Dept.ofGeology

GeologyisaspecificsubjectofSciencewithaMultidisciplinaryapproach.Studentdoinggraduationwith B.Sc.inGeologyshouldbeableto:-

- Understandthebasicgeologicalconcept,principlesandtheoriesofstratigraphy.
- Learn, design and perform experiments in the labs to demonstrate theconcepts,principlesandtheorieslearnedintheclassroom.
- Expose the student to the vast scope of Geosciences in the field ofdisastermanagement,watershedmanagement,waterpollution,oilexploration,miningetc.
- Emphasize the importance of geology as the most important disciplineforsustainingtheexistingindustriesandestablishingnewonestocreatejobopportunitiesatalllevelsofemployment.

The UG Course program of Geology comprises of 3 year integrated degreecourse consisting of 10papers encompassing various branches of Geology toachieveaimofstudy.

B.Sc1- DSC-1- Physical Geology and Geomorphology

ProgramSpecificoutcomes(PSOs)

PSO-1 The study of this paper strengthens students'knowledge withrespecttounderstandingtheessentialsofthedynamicsofearth.

PSO-2The studentswillunderstandthe originandageofour Solarsystemandplanetsincludingearth.

PSO-3The students will able to learn the dynamic nature of the Earthprocesses.Theywilllearnaboutthegeodynamicsofthelithosphere,conceptofIsostacy,oceanfloorspreading,continentaldrift,platetectonics,volcanism,earthquakesetc.

PSO-4The course present concepts of geomorphology in relation withgeologicalprocessesandevolutionoflandforms.

PSO-5Thecoursepresentsanunderstandingoftheendogenicandexogenic processes in action on the earth surface and creation ofvariouslandformsbyvariousgeologicalagentslikeriver,glaciers,seaandoceans, windetc.

CourseOutcomes

CO1 Describe various hypothesis of origin of earth and solar system.CO2 Describeinternalstructureandcompositionoftheearth.

CO3 Describevolcanicactivity,typesofvolcanoes,volcanicproducts.

CO4 Explaintherelationofdiastrophicmovementswithplatetectonics.

CO5 Whatare thevariousgeologicalprocessesinvolving increationofvariouslandformsduetodifferentgeological agents.

B.Sc.-I–DSC-2: Structural Geology and Mineralogy

ProgramSpecificOutcomes

PSO 1 The course is designed to understand the basics of Mineralogyandstructural geologywhichhelpstogainoverallknowledgeinGeology.

PSO 2Thecoursedealswiththestudyofminerals,theirphysical,chemicalandopticalcharacteristics.

PSO 3Thestudentswillbeabletoidentifycommonrockformingmineralsinhandspecimensandinthinsection.

PSO4 Thestudentswillgainknowledgeaboutvariousmineralgroups.

PSO 5The course designed for the students of understand geologicalstructures developed in rocks by the action of force action onthem.

PSO 6Thestudentswillbeabletounderstandthegeometryandmechanicsofthevariousstructuresthatresultthroughrockdeformation.

PSO 7Todeterminepossiblecausesofformationofstructuresandforcesresponsibleforits.

PSO 8 Thiscoursealsohelpstoknowtherelationofstructurewithtectonics.

CourseOutcomes:

CO1 Definemineralanddescribephysicalpropertiesandopticalpropertiesofgivenmineral.

CO2 Describephysicaland opticalpropertiesofgivenmineralgroup.

CO3 Explain polymorphism, pseudo morphism, isomorphism and solidsolution.

CO4 Describerockdeformationusingstressstrainanalysis.

CO5 Describevarioustypesoffolds.Giveclassification.

CO6 Recognizefoldsinthefieldsandinthegeologicalmaps

CO7 Describefaults,classifyonthebasisofGeometryandGenesis.

CO8 Recognizefaultsinthefieldsandingeological map

CO9 Outcroppattern,effectofstructuresinoutcropofstrata

CO10 Describemorphometryofjoints.Givegeometricandgeneticclassification.

CO11 What is unconformity? Types and recognition of unconformity.

