

PREAMBLE

The Four-Year Undergraduate Programme in **GEOLOGY AND DIGITAL SURVEYING (FYUGP -----B.Sc. HONOURS in GEOLOGY AND DIGITAL SURVEYING)** offered by Fatima Mata National College has a student centric approach in which the student can choose their own pathway for learning. The syllabus has been revised and the revised syllabus is to be effective from 2024 admission. On successful attainment of 133 credits in a three-year period, a student shall be awarded an Undergraduate Degree. In a four-year period, the student can successfully attain 177 credits and shall be awarded with either Undergraduate Honours Degree or Undergraduate Honours with Research Degree. The students can acquire credits through the following categories of subjects.

1. Discipline Specific Core (DSC) Courses
2. Discipline Specific Elective (DSE) Courses
3. General Foundation Courses
 - a) Multi-Disciplinary (MDC) Courses
 - b) Ability Enhancement Courses
 - c) Value Addition Courses
 - d) Skill Enhancement Courses

Discipline Specific Core (DSC) courses are the core credit courses in a particular discipline. Students may choose DSC courses as their major or minor course of study. Discipline Specific Elective (DSE) Courses are a pool of credit courses in a particular discipline. These courses offer specialisation to students in a particular discipline. It can be a major or minor course of study. Multi-Disciplinary Courses (MDC) are Generic Elective courses meant to ensure multi-disciplinary/interdisciplinary education to students. Every Discipline has to offer MDCs. Ability Enhancement Courses (AEC) are courses offered by language and Literature Disciplines to ensure enhancement of language proficiency among students.

Students who secure at least 75 % of marks in all the six semesters can choose Undergraduate Honours with Research stream in the fourth year. Value Addition Courses (VAC) are meant to inculcate ethics, constitutional values, soft skills, sports and such similar values to students. Every discipline may offer VACs. Skill Enhancement Courses (SEC) are

skill-based courses in all disciplines which may inculcate skill, competencies and hands on training.

A student will be eligible to be awarded as **B.Sc. HONOURS in GEOLOGY AND DIGITAL SURVEYING** (Double Major) for the 3-year/ 4-year UG degree only if he/she secures a minimum of 50% credits from Geology (first major) and 40% of credit from Digital Surveying (Second Major). Two courses, each from MDC, SEC, VAC and the internship should be from Geology. One course, each from MDC, SEC and VAC should be from Digital Surveying. The four Ability Enhancement Courses (AEC) are to be offered by English and Other language departments. Out of the total 4 Courses, the student has to choose two from English department and another two from any of the other languages departments.

Exit Points and Credit Requirements

On Completion of 3 Years (6 Semesters) the student has an option to exit the programme with 133 credits and shall be awarded with a bachelor's degree. The Maximum credit a student can acquire in three-year period is limited to 150. On Completion of 4 years of study (8 Semesters) by acquiring 177 credit the student shall be awarded with a Bachelors (Honours) Degree or Bachelors (Honours with Research) Degree.

One semester is defined as 90 working days and an academic year is divided into two semesters and an optional summer fast track semester. In addition to the 90 working days, 10 working days in a semester shall be used for co-curricular activities. An academic year shall consist of 200 working days. One semester consisting of 18 weeks with 5 working days per week. In each semester 15 days (3week) should be kept a side for examinations including internal examination evaluation and other academic activities. The maximum available weeks for curriculum transactions should be fixed as 15 in each semester. Minimum of 5 teaching / tutorial hours could be made available for a day in a 5-day week. A 4 - year Degree with (Honours/Research) program shall have a minimum credit requirement of 177. A 3-year exit option (Bachelor's Degree) is given to a student completing 133 credits.

