MAJOR-XIX

DM-CCNH- 481 Climate Change and Natural Hazards Cr. H. 3

Course Description

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 OUTLINE

1. **Introduction**
   - Introduction to Science of Climate Change
   - Weather and Climate
   - Global Climatic Regions
2. **Oceans, Hydrological cycle and weather**
   - Surface Current, Carbon sink
   - Hydrological cycle
   - Hydro-Meteorological System
   - Climate change and its impact
   - 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 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. REID, Hannah. (2014) Climate change and human development, Zed Books, London, UK

2. DOW, Kristin, Downing, Thomas, E. (2011) The atlas of climate change: mapping the world's greatest challenge, University of California Press, Berkley, UK.
3. BURROUGHS, William James (2007) Climate Change: A Multidisciplinary Approach. 2nd Edition, Cambridge University Press, London, UK.
4. GAVIN, Schmidt and Wolfe, Joshua; Jeffrey, D. Sachs (2009) Climate Change: Picturing Science, Earthscan, London, UK.
5. KININMONTH, William (2004) Climate Change: A Natural Hazard. Multi-Science,
6. SMITH, Keith; Petley, David N. (2009) Environmental Hazards: Assessing Risk and Reducing Disaster. 5th Edition, Routledge, London, UK.