CO12 Giveandaccountoffoliationandlineation

B.Sc. - II – DSC-3 : PetrologyProgram

SpecificOutcomes(PSOs)

PSO 1The course of this paper designed to understand the processesinvolved inthe formation ofrocksi.e.,building blocksofearth.

PSO 2The students will be able to understand the formation of igneous,metamorphicandsedimentaryrocks.Theyacquaintaboutvarious

processes responsible for the formation of different typesofrocks.

PSO 3Thestudentswillunderstandtheforms,structure,textureofigneousrocksinterpreting crystallizationhistory.

PSO 4Thecoursepresentsanunderstandingofeffectsofhightemperatureandpressuretransformingaffectedrocksintometamorphicrocks.

PSO 5Thestudentswillknowtheprocessesofsedimentation,lithification,diagenesiswhichconvertingloosesedimentsintoconsolidatedsedimentaryrocks.

Courseoutcomes

CO1	Classifyrocksonthe basisoforigin.
CO2	Describeformsofigneousrocksandgivestheclassification.
CO3	DescribecrystallizationofMagma,andexplainhowunicomponent, bicomponent and multi component magma gives risetodifferenttypesofrocks.
CO4	Explainhowtexture andstructurehelptodetermine origin ofrocktypes.
CO5	Describemetamorphicfacies,grade,agentsandtypeofmetamorphism.
CO6	Explainthermalmetamorphism.
CO7	Explainthesedimentationprocesses.
CO8	Describesedimentarystructure,textureandsedimentaryprocesses.

BSC II- DSC-4-Stratigraphy and Paleontology

CourseOutcomes and program outcomes :

To understand:

- Fundamentals of litho-, bio- and chrono-stratigraphy
- Introduction to concepts of dynamic stratigraphy
- Code of stratigraphic nomenclature
- Sequence stratigraphy and their subdivisions with Indian examples
- Physiographic and tectonic subdivisions of India
- Phanerozoic Stratigraphy of India
- Precambrian-Cambrian boundary, Permian-Triassic boundary, and Cretaceous-Tertiary boundary in India
- Fossilization and fossil record
- Species concept with special reference to paleontology
- Important invertebrate groups (Bivalvia, Gastropoda, Brachiopoda) and their biostratigraphic significance
- Functional adaptation in trilobites and ammonoids
- Origin and major steps in vertebrate evolution
- Origin, diversity and extinction of dinosaurs
- Horse and Human evolution

B.Sc. III :DSE 1 & 2: Applied and Economic Geology, Environmental Geology and Geohydrology

SpecificOutcomes(PSOs)

PSO1 Coursetopicsincludetheconventionalandnon-conventionalenergyresources.

PSO2 Thiscourseintroducesthestudentstovariousprocessesofmineraldepositformations.

PSO3 TheCoursedealswithoccurrence,origin,economicimportance,distribution ofselectedoreminerals.

PSO4 Thestudentswillknoworiginandoccurrence,distributionofcoal,petroleuminIndia.

CourseOutcomes(COs)

CO1 Giveanaccount ofnon-conventionalenergyresources.

CO2 Describe magmatic concentration processes and resultantdeposits.

CO3 DescribeHydrothermalprocessesandresultantdeposits.

CO4 Give anaccount ofmechanical and residual concentrationprocessesandresultantdeposits.

CO5 Describe Oxidation and supergene sulphide enrichmentprocesses,resultantdeposits.

CO6 Giveanaccountofsedimentaryandmetamorphicprocessesoforeformation.

CO7 DescribetheOccurrenceoffossilfuelsinIndia.

CO8 Give mode of occurrence, origin, compositions, distribution andeconomicimportanceoforemineralsgiveninthesyllabus.

CO9 To understand and analyze the following geohydrology related concepts

- Scope of hydrogeology and its societal relevance
- Hydrologic cycle
- Rock properties affecting groundwater
- Groundwater flow
- Well hydraulics and Groundwater exploration
- Physical and chemical properties of water
- Groundwater management
- Rainwater harvesting and artificial recharge of groundwater

ProgramSpecificOutcomes(PSOs)

PSO 1Oncompletionofcourse,thestudentwillhavegainedanunderstandingofoccurrenceandmovementofgroundwater.

