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The curriculum, with varying definitions, is said to be a plan of the teaching-learning process that students of an academic programme are required to undergo. It includes objectives & learning outcomes, course contents, scheme of studies, teaching methodologies and methods of assessment of learning. Since knowledge in all disciplines and fields is expanding at a fast pace and new disciplines are also emerging; it is imperative that curricula be developed and revised accordingly.

University Grants Commission (UGC) was designated as the competent authority to develop, review and revise curricula beyond Class-XII vide Section 3, Sub-Section 2 (ii), Act of Parliament No. X of 1976 titled “Supervision of Curricula and Textbooks and Maintenance of Standard of Education”. With the repeal of UGC Act, the same function was assigned to the Higher Education Commission (HEC) under its Ordinance of 2002, Section 10, Sub-Section 1 (v).

In compliance with the above provisions, the Curriculum Division of HEC undertakes the revision of curricula after every three years through respective National Curriculum Revision Committees (NCRCs) which consist of eminent professors and researchers of relevant fields from public and private sector universities, R&D organizations, councils, industry and civil society by seeking nominations from their organizations.

In order to impart quality education which is at par with international standards, HEC NCRCs have developed unified templates as guidelines for the development and revision of curricula in the disciplines of Basic Sciences, Applied Sciences, Social Sciences, Agriculture and Engineering in 2007 and 2009.

It is hoped that this curriculum document, prepared by the respective NCRC’s, would serve the purpose of meeting our national, social and economic needs, and it would also provide the level of competency specified in Pakistan Qualification Framework to make it compatible with international educational standards. The curriculum is also placed on the website of HEC (www.hec.gov.pk).

(Fida Hussain)
Director General (Academics)
CURRICULUM DEVELOPMENT PROCESS

STAGE-I
- CURRI. UNDER CONSIDERATION
  - COLLECTION OF REC
    - CONS. OF CRC.
      - PREP. OF DRAFT BY CRC

STAGE-II
- CURRI. IN DRAFT STAGE
  - APPRAISAL OF 1ST DRAFT BY EXP. OF COL./UNIV
    - FINALIZATION OF DRAFT BY CRC
      - APPROVAL OF CURRI. BY V.C.C.

STAGE-III
- FINAL STAGE
  - PREP. OF FINAL CURRI.
    - INCORPORATION OF REC. OF V.C.C.

STAGE-IV
- FOLLOW UP STUDY
  - QUESTIONNAIRE
    - COMMENTS
      - REVIEW
        - PRINTING OF CURRI.
          - IMPLE. OF CURRI.
            - BACK TO STAGE-I
              - ORIENTATION COURSES

Abbreviations Used:
- CRC. Curriculum Revision Committee
- VCC. Vice Chancellor’s Committee
- EXP. Experts
- COL. Colleges
- UNI. Universities
- PREP. Preparation
- REC. Recommendations
Minutes of National Curriculum Revision Committee (NCRC) Preliminary Meeting in Disaster Management held from January 08-10, 2018 at HEC Regional Centre, Peshawar

The preliminary meeting of National Curriculum Revision Committee (NCRC) in the discipline of Disaster Management for Bachelor and MS degree programmes was held from 08-10 January, 2018 (03 days) at HEC, Regional Center, Peshawar. Experts from academia, civil society, national and international organization and industry participated in the meeting. Dr. Muhammad Idrees (Director, Academics Division, HEC, Pakistan) coordinated the NCRC meeting. The list of the participants is as below:

<p>| | | |</p>
<table>
<thead>
<tr>
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</tr>
</thead>
</table>
| 1. | Dr. Noor Jehan  
Director / Professor,  
Centre for Disaster Preparedness & Management,  
University of Peshawar, Peshawar | Convener |
| 2. | Dr. Syed Ainuddin  
Chairman / Associate Professor, Department of Disaster and Development Studies Faculty of Social Sciences, and Chairman,  
Under Graduate Studies Office,  
University of Baluchistan, Quetta. | Co-Convener |
| 3. | Dr. Atta-ur-Rahman  
Associate Professor, Department of Geography,  
Faculty of Life and Environmental Sciences,  
University of Peshawar, Peshawar | Secretary |
| 4. | Prof. Dr. Amir Nawaz Khan  
Meritorious Professor,  
Centre for Disaster Preparedness & Management,  
University of Peshawar, Peshawar. | Member |
| 5. | Prof. Dr. Sajid Rashid Ahmad  
Principal / Professor,  
College of Earth & Environmental Sciences, University of the Punjab,  
Quaid-i-Azam Campus, Lahore. | Member |
| 6. | Dr. Mobushir Riaz Khan  
Director / Professor,  
University Institute of Information Technology, PMAS, Arid Agriculture University, Rawalpindi. | Member |
| 7. | Prof. Dr. Qaiser uz Zaman Khan  
Professor, Department of Civil Engineering,  
University of Engineering & Technology, Taxila | Member |
| 8. | Dr. Shaker Mahmood Mayo  
Professor, Faculty of Architecture & Planning,  
Department of City & Regional Planning, | Member |
<table>
<thead>
<tr>
<th></th>
<th>Details</th>
</tr>
</thead>
</table>
| 9. | Dr. Safdar Ali Shirazi  
Director / Associate Professor,  
Center for Integrated Mountain Research,  
University of the Punjab, Quaid-i-Azam Campus, Lahore. | Member |
| 10. | Dr. Naeem Shahzad  
Chairman/Associate Professor  
Military College of Engineering, Civil Engineering Wing,  
National University of Science & Technology, Risalpur. | Member |
| 11. | Dr. Salah Uddin  
Associate Professor, Department of Civil Engineering,  
Baluchistan University of Engineering & Technology, (BUET), Khuzdar | Member |
| 12. | Dr. Naveed Ahmad  
Assistant Professor, Earthquake Engineering Centre,  
University of Engineering & Technology, Peshawar. | Member |
| 13. | Dr. Javed Akhter Qureshi  
Assistant Professor,  
Department of Earth Sciences,  
Karakoram International University,  
Main Campus, University Rd, Gilgit-Baltistan | Member |
| 14. | Dr. Amjad Ali  
Assistant Professor, Centre for Disaster Preparedness & Management, University of Peshawar, Peshawar. | Member |
| 15. | Dr. Saleem Ullah  
Assistant Professor, Department of Space Science,  
Institute of Space Technology, Islamabad. | Member |
| 16. | Dr. Muhammad Ashraf  
Assistant Professor, Department of Disaster Management & Development Studies, University of Baluchistan, Quetta. | Member |
| 17. | Mr. Mushtaq Ahmad Jan  
Assistant Professor, Centre for Disaster Preparedness & Management, University of Peshawar, Peshawar. | Member |
| 18. | Mr. Muhammad Ahmed  
Lecturer, Department of Urban & Infrastructure Engineering, NED University of Engineering & Technology, Karachi. | Member |
| 19. | Mr. Shakeel Mahmood  
Lecturer,  
Department of Geography, Government College University, Lahore. | Member |
| 20. | Dr. Muhammad Hanif  
Director,  
National Weather Forecasting Center,  
Pakistan Meteorological Department, Sector H-8/2, | Member |
National Curriculum Review Committee Agenda

The agenda of NCRC for Disaster Management is as follows:

1. To revise/update the curriculum of Disaster Management (2013) for Bachelor and MS degree programs according to indigenous needs and to bring it at par with international standards.
2. To revise/update/add preface/ preamble and rationale of the subject.
3. To develop and revise programme objectives, learning outcomes (LOs), teaching methods and assessment criteria (formative & summative).
4. To incorporate/suggest latest reading materials/references (local & international) for every course.
5. To revise/update course contents keeping in view the uniformity across other disciplines and avoiding overlapping.

6. To make recommendations for promotion/development of the discipline, keeping in view the futuristic needs of the society and international trends.

The meeting started with recitation from the Holy Quran. Dr. Muhammad Idrees, Director Curriculum, HEC welcomed the members on behalf of Chairman and higher authorities of HEC. All the participants introduced themselves highlighting their qualification, experience and area of expertise. Keeping with the tradition, Dr. Muhammad Idrees, Director Academics Division, HEC, Islamabad offered the house to nominate the Convener and Secretary of the NCRC for smooth functioning. Prof. Dr. Noor Jehan, Director/ Professor, Centre for Disaster Preparedness and Management, University of Peshawar and Dr. Syed A inuddin, Chairman / Associate Professor, Department of Disaster & Development Studies, Faculty of Social Sciences, University of Baluchistan, Quetta and Dr. Atta-ur-Rahman, Associate Professor, Department of Geography, Faculty of Life and Environmental Sciences, University of Peshawar, Peshawar were selected unanimously as Convener, Co-convener and Secretary, respectively.

In second session, Prof Dr. Noor Jehan presented the agenda and objectives of the NCRC. He highlighted the importance of this meeting and emphasized for adaptation of general rules of curriculum development and revision like scope of the subject/ programme, horizontal & vertical alignment, rule of flexibility and adaptability keeping in view the futuristic approach, market value/job market and societal needs. He also shared a template for revising/updating the curricula according to paradigm shift of including learning outcomes (according to Bloom’s Taxonomy), teaching methods and assessment. The template was unanimously accepted to be followed. It was also agreed to add preamble, program objectives, program learning outcomes, teaching methodology and assessment segments in the curricula.

Prof. Dr. Amir Nawaz Khan, briefed the participants about outcome of previous NCRC meetings, as he acted as Convener of previous NCRC in the field of Disaster Management. He informed the participants that key objective of previous NCRC was to devise a curriculum that provides a unified framework (guidelines) to institutions offering degrees under the title of Disaster Management. The house unanimously agreed to pursue the same track for development of Curriculum in field of Disaster Management.
In next session the house openly discussed the nomenclature of the discipline, preface, objectives of the programme, learning outcomes, methods of instruction and learning environment, assessment and operational framework. After long deliberation, the committee finalized the nomenclature, framework/scheme of studies, the duration of the programme, number of semesters, number of weeks per semester, total number of credit hours, number of credit hours per semester, weightage of breadth and depth courses and weightage of theory and practical of undergraduate 4-years programme for Disaster Management. Furthermore, list of courses (core & elective) and semester wise breakup of courses were also discussed thoroughly and the same was unanimously finalized.

In the afternoon session, admission criteria/intake criteria was discussed and finalized. After that the list of courses was distributed among the members; keeping in view the experience and expertise in the field for reviewing course objectives, adding course learning outcomes, updating list of contents, adding teaching-learning methods and assessment, and updating bibliography/references/suggested books. The list of courses assigned to members is at Annex-I.

On second day, courses developed/improved by individual members and compiled by secretary were presented. Each course was discussed in the whole group and with thorough discussion on course objectives, learning outcomes, contents, teaching methods, assessment and reference books were reviewed, revised and finalized. After thorough deliberation, draft curriculum of the undergraduate (4-years) programme for Disaster Management was finalized. In the evening session, the courses of postgraduate programme was distributed among the members, who were well versed and involved in this programme. The list of courses assigned to members is at Annex-II.

On third day, the secretary briefed the house about progress made on the previous day. The courses of postgraduate programme of Disaster Management were reviewed and compiled by secretary and presented in the committee. After through discussion and deliberation courses were reviewed, revised and finalized. It was decided that the draft curriculum of Disaster Management would be circulated among the experts of field (local & foreign) and the feedback of the experts will be incorporated in final meeting.
At the end the Convener thanked the Co-convener, Secretary and all the members of the Committee for sparing their time and for their contribution to prepare the revised draft of the curriculum. They further stated that their efforts will go a long way in developing workable, useful and market oriented comprehensive degree programme in Disaster Management. The Convener and Co-convener of the NCRC also thanked the members for their inputs in revising/updating the curriculum to make it more practical, competitive, efficient and realistic. The committee highly appreciated the efforts made by the officials of HEC Regional Centre, Peshawar for making arrangements to facilitate the committee and their accommodation and recreation tour. The meeting ended with the vote of thanks to HEC and Dr. Muhammad Idrees and his team from HEC for providing this academic and professional opportunity for national cause.

Prof. Dr. Noor Jehan (CONVENER)-----------------------------------------
Dr. Syed Ainuddin (CO-CONVENER)---------------------------------------
Dr. Atta-ur-Rahman (SECRETARY)-----------------------------------------
Dr. Muhammad Idrees (COORDINATOR)-------------------------------------
VISION

Transformation and contribution towards national integration and consolidation to overcome the sense of forlornness and alienation in vulnerable communities.

MISSION

To impart knowledge and skills to effectively manage disasters.

RATIONALE

Disasters, natural or man-made result in untold misery on the human beings and adverse impacts on the community. The frequency and intensity of Disasters are mounting with every passing day as experienced in the past decade. The ability to manage and mitigate disaster assumes paramount importance. Disaster management is understood as the managerial function charged with creating the framework, within which communities reduce vulnerability to hazards and cope with disasters. The function of disaster managers is to evaluate risk and exposure, create response plans and ensure response capacity after an event. The response capacity to disaster becomes complete when the community is involved in the entire disaster management cycle.

