

Course Description

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 OUTLINE

1. **Physiography of Pakistan**

- Landforms
- Climate
- Ecological region of Pakistan
- Seismic zones of Pakistan

2. **Natural Hazards**

- Floods
- Earthquakes
- Tsunami
- Landslides
- Desertification
- Drought
- Cyclone
- Snow Avalanches
- Glacial Hazards
- Salinization
- Heat and Cold Waves
- Sea Water Intrusion
- Deforestation
- Environmental pollution
- Smog
- Pest infestation
- Epidemics

3. **Exposure, Vulnerability and Risk related to Natural Hazard**

- Physical
- Economic
- Social
- Environmental

4. **Turning Hazards into Disasters**

- Factors
- Reasons
- Dynamics
- Triggers

5. Disaster trends and Management framework

- Historical perspective
- Management Framework (National, Provincial and District)

Teaching Methodology

- Lectures
- Written Assignments
- Seminar

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. Mokhtari, M. (2023). *Natural Hazards: New Insights*. United Kingdom: Intech Open.
2. Cui, P., Lei, Y. (2023). *Glance at the Silk Road Disaster Risk*. Singapore: Springer Nature Singapore.
3. Paron, P. (2023). *Hydro-Meteorological Hazards, Risks, and Disasters*. Netherlands: Elsevier Science.
4. Pal, I., Shaw, R. (2023). *Multi-Hazard Vulnerability and Resilience Building: Cross Cutting Issues*. Netherlands: Elsevier Science.
5. Ahmad, M., Ahmad, S. (2023). *Disaster Risk Reduction in Agriculture*. Germany: Springer Nature Singapore.
6. Islam, M. R. (2023). *Disaster, Displacement and Resilient Livelihoods: Perspectives from South Asia*. United Kingdom: Emerald Publishing Limited.
7. Zanten, B., Reguero, B. G., Jongman, B., Shacham, E. C., Renaud, F., Beck, M. W., & Sabatino, S. (2023). *Nature-Based Solutions for Natural Hazards and Climate Change*. Frontiers Media SA.
8. Ahmad, M. (2023). *Water Policy in Pakistan: Issues and Options*. Germany: Springer International Publishing.
9. Bartlett, D., Singh, R. (2020). *Natural Hazards: Earthquakes, Volcanoes, and Landslides*. United Kingdom: Taylor & Francis Group.
10. Gao, J. (2023). *Remote Sensing of Natural Hazards*. CRC Press.
11. Shroder, J. F. (2021). *Snow and Ice-Related Hazards, Risks, and Disasters*. Netherlands: Elsevier Science.