Outcome of M. Sc. Tech Applied Geology Programe

After getting M.Sc. degree students study advance geology in M.Sc.Tech (Applied Geology) course. M.Sc. Tech students get privilege in jobs of all geological organization and industry specially for exploration work. Central Government Department like Geological survey of India, Indian Beauro of Mines, Central Groundwater Board etc. Public enterprises and MNCs like ONGC, Oil India, Cairn Energy etc. They also get jobs in state Government Department like Department of Mines and Geology, Groundwater Department, state government enterprises like RSMM. All mineral, cement and building stone industries employ them as geologist. Also get opportunities in consultancy work.

Course/Paper Code	Course/Paper Name	Objective of Course	Outcome of Course
MT1GEO01-CT01	Structural Geology and Tectonics	Accurate geometric description of the structures observed in natural deformed rocks. Understanding deformation mechanisms at micro- meso- and macroscopic scales.	Students is supposed to learn the techniques of recording and analysing structural data and taught how to map rock sequences in the field and interrogate a region to determine how it formed and what has happened to the area since formation. To come out with the application of structural geology in oil and petroleum sectors.
MT1GEO02-CT02	Micropalaeontology	To know the process/Basics of the study of micropalaeontology. It is aimed to give knowledge about the microfossils role in hydrocarbon exploration and basin analysis.	To explain the role of micropalaeontology in biostratigraphy and hydrocarbon exploration geology. To explain the role of microfossils in palaeoenvironmental interpretation. To describe the morphology and biology of organisms commonly found as microfossils.
MT1GEO03-CT03	Mineral Exploration and Mining Geology	This course is designed to enable students to acquire understanding of the basic concept of mineral exploration, various exploration techniques including ground and aero geophysical surveys, geochemical exploration, etc., introduces the basic concepts of mining and gives knowledge of application of ore petrography.	The expected outcome of the course upon successful completion includes development of ability to apply knowledge based approach for mineral exploration and capacity to judge better use of specific tools for mineral targeting unique to the selected mineral under consideration.
MT1GEO04-CT04	Mineral Technology and	• To acquire knowledge of	Upon successful completion of course the

	Mineral Economics	basic concept of mineral processing and economics of mineral resources. • To be able to understand how and why different types of mineral deposits are formed. • To understand various government mineral policies, rules and regulations for conservation of minerals.	students would be able to • Understand the technology of the minerals processing and implication of the mineral resources in different industries • Students gain the knowledge about different government policies and regulations of minerals. • Students able to know how economy generated by various type of minerals
MT2GEO01-CT05	Advance Remote Sensing in Geosciences	The course is designed to fulfil the following objectives • To provide exposure to students in gaining knowledge on concepts and applications leading to modelling of earth resources management using Remote Sensing • To acquire skills in storing, managing digital data for planning and development. • To acquire skills in advance techniques such as hyper spectral, thermal and microwave for mapping, modeling and monitoring. • To inculcate practical skill for processing advance remote sensing datasets for various applications including natural resources management.	• The students will be able to get understanding on various concepts and application of remote sensing in the modeling of earth resource management • The student will be able to handle digital data for planning and development • The students will be able to learn skill for processing advance remote sensing datasets such as hyper spectral, thermal and microwave for various applications including natural resources management.

MT2GEO02-CT06	Engineering and Groundwater Geology	The course aims at teaching the student • Basic knowledge and understanding in the most central part of engineering geology, rock and soil. • Detailed knowledge of groundwater and its exploration, exploitation, wells and salt-water intrusion.	After completion of course, the student • Can give an account of engineering geological investigations, engineering, stability of slopes and protection of underground facilities • Learn about hydrological properties of aquifers, their determination, groundwater occurrence in different rocks, water level fluctuations and their causative factors • Can learn exploration methods, concept of well hydraulics as well as Hydrogeology of India and Rajasthan in detail.
MT2GEO03-CT07	Petroleum, Coal and Radioactive Minerals	The course is divided in three sections namely Petroleum, Coal and Radioactive Minerals which is spread over five units. In the Petroleum part, the course is designed to enable students to acquire understanding of the processes involved in formation of petroleum, its migration, maturation, its distribution, etc. In the second portion of course, the course enables students to learn details about formation of Coal, fundamental concept of coal	The students after completing this course are expected to have fundamental concepts of origin of energy minerals which includes petroleum, coal and radioactive minerals. The students will have knowledge based approach towards exploration and exploitation including background of their distribution across the globe with special focus in India

