

DEPARTMENT OF GEOLOGY
PROGRAM OUTCOMES, PROGRAM SPECIFIC OUTCOMES AND COURSE OUTCOMES
B.Sc. (GEOLOGY) NEP

Program Outcome	Program Specific Outcome	Name of Course	Course Outcome
<p>The students will be able to understand:</p> <p>(i) Origin of earth and natural processes operative on it.</p> <p>(ii) Various rocks and earth material.</p> <p>(iii) About the various natural resources, environmental problems etc.</p>	<p>Successful completion of this program, they are eligible to:</p> <p>(i) Pursue higher studies.</p> <p>(ii) Complete various competitive exams.</p> <p>(iii) Ready to combat natural calamities.</p>	CORE PAPERS	
		<p>Semester I</p> <ul style="list-style-type: none"> • SOES/GEOL/UG/Core Course-001 (THEORY+PRACTICAL) PHYSICAL AND STRUCTURAL GEOLOGY • SOES/GEOL/UG/AD-001 ELEMENTRAY KNOWLEDGE OF EARTH SCIENECS PART-I (Physical & Structural Geology) (THEORY+PRACTICAL) • SOSES/GEOL/UG/SEC-001 GEOMORPHOLOGY (THEORY) 	<ul style="list-style-type: none"> • Basic knowledge of the geological consideration of different natural agencies, • Understanding of earthquakes and volcanoes with a brief idea of geological structures in the earth crust. • Basic ideas of various earth processes operative over the earth surface.
		<p>Semester II</p> <ul style="list-style-type: none"> • SOES/GEOL/UG/Core Course-002 (THEORY+PRACTICAL) CRYSTALLOGRAPHY AND MINERALOGY • SOES/GEOL/UG/AD-002 ELEMENTRAY KNOWLEDGE OF EARTH SCIENECS PART-II (Crystallography & Mineralogy) (THEORY+PRACTICAL) • SOES/GEOL/UG/VC-002 GEOLOGICAL FIELD TRAINING 	<ul style="list-style-type: none"> • Formation of rock forming minerals and its lattice structure • An Introduction of rocks forming minerals and its properties. • Field observations of geological structures and landforms

		<p>Semester III</p> <ul style="list-style-type: none"> • SOES/GEOL/UG/Core Course-003 (THEORY+PRACTICAL) PETROLOGY • SOES/GEOL/UG/AD-003 ELEMENTRAY KNOWLEDGE OF EARTH SCIENECS PART-1 (Igneous, Sedimentary & Metamorphic Petrology) (THEORY+PRACTICAL) • SOSES/GEOL/UG/SEC-001 GEOMORPHOLOGY 	<ul style="list-style-type: none"> • Understanding the Formation of rocks of different types and their occurrences. • Introduction to different types of rocks and its association • Introduction to the processes operating on the Earth's surface and development of various landforms
		<p>Semester IV</p> <ul style="list-style-type: none"> • SOES/GEOL/UG/Core Course-004 (THEORY+PRACTICAL) PALAEONTOLOGY AND STRATIGRAPHY • SOES/GEOLO/UG/AD-004 ELEMENTRAY KNOWLEDGE OF EARTH SCIENECS PART-1 (Palaeontology & Stratigraphy) (THEORY+PRACTICAL) • SOES/GEOL/UG/SEC/-004 GEOLOGICAL FIELD TRAINING 	<ul style="list-style-type: none"> • To acquire detail knowledge about Paleo life forms on earth and the chronological sequences of rocks occurrences n different part of India. • An introduction to paleo life forms and its position in the rock records of the earth • Detail geological mapping and excavation of fossils
		<p>Semester V</p> <ul style="list-style-type: none"> • SOES/GEOL/UG/Core course-005 (THEORY+PRACTICAL) • ECONOMIC GEOLOGY AND HYDROLOGY • SOES/GEOL/UG/VC-001 GEOCHESIMTRY (Theory) 	<ul style="list-style-type: none"> • Knowing about Indian minerals wealth including coal and petroleum. Learning about water resources in the country. • Use of the elements and isotopes in understanding origin and evolution of Earth rocks