The recent International Conference held in Sendai, Japan has formulated a new framework for Disaster Risk Reduction (SFDRR) which has superseded the Hyogo Framework for Action (HFA). The close inter-linkages between sound Disaster Risk Reduction, environmental management and climate change impacts require a more systematic and comprehensive approach to disaster management. Considering the importance of Disaster Management for all professions (doctors, engineers, military officers, social scientists, logisticians, risk managers, decision makers, etc.) proper education and training is required. There is a severe shortage of qualified and trained professionals in this field. Therefore, a broad array of people either working or looking for jobs in the national authorities, international organizations (UN, NGOs, etc.), public services (health, energy, water) and relief/aid organizations can benefit from this program.

SCOPE

Disaster Management is an inter-disciplinary and multi-disciplinary academic field devoted to various aspects of disaster management across societies and cultures. This program aspires to provide disaster management professionals and specialists for public and private sector Organizations, Institutions and Authorities who can plan, manage, and evaluate interventions in the field of disaster management.

PROGRAM LEARNING OUTCOMES

PLO 1. Disaster Management Knowledge: An ability to apply knowledge of science to the solution of complex disaster problems.

PLO 2. Design/Development of Solutions: An ability to design solutions for prevention, preparedness, mitigation and response to disaster situations.
PLO 3. **Investigation:** An ability to carry out vulnerability and risk assessments in a methodical way.

PLO 4. **Modern Tool Usage:** An ability to create, select and apply appropriate techniques, resources, and modern tools to complex disaster activities.

PLO 5. **Individual and Team Work:** An ability to work effectively, as an individual or in a team, on multifaceted and/or multidisciplinary settings.

PLO 6. **Communication:** An ability to communicate effectively, orally as well as in writing on complex disaster management projects with the community and society at large.

PLO 7. **Project Management:** An ability to demonstrate management skills and apply disaster management knowledge to one’s own work, as a member and/or leader in a team, to manage projects in a multidisciplinary environment.

PLO 8. **Ethics.** An ability to apply ethical principles and commit to professional ethics and responsibilities and norms of disaster management practices

**AIMS AND OBJECTIVES**
The following objectives were considered to prepare curricula for BS in Disaster Management:

i. To develop international standard Disaster Management curriculum for 4 years BS and 2 years MS curriculum so that the uniformity could be adopted by the public and private sector institutions throughout the country.

ii. To impart current knowledge and practical skills to Disaster Management graduates through theory, practical and field exercises.

Keeping in view the mandate of the NCRC on Disaster Management, following decisions were made, accordingly.

**TITLE OF THE DEGREE**
The title of the degree for BS and MS was discussed by the committee. The committee unanimously approved “Disaster Management” as the title of all the degree programmes to be offered by the HEIs in Pakistan.

**PART-I: SCHEME OF STUDY FOR BS (04 YEARS) PROGRAMME**

**Eligibility**
FSc. OR FA with Mathematics, Biology, Statistics, Computer Science, Geography, Economics and Commerce

**Duration**
4-year programme spread over 8 semesters

**Degree Requirement**
Minimum of 124 credits are required to complete 4 years BS in Disaster Management.

**EVALUATION**

For the uniformity in the evaluation system, NCRC recommends that the minimum CGPA required to pass a semester is 2.0 out of 4.0 at undergraduate level OR decided by the respective bodies of the university as per rules in vogue.
STANDARDIZED FORMAT / SCHEME OF STUDIES FOR FOUR-YEAR INTEGRATED CURRICULA
FOR BACHELOR DEGREE IN BASIC, SOCIAL, NATURAL AND APPLIED SCIENCES

STRUCTURE

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Categories</th>
<th>No. of courses</th>
<th>Credit Hours</th>
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<tr>
<td></td>
<td></td>
<td>Min – Max</td>
<td>Min – Max</td>
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<tr>
<td>2.</td>
<td>General Courses to be chosen from other departments</td>
<td>7 – 8</td>
<td>21 – 24</td>
</tr>
<tr>
<td>3.</td>
<td>Discipline Specific Foundation Courses</td>
<td>9 – 10</td>
<td>30 – 33</td>
</tr>
<tr>
<td>4.</td>
<td>Major Courses including research project / Internship</td>
<td>11 – 13</td>
<td>36 – 42</td>
</tr>
<tr>
<td>5.</td>
<td>Electives within the major</td>
<td>4 – 4</td>
<td>12 – 12</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>40 – 44</td>
<td>124 – 136</td>
</tr>
</tbody>
</table>

➢ Total numbers of Credit hours: 124-136
➢ Duration: 4 years
➢ Semester duration: 16-18 weeks
➢ Semesters: 08
➢ Course Load per Semester: 15-18 Cr hr
➢ Number of courses per semester: 4-6 (not more than 3 lab / practical courses)

LAY OUT FOR BS 4-YEAR IN DISASTER MANAGEMENT

<table>
<thead>
<tr>
<th>Compulsory Requirements (the student has no choice)</th>
<th>General Courses to be chosen from other departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 courses</td>
<td>7-8 courses</td>
</tr>
<tr>
<td>25 Credit hours</td>
<td>21-24 Cr. Hours</td>
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<table>
<thead>
<tr>
<th>Subject</th>
<th>Cr. hr</th>
<th>Subject</th>
<th>Cr. hr</th>
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<tbody>
<tr>
<td>1. English I</td>
<td>3</td>
<td>1. Fundamentals of Geography</td>
<td>3</td>
</tr>
<tr>
<td>2. English II</td>
<td>3</td>
<td>2. General Geology</td>
<td>3</td>
</tr>
<tr>
<td>3. English III</td>
<td>3</td>
<td>3. Introduction to Environmental Science</td>
<td>3</td>
</tr>
<tr>
<td>5. Pakistan Studies</td>
<td>2</td>
<td>5. Introduction to Economics</td>
<td>3</td>
</tr>
<tr>
<td>6. Islamic Studies / Ethics</td>
<td>2</td>
<td>6. Introduction to Psychology</td>
<td>3</td>
</tr>
<tr>
<td>7. Mathematics I</td>
<td>3</td>
<td>7. Fundamentals of GIS and RS</td>
<td>2+1</td>
</tr>
<tr>
<td>9. Introduction to Computer</td>
<td>3</td>
<td></td>
<td>24</td>
</tr>
</tbody>
</table>

25
<table>
<thead>
<tr>
<th>Discipline Specific Foundation Courses</th>
<th>Major courses including research project/internship</th>
<th>Elective Courses within the major</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-10 courses</td>
<td>11-13 courses</td>
<td>4 courses</td>
</tr>
<tr>
<td>30-33 Credit hours</td>
<td>36-42 Credit hours</td>
<td>12 Credit Hours</td>
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<tr>
<td><strong>Subject</strong></td>
<td><strong>Cr. hr</strong></td>
<td><strong>Subject</strong></td>
</tr>
<tr>
<td>1. Basic Science of Natural Hazards</td>
<td>3</td>
<td>1. Research Approaches in Disaster Management</td>
</tr>
<tr>
<td>2. Fundamentals of Disaster Management</td>
<td>3</td>
<td>2. Applied Geomorphology and Natural Hazards</td>
</tr>
<tr>
<td>3. Basic Principles of Disaster Planning and Management</td>
<td>3</td>
<td>3. Gender Mainstreaming in Disaster Management</td>
</tr>
<tr>
<td>4. Disaster and Sustainable Development</td>
<td>3</td>
<td>4. Economics of Disasters</td>
</tr>
<tr>
<td>5. Community Based Disaster Risk Management</td>
<td>3</td>
<td>5. Disaster Project Management</td>
</tr>
<tr>
<td>6. Hydro-meteorological Hazards</td>
<td>2+1</td>
<td>6. Multi-Hazards Vulnerabilities</td>
</tr>
<tr>
<td>7. Geo-Hazards</td>
<td>2+1</td>
<td>7. Research Project/Internship</td>
</tr>
<tr>
<td>8. Complex &amp; Biological Hazards</td>
<td>3</td>
<td>8. Natural Hazards of Pakistan</td>
</tr>
<tr>
<td>10. Disaster Risk Management</td>
<td>3</td>
<td>10. GIS and Remote Sensing in Disaster Management</td>
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<tr>
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<td>11. Climate Change and Natural Hazards</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12. Techniques of Hazard Mapping</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13. Practical in Disaster Management</td>
</tr>
</tbody>
</table>

* University has the option to recommend any other course in lieu of English IV
** University may recommend any other course in lieu of Mathematics II
### Scheme of Studies for BS in Disaster Management

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Titles</th>
<th>Credit Hrs.</th>
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<tbody>
<tr>
<td></td>
<td>English-I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Pakistan Studies</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Math/Stat-1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>G-I Fundamentals of Geography</td>
<td>3</td>
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<tr>
<td></td>
<td>G-II General Geology</td>
<td>3</td>
</tr>
<tr>
<td>DM 311</td>
<td>FOUNDATION-I Basic Science of Natural Hazards</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>English-II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Islamic Studies / Ethics</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Math/stat-II / Univ. Optional</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>G-III Introduction to Environmental Science</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>G-IV Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>DM 321</td>
<td>FOUNDATION-II Fundamentals of Disaster Management</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>English-III</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Introduction to Computer</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>G-V Introduction to Economics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>G-VI Introduction to Psychology</td>
<td>3</td>
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<tr>
<td>DM 431</td>
<td>FOUNDATION-III Basic Principles of Disaster Planning and Management</td>
<td>3</td>
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<tr>
<td></td>
<td>English-IV / Univ. Optional</td>
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</tr>
<tr>
<td></td>
<td>G-VII Fundamentals of GIS and RS</td>
<td>2+1</td>
</tr>
<tr>
<td></td>
<td>G-VIII Principles of Management</td>
<td>3</td>
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<td>DM 441</td>
<td>FOUNDATION-IV Disasters and Sustainable Development</td>
<td>3</td>
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<td>DM 442</td>
<td>FOUNDATION-V Community Based Disaster Management</td>
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</tr>
<tr>
<td>DM 551</td>
<td>FOUNDATION-VI Hydro-meteorological Hazards</td>
<td>2+1</td>
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<tr>
<td>DM 552</td>
<td>FOUNDATION-VII Geo-Hazards</td>
<td>2+1</td>
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<td>DM 553</td>
<td>FOUNDATION-VIII Complex and Biological Hazards</td>
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<td>MAJOR-I Research Approaches in Disaster Management</td>
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<tr>
<td>DM 555</td>
<td>MAJOR-II Applied Geomorphology and Natural Hazards</td>
<td>2+1</td>
</tr>
<tr>
<td>DM 556</td>
<td>MAJOR-III Gender Mainstreaming in Disaster Management</td>
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<tr>
<td>DM 561</td>
<td>FOUNDATION-IX Emergency Management</td>
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<td>DM 562</td>
<td>FOUNDATION-X Disaster Risk Management</td>
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<td>DM 563</td>
<td>MAJOR-IV Economics of Disasters</td>
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</tr>
<tr>
<td>DM 564</td>
<td>MAJOR-V Project Management in Context of Disasters</td>
<td>3</td>
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<tr>
<td>DM 565</td>
<td>MAJOR-VI Multi-Hazard Vulnerabilities</td>
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<tr>
<td>Proj 569</td>
<td>MAJOR-VII Research Project /Internship</td>
<td>1+2</td>
</tr>
<tr>
<td>DM 671</td>
<td>MAJOR-VIII Natural Hazards of Pakistan</td>
<td>3</td>
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</table>
DM 672  MAJOR-IX Disasters Risk and Urbanization  3
DM 673  MAJOR-X GIS and Remote Sensing in Disaster Management  2+1
   ELECTIVE-I  3
   ELECTIVE-II  3
   15
DM 681  MAJOR-XI Climate Change and Natural Hazards  2+1
DM 682  MAJOR-XII Techniques of Hazard Mapping  2+1
DM 683  MAJOR-XIII Practical in Disaster Management  1+2
   ELECTIVE-III  3
   ELECTIVE-IV  3
   15

Total Credit Hours (124-136)  130

Note: Students are allowed to select any four electives from the given groups.

