**NDM-110 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:**


1. HYNDMAN, Donald and Hyndman, David (2010) Natural Hazards and Disasters. Brooks Cole, 3rd Revised Edition, Stamford, Connecticut, USA.
2. KREBS, Robert E. (2003) The Basics of Earth Science. Greenwood, Westport, Connecticut, USA.
3. Khan A.N. (2016) Introduction to Hazards and Disasters. Al-Azhar Environmental planning and management, Peshawar
4. STRAHLER, Alan H. and Strahler, Arthur (2004) Physical Geography: Science and Systems of the Human Environment. John Wiley & Sons, 3rd Edition, Hoboken, New Jersey, USA.
5. Rahman A., Khan AN., Shaw R. (2015) Disaster Risk Reduction Approaches in Pakistan. Springer Tokyo.