

UNIVERSITY OF LADAKH



SYLLABUS
OF
THE INTRODUCTORY COURSE
IN

EARTH & ENVIRONMENTAL SCIENCES

(UNDER NEP – 2020)

(To be Implemented w.e.f Academic Session 2023-24)

Jambhelomsky
14/8/2023

UNIVERSITY OF LADAKH

Detailed Syllabus of **Earth and Environmental Science** for B.Sc. **Semester – I** Under NEP – 2020

Course Title: **Introductory Course - I**
Credits: **04** (3 Theory + 1 Practical)

Course Code: **EES-ES-101C**
Max. Marks: **100**

Course Objectives:

- To develop the understanding of fundamental concepts in earth and environmental sciences.
- To understand the origin of earth in the context of universe and to learn about important attributes of earth as a planet.
- To learn about the structure of ecosystems and the major contemporary environmental issues.
- To understand the basics of atmosphere, weather and climate.

THEORY (3 credits – 45 Teaching Hours)

Unit – 1 (Fundamentals of Geology)

- 1.1 Definition of geology and its relation with other sciences, branches of geology and its applications.
- 1.2 Origin of earth: Kant- Laplace, Jeans and Jeffery's, Big Bang theories.
- 1.3 Geological time scale, Age of earth: relative and absolute dating methods
- 1.4 Introduction to rocks and minerals, major rock types, surface and crustal abundance of rocks. Preliminary idea about common rock forming minerals.

Unit – 2 (Fundamentals of Physical Geography)

- 2.1 Meaning, Scope and importance of Geography
- 2.2 Physical Dimensions of Geography: Universe, Galaxies, Solar System and Earth.
- 2.3 Shape and Size of Earth; Revolution and Rotation; The Seasons.
- 2.4 Concept of Latitudes, Longitudes, Time, Location and Direction.

Unit – 3 (Basics of Environmental Science)

- 3.1 Definition, Scope & Importance of environmental science; Components of environment.
- 3.2 Structure and functions of ecosystem; nitrogen cycle; carbon cycle; oxygen cycle.
- 3.3 Natural resources (Renewable & Non-Renewable); Land & Forest Resources, Water & Thermal Resources.
- 3.4 Global warming & Climate change; Stockholm Conference; Earth summit; World summit on sustainable development; COP's
- 3.5 Solid waste management – Causes, effects and control measures

PRACTICAL (1 Credit – 30 Teaching Hours)

1. Megascopic Study of Physical Properties of Common Rock Forming Minerals.
2. Map; Meaning, Essentials & Classification; Scale; Meaning and Classification, Construction of Plain, Comparative & Diagonal Scale.
3. A visit to a waste segregation unit/municipal committee office/Wildlife department/Forest department/ Sewage treatment plant/KREDA/LREDA/Protected area.
4. Determination of biomass using Quadrat method.

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Essential Readings

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Ram K. Lomda
14/6/2023

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Suggested Readings

1. Critchfield, H.J., (1966) General Climatology, Prentice Hall, New York.
4. Lydolf Paul E. (1985) The Climate of the earth, Rowman and Littlefield Publishers, Maryland, U.S.A
2. Vatal (Hukku) M. and Sharma R.C., Oceanography for Geographers, Chaitanya Publications
3. Trewartha, G.T. (1987) Introduction to Climate, Mac Graw Hill, New York
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6. Murthy, V.V.N. 2009. Land and Water Management, 5th edition. Kalyani Publishers.
7. Tiwari, G.N. and M. K. Ghosal. 2005. Renewable Energy Resources: Basic Principles and Application, Narosa Publishing.
8. Edward H. Thorndike (1976), Energy & Environment: A Primer for Scientists and Engineers, Addison-wesley Publishing Company, Reading.
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10. Botkin, Daniel B. and Keller, Edward A. Environmental Science: Earth as a Living Planet. 6th ed. John Wiley & Sons, USA. 2007.

Sambhondra
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UNIVERSITY OF LADAKH

Detailed Syllabus of **Earth and Environmental Science** for B.Sc. **Semester – II** Under NEP – 2020

Course Title: **Introductory Course - II**
Credits: **04** (3 Theory + 1 Practical)

Course Code: **EES-ES-201C**
Max. Marks: **100**

Course Objectives:

- To develop the understanding of nature and scope of environmental geology and human geography.
- To understand the concept of geohazards and its management.
- To understand the complex relationship and interaction between human and environment.
- To learn about the major environmental issues and their management.

THEORY (3 credits – 45 Teaching Hours)

Unit – 1 (Fundamentals of Environmental Geology)

- 1.1 Scope and Aims of Environmental Geology. Biosphere and Man.
- 1.2 Geohazards: Earthquakes, volcanism, landslides floods, flash floods, and snow avalanches.
- 1.3 Concepts of geo hazard management.
- 1.4 Climatology and global environment- Coastal. Greenhouse effect and global warming

Unit – 2 (Fundamentals of Human Geography)

- 2.1 Human Geography; Meaning, Scope and Importance.
- 2.2 Human Dimension in Geography; Human and Environment Relationship (Determinism, Possibilism & Neo-Determinism).
- 2.3 Impact of Environment on Man and Impact of Man on Environment.
- 2.4 Society, Culture, Civilization and Geography.

Unit – 3 (Environmental Issues and Concerns)

- 3.1 Energy depletion (fossil fuels); Energy generation from waste
- 3.2 Population explosion & its environmental impact; Population growth curve; Urban sprawl
- 3.3 Depletion of Natural resources & its management measures (land, water and forest)
- 3.4 Sustainable development goals; IPCC and its reports; NGT (structure and functions); UNEP; UNFCCC; MoEFCC
- 3.5 E-Waste – Issues and Management

PRACTICAL (1 Credit – 30 Teaching Hours)

1. Geomorphological Study of Landforms.
2. Representation of Socio-Economic data through Cartographic diagrams
3. Distribution Maps in Geography: Choropleth, Isopleth and Dot Method.
4. Waste auditing at household level/energy generation from waste.
5. Determination of heavy metals in the given E-waste sample.

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14/8/2022

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Essential Readings

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Suggested Readings

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14/6/2023