**LIST OF ELECTIVE COURSES**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Course Titles</th>
<th>Credit Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM 674a</td>
<td>Climate Change Adaptation and Disasters</td>
<td>3</td>
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<tr>
<td>DM 674b</td>
<td>Structural and Non-Structural Measure in DM</td>
<td>3</td>
</tr>
<tr>
<td>DM 674c</td>
<td>Ageing and Disasters</td>
<td>3</td>
</tr>
<tr>
<td>DM 674d</td>
<td>Public Private Partnerships for DRR</td>
<td>3</td>
</tr>
<tr>
<td>DM 674e</td>
<td>Environment and Hazards Management</td>
<td>3</td>
</tr>
<tr>
<td>DM 674f</td>
<td>Humanitarian Crisis Management</td>
<td>3</td>
</tr>
<tr>
<td>DM 675a</td>
<td>Child Friendly Disaster Management</td>
<td>3</td>
</tr>
<tr>
<td>DM 675b</td>
<td>Earthquake Hazard Risk Reduction</td>
<td>3</td>
</tr>
<tr>
<td>DM 675c</td>
<td>Quantitative Techniques for Disaster Management</td>
<td>2+1</td>
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<tr>
<td>DM 675d</td>
<td>Natural Resources and Disaster</td>
<td>3</td>
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<tr>
<td>DM 675e</td>
<td>Global Regime in Disaster Management</td>
<td>3</td>
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<tr>
<td>DM 684a</td>
<td>Disaster Management Policies</td>
<td>3</td>
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<tr>
<td>DM 684b</td>
<td>Good Governance in Disaster Management</td>
<td>3</td>
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<tr>
<td>DM 684c</td>
<td>Disability and Disasters</td>
<td>3</td>
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<tr>
<td>DM 684d</td>
<td>Health, Hygiene and Sanitation in Disaster Management</td>
<td>3</td>
</tr>
<tr>
<td>DM 685a</td>
<td>Psychological Impacts of Disasters</td>
<td>3</td>
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<tr>
<td>DM 685b</td>
<td>Flood Hazard Risk Reduction</td>
<td>3</td>
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<tr>
<td>DM 685c</td>
<td>Basic Engineering Practices in Disaster Management</td>
<td>3</td>
</tr>
<tr>
<td>DM 685d</td>
<td>Role of Media in Disaster Management</td>
<td>3</td>
</tr>
<tr>
<td>DM 685e</td>
<td>Contingency Planning in Disaster Management</td>
<td>3</td>
</tr>
</tbody>
</table>
DETAIL OF FOUNDATION COURSES

Foundation-I

DM 311 BASIC SCIENCE OF NATURAL HAZARDS Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

- Understand the science of Natural hazards and Geomorphic processes

COURSE CONTENTS:

1. Introduction
   - Scientific Methods, Principles and logic.
   - Universe, Solar System, Earth
   - Concept of Time, Space, Scale, Matter, Energy, Form and
   - Geomorphic Processes

2. Dynamic Earth
   - Earth’s Structure and Composition
   - Plate Tectonics
   - Atmospheric Structure
   - Earth Heat System

3. Hydro-meteorological Systems
   - Elements of Weather and Climate
   - Hydrological Cycle
   - Metrological System
   - Hydro-Meteorological Phenomena

4. Natural Hazards
   - Geo-Hazards
   - Hydro-Meteorological Hazards

Teaching Methodology
- Lecturing
- Written Assignments
- Seminar Lectures
- Documentaries

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:
1st Term (20%)
• Assignments/Quizzes and Presentations

**Mid Term (30%)**
• Written (Long Questions, Short Questions, MCQs)

**Final Term (50%)**
• Written (Long Questions, Short Questions, MCQs)

**Text and Reference books:**


**Foundation-II**

**DM 321**  
**Fundamentals of Disaster Management**  
**Cr. H. 3**

**Course Learning Outcomes:**
Upon Successful completion of this course, the student will be able to:

- **Understand** the basic concepts of disaster management, disaster risk, vulnerability, capacity, disaster risk situation, impacts and evolution of disaster management.

**COURSE CONTENT:**

1. **Introduction to Disaster Management**
   - Basics Concepts evolving terminologies in Disaster Management
   - Nature and Scope of Disaster Management
   - Historical Evolution

2. **Classification of Disasters**
   - Socio-Natural Disasters
   - Anthropogenic Disasters
   - Technological Disasters
3 Concept of Risk, Vulnerability and Capacity
- Disaster Risk
- Vulnerability (Types and Causes, Models)
- Capacity and Types of Capacity
- Level of Capacities

4 Disaster Risks Trends
- Global Disaster Risk Trends
- Costs and Frequency
- Historical Review of Disasters Trends

5 Case Studies on Impacts of Disasters
- Economic
- Social
- Environmental
- Physical Infrastructure

Teaching Methodology
- Lecturing
- Written Assignments
- Documentaries
- Interactive Sessions

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:
1st Term (20%)
- Assignments/Quizzes and Presentations
Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)
Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:

Foundation-III
DM 431 Basic Principles of Disaster Planning and Management Cr. H. 3

Course Learning Outcomes:
Upon Successful completion of this course, the student will be able to:
- Understand the basic concepts of disaster management, disaster risk, vulnerability, capacity, disaster risk situation, impacts and evolution of disaster management.

COURSE CONTENTS:
1. Significance of Disaster Planning and Management
   - Concept of Planning
   - Concept of Disaster Planning and Management

2. Disaster Management Cycle
   - Prevention
   - Mitigation
   - Preparedness
   - Impact
   - Response
   - Recovery
   - Development

3. Planning Process
   - Types of Plan
   - Level of Plan
   - National and Provincial Disaster Management Plans
   - Elements at Risk
4. Legal and Administrative Structure for Disaster Management in Pakistan
   - National Disaster Management Acts
   - National Disaster Management Policies
   - Administrative Structures

5. Emerging Challenges in Disaster Management
   - Socio-Culture Challenges
   - Financial Constraints
   - Environmental Challenges

**Teaching Methodology**

- Lecturing
- Written Assignments
- Documentaries
- Interactive Sessions

**Assessment**

*Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:*

1. **1st Term (20%)**
   - Assignments/Quizzes and Presentations

2. **Mid Term (30%)**
   - Written (Long Questions, Short Questions, MCQs)

3. **Final Term (50%)**
   - Written (Long Questions, Short Questions, MCQs)

**Text and Reference books:**


Foundation-IV

DM 441 Disasters and Sustainable Development Cr. H. 3

Course Learning Outcomes:
Upon Successful completion of this course, the student will be able to:

- UNDERSTAND the concept of development and sustainable development;
- ACQUIRE knowledge about the synergies between disaster risk reduction and development.

COURSE CONTENTS:

1 Introduction
- Concepts of Development and Sustainable Development
- Conceptual Relationship between Disaster and Development
- Disasters-Challenge for Developing Countries
- The Dilemma of Sustainability

2 Global Developmental Frameworks
- Millennium Development Goals and Hyogo Framework
- Sendai Framework and Sustainable Development Goals
- DRR as a cross cutting theme in SDGs

3 Mainstreaming DRR in Development
- Inclusion of DRR in development policies
- Inclusion of DRR in all sectors
- Assessing the trade-offs in Investing in Vulnerability Reduction

4 Disaster Risk and National Development
National Development Plans and DRR
Development Project Design and Disasters
Risk appraisal in Development projects design, implementation and Monitoring and Evaluation

Teaching Methodology

- Lecturing
- Written Assignments
- Documentaries
- Interactive Sessions

Assessment

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:

Foundation-V

DM 442  
Community Based Disaster Risk Management  
Cr. H. 3

Course Learning Outcomes:
Upon Successful completion of this course, the student will be able to:

- **UNDERSTANDING** about Concept of Community, Society and community based disaster risk management.
- **ACQUIRE** the knowledge about the CBDRM Planning process, community based disaster risk assessment and risk management planning.

COURSE CONTENTS:

1  Introduction
   - Concept of Community, Group and Society
   - Social Structure and Social Organization
   - Concept of Participation in Disaster Management
   - Characteristics and Importance of CBDRM

2  CBDRM Process
   - Selection of Community
   - Characteristics of Resilient Communities
   - Participatory Risk assessment
   - Community Implementation
   - Participatory Monitoring and Evaluation
   - Actors in CBDRM

3  Tools and techniques for Participatory Community Risk Assessment
   - Participatory Rural Appraisal
   - Social Mobilization
   - Social Assessment
   - Stakeholders Analysis

4  Disaster Risk Management at Community Level
   - Participatory Disaster Risk Management Planning
• Formation and Training of Community Organizations
• Community Managed Implementation
• Institutionalizations of CBDRM into public policies, planning and implementation
• Framework and Importance of Disaster Risk Communication

5 CBDRM in Pakistan

• Case studies
• Issues and Way Forward

Teaching Methodology

• Lecturing
• Written Assignments
• Interactive Sessions
• Group Activities

Assessment

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
• Assignments/Quizzes and Presentations

Mid Term (30%)
• Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
• Written (Long Questions, Short Questions, MCQs)

Text and Reference books:


Course Learning Outcomes:
Upon Successful completion of this course, the student will be able to:
- UNDERSTAND the Hydro-meteorological processes and its linkages with natural hazards;
- ACQUIRE the knowledge about types of Hydro-meteorological hazards, their management and early warning system.

COURSE CONTENTS:

1. Introduction
   - Concepts of Meteorology and Hydrology
   - Hydrosphere and Atmospheric Circulations
   - Precipitation and its types
   - Drainage System and Surface Runoff
   - Hydro-meteorological Processes and Its Impacts

2. Types, Causes and Management of Hydro-meteorological Hazards
   - Cyclones
   - Thunderstorms, Windstorm, Hail, Snow Squalls, Cloud Bursting Sand storms, Dust storms etc.
   - Floods/Flash Floods
   - Cold Wave/Intense Cold, Heat Waves/Excessive Heat etc.
   - Tide Waves, Tsunamis/Seismic sea waves,
   - Drought
   - Forest fires/Bush fires
   - Smoke Volcanic Ash/ Lahar
   - Avalanches
   - Heat Wave
3. Early Warning System for Hydro-Meteorological Hazards
   - Core Components of Early Warning System
   - Stakeholders for Early Warning
   - Community Based Early Warning System

4. Lab Work
   - Weather data collection using weather instruments
   - Preparation of weather maps
   - Fluvial Morphology
   - River Training
   - Flood risk mapping
   - Flood Modelling
   - Weather RADAR and Satellite based weather forecast
   - Design of mitigation structures

Teaching Methodology

- Lecturing
- Written Assignments
- Interactive Sessions
- Seminar Lectures
- Audio-Visals

Assessment

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
   - Assignments/Quizzes and Presentations

Mid Term (30%)
   - Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
   - Written (Long Questions, Short Questions, MCQs)

Text and Reference books:


Foundation-VII

DM 552 Geo-Hazards Cr. H. 2+1

Course Learning Outcomes:
Upon Successful completion of this course, the student will be able to:

- UNDERSTAND the Geo-hazards, Plate tectonics and Global Distribution of Geo-hazards;
- ACQUIRE knowledge about the types of Geo-hazards, their management and early warning system.

COURSE CONTENTS:

1. Introduction
   - Geo-hazards at a Glance
   - Plate Tectonic and Plate Boundaries
   - Global Distribution of Geo-hazards
   - Folding, Faulting and Fault Lines

2. Types, Causes and Management of Geo-Hazards
   - Earthquake
   - Volcanoes
   - Tsunami
   - Landslide/Mass wasting
   - Glacial Lake Outburst Floods (GLOFs)
   - Associated Hazards
3. **Geo-hazards Risk Assessment**
   - Hazard Inventory
   - Susceptibility Mapping
   - Elements at Risk and Exposure
   - Evaluation of Risk

4. **Lab Work: Prediction, Forecasting and Early Warning System for Geo-hazards**
   - Prediction of Forecasting techniques
   - Exercise on Prediction and forecasting of Geo-hazards
   - Field survey and visit to geophysical centres
   - WMO, Tsunami and earthquake prediction/forecasting and networking
   - Tsunami warning centres and shelters
   - Early Warning System for Tsunami
   - Early Warning System for Volcanos
   - Early Warning System for GLOFs
   - Early Warning System for Landslide
   - Multi-hazard Early Warning System in Pakistan and filed visit

**Teaching Methodology**

- Lecturing
- Written Assignments
- Interactive Sessions
- Seminar Lectures
- Audio-Visuals

**Assessment**

*Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:*

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

**Text and Reference books:**

Foundation-VIII

DM 553  Complex and Biological Hazards  Cr. H. 3

Course Learning Outcomes:
Upon Successful completion of this course, the student will be able to:

- **UNDERSTAND** the phenomena of biological and complex hazards;
- **ACQUIRE** knowledge about the types of Biological, technological and complex hazards and their risk management.