Course outline

Semester	Course Code	Course Title	Type of Course	Academic Level	Instructional hrs/Week			Credit
					T	P	Total	
I	24UGL-DSC111	Fundamentals of Earth Science	DSC	100-199	3	2	5	4
	24UGL-DSC112	Introduction to Mineralogy and Petrology	DSC	100-199	3	2	5	4
	24UDS-DSC111	Introduction to Geoinformatics and Surveying	DSC	100-199	3	2	5	4
	24UGL-MDC111	Earth and Landforms	MDC	100-199	3	0	3	3
II	24UGL-DSC211	Stratigraphy and Paleontology	DSC	100-199	3	2	5	4
	24UDS-DSC211	Principles of Cartography and Techniques	DSC	100-199	3	2	5	4
	24UDS-DSC212	Basic Geodesy	DSC	100-199	3	2	5	4
	24UGL-MDC211	Oceanography	MDC	100-199	3	0	3	3
III	24UGL-DSC321	Crystallography, Optical and Descriptive Mineralogy	DSC	200-299	3	2	5	4
	24UDS-DSC321	Surveying Tools and Techniques	DSC	200-299	3	2	5	4
	24UDS-DSC322	Aerial photography and Photogrammetry	DSC	200-299	3	2	5	4

	24UGL-DSE321	Introduction to Hydrogeology	DSE	200-299	4	0	4	4
	24UGL-VAC321	Environmental Geology and Disaster Management	VAC	200-299	3	0	3	3
	24UDS-MDC321	Information Technology for Digital surveying	MDC	200-299	3	0	3	3
IV	24UGL-DSC421	Structural Geology	DSC	200-299	3	2	5	4
	24UDS-DSC421	Principles of Remote sensing	DSC	200-299	3	2	5	4
	24UGL-DSE421	Groundwater Exploration and Management	DSE	200-299	3	2	5	4
	24UGL-SEC421	Field Geology	SEC	200-299	2	2	4	3
	24UGL-VAC421	Engineering Geology	VAC	200-299	3	0	3	3
	24UDS-VAC421	Research Ethics and Statistics for Digital Surveying	VAC	200-299	3	0	3	3
SUMMER INTERNSHIP (2Credits)								
V	24UGL-DSC531	Igneous Petrology	DSC	300-399	4	0	4	4
	24UGL-DSC532	Sedimentary and Metamorphic Petrology	DSC	300-399	4	0	4	4
	24UDS-DSC531	GNSS Surveying	DSC	300-399	3	2	5	4
	24UGL-DSE531	Mineral Resources of India	DSE	300-399	3	2	5	4
	24UDS-DSE531	Geographic Information System	DSE	300-399	4	0	4	4

	24UGL-SEC531	Economic Geology and Mining Techniques	SEC	300-399	3	0	3	3
VI	24UGL-DSC631	Exploration Geology	DSC	300-399	3	2	5	4
	24UDS-DSC631	Digital Surveying and Applications	DSC	300-399	4	0	4	4
	24UDS-DSC632	Applied Geospatial Technology	DSC	300-399	4	0	4	4
	24UGL-DSE631	Stratigraphy of India	DSE	300-399	4	0	4	4
	24UDS-DSE631	Open-Source Software-QGIS	DSE	300-399	3	2	5	4
	24UDS-SEC631	Field application using GIS / Remote Sensing / Web technology	SEC	300-399	3	0	3	3
	VII	24UGL-DSC741	Advanced Petrology	DSC	400-499	3	2	5
24UGL-DSC742		Geochemistry and Isotope Geology	DSC	400-499	4	0	4	4
24UDS-DSC731		Advance surveying and field work	DSC	300-399	4	0	4	4
24UDS-DSC732		Digital image processing	DSC	300-399	4	0	4	4
24UDS-DSC733		Drone surveying	DSC	300-399	4	0	4	4
24UGL-DSE741		Research Methodology in Geosciences	DSE	400-499	4	0	4	4
VIII		24UGL-DSC841	Analytical Techniques in Geology	DSC	400-499	4	0	4
	24UGL-DSC842	Advanced Stratigraphy and Paleontology	DSC	400-499	4	0	4	4
	24UGL-DSC843	Meteorology and Climatology	DSC	400-499	4	0	4	4
	24UGL-DSC844	ONLINE COURSE	DSC	400-499	4	0	4	4
	24UGL-DSC845	ONLINE COURSE	DSC	400-499	4	0	4	4

	Internship Project for UG Honours.	12

GENERAL INFORMATION ABOUT THE COURSE					
Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-DSC111				
Course Title	FUNDAMENTALS OF EARTH SCIENCE				
Type of Course	DSC				
Semester	I				
Academic Level	100 - 199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Elementary knowledge about Earth and its characteristics.				
Course Summary	This course provides students with first-hand experience relating to geology and its branches, features and processes operating within the Earth and Geologic Time.				