		<ul style="list-style-type: none"> • SOES/GEOL/UG/VC-002 Field Training 	<ul style="list-style-type: none"> • Field training on mining and exploration of mineral deposits
		<p>Semester VI</p> <ul style="list-style-type: none"> • SOES/GEOL/UG/Core course-006 (THEORY+PRACTICAL) • ENGINEERING/ APPLIED GEOLOGY SOES/GEOL/UG/VC-002 FIELD TRAINING 	<ul style="list-style-type: none"> • Students are updated about various Engineering structures viz. Dams, Tunnels, Bridges, Roads, and Mining including processes of Natural disasters. • Students will be exposed to manmade engineering structures

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<p>The students will be able to understand:</p> <p>(i)Origin of earth and natural processes operative on it.</p> <p>(ii)Various rocks and earth material.</p> <p>(iii>About the various natural resources, environmental problems etc.</p>	<p>Successful completion of this program, they are eligible to:</p> <p>(i)Pursue higher studies.</p> <p>(ii)Complete various competitive exams.</p> <p>(iii)Ready to combate natural calamities.</p>	Core papers	
		<p>Semester I SOES/GEOL/UG/Core Course-001 (THEORY) PHYSICAL AND STRUCTURAL GEOLOGY</p>	<p>Basic knowledge of the geological consideration of different natural agencies, understanding of earthquakes and volcanoes with a brief idea of geological structures in the earth crust.</p>
		<p>Semester II SOES/GEOL/UG/Core Course-002 (THEORY) CRYSTALLOGRAPHY AND MINERALOGY</p>	<p>An understanding of rocks forming minerals and crystals.</p>
		<p>Semester III SOES/GEOL/UG/Core Course-003 (THEORY) PETROLOGY</p>	<p>Learning the genesis of different types of rocks and their occurrences.</p>
		<p>Semester IV SOES/GEOL/UG/Core Course-004 (THEORY) STRATIGRAPHY AND PALAEONTOLOGY</p>	<p>Acquire knowledge about fossils and chronological sequences of rocks in different part of India.</p>
Discipline specific courses			

		<u>Semester V</u> SOES/GEOL/UG/DSE-001 (THEORY) ECONOMIC GEOLOGY AND HYDROLOGY	Knowing about Indian minerals wealth including coal and petroleum. Learning a new of water resources in the country.
		<u>Semester VI</u> SOES/GEOL/UG/DSE-002 (THEORY) ELEMENTS OF APPLIED GEOLOGY	Since the Department is housed in the Himalayanterrane, students are updated about dams, tunnels, mining and natural disasters.
Skill enhancement courses			
		<u>Semester III</u> SOES/GEOL/UG/SEC-001 PHOTOGEOLOGY AND REMOTE SENSING	Students are acquiring the skills of remote sensing as it has become an important tool in the modern era.
		<u>Semester IV</u> SOES/GEOL/UG/SEC-002 GEOMORPHOLOGY AND GEOTECTONICS	It provides the new facts about the geodynamic processes on the earth which lead to different formations and deformations,subsequently.
		<u>Semester V</u> SOES/GEOL/UG/SEC-003 ENVIRONMENTAL GEOLOGY	Students learn about the natural hazards and their mitigations . Equally, it gives an idea of managing resources.
		<u>Semester VI</u> SOES/GEOL/UG/SEC-004 GEOCHEMISTRY	Study of meteorites throws light on the origin of planets. It reveals how the earth and other planets are originated.

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<p>(i) To get an expertise in the Earth Science.</p> <p>(ii) Enhance the knowledge of horizon in a broader sense.</p> <p>(iii) Mentally, physically and technologically strong enough and ready to serve the nation.</p>	<p>(i) One becomes eligible for appearing in exams conducted for recruitment of manpower in geology and related fields.</p> <p>(ii) Are eligible to compete the higher competitive exams related to Government and Non-Government organization.</p>	Semester I	
		SOES/GEOL/C-001: General Geology and Geomorphology	It tells about various landforms as well as geomorphic processes operative on earth.
		SOES/GEOL/C-002: Structural Geology	It gives an idea of various rock structures and mechanism of deformation.
		SOES/GEOL/C-003: Mineralogy	Knowledge of identifying common rock forming minerals in hand specimen and thin section using characteristics physical and optical properties.
		SOES/GEOL/C-004: General and Invertebrate Palaeontology	Fossils are an indicator of the organic evolution. It throws light on the vertebrate evolution as well. The study of fossils unravels the palaeogeography, palaeoclimate and palaeoecology.
		SOES/GEOL/C-005: Precambrian Stratigraphy	Knowledge of stratigraphic sequences in chronological order is imparted. Gain in understanding of different tectonic division of India in the context of stratigraphy and sedimentation with an emphasis on the stratigraphic reversals in the Himalaya.
SOES/GEOL/C-006: Practical	1. Training on preparation of geomorphological features, preparation of longitudinal and cross valley profiles.		