COURSE CONTENTS:

1. Introduction
   - Complex Hazards
   - Technological Hazards
   - Biological Hazards

2. Types and Management of complex hazards
   - War
   - Insurgencies and Terrorism
   - Sectarian Violence and conflicts
• Displaced populations
• Urban and Settlement Fire
• Famine

3. **Types and Management Technological Hazards**
• Industrial accidents
• Nuclear Hazards
• Oil and Chemical Spills
• Air Crash
• Transport accidents
• Occupational Hazards Safety

4. **Types and Management of Biological Hazards**
• Epidemics and Pandemics
• Transmission of biological hazards
• Risk assessment of biological hazards
• Controlling exposure to biological hazards
• Disease Early Warning System (DEWS)

**Teaching Methodology**

• Lecturing
• Written Assignments
• Interactive Sessions
• Seminar Lectures
• Audio-Visuals

**Assessment:**
**Note:** Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

- **1st Term (20%)**
  - Assignments/Quizzes and Presentations

- **Mid Term (30%)**
  - Written (Long Questions, Short Questions, MCQs)

- **Final Term (50%)**
  - Written (Long Questions, Short Questions, MCQs)

**Text and Reference books:**

Foundation-IX

DM 561 Emergency Management Cr. H. 2+1

Course Learning Outcomes:
Upon Successful completion of this course, the student will be able to:

- **UNDERSTAND** the Emergency Response Mechanism and Phases of Emergency Management;
- **ACQUIRE** knowledge about the Camp Management, Emergency Operation Centre and Phases of Emergency Management.

COURSE CONTENTS:

1. **Introduction**
   - Disasters and Emergency Situation
   - The nature of Emergency Situation
   - Principles of Emergency Response Management

2. **Phases of Emergency Management**
   - Mitigation (Risk Assessment, Precautionary Measures, Minimizing the Risk)
   - Preparedness for Response (Training, Planning, Plan, and Institutions)
   - Response (Early Warning System, Evacuation, Search and Rescue, Triage, Medical First Aid, Fire Fighting, Hospital Management, Security, Relief)
   - Recovery (Recovery and Rehabilitation, Early Recovery Strategy, Mid-term Recovery Strategy and Final Term Recovery Strategy)

3. **Camp Management**
   - Site Selection
   - Site Survey and Assessment
• Planning and Design
• Shelter Management
• Registration
• Provision of FIs and NFIs
• Protection
• Responsibilities of Camp Management team
• SPHERE Standards

4. Post Disaster Assessment
• Rapid Need Assessment (RNA)
• Preliminary Damages Need Assessment (DNA)
• Post Conflict Need Assessment (PCNA)

5. Emergency Response Organizations
• International Level
• Federal Level
• Provisional Level
• District and Community Level

6. Emergency Operation Centre (EOC)
• Mandate of EOC
• Major Components of EOC
• Organogram of EOC
• Special Powers and Legislation
• Operational Plans of EOC

7. Lab Work and Field work
• Search and Rescue training
• Mock drill and simulation exercises on emergency response
• Preparation of search plan
• Preparation of Rescue and evacuation plans
• Visit to Rescue 1122, NIDM, NDMA, PEOC-PDMA and Joint Simulations on Response Management

• Teaching Methodology
• Lecturing
• Written Assignments
• Interactive Sessions
• Seminar Lectures
• Audio-Visuals

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:


Foundation-X

DM 562 Disaster Risk Management Cr. H. 3

Course Learning Objectives
Upon Successful completion of this course, the student will be able to:
- UNDERSTAND the concept of risk management, risk assessment, and risk planning.

COURSE CONTENTS:

1. Introduction to Disaster Risk Management
   - Meaning and scope of disaster risk management
   - Paradigm shift in disaster risk management
   - HFA and Post HFA framework
   - SDGs, Sendai framework (2015-2030) and Paris agreement
Development in International protocols

2 Components of Risk and Risk Assessment

- Hazard Assessment
- Vulnerability Assessment
- Capacity analysis
- Risk Assessment
- Multi-Hazard Vulnerability and Risk Assessment
- Perception and Attitude Assessment

3 Resilience Assessment

- Concepts and approaches
- Adaptation and Resilience
- Linkage between hazards, vulnerability and resilience
- Resilience Frameworks

4 Disaster Risk Management

- Approaches to Risk Management
- Structural Risk Reduction Strategies
- Non-Structural Risk Reduction Strategies including Risk Transfer, Insurance and Risk Financing

Teaching Methodology

- Lecturing
- Written Assignments
- Documentaries
- Interactive Sessions

Assessment

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:


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**DETAIL OF SUBJECT MAJOR COURSES**

**MAJOR-I**

| DM 554 | Research Approaches in Disaster Management | Cr. H. 3 |

**Course Learning Outcomes:**

Upon successful completion of the course, the student will be able to:

- **Understand** research approaches in Disaster Management.
- **Apply** various techniques for collection, analysis and interpretation of data.
- **Formulate** a draft research proposal.

**COURSE CONTENTS:**

1. **Introduction**
   a. Elements of Research Methodology
   b. Types of Research
   c. Research Techniques in Disaster Management

2. **Research Process**
   a. Theory and Hypothesis
   b. Methods/Techniques of Data Collection and Analysis
c. Questionnaire Design, Field Survey, Analysis, Interpretation

d. Data Classification and Tabulation

e. Sample, Sampling and sampling design

3. **Statistical Techniques in Research**
   a. Measures of Central Tendency
   b. Measures of Dispersion
   c. Computer Based Statistics (SPSS16/Minitab etc.)
   d. Geo-Spatial Statistical Techniques

4. **Prepare a draft Research Proposal**
   a. Elements of Research Proposal
   b. Review on Literature writing
   c. Methodology flow chart design
   d. Computer skills for proof reading

**Teaching Methodology**

- Lectures
- Research proposal
- Seminar
- Lab work

**Assessment**

**Note:** Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1. **1st Term (20%)**
   - Assignments/Quizzes and Presentations

2. **Mid Term (30%)**
   - Written (Long Questions, Short Questions, MCQs)

3. **Final Term (50%)**
   - Written (Long Questions, Short Questions, MCQs)

**Text and Reference books:**


Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

- **Understand** the geomorphological processes
- **Analyse** the geomorphological processes and the man-environment relationship.
- **Apply** the geomorphic techniques in the field.

COURSE CONTENTS:

1. **Introduction**
   a. Introduction to Applied Geomorphology
   b. Landforms and Geomorphic agents
   c. Geomorphological Processes and Man

2. **Classification of Geomorphological Processes**
   a. Terrestrial Processes
      i. Endogenic Hazards:
         o Earthquakes and seismicity
         o Volcanoes and volcanism
         o Tsunamis and sub-water processes
      ii. Exogenic Hazards
         o Rivers, Floodplains and Flooding
         o Rainfall Variability and Drought
         o Glaciers and Associated Hazards
         o Soil Erosion by Water and Wind
         o Weathering, Causes, Implication
         o Desertification, Causes and Implication
         o Mass Movement Hazards
      iii. Biotic Hazards
         o Animals induced
         o Plants Induced
         o Human Induced
   b. Extra-Terrestrial Process

3. **Geomorphological Mapping**
   a. Identification of Hazards
   b. Mapping Techniques
   c. Mapping Geomorphological Processes

4. **Applied Geomorphology and Disaster Management**
a. Floods and Flood Risk Management  
b. Earthquake and Earthquake Risk Management  
c. Drought and Drought Risk Management  
d. Landslide and Landslide Management  
e. Human interventions and sustainability  
5. Lab work, Field Survey and Practical:  
   a. Field Study of various geomorphological processes  
   b. Field Study of Landforms and its relationship with Human activities  
   c. Labs and Practical exercises on models preparation  
   d. Geomorphological mapping  

Teaching Methodology  
- Lecturing  
- Written Assignments  
- Guest Speaker  
- Field Visits  
- Report Writing  
- Documentaries  

Assessment  

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:  

1st Term (20%)  
- Assignments/Quizzes and Presentations  

Mid Term (30%)  
- Written (Long Questions, Short Questions, MCQs)  

Final Term (50%)  
- Written (Long Questions, Short Questions, MCQs)  

Text and Reference books:  


MAJOR-III

DM 556 Mainstreaming in Disaster Management Cr. H. 3

Course Learning Outcomes:
Upon successful completion of the course, the student will be able to:

- **UNDERSTAND** the concept of Gender and Gender Mainstreaming approaches;
- **DESCRIBE** the impacts of disaster on women and gender mainstreaming in disaster risk reduction.

COURSE CONTENTS:

1. **Introduction**
   - Concept of Gender
   - Gender Role Socialization
   - Gender Mainstreaming
   - Theoretical Approaches to Gender Development

2. **Gender and gender relations in disasters**
   - Status of Women in society
   - Perspective of gender: A missing element in disaster
   - Differential impact of disaster on women in different life cycle stages
• Gender inequality, vulnerability and disaster

3. Role of women in disaster management
• Role in Women in Disaster Prevention, Preparedness, Mitigation and Response
• Women involvement in reconstruction and development phase following an emergency and/or disaster
• Psychosocial considerations in prevention, mitigation and preparedness
• Community mobilization through women
• Case studies of women responding to disaster

4. Case Studies on Gender Mainstreaming in Disaster Management
• Pakistan Red Crescent Humanitarian Assistance for Internally Displaced Persons
•ERRA Approach for Reconstruction and Rehabilitation of Earthquake affected Area

Recommended Books


MAJOR-IV

DM 563 Economics of Disasters Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

Understand the economic impacts and implications of disaster costs to the economy
Analyse disasters as an opportunity to address the underlying economic causes of disasters

**COURSE CONTENTS:**

1. **Introduction**
   a. Significance of the economic view of disasters
   b. Economic Impacts of Disasters in Pakistan
   c. Nature of Economic Aid after Disasters
   d. Disasters as an economic opportunity

2. **Economic costs of disasters**
   a. Approaches to estimation of costs after disasters for compensation
   b. Budgetary provisions and mechanism of handling contingencies and disasters

3. **Transfer and sharing mechanisms of disaster costs**
   a. Formal mechanism – insurance
   b. Informal mechanism – collateral community based approaches

4. **Disasters as an opportunity to address economic inequality and vulnerability**
   a. Designing of livelihood programmes to benefit the poor
   b. Sourcing of raw materials and reconstruction activity to stimulate local economy
   c. Handling targeted economic humanitarian assistance to avoid reinforcing vulnerabilities

**Teaching Methodology**

- Lectures
- Documentaries
- Seminar
- Group work
- Presentation

**Assessment**

*Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:*

1. **1st Term (20%)**
   - Assignments/Quizzes and Presentations

2. **Mid Term (30%)**
   - Written (Long Questions, Short Questions, MCQs)

3. **Final Term (50%)**
   - Written (Long Questions, Short Questions, MCQs)

**Text and Reference books:**

MAJOR-V
DM 564 Project Management in Context of Disasters Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

Understand the functional requirements of Projects.
Design a project management workflow

COURSE CONTENTS:

1. Introduction
   a. Project Management- Basic concepts
   b. Project Management International Standards
   c. Project planning and Documentation
2. Project Management Methodologies
   a. Theory and Hypothesis
   b. Project Cycle
   c. Project Management Body of Knowledge (PMBOK)
3. Project Selection Models and Types
   a. Project Scheduling & Critical Path Method
   b. Decision Aiding Models
   c. Criteria for Project Selection
   d. Types of Project Selection Models
4. **On-Field Project Management**
   a. Risk Management
   b. Estimation of loss
   c. Supply Chain
   d. Monitoring
   e. Evacuation

5. **Software related to project management**
   a. Overview
   b. Softwares and practice

**Teaching Methodology**

- Lectures
- Field Visits
- Seminar
- Lab work

**Assessment**

*Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:*

- **1st Term (20%)**
  - Assignments/Quizzes and Presentations

- **Mid Term (30%)**
  - Written (Long Questions, Short Questions, MCQs)

- **Final Term (50%)**
  - Written (Long Questions, Short Questions, MCQs)

**Text and Reference books:**

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

- Understand Physical, Economic, Social and Environmental Vulnerabilities in context of different hazards
- Analyse the dynamics of Geo-spatial and Multi-hazards Vulnerabilities.
- Quantify the multi-components of vulnerability

COURSE CONTENTS:

1. Introduction to Multi-Hazards Vulnerabilities
   a. Hazards: Types, Intensity, Density and Frequency
   b. Vulnerability: Types, Root and Underlying Causes
   c. Elements at risk

2. Geo-Spatial Characteristics
   a. Characteristics of Hazards
   b. Characteristics of Vulnerability
   c. Exposure
   d. Dynamics of Vulnerability
   e. Interrelationship of element at risk, hazards, exposure and vulnerability

3. Multi-component of Vulnerability
   a. Compound and Complex interrelationship
   b. Quantification of vulnerability
   c. Presentation of Vulnerability

Teaching Methodology

- Lectures
- Written Assignments
- Seminar
- Lab work

Assessment

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
• Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
• Written (Long Questions, Short Questions, MCQs)

Text and Reference books:

2. HANDBOOK: International Federation of Red Cross and Red Crescent Societies. What is VCA? An introduction to vulnerability and capacity assessment.

MAJOR-VIII

DM 671 Natural Hazards of Pakistan Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

Describe the physiography of Pakistan
Understand the nature, causes, consequences, history and remedies of the natural hazards occurring in Pakistan.