GENERAL INFORMATION ABOUT THE COURSE					
Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-DSC112				
Course Title	INTRODUCTION TO MINERALOGY AND PETROLOGY				
Type of Course	DSC				
Semester	I				
Academic Level	100 - 199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Elementary knowledge about minerals and rocks				
Course Summary	The course aims to learn about the basics of crystals, physical, chemical properties of minerals, rock cycle and basic facts about igneous, sedimentary and metamorphic rocks.				

GENERAL INFORMATION ABOUT THE COURSE					
Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-DSC111				
Course Title	INTRODUCTION TO GEOINFORMATICS AND SURVEYING				
Type of Course	DSC				
Semester	I				
Academic Level	100-199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Basic understanding of earth sciences and specialized fields especially spatial sciences and geoinformatics.				
Course Summary	To give an introduction to various tools and techniques in the field of surveying and mapping of various earth resources.				

GENERAL INFORMATION ABOUT THE COURSE					
Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-MDC111				
Course Title	EARTH AND LANDFORMS				
Type of Course	MDC				
Semester	I				
Academic Level	100 - 199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	-	3
Pre-requisites- if any	Basic Knowledge about earth surface processes				
Course Summary	The Course aims to bring out the concept of geomorphology, geological agents and its works.				

GENERAL INFORMATION ABOUT THE COURSE					
Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-DSC211				
Course Title	STRATIGRAPHY AND PALEONTOLOGY				
Type of Course	DSC				
Semester	II				

Academic Level	100 - 199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Elementary idea on strata, fossils and geologic time				
Course Summary	The course aims to unlock the secrets of Earth's ancient life by studying strata and fossils. This course provides an in-depth exploration of the scope, methods, and classifications in stratigraphy and palaeontology. Students will delve into the processes of fossilization, taxonomy, and the significance of fossils in understanding evolutionary history.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-DSC211				
Course Title	PRINCIPLES OF CARTOGRAPHY AND TECHNIQUES				
Type of Course	DSC				
Semester	II				
Academic Level	100 - 199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Students should have basic knowledge about maps.				
Course Summary	To provide students with knowledge on map making and its principles. Insight to the methods involved and different techniques of map production for reproduction.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-DSC212				
Course Title	BASIC GEODESY				
Type of Course	DSC				
Semester	II				
Academic Level	100-199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5

Pre-requisites- if any	Student should have basic understanding of related fields to geoinformatics.
Course Summary	To understand and explain geodesy as a subject, give an idea on world geodetic systems and explain measurement techniques.

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-DSC212				
Course Title	BASIC GEODESY				
Type of Course	DSC				
Semester	II				
Academic Level	100-199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Student should have basic understanding of related fields to geoinformatics.				
Course Summary	To understand and explain geodesy as a subject, give an idea on world geodetic systems and explain measurement techniques.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-MDC211				
Course Title	OCEANOGRAPHY				
Type of Course	MDC				
Semester	II				
Academic Level	100 - 199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	-	3
Pre-requisites- if any	NIL				
Course Summary	This course aims to provide a comprehensive understanding of the Earth's oceans. This course brings out various physical, chemical, biological and geological oceanographic processes operating in oceans and its resources.				

GENERAL INFORMATION ABOUT THE COURSE					
Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-DSC321				
Course Title	CRYSTALLOGRAPHY, OPTICAL AND DESCRIPTIVE MINERALOGY				
Type of Course	DSC				
Semester	III				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Basic knowledge about minerals and crystals. Should have completed the course 24UGL-DSC112.				
Course Summary	This course aims to bring out the characteristics and forms of different crystal systems, optical properties of minerals and study of important mineral groups.				

GENERAL INFORMATION ABOUT THE COURSE					
Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-DSC321				
Course Title	SURVEYING TOOLS AND TECHNIQUES				
Type of Course	DSC				
Semester	III				
Academic Level	200-299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Students should have basic knowledge on surveying and its importance.				
Course Summary	To understand the various surveying techniques and methods. understand and apply various surveying instruments on field.				