			<ol style="list-style-type: none"> 2. Learning approaches to interpret geological maps and section. 3. Learning diagnostic physical and optical properties of rock forming minerals with identification. 4. Training on identification of fossils in hand specimens. 5. Learning approaches to prepare palaeogeographical maps and stratigraphic columns.
		Semester II	
		SOES/GEOL/C-007: Crystallography	It gives an idea of understanding of space lattice, internal arrangement crystal structures and symmetry elements of the crystals.
		SOES/GEOL/C-008: Geotectonics	Students understand the different deformation mechanisms in the earth.
		SOES/GEOL/C-009: Micropalaeontology, Vertebrate Palaeontology and Palaeobotany	Students learn about the identification of various types of microfossils and their applications in climatic change and oil exploration. Knowledge is imparted on the evolution of vertebrates.
		SOES/GEOL/C-010: Phanerozoic Stratigraphy	Students gain knowledge of international code of nomenclature and its implementation in the Indian context. Also, they are able to understand different stratigraphic units in India and overseas with their correlations.
		SOES/GEOL/C-011: Geological Field Training Tour	The course is intended to expose students to any fossiliferous area and familiarize them with mapping in any geological province of importance.

		SOES/GEOL/C-012: Practical	Learning different approaches to draw crystal projections and of identification of microfossils. Training on preparation of different palaeogeographical maps of Phanerozoic Eon.
		Semester III	
		SOES/GEOL/C-013: Igneous Petrology & Geo-Chemistry	Students acquire knowledge of different processes leading to the formation of Igneous rocks. The very notion that “Igneous Petrology is core of geology” prevails among students.
		SOES/GEOL/C-014: Engineering Geology	The understanding of sites for civil work among students is the net outcome of the course. Since the department is housed in the Himalaya, they are acquainted with the merits and demerits of the river valley projects here.
		SOES/GEOL/C-015: Practical	Students are able to identify the rocks in hand specimen and thin section as well. They learn to handle Total Station for surveying purpose.
		SOES/GEOL/E-001: Sedimentary & Metamorphic Petrology	Identification of metamorphic rocks on the basis of textural and mineralogical observations. Students understand the texture and structure of sedimentary rocks and depositional environments.
		SOES/GEOL/E-002: Mineral Exploration and Mining Geology	Knowledge of the various exploration techniques leading to the discoveries of newer economic deposits, understanding the different surficial and subsurficial mining methods.

		SOES/GEOL/E-003: Practical	Students identify the sedimentary and metamorphic rocks in hand specimen and thin section as well. They are able to calculate grade of ore reserves.
		SOES/GEOL/S-001: Self Study Course	It provides knowledge of petroliferous basins in India and overseas, remote sensing techniques, climate change and GIS.
Semester IV			
		SOES/GEOL/C-016: Geohydrology	It provides knowledge about occurrences of ground water and aquifers. Students are familiarize with the different hydrological provinces of India.
		SOES/GEOL/C-017: Ore genesis and Indian mineral deposits	On the completion of course , one must have skills of identifying ores in hand specimen. The contribution of Indian mineral wealth in the national economy is also focused.
		SOES/GEOL/C-018: Practical	Students are able to make identification of metallic and non-metallic ore mineral in hand specimen. Learn to measure the various physical and chemical parameters of surface and subsurface water for determining its quality.
		SOES/GEOL/E-004: Elective Course	Since it is an elective one, so, this course talks of the understanding of relationship between climate change and glaciers retreat; application of palaeoseismic data to seismic hazard assessment and neotectonics research; application of geoinformatics to disaster management; depositional sedimentary environments

			and proxy indicators of palaeoenvironmental/palaeoclimatic changes.
		SOES/GEOL/E-005: Geological Field Training	The course will help students in understanding the mineralization in different rocks and familiarize them about open cast and underground mining.
		SOES/GEOL/E-006: Project oriented Dissertation	This is the course of an independent nature, wherein a student comes across of a geological problem of his/her interest, analyse it and makes his/her findings. Sometimes, this leads him/ her towards becoming a competent researcher in days to come.