitivity Beneficiary accountability Environmental sensitivity</li> <li>▪ Capola, D., 2006. Introduction to International Disaster Management, Elsevier</li> </ul>				



<b>Name of the Course/Module</b>	<b>PROJECT WORK</b>			<b>Course Code</b>	
<b>Course type</b>	<b>Core</b>	<b>'Elective'</b>	<b>'Project'</b>	<b>'Thesis'</b>	
			X		
<b>Characteristics</b>	<b>Description</b>				
<b>Language</b>	English				
<b>Credit Points</b>	6				
<b>Objective</b>	The purpose of the project work is to investigate a disaster situation, evaluate different scenarios assess alternative models of disaster risk reduction and evaluate effective approach. The project will be carried out in a group of 2-3 students and each student is supposed to work on a different case within the same context of the group. The project will be an opportunity for the students to work in a team. One of the strong components of the project work should be disaster modelling and simulation using different tools.				
<b>Content Outline</b>					
<b>Teaching Method</b>	<ul style="list-style-type: none"> <li>▪ Lectures, Group work, Interaction, Case studies, Presentation</li> </ul>				
<b>Assessment Method</b>	<ul style="list-style-type: none"> <li>▪ Assessment/Seminar</li> </ul>				
<b>Bibliography</b>					