

ENVIRONMENTAL SCIENCE

I. History of Environmental Thought:

- Environment and Sustainable Development
- History of Environmental Movements
- Industrial and Agriculture Revolution
- United Nations Conference on Human Environment 1972
- Our Common Future 1987
- Rio Summit 1992
- Agenda 21
- World Summit on Sustainable Development 2002
- Rio Summit-II, 2012
- Millennium Development Goals

II. Sustainable Development Issues:

- Population growth
- Poverty
- Biodiversity loss and its Conservation
- Energy security (energy conservation and alternative energy resources)
- Urbanization and sustainable cities
- Carrying capacity and ecological footprint
- Food security and sustainable agriculture
- Ecological restoration

III. Interdisciplinary nature of Environmental Science:

Orientation on the convergence of various social and natural sciences to evolve a new discipline of environmental science:

- Environmental Biology
- Environmental Chemistry
- Environmental Physics
- Environmental Microbiology
- Environmental Toxicology
- Environmental Economics
- Environmental Geology
- Environmental Geography
- Environmental Biotechnology
- Environmental Sociology

IV. Environmental Pollution:

- Air Pollution, Water Pollution, Soil Pollution, Noise Pollution
- Solid Waste
- Water Logging & Salinity
- Deforestation, Desertification & Eutrophication
- Global and regional air pollution problems
 - a) Greenhouse effect
 - b) Global Warming/Climate Change
 - c) Ozone Depletion
 - d) Acid Rain

V. Climate Change:

- Climate Pattern at the local, regional and global scale
- Different types of climates including tropical and mid-latitude climate, polar climates
- Climate change processes, Drivers and Indicators
- Effects of Climate Change on natural and societal systems
- Carbon footprint
- Climate change adaptation and mitigation
- Clean Development Mechanism (CDM)
- REDD+
- Global environmental politics on climate change: role of India, China and USA (Copenhagen Accord 2009)

VI. Environmental Governance:

Policy, legal and institutional frameworks for the governance of the environment in Pakistan:

- National Conservation Strategy of 1992
- National Environmental Policy Act of Pakistan 2005
- Environmental Protection Act of 1997
- Pak-EPA (Review of IEE/EIA) Regulations 2000
- Hospital Waste Management Rules 2005
- Pollution Charge Rules
- Sample Rules
- Solid Waste Management Plan 2005
- Hazardous Substances Rules 2005
- National Drinking Water Policy 2009
- Sanitation Policy
- National Climate Change Policy 2012

VII. Global initiatives:

- Brief on some of the Multilateral Environmental Agreements ratified by Pakistan
- Convention on Biological Diversity (CBD)
- Cartagena Protocol on Bio-safety
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention)
- Convention on the Conservation of Migratory Species (CMS)
- United Nations Framework Convention on Climate Change (UNFCCC)
- Kyoto Protocol to UNFCCC
- Montreal Protocol on Substances that deplete the Ozone Layer
- United Nations Convention to Combat Desertification (UNCCD)

VIII. Environmental Assessment and Management:

- Environmental Impact Assessment
- Strategic Environmental Assessment
- Environmental Management Systems (ISO 14000)
- Occupational Health & Safety management systems (OHSAS 18000)
- Participatory Approaches to Environmental Management
- Technological Approaches to Environmental Management
- Approaches to Solid Waste Management
- Disaster Risk Management
- Pollution Control Technologies
- Geographic Information System & Remote Sensing
- Natural Resources Management