PSO 2Knowthebasicconceptandvarioustechniquesofmineralexploration,drilling,sampling.

PSO 3 Studentswillbeabletoknowthenationalandstatemineralpolicesandconcessionrules.

PSO 4Thecoursehelpsstudentstolearnaboutenvironmentalconsideration in the site selection of construction ofdamandtunnel.

PSO 5The students will be able to knowthe basic earth science asappliedtotheinteractionbetweenhumanactivity andnaturalenvironment.

BSC – SECC – 1,2,3&4 : Photo Geology and Remote Sensing, Geochemistry, Fuel geology, Himalayan Geology.

CourseOutcomes(COs)

To understand :

Geochemistry

- Concepts of geochemistry
- Ability to understand geochemistry of Earth as a planet
- Ability to understand Layered structure of Earth
- Idea about Geochemical classification of elements

Fuel geology

- Basic understanding on the origin, classification of the coal and Coal Petrology
- To highlight global and Indian scenario of Coal Bed Methane
- First order knowledge on Underground coal gasification and Coal liquefaction
- Basic understanding on the origin of petroleum; chemical composition and physical properties of crudes in nature.
- Introductory idea about petroleum Reservoirs and Traps

Photo Geology and Remote Sensing

- Fundamental concepts of photogeology (interpretation of aerial photographs)
- Basic principles to identify the earth surface features from satellite images and digital image processing
- Analyze the basic components of GIS; introduction to GP

ProgramSpecificOutcomes(PSOs)

PSO 1This course intends to introduce the fundamental principles andtechniquesofremote sensing and photogeology and applicationofthesetechniques.

PSO 2 Ability to understand Layered structure of Earth

PSO3: Basic understanding on the origin of petroleum; chemical composition and physical properties of crudes in nature.

PROGRAMEOUTCOMES(POs)THREEYEARDEGREECOURSE

Forthree-yeardegreeprogrammeinHigherEducation,

PO1-Critical thinking – Syllabus for different subject in the under graduateprogramme is prepared by central board of studies dully approved byco-ordinationcommitteeheadedbyhonorableGovernor.Thecombination of different subjects in the graduation level isoffered bythe students in a way that apart from the knowledge gathering, theymustdevelopcriticalthinkingaboutthesubjectandalsoabletocheckingtheassumptionandideasfromdifferentprospection.

PO2-Effectivecommunication–Apartfromthesciencesubjects,twolanguage papers are also includedinthe graduationprogramme, mustbe aiming toward development of communication skills. Hence at thetime of graduation students will be able to connect people, ideas, booksmediaandtechnology.

PO3- Social interaction – In graduation programme of science subjects apartfrom thepractical practices most of the subjects carry field excursionandfields studies forbetterexposure andparticipationindiscussionwith industrialist, entrepreneurs, social activistsetc.,helpthemtoreachconclusioninsetting.

PO4-Effective Citizenship – During the regular three-year degree programme,a student's actively participate in NCC, NSS, Red cross society activities.Thisparticipationwillhelpthemindevelopingeffectivecitizenship,awarenessofissuesandconcernaboutthenationaldevelopment.

PO5-Ethics – College administration during the implementation of syllabussees that the subjects of science field given to the students in theoriesand practical's, in such a way that they develop value system among thestudentsandbetterapproachregardingthemoraldimensions.

PO6- Environment and Sustainability – As per the Supreme Court guideline thegraduationsyllabusofthisinstitutecontainsthestudiesrelatedtoenvironmental issues in which the students are given projects pertainingto the social concern. Apart from this, different subjects like Botany,Geology, Chemistry, Zoology are including localized environmental issuesforstudies.Itwillhelpstudentstounderstandtheissuesofenvironmentalcontextsandsustainabledevelopment.

PO7- Self-directed and lifelong learning- with the changing time and as perneed of an hour the syllabusisconstructedandimplementedinsuch a way that students even aftercompletingtheirgraduationmayacquiretheirabilitytolifelonglearningprocess.Forthisappliedaspectof syllabusaretakenintoconsideration.