COURSE CONTENTS:

1. Physiography of Pakistan
a. Landforms  
b. Climate  
c. Ecological region of Pakistan  
d. Seismic zones of Pakistan  

2. **Natural Hazards**  
   a. Floods  
   b. Earthquakes  
   c. Tsunami  
   d. Landslides  
   e. Desertification  
   f. Drought  
   g. Cyclone  
   h. Snow Avalanches  
   i. Glacial Hazards  
   j. Salinization  
   k. Heat and Cold Waves  
   l. Sea Water Intrusion  
   m. Deforestation  
   n. Environmental pollution  
   o. Smog  
   p. Pest infestation  
   q. Epidemics  

3. **Exposure, Vulnerability and Risk related to Natural Hazard**  
   a. Physical  
   b. Economic  
   c. Social  
   d. Environmental  

4. **Turning Hazards into Disasters**  
   a. Factors  
   b. Reasons  
   c. Dynamics  
   d. Triggers  

5. **Disaster trends and Management framework**  
   a. Historical perspective  
   b. Management Framework (National, Provincial and District)  

**Teaching Methodology**  
- Lectures  
- Written Assignments
• Seminar

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:

1. NAWAZ, Amir (2016) Introduction to Hazards and Disasters, Al-Azhar Environmental Planning and Management Centre, Peshawar, Pakistan.
MAJOR-IX

DM 672  Disasters Risk and Urbanization  Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

* **Acquire** knowledge about the relationship between disaster risk and urbanization
* **Analyse** the urban hazards and risk reduction measures

COURSE CONTENTS:

1. **Introduction**
   a. Concept of Urbanization
   b. Causes and impacts of urbanization

2. **Urban Morphology**
   a. Urban forms and Pattern
   b. City structure
   c. Population and City Land use

3. **Hazards in Urban Environment**
   a. Urban Floods
   b. Environmental Pollution
   c. Urban Fire
   d. Chemical Hazards,
   e. Earthquake and Resilience etc.

4. **Vulnerabilities in urban areas**
   a. Population distribution,
   b. Urban Slums
   c. Housing structure,
   d. Building codes and byelaws,
   e. Accessibility
   f. Emergency services
   g. Hydrology and drainage system

5. **Urban Risk Reduction**
   a. Urban Risk and Urban Authorities
   b. Urban Risk Reduction Strategies
   c. Urban Disaster Management Plan

Practical:

- **Field Study of any city**
• Visit to various urban authorities
• Visit to Fire Brigade, Rescue, EPA

Teaching Methodology

• Lecturing
• Written Assignments
• Guest Speaker
• Field Visits
• Report Writing
• Documentaries

Assessment

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

**1st Term (20%)**
• Assignments/Quizzes and Presentations

**Mid Term (30%)**
• Written (Long Questions, Short Questions, MCQs)

**Final Term (50%)**

Text and Reference books:

• Written (Long Questions, Short Questions, MCQs)
• RAHMAN, A., Khan, A. N., Shaw R. (2016). Disaster Risk Reduction Approaches in Pakistan. SPRINGER Verlag, Tokyo, JAPAN.
Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

- **Understand** the fundamental theory of Geographic Information Systems (GIS) & Remote Sensing
- **Apply** the GIS tools to conduct hazard analysis and risk assessment
- **Prepare** hazard & risk maps that are fit-for-purpose and effectively convey the information they are intended to.

COURSE CONTENTS:

1. Geographical Information System (GIS)
   a. Fundamental theory of Geographic Information Science
   b. Concepts of spatial database and types (its acquisition and development.
   c. Concept of four M’s (Mapping, Modeling, Management & Monitoring) in GIS.
   d. Spatial Data handling for disaster management.

2. Remote Sensing (RS)
   a. History, Scope and Concept of Remote Sensing
   b. Elements of Remote Sensing
   c. Concepts of Image resolution, swath width, cycle and limitations.

3. Application of GIS and RS in Disaster Management
   a. Hazard Mapping & Risk Assessment
   b. Role of GIS and RS in Mitigation and Preparedness
   c. Role of GIS and RS in Disaster Response and Recovery
   d. Role of GIS and RS in Disaster Risk Assessment
   e. Preparation of different thematic maps; exercises on creating maps for different disasters

4. Practical and Lab Work
   a. Geo-referencing
   b. Creation of feature class
   c. Data input and processing
   d. data Mosaicing
   e. Thematic Maps and their cartographic representation
   f. Data handling and Output
   g. Use of remotely sensed data
h. Image processing and extraction of features and information
i. Uses and application of raster and vector data in Disaster Management
j. Hazard, vulnerability and risk mapping

Teaching Methodology

- Lectures
- Written Assignments
- Lab work

Assessment

*Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1. **1st Term (20%)**
   - Assignments/Quizzes and Presentations

2. **Mid Term (30%)**
   - Written (Long Questions, Short Questions, MCQs)

3. **Final Term (50%)**
   - Written (Long Questions, Short Questions, MCQs)

Text and Reference books:

   Rutledge

**MAJOR-XI**

**DM 681** Climate Change and Natural Hazards Cr. H. 2+1

Course Learning Outcomes:
Upon successful completion of the course, the student will be able to:

**Understand** the process of climate change and its impacts  
**Demonstrate** linkage between natural hazards and climate change.

**COURSE CONTENTS:**

1. **Introduction**  
   a. Introduction to Science of Climate Change  
   b. Weather and Climate  
   c. Global Climatic Regions

2. **Oceans, Hydrological cycle and weather**  
   a. Surface Current, Carbon sink  
   b. Hydrological cycle  
   c. Hydro-Meteorological System  
   d. Climate change and its impact  
   e. El-Nino and La-nina Effects and climate change

3. **Causes of Climate Change and indicators**  
   Causes of Climate Change (Natural and Anthropogenic)  
   - Impacts of Climate Change  
   - Global Warming  
   - Extreme Weather Events  
   - Linkage between Climate Change and Natural Hazards  
   - Hydro-meteorological Hazards and Disasters  
   - Global Distribution of Hydro-meteorological Disasters  
   - Climate Change Adaptation and Disaster Risk Reduction

4. **Practical: Linking Adaptations and Mitigation and Lab work**  
   - Uses and application of climate models  
   - Forecasting and Early warning system  
   - Multi-hazard forecasting and early warning mechanism in Pakistan  
   - RADAR and Satellite based weather forecast  
   - Mainstreaming climate change adaptation and disaster mitigation  
   - Tools for Climate Change Adaptation

**Teaching Methodology**

- Lecturing  
- Written Assignments  
- Seminar Lectures  
- Documentaries
Assessment

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:


MAJOR-XII

DM 682 Techniques of Hazard Mapping Cr. H. 2+1

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

Understand the basic elements of a map.
Illustrate the hazard variables.
Apply methods and techniques of hazard mapping.
COURSE CONTENTS:

1. Introduction
   a. Maps (Definition, Importance and Use)
   b. Types of Maps (Scale, Purpose and Content)
   c. Basic Elements of a Map

2. Types and variables of Hazards
   a. Standard definition of a hazard
   b. Derivation of variables
   c. Listing of map-able variables
   d. Interlinking of variables and map components

3. Cartography and Map drawing in Lab
   a. Sketch Map
   b. Drawing Tools
   c. Surveying Tools
   d. Computer Aided Cartography
   e. GIS &RS
   f. Multi-Tool Mapping

4. Practical: Hazard Mapping
   a. Data availability
   b. Spatio-temporal dynamics
   c. Multi-variables
   d. Hazard mapping
   e. Vulnerability mapping
   f. Risk Mapping
   g. Multi-Hazard mapping

Teaching Methodology

- Lectures
- Written Assignments
- Seminar
- Lab work

Assessment

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)
Text and Reference books:


MAJOR-XIII

DM 683 Practical Exercises in Disaster Management Cr. H. 1+2

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

- Identify the needs of practical skills of emergency response
- Apply the practical skills during emergency response

COURSE CONTENTS:

1. Map reading and drawing
   a. General Maps
   b. Topographic Maps
   c. Weather Maps
   d. Distance, shape and area analysis on a map
   e. Contour and Slope analysis
   f. Drainage Pattern analysis
   g. Hazard Mapping

2. Search and Rescue
   a. Types
b. Equipment
c. Trainings

3. **Fire Prevention and Fighting**
   a. Types of Fire
   b. Fire safety provision
   c. Equipment and techniques

4. **Medical First Aid**
   a. Vital Sign
   b. Basic Life Support
   c. Wounds and its Types: Pre-Hospital Management.
   d. Basic Guidelines for Management of Fractures
   e. Burn Injuries
   f. Safe Transportation of Patient
   g. Foreign Body Airway Obstruction (FBAO)
   h. First aid for victims of extreme weather events

**Teaching Methodology**

- Lectures
- Field work
- Seminar and Documentary
- Lab work

**Assessment**

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1. **1st Term (20%)**
   - Assignments/Quizzes and Presentations

2. **Mid Term (30%)**
   - Written (Long Questions, Short Questions, MCQs)

3. **Final Term (50%)**
   - Written (Long Questions, Short Questions, MCQs)

**Text and Reference books:**


**DETAIL OF ELECTIVE COURSES**

**Elective (Semester 07)**

| DM 674a                      | Climate Change Adaptation and Disasters | Cr. H. 3 |

**Course Learning Outcomes:**

Upon successful completion of the course, the student will be able to:

- **Understand** current issues of climate change adaptation.
- **Analyze** different approaches of CCA.

**COURSE CONTENTS:**

1. **Introduction**
   - Climate change and climate variability
   - Major impacts of climate change on agriculture, water resources, forestry, biodiversity, human health and hydro-meteorological phenomena
2. **Climate Change Adaptation**
   - Overview of Climate Change Adaptation
   - International protocols
   - Climate Change and extreme hydro-meteorological events
   - Criteria for prioritization of Climate Change Adaptation
3. **Climate Change Vulnerability**
   - Climate change and vulnerabilities
   - Local coping strategies, indigenous knowledge in climate change adaptation
4. **Climate Change Adaptation in Pakistan**
   - Climate change adaptation in Pakistan
   - Climate Change and agriculture, water, forestry, biodiversity, health sectors
Teaching Methodologies:
5. Lectures
6. Documentaries and visuals
7. Interactive discussions and talks
8. Assignments and quizzes

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:
- INTERGOVERNMENTAL Panel on Climate Change (IPCC) (2013) Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. Cambridge University Press 32 Avenue of the Americas, New York, NY 10013-2473, USA
Elective (Semester 07)

DM 674b  Structural and Non-Structural Measures in DM  Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

- Understand geohazard impacts and their mitigation needs
- Delineate structural and non-structural measures in DRM

COURSE CONTENTS:

1. Introduction
   - Introduction to Structural and Non-Structural Measures in DRM
   - The understanding on geo-hazards such as; floods, earthquakes, landslides, storms, desertification, fire etc.

2. Structural Measures
   - Resistant constructions, building codes and regulatory measures
   - Structural/Physical modifications and retrofitting
   - Relocation in construction of community shelters
   - Construction of barriers, deflections or retention systems (Dams and reservoirs, levees and flood walls, retaining walls, diversion channels)

3. Non-Structural Measures
   - Disaster preparedness
   - Hazard detection and early warning system
   - Biological measures
   - DRM policies, plans and programs
   - Risk assessment and insurance
   - Community awareness and educational programs

Teaching Methodologies:
   i. Lectures and case studies
   ii. Documentaries and visuals
   iii. Interactive discussions and talks
   iv. Assignments and quizzes

Assessment

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
   - Assignments/Quizzes and Presentations
Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:
5. SHAH, B. H. (2008) Field Manual on Slope Stabilization. Environmental Recovery Programme For The Earthquake Areas, UNDP Pakistan publication, Crisis Prevention & Recovery Unit (CPRU), House # 124 Street # 11, E-7 Islamabad

Elective (Semester 07)

DM 674c Ageing and Disaster Cr. H. 3

Course Learning Outcomes:
Upon successful completion of the course, the student will be able to:

Understand the concept of ageing within disaster management
Identify the role of senior citizens in DM

COURSE CONTENT:

1. Introduction
   - Introduction to Ageing
   - Social Ageing and the Life Course Perspective
   - Cultural Images of Ageing
   - Theoretical Analysis of ageing

2. Problems and Remedies
   - Madrid International Plan of Action on Ageing, 2002
   - Employment Old Age Benefit Institution
   - Problems of Old Age People
• Problem of older People in disaster

3. Vulnerability, Capacity and standard
• Disasters and the Vulnerability of Older Populations
• Displacement, separation and return
• Capacities and contribution social capital during disaster
• Senior People and Sphere Standards

4. Case studies
• Case Studies: Help Age older people associations in community disaster risk Reduction

Teaching Methodologies:
• Lectures and case studies
• Documentaries and visuals
• Interactive discussions and talks
• Assignments and quizzes

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
• Assignments/Quizzes and Presentations

Mid Term (30%)
• Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
• Written (Long Questions, Short Questions, MCQs)

Text and Reference books:
Elective (Semester 07)

DM 674d Public Private Partnerships for Disaster Risk Reduction Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

- **understand** the significance of Public Private Partnership (PPP) in DRM
- **Appraise** the role of PPP in DRM

**COURSE CONTENTS:**

**1. Introduction**
- Introduction to the Public Private Partnerships concept
- Introduction to institutional and legal arrangements for PPP

**2. Public private Partnership and DRR**
- Public Private Partnership for Disaster Risk Reduction
- Private sector involvement in DRM
- The business case for corporate sector involvement in DRM
- The role of the private sector in DRR

**3. Case studies**
- Case studies of private sector involvement in DRM activities
- Current legislative and institutional framework for PPPs for DRM

**4. Emerging concepts**
- Way forward and evolving concepts in PPP for DRM
- Reference from Pakistan and developed world

**Teaching Methodologies:**
- Lectures and case studies
- Documentaries and visuals
- Interactive discussions and talks
- Assignments and quizzes

**Assessment**

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

- **1st Term (20%)**
  - Assignments/Quizzes and Presentations

- **Mid Term (30%)**
Text and Reference books:


Elective (Semester 07)

DM 674e  Environment and Hazards Management  Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

- Understand the basic components of environment.
- Relationship between Man and Environment.
- Interlink environmental problems with natural hazards.

