

Detail Outline of Postgraduate Courses

The Master of Science in Disaster Risk Reduction Science [M. Sc. (DRR)] program will consist of a total of 10 courses. Out of these, 6 courses will be provided by BUET-JIDPUS, while the remaining 4 courses will be offered by other departments or institutions within BUET.

COURSES OFFERED BY BUET-JIDPUS

DP 6001 Multi Hazard Risk Assessment and Mitigation

3 Credits

Natural Hazards & Man-made Hazards, Hazard Assessment, Risk Analysis for Different Hazards, Elements at Risk Assessment, Obtaining Spatial Data for Risk Assessment, Risk Based Zoning, Vulnerability Assessment, Risk Management, Forecasting and Warning.

DP 6003 Remote sensing and GIS for Disaster Mitigation

3 Credits

Stress-strain relationship; Plane-stress and plane-strain; Stress functions; Two dimensional problems in rectangular and polar coordinates; Torsion; Energy principles; Stress and strain in three dimensions; General theorems; Three dimensional problems; Theories of failure; Computer solutions of elasticity problem. Introduction to Spatial Information Engineering for Disaster management, Principle of Remote Sensing: Optical Sensors, SAR, LIDAR Images, Image Processing and Analysis, Principle of Geographic Information System: Geo-spatial and Thematic Data Analysis, GPS and Field Surveying, Data Integration and Database Generation, Spatial Analysis and Visualization; Advanced Mapping Technology: UAV, MMS, Field Sensor Network; Space-Based Technology for Disaster and International Collaborations; Location Based Service: Web GIS, Geo-Portal, Early Warning System.

DP 6013 Urban Fire Hazard Mitigation and Safety Planning

3 Credits

Fire hazard in urban areas: Fuel/structure modification, Water supply, Emergency services, Emergency evacuations, Minimizing fire loss, Firefighter safety; Development of fire mitigation policies; Post event recovery and maintenance; Mandatory elements of the general plan: Land use, Housing, Circulation, Conservation, Open space, Safety, Related planning and regulatory tools.

DP 6015 Community Based Disaster Planning

3 Credits

Major activities and concepts related to disaster mitigation; Community-based approaches to disaster mitigation; A communication model; Community preparedness programs; Community Disaster resilience programs and Community assessment tools; Developing partnerships and Connecting with the Public.

DP 6017 Land Use Planning Using Remote Sensing and GIS

3 Credits

Introduction to Geographic Information Systems (GIS) and Remote Sensing (RS); Basic Land-use classifications with GIS software; Use of satellite technology for thermal remote sensing and temperature monitoring; Creation of 3D landscape models from drone surveys; Advanced classification of landscapes from street-level to district level; Introduction to declassified satellite imagery; Working with declassified data: registration and geometric corrections; Quantifying urban expansion and land-use change with mixed satellite data sources; Object -Oriented classification of urban landscapes with Corona data.

DP 6201 Flood Control and Mitigation

3 Credits

Background and causes of flood problem in Bangladesh; Flood damage: Flood induced riverbank erosion; Flood control policies: Post-disaster recovery, Indigenous flood-adjustment strategies, Sustainable floodplain development policy; Flood control measures: Mitigation of flood damage, Structural and Non-structural measures, Land use, zoning and risk assessment, Flood induced erosion control, Low cost measures; Flood forecasting and warning systems; Research, education and exchange of knowledge; Public awareness, preparedness and participation.

COURSES OFFERED BY EXTERNAL INSTITUTIONS/DEPARTMENTS

WFM 6201 Hazards and Risk Analysis

3 Credits

Natural hazards: climate, riverine and coastal; Man made hazards; Presentation of hazards data; Hazards assessment; Expected damage; Risk analysis; Risk reduction measure: structural and non-structural; Operation and maintenance of mitigation facilities; Reliability analysis; Risk-based zoning; Forecasting and warning; Hazard management planning; Case studies.

WFM 6311 Climate Change Risk Management

3 Credits

The global climate system: global heat and water balance, atmospheric circulation, ocean circulation, coupled ocean and atmospheric processes; Climate variability and climate change; Assessment of climate change risks; Forecasts and scenarios development; Impact of climate change on water related hazards; Economic, social and environmental implications; Mitigation measures and adaptation techniques, Mainstreaming climate change risk management.

WFM 6305 Coastal Zone Management

3 Credits

Definition and delineation of the coastal zone; Coastal zone management: concepts, issues,

prospects; Coastal, estuarine and delta processes; Coastal hazards: storm surge, sea level rise, tsunami; Linkages among coastal systems; Coastal ecosystem and environment; Socio-economic, political and institutional considerations; Coastal infrastructure: erosion protection, embankment, polder, cyclone shelter, cross-dam, port and waterway; Coastal population and livelihood; Marine and coastal resources; Coastal zone policy and strategy; Case studies on Integrated Coastal Zone Management.

PLAN 6153 Disaster Management in Planning

3 Credits

Type and nature of natural and man-made disasters; techniques and issues related to hazard assessments vulnerability analysis and risk assessment; socio-economic impacts of disasters; disasters in urban areas; disaster preparedness and pre-disasters in urban areas; disaster preparedness and pre-disaster management; disaster response and post-disaster management; institutional framework and the experience of disaster management in Bangladesh.