

Krantiguru Shyamji Krishna Verma

# **Kachchh University**

**BHUJ : 370 001**



**SYLLABUS (CBCS)**

**Semester 3**

# **GEOLOGY**

(With effect from June 2017)

**K.S.K.V. KACHCHH UNIVERSITY**  
**SYLLABUS OF B. Sc. (GEOLOGY)**

**SEMESTER-3**

**CEGE-303 DYNAMICAL GEOLOGY**

**Unit : 1 Earthquakes and Volcanoes**

**(15 Marks)**

- Volcanoes– Types, Causes, Effects, Products and Distribution.
- Earthquakes– Definition, Mechanism of Earthquakes, Seismic Waves, Scales of Earthquake, Earthquake Prediction, Seismograph and Seismogram, Effect of Earthquake, Seismic Belts, Relation between Earthquakes, Volcanoes and Plate Tectonics.

Ref: Introduction to Environmental Geology 5th ed. - E. Keller

**Unit : 2 Dynamics of The Earth**

**(15 Marks)**

- Mountains – Causes, Types, Distribution.
- Diastrophism – Evidences of Upheaval and Subsidence.
- Oceanology : Distribution of seas and oceans across the world. Movements of sea water: Currents, waves and tides, hypsographic curve, Marine erosion and deposition.
- Atmosphere: Composition, Layers of atmosphere, atmospheric pressure and thickness, Structure of Atmosphere, Evolution of atmosphere.

**Unit : 3 Physical Geology:**

**(15 Marks)**

- Weathering: Types with examples, Erosion, Denudation, Transportation and Deposition.
- Geological agents – Glaciers: Types, movement of glaciers, erosion, transport and depositional features.
- Rivers: Types, Terminology related to rivers, stages of river development.
- Lakes: Definition, Types of lakes, Lacustrine deposits.
- Winds: Definition, erosion, transport and depositional features.

**Unit : 4 Environmental Geology**

**(15 Marks)**

- Introduction to Natural environmental hazards: Floods, landslides, Avalanches, cyclones and tsunamis- causes and preventive measures.

**Reference Books:**

- Introduction to Physical Geology, A. K. Datta, Kalyani Publisher, New Delhi.
- A Text Book of Geology, P. K. Mukerjee, World press.
- A Text Book of Geology with Special Reference to India, G. B. Mahapatra.
- General Geology, V. Radhakrishnan (1987), V.V.P. Publishers, Tuticorin.
- Principles Physical Geology, Arthur Holmes (1978), ELBS.
- Patwardhan, A.M. (1999): The Dynamic Earth System. Prentice Hall.

**SEMESTER-3**

**CEGE-304 MINERALOGY, PETROLOGY & STRUCTURAL GEOLOGY**

**Unit : 1 Optical Mineralogy: (15 Marks)**

- Nature of Light, Phenomenon of Polarisation, Reflection, Refraction, Double Refraction, Construction of Nicol Prism, Petrological Microscope and Its Parts. Passage of Light through Nicol Prism, Properties of Isotropism, Anisotropism. R.I. of Minerals, Beck's Test and Its Effects. Twinkling, Pleochroism, Extinction. Elementary Knowledge of Interference Colors and Twinning.

Ref: Rutley's Elements of Mineralogy, H. H. Read, CBS publishers.

**Unit : 2 Igneous Petrology: (15 Marks)**

- **Igneous rocks:** Magma: Definition & composition, Modes of occurrence of Intrusive and Extrusive structures, Detailed study of textures and Tabular classifications of igneous rocks.

Ref: The Principles of Petrology, G. W. Tyrell (1960), Asia Publishing House.

**Unit : 3 Sedimentary and Metamorphic petrology: (15 Marks)**

- **Sedimentary Petrology:** Detailed study of structures and composition of common sedimentary rocks. Descriptive study of Residual, clastic, Chemical and organic deposits
- **Metamorphic Petrology:** structures and classifications of metamorphic rocks, Introduction to Metamorphic grades and facies.

**Unit : 4 Structural Geology: (15 Marks)**

- Terminology, Elevation and Relief, Contours, Outcrops, Dip, Strike, Unconformity and Overlap. Inliers and Outliers. Types of Stresses. Structures In Rocks : Primary and Secondary. Elementary Study of Joints, Faults, and Folds : Their Types and Classification. Criteria to find out faults, folds, intrusions in the field.

Ref: Billings, M.P. (1977): Structural Geology. Prentice Hall.

**Additional Reference Books:**

- Introduction to Rock Forming Minerals, R. A. Deer, R. E. Howie and J. Zussman (1978), The English Language Book Society.
- Elements of Optical Mineralogy, N. H. Winchel, A. N. Winchel (1968), Willey, Delhi.
- The Principles of Petrology, G. W. Tyrell (1960), Asia Publishing House.
- Petrology, W. T. Haung (1962), Mc. Graw Hill.
- Dana's Text Book of Mineralogy Revised by W.E. Ford, Wiley Eastern Ltd., New Delhi.

## **KSKV Kachchh University, BHUJ**

**B.Sc. Semester 3 (THREE)**

**SUBJECT : GEOLOGY**

### **(PRACTICAL - 303)**

Total Marks: **50**

Passing standard: **20 Marks**

- 1. Study of the physical properties of the common rock forming minerals:**  
Beryl, Garnet, Asbestos, Hornblende, Augite, Tourmaline, Olivine, Baryte, Halite, Magnesite, Aragonite, Dolomite.
- 2. Megascopic identification of typical rocks:** Granite, Syenite, Gabbro, Dolerite, Rhyolite, Trachyte, Andesite, Obsidian, Pumice, Scoria (Volcanic Tuff), Pitchstone, Grit, Kaolin clay, Bentonite, Slate, Phyllite, Quartzite.

### **(PRACTICAL - 304)**

Total Marks: **50**

Passing standard: **20 Marks**

1. Sections and Descriptions of Geological Maps with Horizontal and Inclined continuous One series strata with Inliers, Outliers and Igneous Intrusions.
2. Drawing of contours depicting typical landforms.
3. Outcrop filling problems of Horizontal and Inclined strata.
4. Geometrical solutions of simple structural problems– width of Outcrop, True Thickness and Vertical Thickness.