

Mafatlal Gagalbhai Science Institute (Autonomous)
(M. G. Science Institute), Ahmedabad
Accredited “A” level by NAAC (3rd Cycle)

Managed by The Ahmedabad Education Society

Affiliated to
Gujarat University
(Recognized by University Grants Commission)

SYLLABUS
(Outcome Based Education Pattern)
For 3 years B. Sc. / 4 years B. Sc. (Honours) programme
For

B. Sc. SEMESTER - III & IV
Based on
National Education Policy (NEP) 2020

For Graduate Degree in

GEOLOGY
(Earth Sciences)
(In force from June 2025)

Submitted by
Geology Department
M. G. Science Institute
Navrangpura
Ahmedabad – 380 009

PROGRAM SPECIFIC OUTCOMES (PSOs)

On completion of the course, the learner will be able to

PSO 1: Academic skills:

- (i) Comprehend various branches of Mineralogy in detail such as optical mineralogy and crystallography. Grasp the knowledge of petrology, economic geology, physical geology, global tectonics and hydrogeology.
- (ii) Demonstrate the fundamental knowledge of the stratigraphy, palaeontology, structural geology, geomorphology and dynamics of the earth.

PSO 2: Laboratory skills:

Identification of minerals and rocks at megascopic and microscopic level. Study of crystal models with reference to forms. Modes of preservation of fossils and basic exercises of structural geology included.

PSO 3: Personal skills:

Express the basic concepts of the most important branches of the subject. Communication skills developed through the participation in various programmes related to the subject as well as during the data collection in the field work.

PSO 4: Social skills:

Social relevance of earth systems and processes related to other subjects.

M. G. Science Institute (Autonomous)

Design and Structure of Geology (Earth Sciences) UG Courses

Course Type/ Department	Sem ester	Course		Credit	Work Hours/ Week
		No.	Name		
Geology (Minor / Elective)	IV	GEE 244 T	Physical Geology and Palaeontology	2	2
		GEE 244 P	Petrology and Palaeontology Laboratory	2	4

COURSE OUTCOMES (COs):

On completion of the course, students will be able to

CO 1: Understand the mother earth very well with reference to various processes operated within and on the surface of the earth.

CO 2: Analyze the concept of soil science.

CO 3: Basic concepts of palaeontology will be cleared with its applications.

CO 4: Practically they will be able to identify various rocks as well as how to distinguish it from each other under microscope. Recognize various modes of preservation of fossils.

B. Sc. Semester IV
GEOLOGY - THEORY and PRACTICALS
Course-wise detail syllabus

GEE 244 T

Physical Geology and Palaeontology

Unit	Course details
Unit –1	Physical Geology: Geophysical conditions of the earth – Gravity, Magnetic, Heat flow. Ocean as a thermostat for the earth's surface heat balance. Soil: Soils – Definition, classification, composition, texture, fertility, chief types, and soil profile. Soil-erosion and conservation.
Unit –2	Palaeontology: Conditions of entombment, preservation, and modes of fossilization. Uses of fossil study. Environmental factors and geological distribution of mollusca, brachiopoda, echinodermata and arthropoda.

Reference Books:

- 1) Principles Physical Geology, Arthur Holmes (1978), ELBS.
- 2) Engineering and General Geology, Parbin Singh (1994), S.K. Kataria and Sons, Delhi.
- 3) Invertebrate Palaeontology, H. Woods (1982), Cambridge University Press.

GEE 244 P

Petrology and Palaeontology Laboratory

Course details
Microscopic identification of following rocks: Granite, Syenite, Gabbro, Rhyolite, Trachyte, Basalt, Conglomerate, Sandstone, Limestone, Quartzite, Marble, Schist, Gneiss. Palaeontology: Typical fossil specimens showing Modes of fossilization – Petrification, Mould of skeleton, Imprint, Carbonization, Tracks and trails.