ENVIRONMENTAL SCIENCE, MANAGEMENT & POLICY (ESMP)

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Agenda

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2. Syllabus
3. Environmental Science Fundamentals
4. Global and Multi-Media Environmental Issues
5. Environmental Impact, Site Assessment and Risk Assessment Processes
6. Environmental Management Systems
7. Pollution Prevention, Design for Environment, and Sustainability
8. Development and Implementation of Environmental Public Policy
9. International Environmental Conventions
10. Suggested Reading Materials
11. Sample Questions

Environmental science is about:

How the nature works
- Biogeochemical cycle of materials
- Relationship among animals, plants, and abiotic factors
- Solar-Earth radiation balance and climate

Unattainable Earth?
- Climate change
- Ozone hole
- Loss of biodiversity
- Energy and resource

Human impact
- Population
- Energy use
- Urbanization
- Industrial materials
- Agriculture

Local pollution
- Air
- Water
- Soil
- Solid waste

Human health and other effects

Solutions
- Environmental policy
- Better/green technologies

Focusing on interconnection among different topics and scales and current environmental issues.

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Syllabus

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Syllabus has been uploaded on http://hkiqep.org/materials-and-links/

1. Environmental Science Fundamentals

1.	Environmental Science Fundamentals
1.1	Types of pollution
1.2	Sources and types of environmental contaminants
1.3	Fate and transport of pollutants in the environment (air, water, land)
1.4	Ecology, health and ecological effects of pollutants
1.5	Data collection, analysis and interpretation
1.5.1	Numerical calculations
1.5.2	Statistics
1.5.3	Modeling and uncertainty analysis
1.6	Pollution control technologies (physical, chemical, and biological processes and their applications)
1.7	Characterization of contaminated sites
1.8	Remediation and restoration technologies

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2. Global and Multi-Media Environmental Issues

2.	Global and Multi-Media Environmental Issues
2.1	Atmospheric ozone depletion
2.2	Global climate change
2.3	Indoor air quality
2.4	Nutrient enrichment of waters
2.5	Habitat degradation/destruction, biodiversity, endangered species
2.6	Bioaccumulative substances
2.7	Unconventional pollutants *(e.g., endocrine disruptors, pharmaceuticals)*

3. Environmental Impact, Site Assessment and Risk Assessment Process

3.	Environmental Impact, Site Assessment and Risk Assessment Processes
3.1	Environmental impact assessment processes
3.2	Site assessment process
3.3	Risk assessment process

4. Environmental Management Systems

4.	Environmental Management Systems
4.1	Organizational environmental policy
4.2	Identification of environmental aspects
4.3	Establishing goals and objectives
4.4	Environmental performance indicators *(e.g., metrics)*
4.5	Reporting environmental performance
4.6	Operational controls *(e.g., processes, procedures)*
4.7	Emergency response planning and implementation
4.8	Incident investigation and corrective/preventive action
4.9	Environment and health
4.10	Environmental auditing and corrective action
4.11	Environmental due diligence related acquisitions and divestitures
4.12	Total quality environmental management
4.13	Financial aspects of environmental management *(e.g., environmental cost accounting, cost-benefit analysis)*

5. Pollution Prevention, Design for Environment, and Sustainability

5.	Pollution Prevention, Design for Environment, and Sustainability
5.1	Elements of pollution prevention *(e.g., source control, recycle/reuse, green chemistry, green procurement)*
5.2	Life-cycle assessment
5.3	Industrial ecology
5.4	Elements of sustainable development
5.5	Land use and watershed issues
5.6	Product and environmental stewardship

6. Development and Implementation of Environmental Public Policy

6.	Development and Implementation of Environmental Public Policy
6.1	Role of the public and other stakeholders in policy development
6.2	Geopolitical considerations (local, regional, provincial, international)
6.3	Role of science in public policy formulation
6.4	Command-and-control regulatory framework & mechanisms
6.5	Market-based regulatory framework & mechanisms

7. International Environmental Conventions

Suggested Materials

- Richard T. Wright and Dorothy F. Boorse, *Environmental Science: Toward a Sustainable Future*, Pearson Education, Recent editions
- William Cunningham, *Environmental Science: A Global Concern*, McGraw-Hill Higher Education, Recent editions
- Robert K. Kaufmann and Cutler J. Cleveland, *Environmental Science,* McGraw-Hill Higher Education, 2008
- Recommended Study Materials, Text Books & Resources of Qualified Environmental Professional (QEP) Certification, The Institute of Professional Environmental Practice