

## Semester I

### 102: Fundamentals of the Earth's System

#### **Unit-1: Basic Geography**

**15 Lectures**

- 1.1 Earth - Orbit, Rotation, Time
- 1.2 Oceans - Depth, Bottom relief, temperature, salinity, density of seawater
- 1.3 Oceans - Waves, Tides, Currents
- 1.4 Climate and the atmosphere – Origin, nature, composition and vertical division of the atmosphere.

#### **Unit-2: Advanced Geography**

**15 Lectures**

- 2.1 Meteorological parameters and their measurements - Geographical, seasonal and vertical distribution of temperature, pressure, wind and precipitation.
- 2.2 Solar and terrestrial radiation: Distribution in clear, cloudy and average conditions, mean heat balance.
- 2.3 Weather disturbances: Air mass and front, cyclone and anti-cyclone, thunderstorm and tornado.
- 2.4 Weather analysis and forecasting, climate and agricultural factors in crop production.

#### **Unit-3: Climate and Geomorphology**

**15 Lectures**

- 3.1 ClimateChange: Causes and Impacts
- 3.2 Monsoons: Concepts of the origin of monsoon - Indian Monsoons
- 3.3 Fundamental concepts of Geomorphology, weathering, mass wasting and erosion.
- 3.4 Landforms- fluvial, aeolian, glacial, folds and faults

#### **Unit 4: Soil formation**

**15 Lectures**

- 4.1 Soil forming processes, Soil profile, Soil components
- 4.2 Pedogenic regimes
- 4.3 Classification of soils
- 4.4 Soils of India

#### **References:**

1. Structural Geology by Billings, M. 1984
2. Earth History & Plate Tectonics by Carl K. Seyfert, Leslie A. Sirkin
3. Geology of India & Burma by M.S. Krishna 6th, Ed.
4. General Climatology by H.J. Critchfield
5. Physical Geology by Arthur Holmes
6. Physical Geography by Strahler
7. The Atmosphere by Frederick K. Lutgens and Edward J. Tarbuck