GENERAL INFORMATION ABOUT THE COURSE	
Faculty	SCIENCE
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING
Course Code	24UDS-DSC322
Course Title	AERIAL PHOTOGRAPHY AND PHOTOGRAMMETRY
Type of Course	DSC

Semester	III				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Students should have basic idea regarding modern surveying.				
Course Summary	understand the basic concepts of aerial photography and photogrammetry. Explain aerial photography, types, planning and execution and apply different photogrammetric techniques.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-DSE321				
Course Title	INTRODUCTION TO HYDROGEOLOGY				
Type of Course	DSE				
Semester	III				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-		4
Pre-requisites- if any	Basic knowledge about the occurrence and characteristics of underground water				
Course Summary	This course helps the students to undertake hydrogeological studies of an area. Various aspects of physical hydrogeology, groundwater quality and causes and remedial measures of pollution are dealt with.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL- VAC321				
Course Title	ENVIRONMENTAL GEOLOGY AND DISASTER MANAGEMENT				
Type of Course	VAC				
Semester	4				
Academic Level	200-299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week

	3	3 hours	-	-	3
Pre-requisites- if any	Basic knowledge of environment and disaster management.				
Course Summary	This course is designed to provide a deep understanding of the essential components of environment, its components, disasters and its management.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-MDC321				
Course Title	INFORMATION TECHNOLOGY FOR DIGITAL SURVEYING				
Type of Course	MDC				
Semester	III				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3		-	3
Pre-requisites- if any	Basic knowledge about computers.				
Course Summary	To introduce the IT tools and its applications in Geoinformatics and digital surveying. To understand the basic Computing Skills, Storage Mechanisms Operating Systems, various software and hardware devices.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-DSC421				
Course Title	STRUCTURAL GEOLOGY				
Type of Course	DSC				
Semester	IV				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Basic knowledge about rocks and associated structures				
Course Summary	Structural geology helps students to understand the processes that shape the Earth's surface, such as faulting, folding, joints etc. and their importance in mineral exploration and engineering geology.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-DSC421				
Course Title	PRINCIPLES OF REMOTE SENSING.				
Type of Course	DSC				
Semester	IV				
Academic Level	200-299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Basic idea on geospatial science.				
Course Summary	Understand the basic concepts of remote sensing. Understand the basics of types of remote sensing and its principles and sensors. To Interpret satellite imageries with different keys and techniques.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-DSE421				
Course Title	GROUNDWATER EXPLORATION & MANAGEMENT				
Type of Course	DSE				
Semester	IV				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Should have completed the course 24UGL-DSE321				
Course Summary	This course helps the student to understand the exploration and management techniques in hydrogeology.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-SEC421				
Course Title	FIELD GEOLOGY				
Type of Course	SEC				

Semester	IV				
Academic Level	200 - 299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	2 hours	-	2 hours	4 hours
Pre-requisites- if any	Basic knowledge about geological features				
Course Summary	A course in field geology provides practical application of geological principles through hands-on fieldwork. This course develops a foundational understanding of field techniques, equipment usage, map reading, and data collection essential for geological exploration and analysis.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL- VAC421				
Course Title	ENGINEERING GEOLOGY				
Type of Course	VAC				
Semester	4				
Academic Level	200-299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	-	3
Pre-requisites- if any	Basic knowledge about geological structures and processes				
Course Summary	This course aims to instruct the student with the application of geology in the field of engineering.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-VAC421				
Course Title	RESEARCH ETHICS AND STATISTICS FOR DIGITAL SURVEYING				
Type of Course	VAC				
Semester	IV				
Academic Level	200-299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	-	3

Pre-requisites- if any	Students should have idea about research and its uses.
Course Summary	Understand the Research ethics and designs. The use of statistics in research for both quantitative and qualitative study. Using any surveying tool to test a hypothesis.

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-DSC531				
Course Title	IGNEOUS PETROLOGY				
Type of Course	DSC				
Semester	V				
Academic Level	300 - 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-		4
Pre-requisites- if any	Basic knowledge of magma and igneous rocks				
Course Summary	Igneous petrology deals with all the processes involved in the evolution of igneous rocks from melting to crystallization. Also aims to study various types of igneous rocks and its relevance in the earth and to provide an insight about the magma and rock formation processes in various tectonic set ups.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-DSC532				
Course Title	SEDIMENTARY AND METAMORPHIC PETROLOGY				
Type of Course	DSC				
Semester	V				
Academic Level	300 - 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-		4
Pre-requisites- if any	Basic knowledge about sedimentation, metamorphism and rock types.				
Course Summary	The Course aims to understand the origin, nature, texture, structure and classification of sedimentary and metamorphic rocks.				