COURSE CONTENT:

1. Introduction
   - Introduction to Environment and Natural Hazards
   - Environment and it’s components

2. Earth spheres and Greenhouse gases
   - Spheres of the Earth (Litho, Hydro, Cryo, Bio, and Atmosphere)
   - Earth Heat Budget System
   - Green House Effects
   - Global Warming

3. Environment and sustainability
• Sustainable Use of Resources for DRR
• Eco-Systems, Food Chain and Energy Chain
• Environment and Resources
• Economic Activities & Environment

4. Environmental Degradation
• Pollutions and Disasters
• Environmental Hazards

Teaching Methodologies:
• Lectures and case studies
• Documentaries and visuals
• Interactive discussions and talks
• Assignments and quizzes

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
• Assignments/Quizzes and Presentations

Mid Term (30%)
• Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
• Written (Long Questions, Short Questions, MCQs)

Recommended Books:

Elective (Semester 07)
DM 674f Humanitarian Crisis Management Cr. H. 3

Course Learning Outcomes:
Upon successful completion of the course, the student will be able to:

1. To **understand** the dynamics of national and international conflict areas involved in humanitarian crises.
2. To **appreciate** the challenges of humanitarian crises, interventions and management in conflict areas due to internal or external factors.

**COURSE CONTENTS:**

1. **Introduction**
   - Understanding humanitarian organisations
   - Criteria and formation of humanitarian organisations

2. **Humanitarian organisations and Crises**
   - Humanitarian organisations' crises
   - International responsibilities towards crises
   - Work of humanitarian organisations
   - International aid and humanitarian organisations
   - Financial status and humanitarian organisations

3. **International protocols**
   - International protocol for humanitarian organisations
   - World Humanitarian summit
   - Universal declaration of Human rights
   - Sphere standards
   - Social stratification and Disparities

4. **Conflict in Crises management**
   - Conflict areas and Challenges of humanitarian organisations
   - Conflict resolution mechanism
   - Post conflict recovery
   - Human security in crises zones
   - Best practices in crises management

5. **Case studies**
   - Case studies on humanitarian crises management

**Teaching Methodologies:**

- Lectures and case studies
- Documentaries and visuals
- Interactive discussions and talks
- Assignments and quizzes
Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:
- VICTOR, Asal, David Quinn, Jonathan Wilkenfeld, Kathleen Young, Mediating International Crises (Routledge Advances in International Relations and Global Politics), Routledge, 2006, London

Elective (Semester 07)

DM 675a Child Friendly Disaster Management Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

1. DESCRIBE Child Development and Violence Against Children;
2. ANALYSE the impacts of disasters on children and mainstreaming DRR into school curriculum and other educational programmes.

COURSE CONTENT:

1: Introduction
- Definition of Childhood
- Child Development
• Children’s roles in family, community and cultural contexts
• Needs of children and families in preschool, inclusive and community education settings
• Social Policies for Children Protection

2: Violence against Children and its impact
• Physical abuse
• Psychological abuse
• Neglect and Emotional/ Psychological Abuse
• Sexual abuse
• Teaching Life Skills to Children regarding protection from abuse and violence

3: Impacts of Disasters in Children
• Direct and Indirect impacts of Disaster on Children
• Specific Needs of Children During Disaster
• International Convention on the Rights of Children in emergency
• International and national guidelines for child friendly disaster management and response
• Responding to Child Trauma

4: Mainstreaming DRR Education into School curricula
• Stand-alone Programmes
• Infusion Approach
• Pedagogy of DRR Education
• Methods and practices of teaching DDR curriculum at school level
• School Emergency Planning and Management
• Case studies on Child Friendly Disaster Management

Teaching Methodologies:
• Lectures and case studies
• Documentaries and visuals
• Interactive discussions and talks
• Assignments and quizzes
• Tabletop Exercises

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:
1st Term (20%)
• Assignments/Quizzes and Presentations
Mid Term (30%)
• Written (Long Questions, Short Questions, MCQs)
Final Term (50%)
• Written (Long Questions, Short Questions, MCQs)
Recommended Books:
1. ADPC (2007) Child Focused Disaster Risk Reduction, Module 6: Community Disaster Risk Reduction Implementation, 16th Community Based Disaster Risk Management Course, Bangkok.
4. MURTHY and Josephine (2006) A Study on Non-Discrimination in the Tsunami Rehabilitation Programme in India, Save the Children Tsunami Rehabilitation Programme in India

Elective (Semester 07)

DM 675b  Earthquake Hazard Risk Reduction  Cr. H. 3

Course Learning Outcomes:
Upon successful completion of the course, the student will be able to:

1. To understand the nature, causes and consequences of the earthquake hazards
2. To apply the knowledge and tools for earthquake hazards assessment and risk mitigation.

Course Contents:

1. Introduction
   a. Basics on Earthquakes (Faults, Size and Location of Earthquakes)
   b. Seismology, Seismic Waves and Seismometry

2. Seismic Hazards
   a. Primary and Secondary Hazards (Ground Shaking, Land-Sliding, Liquefaction, Tsunami, Fires, etc.)
   b. Strong Ground Motions Parameters
   c. Introduction to Ground Motions Prediction Equations (GMPEs) and Applications
   d. Introduction to Hazard Analysis (Deterministic & Probabilistic Seismic Hazard Analysis)
   e. Introduction to local site-effects and seismic soil-response analysis
   f. Evaluation of Landsliding and Liquefaction Hazards
g. Seismic Micro-Zonation

3. **Seismic Risk**
   a. Exposure Characterization
   b. Field Visits (understand Urban Building Typologies)
   c. Seismic Vulnerability/Fragility Assessment
   d. Introduction to EMS-98 Scale
   e. Introduction to RADIUS Tool
   f. Seismic Risk Assessment Case Studies: Damage Evaluation and Loss Estimation

4. **Seismic Risk Mitigation**
   a. Introduction to Laboratory Methods for Earthquake Engineering Research
   b. Laboratory Visits (Earthquake Engineering Center, UET Peshawar)
   c. Earthquake Prediction and Early Warning Systems
   d. Public Awareness and Preparedness
   e. Earthquake Insurance

**Teaching Methodologies:**
- Lectures and case studies
- Documentaries and visuals
- Interactive discussions and talks
- Assignments and quizzes

**Assessment**

*Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:*

**1st Term (20%)**
- Assignments/Quizzes and Presentations

**Mid Term (30%)**
- Written (Long Questions, Short Questions, MCQs)

**Final Term (50%)**
- Written (Long Questions, Short Questions, MCQs)

**Text and Reference books:**


Elective (Semester 07)

DM 675c Quantitative Techniques for Disaster Management Cr. H. 2+1

Course Learning Outcomes:
Upon successful completion of the course, the student will be able to:

- **Understand** basics of data type, variable types and their level of measurement
- **Understand** quantitative techniques that are widely applied in disaster management and their application using interface of Statistical Package
- **Choose** and **perform** a suitable quantitative technique in their research work.

COURSE OUTLINE:

1. Introduction
   - Sample and Population
   - Types of variables and their level of measurement
   - Quantitative and Qualitative techniques
   - Measure of central tendency
   - Measure of dispersion

2. The User interface of Statistical Package in lab
   - The Data Editor
   - Creating variables
   - Entering data
   - The output viewer
   - Saving and retrieving files

3. Exploring Data in Statistical Package in Lab
   - Graphing and screening data
   - Exploring groups of data
   - Tests for normality of data

4. Bivariat Correlation using Lab
• Correlation concepts
• How to measure relationship
• Graphing relationship
• Bivariate correlation
• Using R-square for interpretation
• Partial correlation
• How to report results

5 Regression Analysis using Lab
• An introduction to regression
• Simple regression in SPSS
• Interpreting simple regression
• Multiple regression: the basics
• Accuracy of regression models
• Multiple regressions in Statistical Package
• Methods of multiple regression
• Categorical predictors in multiple regression
• Interpreting and reporting multiple regression

6 Logistic Regression
• Background to logistic regression
• Methods of logistic regression
• Logistic regression in Statistical Package
• Interpreting the results
• Reporting the results

7 Comparing two Mean
• Testing difference between means: t-test
• The dependent t-test
• The independent t-test

8 Comparing Several Means: ANNOVA
• The theory behind ANNOVA
• One-way ANNOVA in Statistical Package
• Post hoc tests in Statistical Package
• Interpreting the results
• Reporting the results

9 Categorical data in Lab
• Theory of analyzing categorical data
• Pearson’s chi-square test
• Running chi-square on Statistical Package
• Interpreting and reporting results

Teaching Methodology
• Lecturing
• Assignments

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
• Assignments/Quizzes and Presentations

Mid Term (30%)
• Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
• Written (Long Questions, Short Questions, MCQs)

Text and Reference books:


Elective (Semester 07)

DM 675d Natural Resources and Disasters Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

1. To know about the natural resources and its utilization.
2. To explore the relationship of natural resources utilization and natural hazards.
3. To understand the sustainable use of resources and disaster risk reduction.

COURSE CONTENTS:

• Natural Resources and its Classification
• Utilization patterns of natural resources
• Introduction to Natural Resources and Disaster management
• Impacts of Disasters on Natural Resources
• Preservation, Conservation and Restoration of Natural Resources
• Natural Resources Policies and its Management
• Natural Resources and Human Environment Interaction
• Natural Resources and Development
• Ecological Balance Systems
• Natural Resources and Natural Hazards

Teaching Methodologies:
• Lectures and case studies
• Documentaries and visuals
• Interactive discussions and talks
• Assignments and quizzes

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
• Assignments/Quizzes and Presentations

Mid Term (30%)
• Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
• Written (Long Questions, Short Questions, MCQs)

Text and Reference books:

Elective (Semester 07)
DM 675e Global Regime in Disaster Management Cr. H. 3
Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

| Understand | the disaster management framework and legislations in the context of global conventions and treaties |
| Evaluate | the implementation status of global treaties and conventions |

COURSE CONTENTS:

Introduction
- Introduction to global regime in disaster management
- Global challenges and disasters

Past Treaties & Conventions
- The linkage between disasters and Millennium Developmental Goals (MDGs)
- International Decade for Natural Disaster Reduction (IDNDR) 1990-1999
- Yokohama Strategy and Plan of Action – Mid review IDNDR
- Johannesburg Plan of Implementation 2002
- Kyoto Protocol 2008-2012
- Disaster Risk Reduction tools for Climate Change Adaptation

Current Treaties and Conventions
- SENDAI Agreement 2015-2030
- The Sustainable Development Goals (SDGs) and Disaster Management
- International Strategy for Disaster Reduction (ISDR)
  Public commitment and linkage to sustainable development, enlarged networking and partnerships. Mechanisms: IATF/DR, ISDR secretariat, UN Trust Fund
- UNISDR DRR Strategy

Global Regimes at Work
- UN Organizations and DRR
- Pakistan and DRR

Teaching Methodologies:
- Lectures and case studies
- Documentaries and visuals
- Interactive discussions and talks
- Assignments and quizzes
Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:


Elective (Semester 08)

DM 684a Disaster Management Policies Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

Understand the disaster management frameworks/legislations/policies in Pakistan vis-à-vis global conventions.
Evaluate the current national and international policies related to disaster management

COURSE CONTENTS:

Introduction
- Components of Disaster Management System
  Definition, Need, Objectives, Principles, Composition, Major functions
• Disaster Management Bodies at Regional, National and International level
• Guiding principles for policy
• Process of policy formulation, implementation and techniques in policy analysis
• Organizations responsible for Disaster Management in Pakistan

National Plans and Policies
• Disaster Management and National Plans
  o NDRF 2007
  o NDRP 2010
  o NDMP 2012
  o Contingency Plans
  o Provincial Plans
• Legislation for Disaster Management
  o Civil Defence Act, 1952
  o The National Calamities Act (West Pakistan Calamities Act), 1958
  o Local Government Act, 2001/2013
  o Emergency Services Ordinance/Act, 2002
  o Environmental Legislations
    Such as Environmental Laws and Climate Change Policies at work
  o National Disaster Management Act – 2010
  o ERRA Act 2011
  o Pakistan Climate Change Act 2016
• National Disaster Management Policy, 2013
  o DRR Policy 2012
  o Climate Change Policy 2013

International Plans and Policies
• Analytical review of the international policies and frameworks
  o Yokohama Strategy
  o The Geneva Mandate
  o Kyoto Protocol
  o Hyogo Framework for Action (HFA)
  o Sendai Framework

Teaching Methodologies:
• Lectures and case studies
• Documentaries and visuals
• Interactive discussions and talks
• Assignments and quizzes

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:
1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:

6. GOVERNMENT of Pakistan (GOP) (2010) NDMA. National Disaster Management Authority, NDMA, Prime Minister’s Secretariat, Constitution Avenue, Islamabad-Pakistan, www.ndma.gov.pk

Elective (Semester 08)

DM 684b Good Governance in Disaster Management Cr. H. 3

Course Learning Outcomes:
By the end of this course students shall be capable of understanding the significance of good governance in disaster management and its influence on good practices in disaster management.

