

Course Description:

Upon successful completion of the course, the student will be able to Understand the geomorphological processes, analyze the geomorphological processes and the man-environment relationship and apply Geomorphic techniques in the field.

Course Outline:

1. **Introduction**
 - Introduction to Applied Geomorphology
 - Landforms and Geomorphic agents
 - Geomorphological Processes and Man
2. **Classification of Geomorphological Processes**
 - a. **Terrestrial Processes**
 - i. **Endogenic Hazards:**
 - Earthquakes and seismicity
 - Volcanoes and volcanism
 - Tsunamis and sub-water processes
 - ii. **Exogenic Hazards**
 - Rivers, Floodplains and Flooding
 - Rainfall Variability and Drought
 - Glaciers and Associated Hazards
 - Soil Erosion by Water and Wind
 - Weathering, Causes, Implication
 - Desertification, Causes and Implication
 - Mass Movement Hazards
 - iii. **Biotic Hazards**
 - Animals induced
 - Plants Induced
 - Human Induced
 - b. **Extra-Terrestrial Process**
3. **Geomorphological Mapping**
 - Identification of Hazards
 - Mapping Techniques
 - Mapping Geomorphological Processes
4. **Applied Geomorphology and Disaster Management**
 - Floods and Flood Risk Management
 - Earthquake and Earthquake Risk Management
 - Drought and Drought Risk Management
 - Landslide and Landslide Management
 - Human interventions and sustainability
5. **Lab work, Field Survey and Practical:**
 - Field Study of various geomorphological processes
 - Field Study of Landforms and its relationship with Human activities

- Labs and Practical exercises on models' preparation
- Geomorphological mapping

Teaching Methodology

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

Assessment Criteria:

1st Term (25%) Assignments/Quizzes and Presentations

Mid Term (35%) Written (Long Questions, Short Questions, MCQs)

Final Term (40%) Written (Long Questions, Short Questions, MCQs)

Textbooks:

1. Applied Geomorphology: Theory and Practice by Avijit Gupta (1st Edition, 2023) Gupta, A. (2023). Applied Geomorphology: Theory and Practice. Routledge.
2. Natural Hazards: Earth's Processes as Hazards, Disasters, and Catastrophes by Edward A. Keller and Duane E. DeVecchio (5th Edition, 2022)
3. Keller, E. A., & DeVecchio, D. E. (2022). Natural Hazards: Earth's Processes as Hazards, Disasters, and Catastrophes (5th ed.). Pearson.
4. Geomorphological Hazards and Disaster Prevention edited by Irasema Alcántara-Ayala and Andrew S. Goudie (1st Edition, 2022)
5. Alcántara-Ayala, I., & Goudie, A. S. (Eds.). (2022). Geomorphological Hazards and Disaster Prevention. Cambridge University Press.
6. Hazards, Risks, and Disasters in Society"edited by Andrew E. Collins (1st Edition, 2023) Collins, A. E. (Ed.). (2023). Hazards, Risks, and Disasters in Society. Elsevier.
7. "Handbook of Applied Hydrology, Second Edition" edited by Vijay P. Singh (2nd Edition, 2023) Singh, V. P. (Ed.). (2023). Handbook of Applied Hydrology (2nd ed.). McGraw-Hill Education.
8. ALEXANDER, D. (2002) Principles of Emergency planning and Management. Terra Publishing, University of Minnesota, US.
9. ALLISON, R. (Edit) (2002) Applied Geomorphology: Theory and Practice. Brooks Cole, Stamford, Connecticut, USA.
10. COOKE, R. U. and Doornkamp, J. C. (1990) Geomorphology in Environmental Management: an introduction. Clarendon Press Oxford.
11. HYNDMAN, D. and Hyndman, D. (2010) Natural Hazards and Disasters. Brooks Cole, 3rd Revised Edition, Stamford, Connecticut, USA.
12. KHAN, A. N. (2009) Integrating Disaster Management and Climate Change Adaptation into Policy Making. Proceedings of the International Disaster Management Conference -2009, Baragali – Summer Campus, University of Peshawar, Khyber Pakhtunkhwa, Pakistan
13. KHAN, Amir Nawaz (2016) Introduction to Hazards and Disasters. Al-Azhar

Environmental Planning and Management Centre, Peshawar