Name of the Programme: B.Sc. Geology (FYUGP)

Programme Outcomes (PO)

After completing the Four Year Undergraduate Programme in Geology, Students are expected to achieve the following Programme Outcomes:

PO1: Critical thinking

PO2: Communication Skills

PO3: Problem-solving

PO4: Analytical reasoning

PO5: Research-related skills

PO6: Cooperation/Teamwork

PO7: Reflective thinking

PO8: Digital literacy/ Use of Modern Tools

PO9: Environmental Awareness

PO10: Practical Skills

PO11: Lifelong Learning

PO12: Social perspective

Programme Specific Outcomes (PSO)

The programme specific outcomes of the Undergraduate Programme in Geology are listed below. After completing the programme the students will be able to-

PSO1: Understand the basic knowledge of different components of Earth System, viz. lithosphere, biosphere, atmosphere and hydrosphere as well as their mutual interactions

PSO2: Conceptualise the basics of ore forming minerals and hydrocarbon, their formation and occurrence as well as estimate the minerals reserves present in rocks. Ability to differentiate ore minerals and rock forming minerals

PSO3: Develop critical thinking on application of different aspects of geology viz. mineralogy, structural geology, petrology and paleontology in geological mapping and exploration of minerals, coal and petroleum.

Course Outcomes (CO)

B.Sc. 1st Semester

Course Title: Earth System Science

Course Code: GEOC1
Nature of Course: Major
Total Credits: 4

On completion of this Course, students will be able to –

CO1: Explore, and understand the earth as a planet.

CO2: Develop understanding of its complex processes, past and future evolution and interaction with society.

CO3: Get integrated understanding of the different components of earth system viz. complex interaction among lithosphere, biosphere and atmosphere.

CO4: Gain knowledge on characteristics and on different components of earth system.
CO5: Understand the practical aspects of Earth System Science

Course Title: Earth & Climate
Course Code: MINGEO1
Nature of Course: Minor
Total Credits: 4

At the end of this course, students will be able to:
CO1: Have a basic knowledge about climate system.
CO2: Understand the interrelationship between different components of climate system.
CO3: Understand different processes related to atmospheric and oceanic circulations.
CO4: Gain basic knowledge about the mechanism of Indian Monsoon.
CO5: Gain sufficient numerical skills necessary for carrying out research, including data interpretation & statistical analysis, for paleoclimate analysis.

Course Title: Minerals & Rocks
Course Code: GECGEO1A
Nature of Course: Generic
Total Credits: 3

At the end of this course, students will be able to:
CO1: Gain knowledge on composition of rocks
CO2: Understand the rock forming minerals
CO3: Acquire knowledge on physical and optical properties of minerals
CO4: Apply the concepts mineralogy to understand the properties of rocks
CO5: Gain a very good understanding about the silicate structure and their significance

Course Title: Basic field mapping

Course Code: SEC121
Nature of Course: SEC
Total Credits: 3

At the end of this course, students will be able to:

CO1: Know about the basics of field mapping.
CO2: Understand the different methods and tools used in mapping.
CO3: Understand the different methods and tools used in sampling.
CO4: Understand the application of geological mapping in different practical applications.
CO5: Understand the procedure of data collection through field study

B.Sc. 2nd Semester

Course Title: Mineralogy & Crystallography

Course Code: GEOC2
Nature of Course: Major
Total Credits: 4

At the end of this course, students will be able to:

CO1: Acquire knowledge on various crystal classes
CO2: Understand the rock forming minerals
CO3: Gain knowledge on physical and optical properties of minerals
CO4: Apply the concepts mineralogy to understand the properties of rocks
C05: Developed a very good understanding about the silicate structure and their significance

Course Title: Introduction to Geophysics

Course Code: MINGEO2

Nature of Course: Minor

Total Credits: 4

At the end of this course, students will be able to:

CO1. Understand the scope of geophysics.

CO2. Gain basic fundamental knowledge on different geophysical survey

CO3. Understand different methods of geophysical data acquisition

CO4. Gain practical knowledge on presentation and interpretation of geophysical data**.**

Course Title: Earthquake Studies

Course Code: GECGEO2A

Nature of Course: Generic

Total Credits: 3

At the end of this course, students will be able to:

CO1. Understand the seismicity of the Indian region

CO2. Gain basic fundamental knowledge of earthquake generation and propagation

CO3. Understand the seismicity measuring instruments

CO4. Develop critical thinking on planning and mitigation of earthquake hazards

Course Title: Geological mapping

Course Code: SEC221

Nature of Course: SEC

Total Credits: 3

At the end of this course, students will be able to:

CO1 Understand the scope and application of Geological Mapping.

CO2 Get introduce the mapping techniques and utilise the data for mapping.

CO3 Retrieve information from field works and incorporate in preparation of geological maps for research and practical applications.

CO4 Know about the application of remote sensing in geological mapping.

CO5 Impart knowledge on various fields based techniques- surveying, mapping and profile sections

B.Sc. 3rd Semester

Course Title: Paleontology

Course Code: GEOC3

Nature of Course: Major

Total Credits: 4

At the end of this course, students will be able to:

CO1 Gain an understanding of mode of preservation of fossils

CO2 Understand the process of fossilization

CO3 Learn about the morphological features of invertebrate and vertebrate fossils.

CO4 Apply the knowledge of biostratigraphy in different practical aspects of paleontology

CO5 Enhance the critical thinking of students about paleoenvironmental assessments.

Course Title: Structural Geology & Tectonics

Course Code: GEOC4
Nature of Course: Major
Total Credits: 4

At the end of this course, students will be able to:

CO1 Explain basic principles of stratigraphy; relationships between stratigraphy and depositional environment.

CO2 Elaborate Indian stratigraphy

CO3 Discuss physiography, the major paleotectonic evets of the world and different vegetational belts of the earth with characteristic paleoclimatic conditions of the area.

CO4 Identify physiographical regions of India, regional stratigraphy and its importance

C05 Apply the knowledge of stratigraphy in studying depositional history and metallogeny.

Course Title: Evolution of life through time

Course Code: MINGEO3
Nature of Course: Minor
Total Credits: 4

At the end of this course, students will be able to:

CO1 Gain an understanding of depositional environment of fossils

CO2 Understand the theories of evolution

CO3 Learn about the morphological features of invertebrate and vertebrate fossils

CO4 Apply the knowledge of paleontology in interpretation of evolution of life

CO5 Enhance the critical thinking of students about paleoenvironmental assessments.

Course Title: Climate change past & present

Course Code: GECGEO3A

Nature of Course: Generic

Total Credits: 3

At the end of this course, students will be able to:

CO1: Gain basic knowledge about climate system.

CO2: Understand the interrelationship between different components of climate system.

CO3: Understand different processes related to atmospheric and oceanic circulations.

CO4: Gain a basic knowledge about the mechanism of Indian Monsoon.

CO5: Gain sufficient numerical skills necessary for carrying out research, including data interpretation & statistical analysis, for analysing past, present, and future climate.

Course Title: Surveying techniques & GIS

Course Code: SEC321

Nature of Course: SEC

Total Credits: 3

At the end of this course, students will be able to:

CO1 Understand the scope and application of surveying Techniques.

CO2 Introduce the surveying techniques and utilise the data for mapping.

CO3 Retrieve information from field works and incorporate in preparation of geological maps for research and practical applications.

CO4 Know about the application of remote sensing in geological mapping.

CO5 Impart knowledge on various field-based techniques- surveying, mapping and profile sections.

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