COURSE CONTENTS:
- Good governance, elements, concept, principles, practices and framework in Disaster Management
- Governance and its types
- Governance indicators (worldwide and Pakistan)
- DRR, Good Governance and Development
- Positioning disaster risk reduction in government
- Good governance initiative for disaster management in Pakistan
- The role of the good governance in disaster management
- Good governance through development assistance
- Case studies of good governance in disaster management activities
- Learning Experiences: Governance issues in disaster management
  - Ownership of initiatives
  - Participation
  - Coordination
  - Communication
  - Strengthening implementing capacity
  - Accountability
- Institutional and Policy Analysis for DRR in Pakistan
- Institutional Aid and Good Governance

Teaching Methodologies:
- Lectures and case studies
- Documentaries and visuals
- Interactive discussions and talks
- Assignments and quizzes

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:
  1. **1st Term (20%)**
     - Assignments/Quizzes and Presentations
  2. **Mid Term (30%)**
     - Written (Long Questions, Short Questions, MCQs)
  3. **Final Term (50%)**
     - Written (Long Questions, Short Questions, MCQs)

Text and Reference books:

Elective (Semester 08)

DM 684c Disability and Disasters Cr. H. 3

Course Learning Outcomes:
Upon successful completion of the course, the student will be able to:
UNDERSTAND the key concepts of disability and national/International conventions on disability.
DESCRIBE how disasters affect the disable people and how to protect Persons with disabilities in disaster situation.

COURSE CONTENTS:

01: Introduction
• Disability and Impairment
• Causes of Disability
• Disabled status in the world
• Socio-economic issues of Persons with Disabilities in Pakistan

02: Conventions and Policies on Disability
• International conventions on disability
• National Policies on Disability in Pakistan

03: Disaster and Disability Nexus
• Disaster as a cause of disability
• Problems and Coping Mechanism during disaster
• Protection of Life & Security during Disasters
• Assessment procedures in Intervention
• Guidelines to include disability in disaster preparedness and management
• Role of CBOs in Rehabilitation of Disabled

04: Approaches for rehabilitation of Disable after disaster
• Professional Approaches for rehabilitation of Disable after disaster
• Sociological Approaches for rehabilitation of Disable after disaster
• Livelihood Options for the Persons with Disabilities after disaster
TEACHING METHODOLOGIES:
- Lectures and case studies
- Documentaries and visuals
- Interactive discussions and talks
- Assignments and quizzes
- Tabletop Exercises

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Recommended Books
1. ABU-HABIB, Lina (1997) Gender and Disability, Women’s Experiences in the Middle East, Oxford: Oxfam (UK and Ireland)

Elective (Semester 08)
DM 684d    Health, Hygiene and Sanitation in Disaster Management    Cr. H. 3

Course Learning Outcomes:
Upon successful completion of the course, the student will be able to:

1. explore the relationship of DM and Health.
2. understand the consequences of disasters and Health response.
3. know strategies for Health response in DM.

COURSE CONTENTS:

- Introduction to Health Issues in Disaster Management
- Basic Elements of Public Health
- The Consequences of Disasters and Its Impacts on Public Health
- Public Health and Phases of Disaster Response
  - Acute Phase (Surgical, Rapid response, Ambulances etc.)
  - Non-Surgical
  - Chronic Phase
- Short Term Programmes
  - Mobile Clinic, Tele Health, Training, Restoration of Public Health Facilities, Safe Community, Rehabilitation Medicines, Drugs and Vaccines, Liaison with other Stakeholders of DM etc.
- Long Term Programmes
  - Medical Support
  - Rapid Response Unit
  - Field Hospital and Mobile Clinic
- Management of Health Issues in Disasters (Planning Coordination, Logistics, Manpower etc.)
- Provision of clean drinking water, safe sanitation, and adequate nutrition
- Protection from climatic effects
- Social support to affected communities.

Teaching Methodologies:
- Lectures and case studies
- Documentaries and visuals
- Interactive discussions and talks
- Assignments and quizzes

Assessment

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)
Final Term (50%)

- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:


Elective (Semester 08)

DM685a Psychological Impacts of Disasters Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

1. To understand the psychological impacts of disasters.
2. To know about psychological Trauma.

COURSE CONTENTS:

- Introduction to Psychological Impacts of Disasters
- Disaster Impacts
- Psychological Trauma
- Trauma response
  - Normal response, Basic principle, Bio psychosocial model, cultural influences
- Classification of Psychological Disorders
  - Depression, Anxiety, Post-traumatic stress disorder
- Children in Disasters
  - Development tasks, risk factors, and childhood traumatic grief
- Psychological and social support
  - Psychological first aid, coping strategies, and resiliency models
Teaching Methodologies:
- Lectures and case studies
- Documentaries and visuals
- Interactive discussions and talks
- Assignments and quizzes

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:
1st Term (20%)
- Assignments/Quizzes and Presentations
Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)
Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:

Elective (Semester 08)

DPM 685b Flood Hazard Risk Reduction Cr. H. 3

Course Learning Outcomes:
Upon successful completion of the course, the student will be able to:
1. UNDERSTAND the nature, causes, consequences and mitigation of the flood hazard.
2. INTERPRET preparedness and response plans for effective flood risk reduction.
COURSE CONTENTS:

- Introduction to Flood Hazard
- General Characteristics of Flood
- Causes of Floods
  - Meteorological
  - Hydrological
  - Anthropogenic
- Flood Intensifying Conditions
- Types of Floods (Riverine flood, Flash flood, Coastal flood, GLOF)
- Climate Change Impacts on floods
- Major Flood Impacts
- Basic Principles in Flood Hazard Assessment
- Basic Principles in Flood Risk and Vulnerability Assessment
- Integrated Flood Risk Management
- Flood Mitigation Measures
  - Structural (Engineering Protection)
  - Non-structural (Planning and Policies)
- Early Warning System for Floods

Teaching Methodologies:

- Lectures and case studies
- Documentaries and visuals
- Interactive discussions and talks
- Assignments and quizzes

Assessment

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
- Assignments/Quizzes and Presentations

Mid Term (30%)
- Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
- Written (Long Questions, Short Questions, MCQs)

Text and Reference books:

Elective (Semester 08)

DPM 685c Basic Engineering Practices in Disaster Management Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

1. To understand the role of various basic disciplines of engineering
2. Role of various engineering codes, guidelines and specifications
3. History of disasters with specific emphasis to Pakistan in context of engineering

COURSE CONTENTS:

1. Introduction
   - Introduction to basic engineering fields
   - The role of (Agricultural, Chemical, Civil, Electrical, Mechanical and Mining engineering in DM

2. Nature of Engineering Project
   - Typical process of engineering project output
   - (Concept, feasibility, design, approval, execution, handover, management, maintenance, end of design life disposal).
   - Basic concept of Planning Commissioning preforms (PC-I to PC-V).

3. Engineering Codes/guidelines/Specifications
   - Introduction of concept of codes, guidelines, specifications in various engineering fields.

4. Case Studies
   - History of various disasters in world with summary of engineering challenges
   - History of various disasters in Pakistan with engineering challenges

Teaching Methodologies:
   - Lectures and case studies
• Documentaries and visuals
• Interactive discussions and talks
• Assignments and quizzes

Assessment
Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1st Term (20%)
• Assignments/Quizzes and Presentations

Mid Term (30%)
• Written (Long Questions, Short Questions, MCQs)

Final Term (50%)
• Written (Long Questions, Short Questions, MCQs)

Text and Reference books:


Elective (Semester 08)

DM 685d Role of Media in Disaster Management Cr. H. 3

COURSE LEARNING OUTCOMES:

Upon successful completion of the course, the student will be able to:

UNDERSTAND the fundamentals of media and its nexus with DM.
ILLUSTRATE the role of Media in DM in Pakistan with special reference to the importance of media in pre-and post disaster scenarios.
Course outline:

1. **Introduction**
   a. Media Studies, definition
   b. Historical Sketch of Media Studies
   c. Types of Media

2. **Relationship between Media and DM**
   a. Media in Disaster Management Cycle
   b. Media in Pre-Disaster Stage
   c. Media in Post Disaster response

3. **Media in Emergencies**
   a. Means of Communications
   b. Media in Emergency communications
   c. National policy and Media

4. **Impact of Media in Disasters**
   a. Positive impacts
   b. Negative impacts
   c. Code of Conduct

5. **Media role in context of Pakistan**
   a. Reactive in nature
   b. Post disaster focused
   c. Lack of Disaster journalism
   d. Policy gap

6. **Way Forward**
   a. Revised role of Media in disaster Act
   b. Unbiased journalism
   c. Focus DRR and Resilience
   d. Focus on Pre-Disaster Cycle

**Teaching Methodology**

- Lecturing
- Interactive Sessions
- Written Assignments
- Seminar Lectures
- Documentaries

**Assessment**

Note: Each university can adopt the assessment of this course as per their approved criteria. However, the committee proposed the following assessment criteria:

1. **1st Term (20%)**
   - Assignments/Quizzes and Presentations

2. **Mid Term (30%)**
Text and Reference books:


Elective (Semester 08)

DPM 685e Contingency Planning in Disaster Management Cr. H. 3

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

1. To understand the role of various basic disciplines of engineering
2. Role of various engineering codes, guidelines and specifications
3. History of disasters with specific emphasis to Pakistan in context of engineering

COURSE CONTENTS:

- Introduction to contingency planning
- Preparedness: Organization. Training, Planning and/or Plans
- Planning Process
- Plan Preparation: Level, Components, Viability, Check list etc.
- Dynamic Nature of Disaster Management
- Contingency Planning - Planning Continuum
- Methodology & Steps
- Content of the contingency Plan
- Time Line
- Likely Actions at Federal, Provincial and District levels
- Monsoon Contingency Plan

Text and Reference books:
RECOMMENDATIONS BY NCRC FOR THE IMPLEMENTATION OF BS/MS DISASTER MANAGEMENT

1. Recognition of DM Programme
   1.1. Recognition of Disaster Management as a science subject by the HEC and other National bodies.
   1.2. Disaster Management must be treated at par with other basic sciences by the HEC.
   1.3. Opening of Disaster Management Departments in all general public and private sector universities of the country.
   1.4. Facilitate curricula development at School and College levels through relevant bodies.
   1.5. The broad spectral domain of Disaster Management provides an opportunity for a wide range of useful multi-disciplinary associations with other subject areas. Therefore, HEC is to advise the institutions to provide maximum range of combinations both with BS science and humanities groups.

2. Labs/Equipment
   2.1. Provision of computers for Disaster Management labs. There should be Central Computer lab in each institution/colleges to provide computing facility to the different disciplines of sciences including Disaster Management. The GIS and Remote Sensing software should be provided at least to the post graduate level institution where Disaster Management is taught.
   2.2. Sufficient funds should be allocated by the Institutions for the purchase of teaching aids, surveying and computing equipment/instruments, GPS and other field surveys equipment.

3. Workshops/Seminars/Conferences
   3.1. National level workshop should be organized by HEC to discuss the problems related to the implementation for 4 year BS and 2 year MS Disaster Management curriculum at the national level.
   3.2. Workshops/seminars/conferences should be arranged at regular interval for the capacity building of all stakeholders related to disaster management.
   3.3. Facilitating knowledge sharing through workshops, seminars and conferences among scientific community.