GENERAL INFORMATION ABOUT THE COURSE					
Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-DSC531				
Course Title	GNSS SURVEYING				
Type of Course	DSC				
Semester	V				
Academic Level	300-399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Basic understanding of satellites and geodesy.				
Course Summary	Understand and describe the history and development of GNSS. Understand and explain the GPS design objectives, components of GPS, its errors and accuracy. Acquire information and explain the various applications of GPS technology in modern world.				

GENERAL INFORMATION ABOUT THE COURSE					
Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-DSE531				
Course Title	MINERAL RESOURCES OF INDIA				
Type of Course	DSE				
Semester	V				
Academic Level	300 - 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Basic knowledge of minerals and their occurrence				
Course Summary	This course aims to bring out an idea about the geological and geographical occurrence of various mineral deposits in our country				

GENERAL INFORMATION ABOUT THE COURSE					
Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-DSE531				
Course Title	GEOGRAPHIC INFORMATION SYSTEM				

Type of Course	DSE				
Semester	V				
Academic Level	300-399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-	-	4
Pre-requisites- if any	Idea regarding spatial and non-spatial science.				
Course Summary	Provide knowledge on various methods of data input, types of errors and its correcting methods and gain knowledge on GIS analysis, GIS data modelling. Know about various forms of GIS output and their method of visualization				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-DSE531				
Course Title	ECONOMIC GEOLOGY AND MINING TECHNIQUES				
Type of Course	DSE				
Semester	V				
Academic Level	300 - 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours			3 hours
Pre-requisites- if any	Basic knowledge about minerals and mining.				
Course Summary	The course is designed to build a comprehensive understanding of the economic aspects of geology and mining techniques.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-DSC631				
Course Title	EXPLORATION GEOLOGY				
Type of Course	DSC				
Semester	VI				
Academic Level	300 - 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5

Pre-requisites- if any	Basic knowledge about geophysics and geochemistry
Course Summary	This course aims to bring out the methods and application of geophysical, geochemical and biogeochemical exploration in geology.

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-DSC631				
Course Title	DIGITAL SURVEYING AND APPLICATIONS				
Type of Course	DSC				
Semester	VI				
Academic Level	300-399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-	-	4
Pre-requisites- if any	Whole idea of traditional surveying tools and techniques.				
Course Summary	Understand and describe the different aspects of digital surveying, its nature and scope and objectives. Understand and describe the digital mapping techniques; explain digital photogrammetry and methods. Understand and explain the applications of digital surveying in various fields in modern world.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-DSC632				
Course Title	APPLIED GEOSPATIAL TECHNOLOGY				
Type of Course	DSC				
Semester	VI				
Academic Level	300-399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-	-	4
Pre-requisites- if any	Basic idea regarding different geospatial technologies.				
Course Summary	To understand the relevance of geospatial technology in various fields of study. Understand the procedures and techniques used in each field.				

GENERAL INFORMATION ABOUT THE COURSE					
Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UG-DSE631				
Course Title	STRATIGRAPHY OF INDIA				
Type of Course	DSE				
Semester	VI				
Academic Level	300 - 399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-		4
Pre-requisites- if any	Basic knowledge of geological time scale and Indian sub-continent				
Course Summary	The Course aims to learn about the geological divisions of India, Precambrian, Paleozoic, Mesozoic and Cenozoic stratigraphy of Indian sub-continent.				

GENERAL INFORMATION ABOUT THE COURSE					
Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-DSE631				
Course Title	OPEN-SOURCE SOFTWARE- QGIS				
Type of Course	DSE				
Semester	VI				
Academic Level	300-399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Basic understanding about GIS and its aspects.				
Course Summary	Understand and acquire skills in GIS Spatial Data input; develop expertise in map layer creation, digitization / Vectorization; and develop expertise in GIS data editing and preparation of choropleth / thematic maps. Understand and familiarize with the basic GIS tools; acquire skills in GIS Querying, Calculations and basic GIS analysis.				

GENERAL INFORMATION ABOUT THE COURSE	
Faculty	SCIENCE
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING
Course Code	24UDS-SEC631

Course Title	FIELD APPLICATION USING GIS/REMOTE SENSING /WEB TECHNOLOGY				
Type of Course	SEC				
Semester	VI				
Academic Level	300-399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	3	3 hours	-	.	3
Pre-requisites- if any	Student should have knowledge in various geospatial techniques.				
Course Summary	To understand the types of research and digital survey as a tool to conduct it.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UG-DSC741				
Course Title	ADVANCED PETROLOGY				
Type of Course	DSC				
Semester	VII				
Academic Level	400 - 499				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Knowledge about igneous, sedimentary and metamorphic petrology in the level of 300-399.				
Course Summary	This course aims to bring out an in-depth knowledge in igneous, sedimentary and metamorphic petrology.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UG-DSC742				
Course Title	GEOCHEMISTRY AND ISOTOPE GEOLOGY				
Type of Course	DSE				
Semester	VII				
Academic Level	400 - 499				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-		4

Pre-requisites- if any	Excellent background in petrology and hydrogeology; knowledge about isotopes.
Course Summary	This course aims to bring out an in-depth knowledge in geochemistry and isotope geology.

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-DSC731				
Course Title	ADVANCE SURVEYING AND FIELD WORK				
Type of Course	DSC				
Semester	VII				
Academic Level	300-399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-		4
Pre-requisites- if any	Understand traditional and modern surveying differences.				
Course Summary	Introduces the advance tool of surveying viz., total station, DGPS.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	DEPARTMENT OF DIGITAL SURVEYING				
Course Code	24UDS-DSC732				
Course Title	DIGITAL IMAGE PROCESSING				
Type of Course	DSC				
Semester	VII				
Academic Level	300-399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-		4
Pre-requisites- if any	Understanding of digital images and its sources.				
Course Summary	Apply the concept of digital image processing techniques. analyse the digital data. Evaluate and create information on Earth using digital data				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE
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Course offering Department	DIGITAL SURVEYING				
Course Code	24UDS-DSC733				
Course Title	DRONE SURVEYING				
Type of Course	DSC				
Semester	VII				
Academic Level	300-399				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-		4
Pre-requisites- if any	Aerial photography, geometry and others.				
Course Summary	explain the components in Drone, surveying using it and the processing etc. A practical drone surveying for employability.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UG-DSE741				
Course Title	RESEARCH METHODOLOGY IN GEOSCIENCES				
Type of Course	DSE				
Semester	VII				
Academic Level	400 - 499				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4		-	4 hours	4
Pre-requisites- if any	NIL				
Course Summary	This course is designed to understand the aspects of research in geosciences.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UGL-DSC841				
Course Title	ANALYTICAL TECHNIQUES IN GEOLOGY				
Type of Course	DSC				
Semester	VIII				
Academic Level	400 - 499				

Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-		4
Pre-requisites- if any	Knowledge about mineralogy and petrology				
Course Summary	The purpose of this course is to get a hands-on knowledge in the essential tools in mineralogical, petrological and geochemical analytical techniques available				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UG-DSC842				
Course Title	ADVANCED STRATIGRAPHY AND PALEONTOLOGY				
Type of Course	DSC				
Semester	VII				
Academic Level	400 - 499				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	3 hours	-	2 hours	5
Pre-requisites- if any	Knowledge about basic stratigraphy and invertebrate paleontology				
Course Summary	This course aims to bring out an in-depth knowledge about advanced stratigraphy, invertebrate paleontology and micropaleontology.				

GENERAL INFORMATION ABOUT THE COURSE

Faculty	SCIENCE				
Course offering Department	GEOLOGY				
Course Code	24UG-DSC843				
Course Title	METEOROLOGY AND CLIMATOLOGY				
Type of Course	DSC				
Semester	VIII				
Academic Level	400 - 499				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	4	4 hours	-		4
Pre-requisites- if any	Nil				
Course Summary	This course aims to provide a comprehensive understanding of various meteorological and climatic conditions encountered				

	within the earth. It also provides knowledge on major factors which control the meteorological and climatic systems. This course helps the students to understand how the climate has changed in the past, and the causes of past climate change
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