

UNIVERSITY OF LADAKH



**SYLLABUS
OF
THE FOUNDATION COURSE
OF**

EARTH & ENVIRONMENTAL SCIENCES

(UNDER NEP – 2020)

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

UNIVERSITY OF LADAKH

SYLLABUS OF THE INTRODUCTORY COURSE IN EARTH AND ENVIRONMENTAL SCIENCE

UNDER NATIONAL EDUCATION POLICY - 2020
(Session 2023-2024)

Semester – I

Course Title: Foundation Course - I
Course Code: EES-ES-101-M

Credits: 04 (3 Theory + 1 Practical)
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.
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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 (Fundamentals 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 Energy 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

Unit – 4 (Atmosphere Weather & Climate)

- 4.1 Atmosphere; Structure & Composition
- 4.2 Weather & Climate; Meaning & Elements
- 4.3 Insolation & Heat Budget of The Earth, Factors Affecting Insolation.
- 4.4 Atmospheric Temperature: Distribution and Factors

PRACTICAL (1 Credit – 30 Teaching Hours)

1. Microscopic 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.

REFERENCES

Essential Readings

1. Barry, R. G. and Chorley, R. J. (1998): Atmosphere, Weather and Climate. Routledge
2. Bryant, H. Richard (2001): Physical Geography Made Simple, Rupa and Company. N.D
3. Lake, P. (1979): Physical Geography (English editions), Cambridge University Press, Cambridge.
4. Leong Goh Cheng (2003): Certificate Physical and Human Geography, Oxford University Press, New Delhi.
5. Monkhouse, F.J. (1979): Physical Geography. Methuen, London
6. Singh, S. (2003): Physical Geography. (English edition.). Prayag Pustak Bhawan, Allahabad
7. Trewartha, G.T., Robinson, A.H., Hammond, E.H., and Horn, A.T. (1976/1990): Fundamentals of Physical Geography, 3rd edition. MacGraw-Hill, New York
8. Monkhouse, F. J. and Wilkinson, F.J. (1985): Maps and Diagrams. Methuen, London
9. Singh, R.L. and Singh, Rana P.B. (1993): Elements of Practical Geography. (Hindi and English editions). Kalyani Publishers, New Delhi.
10. Singh, L.R. (2006): Fundamentals of Practical Geography, Sharda Pustak Bhawan, Allahabad.

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
4. Raisz, E. (1962): General Cartography. John Wiley and Sons, New York. 5th edition.
5. Sarkar, A. K. (1997): Practical Geography: A Systematic Approach. Orient Longman, Kolkata

Syllabus of the Foundation Course of Earth and Environmental Science under NEP-2020

Semester – II

Course Title: Foundation Course - II

Credits: 04 (3 Theory + 1 Practical)

Course Code: EES-ES-201-M

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)

- 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

Unit – 4 (Atmosphere Weather & Climate)*

- 4.1 Atmospheric Pressure: Distribution and Factors
- 4.2 Winds, Types and Factors
- 4.3 Humidity
- 4.4 Precipitation and its types

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.

REFERENCES

Essential Readings

1. Chisholm, M. (1985): Human Geography, 2nd edition, Penguin Books, London.
2. DeBlij, H.J. (1996): Human Geography: Culture, Society and Space, 2nd edition. John Wiley and Sons, New York,
3. Fellman, J. D., Arthur, G., Judith, G., Hopkins, J. and Dan, S. (2007): Human Geography: Landscapes of Human Activities. McGraw-Hill, New York. 10th edition.
4. Haggett, P. (2004): Geography: A Modern Synthesis. 8th edition, Harper and Row, New York.
5. Hussain, M. (1994): Human Geography, Rawat Publications, Jaipur.
6. Husain Majid (2012). Evolution of Geographic Thoughts
7. Mishra R.P. and Romesh A, Fundamentals of Cartography. Mc Millan Co. New Delhi, 1986
8. Sarkar, A., Practical Geography: A Systematic Approach' Logman, Calcutta, 1997.

9. Singh R.L. and Duff R.K., Element of Practical Geography. Kalyani Publishers, New Delhi,
10. Singh, Gopal: Map Work and Practical Geography, Vikas Publisher House Pvt. Ltd. New Delhi.
11. Khullar, D.R., 2017: Essential of Practical Geography, Manjit Singh New Academic Publishing Co Jalandhar.

Suggested Readings

1. Johnston, R. J., Gregory, D., Pratt, G. and Watts, M. (2009): The Dictionary of Human Geography. 5th edition, Basil Blackwell Publishers, Oxford.
2. Kaushik, S.D. and Sharma, A.K. (1996): Principles of Human Geography, Rastogi Publication, Meerut.
3. Norton, W. (2008): Human Geography, Oxford University Press, New York. 5th ed.
4. Qureshi, M.H.(ed.) (20013) Paradigm Shift in Geography, Manak ,New Delhi
5. Singh, K. N. and Singh, J. (2001): ManavBhugol. GyanodayaPrakashan, Gorakhpur. 2nd edition.
6. Hassan M.I. (2005) Population Geography, Rawat Publication
7. Pal, S.K., Statistics for Geoscientists -Techniques and Concept Publishing, New Delhi,1998.
8. Robinson,A.H. et.al: Elements of Cartography, John Wiley& Sons USA.1995.