4. Library Facilities
   4.1. Development of well-equipped seminar libraries and provision of funds for appropriate collection of journals, literature and reference material including government publications.
   4.2. HEC to facilitate publication of monographs, reports and books in Disaster Management.
   4.3. HEC to provide robust, internet facility for access to online journals, e-books, reports, satellite data and video streaming.

5. Research Support
   HEC to provide adequate funds for field works/research works related to Disaster Management to the institutions.

6. Refresher Courses
6.1. Organizing refresher courses regularly for postgraduate teachers in collaboration with NDMA, PDMAs, RESCUE 1122, Survey of Pakistan, Meteorological Department of Pakistan, Geological Survey of Pakistan, and SUPARCO etc. related to Instrumental Surveying, GIS, Remote Sensing, Emergency Response Management, Disaster Risk Assessment etc.

6.2. Refresher courses should be arranged at regular intervals for all teachers (Disaster Management) to keep them abreast with continuing changes in the discipline in the given fields.

6.3. The HEC may advise subordinate institutions to run short-term courses during summer vacation within the ramifications of disaster management enabling disaster management teachers to enhance their knowledge.
Annexure “A”

COMPULSORY COURSES IN ENGLISH FOR BS
(4 YEAR) IN BASIC & SOCIAL SCIENCES

English I (Functional English)

Objectives: Enhance language skills and develop critical thinking.

Course Contents:
- Basics of Grammar
- Parts of speech and use of articles
- Sentence structure, active and passive voice
- Practice in unified sentence
- Analysis of phrase, clause and sentence structure
- Transitive and intransitive verbs
- Punctuation and spelling

Comprehension
Answers to questions on a given text

Discussion
General topics and every-day conversation (topics for discussion to be at the discretion of the teacher keeping in view the level of students)

Listening
To be improved by showing documentaries/films carefully selected by subject teachers

Translation skills
Urdu to English

Paragraph writing
Topics to be chosen at the discretion of the teacher

Presentation skills
Introduction

Note: Extensive reading is required for vocabulary building

Recommended Books:
1. Functional English
   a) Grammar
   b) Writing
   c) Reading/Comprehension
d) Speaking

**English II (Communication Skills)**

**Objectives:** Enable the students to meet their real life communication needs.

**Course Contents:**

- **Paragraph writing**
  Practice in writing a good, unified and coherent paragraph

- **Essay writing**
  Introduction

- **CV and job application**
  Translation skills
  Urdu to English

- **Study skills**
  Skimming and scanning, intensive and extensive, and speed reading, summary and précis writing and comprehension

- **Academic skills**
  Letter/memo writing, minutes of meetings, use of library and internet

- **Presentation skills**
  Personality development (emphasis on content, style and pronunciation)

*Note: documentaries to be shown for discussion and review*

**Recommended Books:**

**Communication Skills**

a) **Grammar**

b) **Writing**

c) **Reading**
   2. Reading and Study Skills by John Langan
English III (Technical Writing and Presentation Skills)

Objectives: Enhance language skills and develop critical thinking

Course Contents:

Presentation skills

Essay writing
Descriptive, narrative, discursive, argumentative

Academic writing
How to write a proposal for research paper/term paper
How to write a research paper/term paper (emphasis on style, content, language, form, clarity, consistency)

Technical Report writing

Progress report writing

Note: Extensive reading is required for vocabulary building

Recommended Books:

Technical Writing and Presentation Skills

a) Essay Writing and Academic Writing

b) Presentation Skills

c) Reading
The Mercury Reader. A Custom Publication. Compiled by northern Illinois University. General Editors: Janice Neulib; Kathleen Shine Cain; Stephen Ruffus and Maurice Scharton. (A reader which will give students exposure to the best of twentieth century literature, without taxing the taste of engineering students).
Introduction/Objectives:

- Develop vision of historical perspective, government, politics, contemporary Pakistan, ideological background of Pakistan.
- Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.

Course Outline:

1. **Historical Perspective**
   b. Factors leading to Muslim separatism
   c. People and Land
      i. Indus Civilization
      ii. Muslim advent
      iii. Location and geo-physical features.

2. **Government and Politics in Pakistan**
   Political and constitutional phases:
   a. 1947-58
   b. 1958-71
   c. 1971-77
   d. 1977-88
   e. 1988-99
   f. 1999 onward

3. **Contemporary Pakistan**
   a. Economic institutions and issues
   b. Society and social structure
   c. Ethnicity
   d. Foreign policy of Pakistan and challenges
   e. Futuristic outlook of Pakistan

Recommended Books:
Annexure “C”

ISLAMIC STUDIES (Compulsory)

Objectives:
This course is aimed at:
1. To provide basic information about Islamic Studies
2. To enhance understanding of the students regarding Islamic Civilization
3. To improve Students skill to perform prayers and other worships
4. To enhance the skill of the students for understanding of issues related to faith and religious life.

Detail of Courses:

Introduction to Quran Studies
1) Basic Concepts of Quran
2) History of Quran
3) Uloom-ul-Quran

Study of Selected Text of Holly Quran
1) Verses of Surah Al-Baqra Related to Faith (Verse No-284-286)
2) Verses of Surah Al-Hujrat Related to Adab Al-Nabi (Verse No-1-18)
3) Verses of Surah Al-Mumanoon Related to Characteristics of faithful (Verse No-1-11)
4) Verses of Surah al-Furqan Related to Social Ethics (Verse No.63-77)
5) Verses of Surah Al-Inam Related to Ihkam(Verse No-152-154)

Study of Selected Text of Holly Quran
1) Verses of Surah Al-Ihzab Related to Adab al-Nabi (Verse No.6,21,40,56,57,58.)
2) Verses of Surah Al-Hashar (18,19,20) Related to thinking, Day of Judgment
3) Verses of Surah Al-Saf Related to Tafakar,Tadabar (Verse No-1,14)

Seerat of Holy Prophet (S.A.W) I
1) Life of Muhammad Bin Abdullah (Before Prophet Hood)
2) Life of Holy Prophet (S.A.W) in Makkah
3) Important Lessons Derived from the life of Holy Prophet in Makkah

Seerat of Holy Prophet (S.A.W) II
1) Life of Holy Prophet (S.A.W) in Madina
2) Important Events of Life Holy Prophet in Madina
3) Important Lessons Derived from the life of Holy Prophet in Madina

Introduction To Sunnah
1) Basic Concepts of Hadith
2) History of Hadith
3) Kinds of Hadith
4) Uloom-ul-Hadith
5) Sunnah & Hadith
6) Legal Position of Sunnah
Selected Study from Text of Hadith

Introduction To Islamic Law & Jurisprudence
1) Basic Concepts of Islamic Law & Jurisprudence
2) History & Importance of Islamic Law & Jurisprudence
3) Sources of Islamic Law & Jurisprudence
4) Nature of Differences in Islamic Law
5) Islam and Sectarianism

Islamic Culture & Civilization
1) Basic Concepts of Islamic Culture & Civilization
2) Historical Development of Islamic Culture & Civilization
3) Characteristics of Islamic Culture & Civilization
4) Islamic Culture & Civilization and Contemporary Issues

Islam & Science
1) Basic Concepts of Islam & Science
2) Contributions of Muslims in the Development of Science
3) Quran & Science

Islamic Economic System
1) Basic Concepts of Islamic Economic System
2) Means of Distribution of wealth in Islamic Economics
3) Islamic Concept of Riba
4) Islamic Ways of Trade & Commerce

Political System of Islam
1) Basic Concepts of Islamic Political System
2) Islamic Concept of Sovereignty
3) Basic Institutions of Govt. in Islam

Islamic History
1) Period of Khlaft-E-Rashida
2) Period of Ummayyads
3) Period of Abbasids

Social System of Islam
1) Basic Concepts Of Social System Of Islam
2) Elements Of Family
3) Ethical Values Of Islam

Reference Books:
1) Hameed ullah Muhammad, “Emergence of Islam”, IRI, Islamabad
2) Hameed ullah Muhammad, “Muslim Conduct of State”
3) Hameed ullah Muhammad, ‘Introduction to Islam
4) Mulana Muhammad Yousaf Islahi,”
6) Ahmad Hasan, “Principles of Islamic Jurisprudence” Islamic Research Institute, International Islamic University, Islamabad (1993)
9) Dr. Muhammad Zia-ul-Haq, “Introduction to Al Sharia Al Islamia” Allama Iqbal Open University, Islamabad (2001)
Annexure “D”

COMPULSORY MATHEMATICS COURSES FOR BS (4 YEAR)

(FOR STUDENTS NOT MAJORING IN MATHEMATICS)

1. MATHEMATICS I (ALGEBRA)

Prerequisite(s): Mathematics at secondary level
Credit Hours: 3 + 0

Specific Objectives of the Course: To prepare the students, not majoring in mathematics, with the essential tools of algebra to apply the concepts and the techniques in their respective disciplines.

Course Outline:

Preliminaries: Real-number system, complex numbers, introduction to sets, set operations, functions, types of functions.
Matrices: Introduction to matrices, types, matrix inverse, determinants, system of linear equations, Cramer’s rule.
Quadratic Equations: Solution of quadratic equations, qualitative analysis of roots of a quadratic equations, equations reducible to quadratic equations, cube roots of unity, relation between roots and coefficients of quadratic equations.
Sequences and Series: Arithmetic progression, geometric progression, harmonic progression.
Binomial Theorem: Introduction to mathematical induction, binomial theorem with rational and irrational indices.
Trigonometry: Fundamentals of trigonometry, trigonometric identities.

Recommended Books:
Dolciani MP, Wooton W, Beckenback EF, Sharron S, Algebra 2 and Trigonometry, 1978, Houghton & Mifflin,
Kaufmann JE, College Algebra and Trigonometry, 1987, PWS-Kent Company, Boston
Statistics-I
Credit 3 (2-1)

Definition and importance of Statistics in Agriculture, Data Different types of data and variables
Classification and Tabulation of data, Frequency distribution, stem-and-Leaf diagram, Graphical
representation of data Histogram, frequency polygon, frequency curve.
Measure of Central tendency, Definition and calculation of Arithmetic mean, Geometric mean, Harmonic
mean, Median quantiles and Mode in grouped and un-grouped data.
Measure of Dispersion, Definition and Calculation of Range, quartile deviation, Mean deviation, Standard
deviation and variance, coefficient of variation.

Practical:
   a. Frequency Distribution
   b. Stem-and-Leaf diagram
   c. Various types of Graphs
   d. Mean, Geometric mean Harmonic Mean,
   e. Median, Quartiles Deviation, mean Deviation.
   f. Standard Deviation, Variance, Coefficient of variation,
   g. Skewness and kensosis

Recommended Books:
1. Introduction to Statistical Theory Part- I by Sher Muhammad and Dr. Shahid Kamal (Latest Edition)
2. Statistical Methods and Data Analysis by Dr. Faquir Muhammad
Statistics-II

Credit 3 (2-1)

Sampling Probability and non-Probability Sampling, Simple random sampling stratified random sampling Systematic sampling error, Sampling distribution of mean and difference between two means. Interference Theory: Estimation and testing of hypothesis, Type—I and type-II error, Testing of hypothesis about mean and difference between two means using Z-test and t-test, Paired t-test, Test of association of attributes using X2 (chi-square) Testing hypothesis about variance.

Practical:

a. Sampling random sampling
b. Stratified random sampling.
c. Sampling distribution of mean
d. Testing of hypotheses regarding population mean
e. Testing of hypotheses about the difference between population means
f. Chi-square test
g. Testing of Correlation Coefficient
h. Fitting of simple linear regression
i. One-way ANOVA
j. Two-way ANOVA

Recommended Books:

1. Introduction to Statistical Theory Part-II by Sher Muhammad and Dr. Shahid Kamal (Latest Edition)
2. Statistical Methods and Data Analysis by Dr. Faquir Muhammad
INTRODUCTION TO INFORMATION AND COMMUNICATION TECHNOLOGIES

Course Structure: Lectures: 2 Labs: 1 Credit Hours: 3
Pre-requisite: None Semester: 1

Course Description:

This is an introductory course on Information and Communication Technologies. Topics include ICT terminologies, hardware and software components, the internet and World Wide Web, and ICT based applications.

After completing this course, a student will be able to:

- Understand different terms associated with ICT
- Identify various components of a computer system
- Identify the various categories of software and their usage
- Define the basic terms associated with communications and networking
- Understand different terms associated with the Internet and World Wide Web.
- Use various web tools including Web Browsers, E-mail clients and search utilities.
- Use text processing, spreadsheets and presentation tools
- Understand the enabling/pervasive features of ICT

Course Contents:

Basic Definitions & Concepts
Hardware: Computer Systems & Components
Storage Devices, Number Systems
Software: Operating Systems, Programming and Application Software
Introduction to Programming, Databases and Information Systems
Networks
Data Communication
The Internet, Browsers and Search Engines
The Internet: Email, Collaborative Computing and Social Networking
The Internet: E-Commerce
IT Security and other issues
Project Week
Review Week

Text Books/Reference Books:
