



## ***Professional Master in Disaster Risk Management Sciences (P.M.D.R.M)***

### **Syllabus**

<b>Course 1</b>	<b><i>Fundamentals of Risk Management</i></b>
<b>Hours</b>	<b><i>3 hours weekly -first semester - first year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"><li>• <i>Concepts and terminology</i></li><li>• <i>Hazards and risks related</i></li><li>• <i>Risk assessment and exposure</i></li><li>• <i>Potential risk treatments</i></li><li>• <i>Key steps in the risk assessment process.</i></li></ul>	
<b>Course 2</b>	<b><i>Flood Risk and Risk Assessment</i></b>
<b>Hours</b>	<b><i>3 hours weekly -first semester - first year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"><li>• <b><i>Hydrology and climate: Hydrology departments - Water quality in nature - Hydrological cycle - Climate.</i></b></li><li>- <i>Water balance and energy balance: Water balance .</i></li><li>- <i>Energy balance equation for the surface of the earth Water measurements: Measurement of water levels - Measurement of discharges in open waterways - the key to discharge</i></li><li>- <i>Representation of random mutants according to mathematical curves</i></li><li><i>Morphological characteristics of the ponds Precipitation: River basins</i></li><li>- <i>Characteristics of the basin of the young</i></li><li>- <i>River network</i></li><li>- <i>Measurement of precipitation</i></li><li>- <i>Measurement of snow - treatment of precipitation measurement data</i></li><li>- <i>The relationship of precipitation with time - rain intensity curves Period of Precipitation</i></li><li>- <i>Estimation of mean elevation in an area</i></li><li>• <b><i>Heavy rains and design rains</i></b></li><li><i>Rain relation of runoff: - Analysis of the time curve of discharge</i></li><li>- <i>The characteristic times of the drainage curves</i></li><li>- <i>Separation of direct discharge from indirect discharge - Determination of runoff - Flow control - Flood transmission.</i></li></ul>	

<b>Course 3</b>	<b>Information Technology in Disaster and Crisis Management</b>
<b>Hours</b>	<b>3 hours weekly -first semester - first year</b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• Data and information (information pyramid).</li> <li>• Information systems and characteristics, indicators, evidence.</li> <li>• Secondary data characteristics and sources (before, during, after) disaster.</li> <li>• Methods and methods of survey / assessment (before, during, after) disaster</li> <li>• Foundations and criteria for designing questionnaires.</li> <li>• Development of the urban construction questionnaires (emergency, early recovery, reconstruction)</li> <li>• Preparing and equipping the spatial basis of the study area (simple spatial information systems) disaster management information systems</li> <li>• Global disaster information networks</li> <li>• Special experiences in the field of information management in Syria in the current crisis in the field of establishing national databases of national data bases</li> </ul>	
<b>Course 4</b>	<b>Natural Disasters</b>
<b>Hours</b>	<b>3 hours weekly -first semester - first year</b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• Definitions and terminology related to the article</li> <li>• General Introduction to Natural Disasters and the Environment (Definition of the concept of disasters, their types, characteristics, human coping and coping with it, the complexity of natural disaster management, causes of increasing disasters)</li> <li>• Explain the systems of the earth and the disintegration that occurs within each of these systems. This section also discusses the potential hazards to humans, animals and plant life: Explain the interaction between Earth systems (atmosphere, oceans: hydro-surf, watercourse, Terrestrial: lithosphere, biosphere: biosphere).</li> <li>• Know how changes in one system affect other systems: environmental disintegration (disintegration of the gaseous atmosphere, disintegration of the oceans, disintegration of the system of cycles, disintegration of the land, and disintegration of the biosphere).</li> <li>• The effects of disasters on the environment (description of certain types of natural environmental disasters and man-made types of causes and risks such as earthquakes, volcanic eruptions, land sliding, desertification, drought, floods, tsunamis, etc., explain how these disasters affect human societies And the environment.</li> <li>• Mitigating damage to the environment: <ul style="list-style-type: none"> <li>- Identification of ways of mitigating damage to the environment (response to problem requirements)</li> <li>- Develop a list of humanitarian systems that should be targeted by mitigation programs.</li> <li>- Discuss the principle of sustainable development.- Suggest actions to be taken to introduce and implement changes to the environment.- Identify the roles of governments, governmental organizations, non-governmental organizations, local and international organizations in fixed development programs.</li> </ul> </li> </ul>	

<b>Course 5</b>	<b><i>The Dangers of Earthquakes</i></b>
<b>Hours</b>	<b><i>first semester - first year -3 hours weekly</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Introduction to the management of the seismic disaster: definition of disaster, disaster management concept, characteristics and characteristics of disasters, types of disasters, world disaster losses - facts and figures, earthquakes as a source of disasters, seismic forecasting. Seismic disasters, how to deal with earthquakes when they occur</i></li> <li>• <i>Preliminary principles in seismology: definition of earthquakes, seismic waves and their characteristics, seismic activity ranges and tectonic plates, internal structure of the Earth, physical elements of the earthquake, seismic terms, earthquakes and faults, seismic scales: intensity, fate</i></li> <li>• <i>Seismic prediction: seismic hazards, earthquake prediction and phases, long-term prediction of earthquakes, seismic frequency, seismic cycle, seismic frequency relationship (Gothenburg-Richter), seismic risk assessment, short-term forecasting.</i></li> <li>• <i>Seismic hazard and susceptibility: definition of seismic hazard, seismic hazard in the Mediterranean region, lessons learned from previous earthquakes, susceptibility, factors affecting susceptibility, mitigation of susceptibility, estimation of susceptibility to some models of installations</i></li> <li>• <i>Seismic activity in Syria: regional seismicity in the Arab region, tectonic status in Syria, historical seismic, seismic, seismic monitoring, seismic risk mitigation in Syria, seismic disaster reduction strategy features, proposed seismic management approach</i></li> </ul>	
<b>Course 6</b>	<b><i>Crisis and Disaster Management</i></b>
<b>Hours</b>	<b><i>first semester - first year -3 hours weekly</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Introduction to the concept of risk, risk, definition of natural phenomenon, accident, crisis, disaster, vulnerability factors.</i></li> <li>• <i>The difference between disaster and crisis. General characteristics of natural disasters,</i></li> <li>• <i>Disaster Management</i> <ul style="list-style-type: none"> <li>- <i>Disaster Classification and Main Types</i></li> <li>- <i>Presentation of Key Features of Natural and Man-made Disasters.</i></li> </ul> </li> <li>• <i>Disasters and developing countries: (developing countries and disasters, vulnerability factors and vulnerability</i></li> <li>• <i>Causes of increased incidence of disasters.</i></li> <li>• <i>The effects of disasters and wars globally in general and in developing countries in particular.</i></li> <li>• <i>Key Concepts in Disaster Management: A Historical Approach to the Development of Disaster Management Science.</i></li> <li>• <i>Disaster management concept Disaster Management - Disaster management objectives</i> <ul style="list-style-type: none"> <li>- <i>Disaster management functions</i></li> <li>- <i>Disaster management requirements and needs</i></li> <li>- <i>Recent challenges in disaster management.</i></li> </ul> </li> <li>• <i>Disaster management phases: pre-disaster (preparedness), Effective response phase of the disaster (Response), Effective response phase of the disaster (Response)</i> <ul style="list-style-type: none"> <li>• <i>Recovery Stage.</i></li> <li>• <i>Basic steps in planning and disaster preparedness.</i></li> <li>• <i>The role of government, media communities and non-governmental organizations</i></li> </ul> </li> </ul>	

<b>Course 7</b>	<b><i>Managing Drought Risks and Climate Change</i></b>
<b>Hours</b>	<b><i>3 hours weekly - Second semester - first year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>General understanding - understanding any problem that is the first step in finding appropriate solutions</i></li> <li>• <i>the success of disaster risk reduction and management procedures requires coordination and cooperation between ministries and state bodies and their governmental and non-governmental institutions on the one hand and the elements of the response of those concerned on the other hand.</i></li> <li>• <i>Management concept, risk, risk management, drought, climate change.</i></li> <li>• <i>Concepts that are intertwined with the concept of drought</i></li> <li>• <i>the concept of climate and weather</i></li> <li>• <i>integrated regulatory levels of climate</i></li> <li>• <i>climate systems.</i></li> <li>• <i>Causes of climate change.</i></li> <li>• <i>Quantitative, temporal and seasonal rainfall systems.</i></li> <li>• <i>Natural sources of water.</i></li> <li>• <i>The concept of virtual water and harvesting of water.</i></li> <li>• <i>Drought indicators and causes.</i></li> <li>• <i>Determination of dryness and calculation of its severity and duration</i></li> <li>• <i>continental factor</i></li> <li>• <i>drought coefficient.</i></li> <li>• <i>Drought management techniques and climate change.</i></li> <li>• <i>Samples of the Syrian experience in managing the risks of drought and climate change</i></li> <li>• <i>Syrian efforts to combat drought.</i></li> <li>• <i>Examples of global experience in drought risk management and climate change.</i></li> </ul>	
<b>Course 8</b>	<b><i>Health and Medical Issues in Emergency Management</i></b>
<b>Hours</b>	<b><i>3 hours weekly - Second semester - first year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Defining the health disaster and its impact on human health</i></li> <li>• <i>How to deal with the health disaster and early preparedness.</i></li> <li>• <i>Primary health fundamentals in disasters and rapid assessment of disaster.</i></li> <li>• <i>Assess the needs of medicines and equipment.</i></li> <li>• <i>The role of emergency medicine in disasters</i></li> <li>• <i>Apply the skills needed to assist the injured to cope with potential hazards and disasters in the communities (wounds, fractures, burns, trauma, CPR, fainting, heat exhaustion) and practical application of trainees.</i></li> <li>• <i>Public health and disasters.</i></li> <li>• <i>The role of medical services in disaster management</i></li> <li>• <i>Activating emergency programs in hospitals and moving some facilities (field hospitals).</i></li> <li>• <i>Familiarity with the health emergency.</i></li> <li>• <i>health education</i></li> <li>• <i>Ethical issues in the provision of health care in disasters.</i></li> <li>• <i>Supervision of public health</i></li> <li>• <i>Nutrition, sanitation and its impact on health.</i></li> <li>• <i>Types of infectious diseases and epidemics prevalent in disasters and ways to combat them.</i></li> </ul>	

<b>Course 9</b>	<b><i>Disaster Preparedness and Emergency Planning</i></b>
<b>Hours</b>	<b><i>3 hours weekly - Second semester - first year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• The concept of disaster preparedness</li> <li>• Managing disaster preparedness as one of the important episodes of the disaster.</li> <li>• Important aspects of disaster preparedness at the national level, those involved in the formulation of disaster preparedness policies</li> <li>• how to formulate disaster preparedness policies.</li> <li>• Disaster planning and preparedness: national contingency planning, participatory planning</li> <li>• Planning principles for disaster preparedness.</li> <li>• Basic Requirements: Outline of the types and sources of information needed to describe the scope, content and purpose of the disaster preparedness plan, describe how a disaster preparedness plan works.</li> <li>• Disaster Preparedness training: general need for training, identification of persons and entities to be trained.</li> <li>• Describe the techniques used in training</li> <li>• Community awareness and building a disaster-resilient society.</li> <li>• International cooperation in disaster preparedness.</li> <li>• Examples of preparations for slow and sudden disasters</li> </ul>	
<b>Course 10</b>	<b><i>Geo-informatics Applications in Disaster Management (GIS, RS, GPS)</i></b>
<b>Hours</b>	<b><i>3 hours weekly - Second semester - first year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• GIS components.</li> <li>• Spatial data sources (space / aerial imagery - GPS)</li> <li>• Geographical database and geographical segment characteristics.</li> <li>• Radiological and matrix representation of spatial data.</li> <li>• Returns and spatial adjustment of maps / maps / satellite images.</li> <li>• Preliminary principles in spatial analysis.</li> <li>• Cartography</li> <li>• RS components</li> </ul>	
<b>Course 11</b>	<b><i>Programs of International and Regional Organizations Engaged in Disaster Management</i></b>
<b>Hours</b>	<b><i>3 hours weekly - Second semester - first year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• United Nations organizational structure</li> <li>• Location of organizations for economic</li> <li>• social development in disaster management.</li> <li>• Review the role of some of the most important United Nations organizations in disaster management.</li> <li>• The importance of volunteering in disaster management for civil society.</li> </ul>	

<b>Course 12</b>	<b><i>laws and principles, and ethics of humanitarian action</i></b>
<b>Hours</b>	<b><i>3 hours weekly - Second semester - first year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Introduction to humanitarian work and its complexities</i></li> <li>• <i>Ethical dilemmas in humanitarian work</i></li> <li>• <i>Scope of application of international law</i></li> <li>• <i>Armed conflict and relief work</i></li> <li>• <i>General principles governing relief work</i></li> <li>• <i>International humanitarian law and relief work.</i></li> <li>• <i>Entry and passage of humanitarian relief and coordination work</i></li> <li>• <i>Code of Conduct for the International Federation of the Red Cross</i></li> </ul> <p><i>Legal frameworks for disaster at the international, regional and national levels</i></p> <ul style="list-style-type: none"> <li>• <i>Practical examples of the material.</i></li> </ul>	

## ***Specialization: Disaster Mitigation and Reconstruction Engineering***

***second year- first and second semester***

<b><i>Course 13</i></b>	<b><i>Environmental Impact Assessment in Disasters</i></b>
<b><i>Hours</i></b>	<b><i>3 hours weekly -second semester - second year</i></b>
<b><i>Teaching Staff</i></b>	
<ul style="list-style-type: none"><li>• <i>Introduction to environmental impact assessment- Screening of projects</i></li><li>• <i>Determine the scope of the study</i></li><li>• <i>Environmental impact statement</i></li><li>• <i>Impact analysis</i></li><li>• <i>Public Consultation</i></li><li>• <i>Environmental impact management</i></li><li>• <i>Thresholds and standards</i></li><li>• <i>Monitoring in environmental impact assessment</i></li><li>• <i>Strategic environmental assessment</i></li></ul> <p>- <i>An analysis of the various environmental impacts (whether temporary or permanent) of a particular development activity. - The study of the different options for implementing this activity in terms of its various impacts on the components of the ecosystem, including the chemical, physical and biological effects, And to highlight these environmental impacts of decision-makers in order to establish and take appropriate decision on the environmental and social consequences of such activity.</i></p> <p>- <i>Enable local authorities to know the environmental impact and environmental risks of projects prior to their establishment and thus take appropriate decisions to avoid environmental disasters.</i></p> <p><i>Conditions for granting licenses for development activities.</i></p>	
<b><i>Course 14</i></b>	<b><i>Integrated Disaster Management in Syria (floods, forest fires, earthquakes)</i></b>
<b><i>Hours</i></b>	<b><i>3 hours weekly -second semester - second year</i></b>
<b><i>Teaching Staff</i></b>	
<ul style="list-style-type: none"><li>• <i>Application of probability theory and mathematical statistics in hydrology:</i></li><li>• <i>Calculation of maximum expenditure:</i></li><li>• <i>Reservoirs</i></li><li>• <i>Regulation of runoff in rivers</i></li><li>• <i>Flood management:</i></li><li>• <i>Security measures to reduce forest fires: global forest status</i></li><li>• <i>Forest status in the Arab world • Measures to be taken to prevent forest fires</i></li><li>• <i>Measures to be taken during forest fires • Measures to be taken after forest fires • From forest fires in Syria.</i></li><li>• <i>Causes of forest fires</i></li><li>• <i>Fire extinguishers and types</i></li></ul>	



<b>Course 15</b>	<b><i>Disaster Mitigation and Sustainable Development</i></b>
<b>Hours</b>	<b><i>3 hours weekly -second semester - second year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Introduction to classification of mitigation measures</i></li> <li>• <i>Engineering and construction measures</i></li> <li>• <i>Urban planning measures</i></li> <li>• <i>Economic measures to mitigate risks.</i></li> <li>• <i>Administrative and institutional risk mitigation measures</i></li> <li>• <i>Community risk mitigation measures - events and quality mitigation actions</i></li> <li>• <i>Mitigation strategy</i></li> <li>• <i>Disaster and sustainable development</i></li> <li>• <i>International cooperation in mitigation and disaster risk reduction.</i></li> </ul>	
<b>Course 16</b>	<b><i>Seismic Response to Buildings</i></b>
<b>Hours</b>	<b><i>3 hours weekly -second semester - second year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>General introduction to the geology of the Earth's crust and the origin of earthquakes.</i></li> <li>• <i>Seismic design criteria, conditions and precautions required in the design of seismic and load structures.</i></li> <li>• <i>Methods of calculation of design seismic forces</i></li> <li>• <i>Stages of calculating the equivalent static force.</i></li> </ul> <p><i>Vertical distribution and horizontal distribution of shear forces and lattice calculation, displacement, displacement floor displacement, and vertical vehicle.</i></p> <ul style="list-style-type: none"> <li>• <i>Introduction to construction dynamics and motion equation.</i></li> <li>• <i>Single-degree systems of generalized freedom and multiple degrees of freedom systems</i></li> <li>• <i>Vibration is free of clogged and non-cumbersome vibration patterns.</i></li> <li>• <i>Seismic requirements according to the Syrian Arab Code</i></li> <li>• <i>Seismic requirements according to the IBC and ASCE</i></li> <li>• <i>Practical applications with computer support according to SAP and ETABS programs</i></li> </ul>	
<b>Course 17</b>	<b><i>Mitigation of Seismic Losses and Strengthening of Weak Buildings</i></b>
<b>Hours</b>	<b><i>3 hours weekly -second semester - second year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Methods and bases of detection and investigation of buildings and facilities (damaged and unaffected).</i></li> <li>• <i>Methods of calculating and re-evaluating structural elements on seismic loads.</i></li> <li>• <i>Introduction to methods and methods of strengthening and implementation technology.</i></li> <li>• <i>Soil strengthening methods</i></li> <li>• <i>Methods of strengthening single and common foundations and mats with mathematical models.</i></li> <li>• <i>Methods of reinforcing concrete columns with mathematical models</i></li> <li>• <i>Methods of reinforcing metal columns with mathematical models.</i></li> <li>• <i>Methods of supporting the awards and the metal prizes with mathematical models.</i></li> <li>• <i>Methods of supporting solid tiles and Hurdite tiles with mathematical models.</i></li> <li>• <i>Review the calculation of mixed sections - review the carbon fiber models used in the consolidation.</i></li> </ul>	



<b>Course 18</b>	<b><i>Seismic Response to Infrastructure and Bridges</i></b>
<b>Hours</b>	<b><i>3 hours weekly -second semester - second year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Introduction and basic concepts of seismic response to infrastructure.</i></li> <li>• <i>Structural design for flexible paving layers.</i></li> <li>• <i>The basic concepts of the seismic effect between soil origin</i></li> <li>• <i>Introduction</i></li> <li>• <i>principles of soil assimilation</i></li> <li>• <i>Key factors affecting soil assimilation - issues.</i></li> <li>• <i>Anti-fouling procedures.</i></li> <li>• <i>Introduction and basic concepts of seismic response to bridges.</i></li> </ul>	
<b>Course 19</b>	<b><i>Recycle and Manage Debris and Debris from Disasters</i></b>
<b>Hours</b>	<b><i>3 hours weekly -second semester - second year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>General description of the aggregates and their types</i></li> <li>• <i>Types of disasters and their impact on recycling materials</i></li> <li>• <i>Gravels (from the remains of concrete blocks, from the remains of the block)</i></li> <li>• <i>Recycling of iron (steel)</i></li> <li>• <i>Recycling aluminum</i></li> <li>• <i>Recycling glass</i></li> <li>• <i>Recycling plastic</i></li> <li>• <i>Recycling wood</i></li> <li>• <i>Recycling paper</i></li> <li>• <i>Sort aggregates</i></li> <li>• <i>Transportation of aggregates</i></li> <li>• <i>Mechanisms used in recycling labor</i></li> <li>• <i>Cost and economic feasibility</i></li> <li>• <i>Recycling of aggregates</i></li> <li>• <i>. Laboratory experiments and scientific research.</i></li> </ul>	
<b>Course 20</b>	<b><i>Cultural Heritage and Risk Management</i></b>
<b>Hours</b>	<b><i>3 hours weekly -second semester - second year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Preparing a case study for an archaeological site.</i></li> <li>• <i>Information necessary to prepare a case study for the site to be studied</i></li> <li>• <i>Study the characteristics of the archaeological site.</i></li> <li>• <i>Syrian Archeology Law.</i></li> <li>• <i>Types of effects</i></li> <li>• <i>Archaeological excavations.</i></li> <li>• <i>Development of restoration, restoration and conservation strategies</i></li> <li>• <i>International law, international conventions and mechanisms for the implementation of archaeological restoration</i></li> <li>• <i>Pre-disaster preparedness for reliable inheritance certification</i></li> <li>• <i>Preparing for the protection and preservation of cultural heritage through international conventions.</i></li> </ul>	

<b>Course 21</b>	<b><i>Advanced Software in the Analysis and Assessment of Potential Losses Caused by Disasters</i></b>
<b>Hours</b>	<b><i>3 hours weekly -second semester - second year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Risk assessment methodology.</i></li> <li>• <i>Risk control plans.</i></li> <li>• <i>Assessment of damage and loss after disasters.</i></li> <li>• <i>General evaluation procedures.</i></li> <li>• <i>Programmatic assessment of disaster risks.</i></li> <li>• <i>Some software used to assess losses.</i></li> <li>• <i>HAZUS: Program for estimating human and material losses resulting from natural disasters.</i></li> <li>• <i>Steps to use the HAZUS program</i></li> </ul>	
<b>Course 22</b>	<b><i>Seismic Response to Liquid Storage Tanks and Dams</i></b>
<b>Hours</b>	<b><i>3 hours weekly -second semester - second year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Introduction and basic concepts of dams.</i></li> <li>• <i>Seismic design requirements for dams.</i></li> <li>• <i>Seismic response to earth dams</i></li> <li>• <i>Seismic reaction to concrete dams</i></li> <li>• <i>Introduction and basic concepts of storage tanks for liquids</i></li> <li>• <i>Seismic design requirements for liquid storage tanks.</i></li> <li>• <i>Simplified seismic design methods for liquid storage tanks - digital applications.</i></li> <li>• <i>Review code requirements for seismic analysis of fluid storage tanks.</i></li> </ul>	
<b>Course 23</b>	<b><i>Project Risk Assessment</i></b>
<b>Hours</b>	<b><i>3 hours weekly -second semester - second year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Introduction to Project Risk Management (PRM)</i></li> <li>• <i>Definition of risk</i></li> <li>• <i>Quantitative risk analysis procedures (R.Qn.A)</i></li> <li>• <i>Qualitative Analysis Procedures (R.QI.A)</i></li> <li>• <i>Risk Management and Response Plan (RMP)</i></li> <li>• <i>Risk log</i></li> <li>• <i>Control and control of risk</i></li> <li>• <i>Knowledge of Risk Management System (ISO 31000): ERM</i></li> <li>• <i>Risk management applications in infrastructure projects</i></li> </ul>	

Course 24	Reconstruction and Rehabilitation After Disasters		
Hours	3 hours weekly -second semester - second year		
Teaching Staff			
<ul style="list-style-type: none"><li>• Assessment of damage, loss and needs for post-disaster recovery.</li><li>• sectors to be assessed after disasters.</li><li>• Assessment of reconstruction needs.</li><li>• Models of post-disaster status assessment forms.</li><li>• Evaluation of abandoned buildings after disasters.</li><li>• Case studies on post-disaster reconstruction.</li></ul>			
Course 25	Graduation Project		
Hours	4 hours per week - second year – second semester		
Teaching Staff	-		
<div><div>Dean of the higher Institute of Earthquake Studies and Research</div><div>Vice dean</div><div>head of the Department Earthquake Structural Engineering</div></div> <div><div>Professor Nazih Rashed Abboud</div><div>Associate Professor Nedal shouker</div><div>Associate Professor Hala Tawfek Hasan</div></div>			

## ***Relief and Management of Relief Operations***

***second year- first and second semester***

<b><i>Course 13</i></b>	<b><i>Climate Prediction and Early Warning Systems</i></b>
<b><i>Hours</i></b>	<b><i>3 hours weekly - Second semester - first year</i></b>
<b><i>Teaching Staff</i></b>	
<ul style="list-style-type: none"> <li>• <i>Climate and weather concepts - Climate change - Spatial and temporal variation of climate and weather Methods of changing weather conditions at different time periods.</i></li> <li>• <i>Atmospheric components and their impact on weather and climate</i> <ul style="list-style-type: none"> <li>- <i>Climate impact on weather - Weather factors</i></li> <li>- <i>Methods of horizontal and vertical change of weather factors</i></li> <li>- <i>Temperature and humidity in the atmosphere and potential temperature.</i></li> </ul> </li> <li>• <i>Some atmospheric issues: the greenhouse effect, tornadoes, sea storms and Nino.</i></li> <li>• <i>Force affecting the atmosphere and equations (Force of pressure gradient- Coriolis force- Friction forces and gravity)</i></li> <li>• <i>Equations that govern the movement of the atmosphere - models of prediction and simulation of weather and climate - types of techniques for climate prediction</i></li> <li>• <i>Models of primitive equations - initial and boundary conditions - industrial intelligence algorithms - models of global and regional climate simulations.</i></li> <li>• <i>Predictability and uncertainty in forecasting weather and climate - Climate prediction and future threats.</i></li> <li>• <i>Prediction and risk forecasting tools - early warning systems and decision support.</i></li> <li>• <i>National Emergency Operations Center. National Emergency Telecommunications Network.</i></li> <li>• <i>Early warning systems for risk prediction - early warning system concepts - Generations of early warning systems for weather and climate prediction.</i></li> <li>• <i>Early warning systems framework</i></li> <li>• <i>Implementation of early warning system at local, national and regional levels.</i></li> <li>• <i>Tsunami Early Warning Systems</i></li> <li>• <i>Hurricane Early Warning Systems</i></li> <li>• <i>- Flood Early Warning Systems.</i></li> </ul>	
<b><i>Course 14</i></b>	<b><i>Integrated Disaster Management in Syria (floods, forest fires, earthquakes)</i></b>
<b><i>Hours</i></b>	<b><i>3 hours weekly - Second semester - first year</i></b>
<b><i>Teaching Staff</i></b>	
<ul style="list-style-type: none"> <li>• <i>Application of probability theory and mathematical statistics in hydrology:</i> <ul style="list-style-type: none"> <li>• <i>Calculation of maximum expenditure: Reservoirs</i></li> <li>• <i>Regulation of runoff in rivers</i></li> </ul> </li> <li>• <i>Flood management:</i></li> <li>• <i>Security measures to reduce forest fires: global forest status</i></li> <li>• <i>Forest status in the Arab world</i></li> <li>• <i>Measures to be taken to prevent forest fires</i></li> <li>• <i>Measures to be taken during forest fires</i></li> <li>• <i>Measures to be taken after forest fires</i></li> <li>• <i>From forest fires in Syria.</i></li> <li>• <i>Causes of forest fires</i></li> <li>• <i>Fire extinguishers and types</i></li> </ul>	

<b>Course 15</b>	<b><i>Response Plans and Disaster Management in the Relief Phase</i></b>
<b>Hours</b>	<b><i>3 hours weekly - Second semester - first year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Material definitions and terminology, disaster response as an important link in disaster management.</i></li> <li>• <i>Monitoring early warning indicators</i></li> <li>• <i>Surveys and post-disaster assessment, needs assessment.</i></li> <li>• <i>Process planning (the difference between the operational plan and the national plan</i></li> <li>• <i>Operations and logistics, exploring different techniques and best practices for disaster response.</i></li> <li>• <i>Disaster response and response activities (evacuation, search, rescue, etc.)</i></li> <li>• <i>Search and rescue operations (techniques and foundations)</i></li> <li>• <i>Medical evacuation (treatment, first aid medical, psychological support)</i></li> <li>• <i>Managing corpses</i></li> <li>• <i>Management and planning of accommodation sites</i></li> <li>• <i>Provide survival supplies (lifeline, water, food, nutrition, sanitation)</i></li> <li>• <i>Security of affected areas</i></li> <li>• <i>Critical infrastructure rehabilitation</i></li> <li>• <i>Coordination mechanisms during the disaster</i></li> <li>• <i>Telecommunications</i></li> <li>• <i>Working with the military and multiple actors during disasters</i></li> <li>• <i>Volunteer management</i></li> <li>• <i>Financing aspects of humanitarian relief</i></li> </ul>	
<b>Course 16</b>	<b><i>Management of Small Projects in the Relief Phase</i></b>
<b>Hours</b>	<b><i>3 hours weekly - Second semester - first year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>The importance of small and medium enterprises.</i></li> <li>• <i>Investment project cycle.</i></li> <li>• <i>Management of small and medium enterprises.</i></li> <li>• <i>Feasibility studies.</i></li> <li>• <i>Marketing research</i></li> <li>• <i>The technical study</i></li> <li>• <i>Social study</i></li> <li>• <i>Economic and financial study.</i></li> <li>• <i>Practical exercises</i></li> </ul>	
<b>Course 17</b>	<b><i>Development of Safety Plans in Industrial Facilities</i></b>
<b>Hours</b>	<b><i>3 hours weekly - Second semester - first year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Introduction to occupational safety</i></li> <li>• <i>Occupational safety concepts</i></li> <li>• <i>The objective of safety plans - the importance of safety management in facilities</i></li> <li>• <i>Types of hazards and risks</i></li> </ul>	

- How accidents occur - what are the causes of accidents - the responsibility of safety in the facility).

*OSHA Occupational Safety and Health Standards and Requirements: Protection against electrical hazards - safety requirements when designing or working on scaffolding - work conditions in indoor safety - welding work - protection from falling hazards etc. - safety tasks for personal protection).*

- Emergency planning in industrial facilities: Definition of emergencies - Types of emergency in facilities - Purpose of emergency plan - Planning and preparation of contingency plans - Structure of emergency plan - Contents and components of emergency plan - Effectiveness and efficiency of emergency plans.
- Emergency evacuation plan: definition of evacuation - evacuation type - evacuation plan or establishment - evacuation plan elements - instructions and evacuation orders - general requirements for escape routes - duties of evacuation team in the building - practical training on the implementation of the plan)
- Introduction to fire extinguishing: fire, fire life cycle, fire pyramid, forms of fire, types of fire, fire extinguishers, of extinguishers, period of operation of extinguisher, main parts of extinguisher, use of extinguisher, common mistakes in fire fighting using extinguishers, Safety rules).
- Handling of Dangerous Goods: Definition of Dangerous Goods - Classification of Hazardous Materials - Physical and Chemical Properties of Dangerous Goods
- Handling safe transport, storage and circulation of dangerous goods - Identification of dangerous goods through international marks - First aid when exposed to hazardous materials).
- Material safety data document MSDS.

<b>Course 18</b>	<b>Management and Planning of Human Resources in the Field of Disaster Management</b>
<b>Hours</b>	<b>3 hours weekly - Second semester - first year</b>
<b>Teaching Staff</b>	

- The definition of human development
- Planning for human development
- Human Resource Management
- Training for human resources in disaster management
- Achieve the goal of best performance for all governmental and non-governmental organizations
- Planning, training and qualifying human resources
- Practical applications

<b>Course 19</b>	<b>Psychological support in disasters</b>
<b>Hours</b>	<b>3 hours weekly -second semester - second year</b>
<b>Teaching Staff</b>	

- Definitions
- Psychological support terms :
  - primary psychological aid
  - based on psychological care
  - trauma
  - loss and sadness.
- Primary Psychiatry
- Common reactions among people with mental trauma
- Effective communication and communication contexts
- Establish psychological support for survivors of tragic accidents.
- Dealing with trauma resulting from loss and acute grief interaction.
- Psychological support for survivors of mental illness before the accident
- Taking care of the psychological state of those providing psychological care in the community itself

<b>Course 20</b>	<b>Department of Information and Humanitarian Action</b>
<b>Hours</b>	<b>3 hours weekly -second semester - second year</b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• Foundations and foundations of the media</li> <li>• Foundations and foundations of humanitarian action.</li> <li>• Information planning</li> <li>• Planning for humanitarian action.</li> <li>• Training and qualification for effective information management.</li> <li>• Practical applications.</li> </ul>	
<b>Course 21</b>	<b>The Humanitarian Charter and the Minimum Standards for Humanitarian Response</b>
<b>Hours</b>	<b>3 hours weekly -second semester - second year</b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• Introduction to the Isphere Project.</li> <li>• Humanitarian Charter</li> <li>• Principles of conduct.</li> <li>• Principles of protection.</li> <li>• Basic standards.</li> <li>• Minimum standards in the field of water supply and sanitation</li> <li>• Minimum standards in the field of hygiene promotion.</li> <li>• Minimum standards in food security and nutrition.</li> <li>• Minimum standards in shelter</li> <li>• Minimum standards in the area of human settlements and non-food supplies.</li> <li>• Minimum standards in health work.</li> <li>• Inclusion of protection and gender in cross-sectorial issues.</li> <li>• The practice of the Isphere project.</li> </ul>	
<b>Course 22</b>	<b>Case Studies to Deal with Crises and Disasters</b>
<b>Hours</b>	<b>3 hours weekly -second semester - second year</b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• Introduction to the material through a review of a range of disasters and crises (natural - human - fast - occurring - slow occurrence).</li> <li>• Distinguish between these patterns in terms of management and responsiveness.</li> <li>• Explain the ways of critical thinking and scientific analysis of how to study each of the previous disasters in terms of formulation of details of the problems, research methodology, data collection, analysis techniques.</li> <li>• Analyzing the multiple factors that have led to historically large disasters.</li> <li>• Discuss preparedness and response to different types of disasters and major mistakes made</li> <li>• Analyzing lessons learned from major past disasters, analyzing what happened and why.</li> <li>• Lessons to be learned from the study that will improve the area of emergency and disaster management.</li> <li>• Analyze and discuss future directions for the relief management.</li> <li>• Teach students valuable research skill that can be used repeatedly throughout their careers, by selecting a set of applied cases in disaster response, and their knowledge of methods and techniques of scientific analysis for error detection.</li> </ul>	



<b>Course 23</b>	<b><i>Logistics Work for Humanitarian Relief</i></b>
<b>Hours</b>	<b><i>3 hours weekly -second semester - second year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>Introduction to Logistics Science</i></li> <li>• <i>Logistics management science concept</i></li> <li>• <i>Importance of logistics management knowledge</i></li> <li>• <i>Major activities and assistance for logistics</i></li> <li>• <i>Humanitarian logistics and complex emergencies: (concept of logistical support for humanitarian relief operations importance of logistical support for humanitarian relief operations).</i></li> <li>• <i>Logistics planning and preparedness - Logistics readiness plan - Evaluation of transport systems and facilities available.</i></li> <li>• <i>Humanitarian logistics and effective response activities: (Operations planning and logistical support - assessment damage to transport systems and identification of needs).</i></li> <li>• <i>Logistics support and emergency relief operations.</i></li> <li>• <i>Humanitarian supply chains and ongoing relief operations:</i> <ul style="list-style-type: none"> <li>- <i>The concept and characteristics of humanitarian supply chains.</i></li> <li>- <i>Key components of the humanitarian supply chains.</i></li> <li>- <i>Reverse supply chains).</i></li> </ul> </li> <li>• <i>Design and implementation of the supply chain within the country.</i></li> </ul>	
<b>Course 24</b>	<b><i>Economic and Financial Aspects of Disaster Recovery</i></b>
<b>Hours</b>	<b><i>3 hours weekly -second semester - second year</i></b>
<b>Teaching Staff</b>	
<ul style="list-style-type: none"> <li>• <i>The basic theories in the stage of recovery and reconstruction</i></li> <li>• <i>Defining and eliminating crises</i></li> <li>• <i>The basics of disaster economy</i></li> <li>• <i>Time value of money concept</i></li> <li>• <i>Risks of economic analysis programs</i></li> <li>• <i>Practical cases from the point of view of the economy</i></li> <li>• <i>Sustainable local development</i></li> </ul>	
<b>Course 25</b>	<b><i>Graduation Project</i></b>
<b>Hours</b>	<b><i>4 hours weekly -second semester - second year</i></b>
<b>Teaching Staff</b>	<b><i>-</i></b>

*Dean of the higher Institute of  
Earthquake Studies and Research*

*Vice dean*

*head of the Department  
Earthquake Structural Engineering*