

8. Earth Sciences

MDC-1: Understanding Physical Formations of the Earth

Unit	Contents	Lecture
Unit-I Origin of the Earth	Views on origin and age of the earth; Components of the earth system and the characteristics of the Lithosphere from the perspective of geological formations; Geological time scale	7
Unit-II Internal structure of the earth	General constitution of the earth; Layers of the earth and their composition and characteristics: Crust, mantle, outer core and inner core	7
Unit-III Rocks and minerals	Definition of rock and mineral; Mineral: Properties and types; Rock: Classification and types	6
Unit-IV Landform dynamics on the earth	Landform and its classification; Geomorphic forces, associated processes and landform development: Endogenic and exogenic; Folding and faulting; Erosion, mass wasting and landslide; Earthquake and volcanic eruption-Causes, consequences and distribution	14

Books Recommended:

1. Klein, C. and Philpotts, A. (2016). Earth Materials: Introduction to Mineralogy and Petrology, 2nd edition, Cambridge University Press, 616p.
2. Patwardhan, A. M. (2020). The Dynamic Earth System. 4th edition, PHI Learning Pvt. Ltd., 576p.
3. Plummer, C. C., Carlson, D., and Hammersley, L. (2015). Physical Geology., 15th edition, McGraw Hill, 672p.
4. Reynolds, S. and Johnson, J. (2021). Exploring Geology. 6th edition, McGraw Hill, 704p.
5. Singh, S. (2012). Geomorphology, Pravalika Prakashans, Allahabad, 652p.

MDC-2: Understanding the Changing Environment

Unit	Contents	Lect.
Unit-I Environment as a system	Meaning of environment; Components of earth's environment system and their characteristics and interrelationship: Lithosphere, Hydrosphere, Atmosphere and Biosphere; Ecosystem, its components and functioning; Concept of balanced environment	8
Unit II Changing man and environment relationship	Impact of natural environment on man and his activities (Agriculture, food, dress, house, power development, human adjustment in different	10

	environments); Population growth and environmental changes; Impact of man on natural environment (Deforestation, soil erosion, soil degradation, depletion of mineral resources, air and water pollution)	
Unit-III Environmental changes and associated environmental problems	Global environmental changes: Global warming, Ozone layer depletion, Climate change Environmental problems: Sea level change; Extreme weather events; Land, air and water pollution; Desertification; Deforestation, biodiversity loss and man-animal conflicts	10
Unit-IV Environmental Management	Meaning of environmental management; Conservation of natural environment and its resources; Management of environmental problems; Concept of sustainable development	6

Recommended Books:

1. S. C. Santra (2011): Environmental Science, New Central Book Agency
2. Michael Allaby (2000): Basics of Environmental Science (2nd Ed.), Taylor & Francis
3. R. W. Jackson and J. M. Jackson (1998): Environmental Science – The natural environment and human impact, Longman
4. 4.D. D. Mishra (2019): Fundamental Concepts in Environmental Studies, S Chand Publication

MDC-3: Land and People of Assam

Unit	Contents	Lect.
Unit-I	Locational significance of Assam; Assam as an administrative division - Pre and Post-Independence Changes; Present administrative divisions	8
Unit II	Physical Characteristics (Relief, drainage, climate and vegetation) and associated problems (River-bank erosion, landslides and floods)	10
Unit-III	Natural resources (Forests, wildlife and biodiversity, mineral resources)	8

Unit-IV	Unit 4: Population (Trend of growth, spatial variation in growth, density, ethno-religious and linguistic composition, age composition, urbanization, literacy)	8
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Books Recommended:

1. Bhagabati, A.K., Bora, A.K. and Kar, B.K. (edited), 2022: *Geography of Assam*, Rajesh Publications, New Delhi (Revised & Enlarged Edition).
2. Bora, A.K. and Nath, M. (edited), 2022: *An Illustrated Geography of Assam*, EBH Publishers (India), Guwahati.
3. Dikshit, K.R. and Dikshit, J.K., 2013: *North-East India: Land, People and Economy*, Springer Science.
4. Taher, M. and Ahmed, P., 2007: *Geography of North-East India*, Mani ManilPrakash, Guwahati.