		petrography, its classification and distribution across globe. In the last part, the course deals with radioactive minerals where student is exposed to processes of formation of various radioactive minerals, their classification and distribution in detail.	
MT2GEO04-CT08	Oceanography and Climatology	This course aims at introducing oceanography and climatology concepts dealing with the physical process and chemical behaviour of ocean and climate as a coupled system. Also this course includes the application of the various proxies for paleoceanographic and paleoclimatic interpretation.	After successful completion of this course student will be able to understand the process responsible for various oceanographic and climatological phenomenon. Also through this course student will be able to interpret and correlate various paleoceanographic and paleoclimatic events.
MT1GEO05-CP01	Practical-I: Structural Geology and Tectonics. Micropalaeontology	For Structural Geology and Tectonics To learn the practice of theoretical knowledge for applying at ground observation in field and to learn essential observational and practical skills. For Micropaleontology To explore students knowledge particularly in micro fossils.	For Structural Geology and Tectonics To train the students for adaptation in field work environment in certain professional and scientific organizations.Students will have knowledge and imparted through field trip. Students are expected to learn different deformational structures. For Micropaleontology Students will be able to identify all morphological features of microfossils by the help of microscope and will learn applications of microfossils in hydrocarbon exploration and correlation with the strata.
MT1GEO06-CP02	Practical-II: Mineral Exploration and Mining Geology. Mineral Technology and Mineral	The practical paper has following objectives: 1. To understand beneficiation of various ore minerals and use of	Upon successful completion of course the students would be able to:- 1. Use flow sheet and appreciate ore beneficiation methods specific to various

	Economics	their flow sheets 2. To understand industrial specifications of various minerals specific to different industries 3. To describe and identify various hand specimen of important metallic and non-metallic minerals 4. To understand the importance of surveying and Levelling in the field of Geology. 5. To know the basics of levelling and theodolite survey in elevation and angular measurements. 6. To understand measurement of horizontal, vertical angles and linear distance from Theodolite. 7. To understand process of core logging and its importance in exploration. 8. To understand applications of GPS and its use in field. To understand the methods of ore reserve estimation and calculation of ore reserves	metals 2. Decide use of mineral specification data and categorise it according to various industry 3. Identify and describe various metallic and non-metallic minerals in hand specimen 4. Understand the working principles of survey instruments. 5. Calculate angles, distances and levels by Theodolite. 6. Estimate measurement errors and apply corrections. 7. Understand Theodolite survey takes vertical and horizontal angles in order to establish controls. 8. Understand techniques and applications of GPS and its uses in field in mapping. Understand the methods of ore reserve estimation in a mineral deposit.
MT2GEO05-CP03	Practical-III: Advance Remote Sensing in Geosciences & Engineering and Groundwater Geology	For Advance Remote Sensing in Geosciences To introduce students with the more understanding of the remote sensing with the practical knowledge of the subject.	For Advance Remote Sensing in Geosciences The students will be able to do various analysis viz. geomorphic mapping on aerial photographs, geological and structural mapping using aerial photographs, lineament analysis on satellite imageries as well as

		To introduce students with the various analysis viz. geomorphic mapping on aerial photographs, geological and structural mapping using aerial photographs, lineament analysis on satellite imageries as well as Geological and Structural studies using satellite imageries. For Engineering and Groundwater Geology To give students hands-on practical classes aimed at 1. Giving numerical problems/exercises on various topics covered in theory classes of the subject like engineering properties of soil and rock 2. Making maps such as iso-hyetal and groundwater contouring as well as numerical problems on aquifer parameters and pumping tests.	Geological and Structural studies using satellite imageries by themselves. They will be able to use this practical knowledge in research purpose too. For Engineering and Groundwater Geology After completion, students will be able to understand and apply theoretical concepts of engineering and groundwater geology in practical aspects like deciding which soil or rock properties are essential for construction of various engineering structures and making maps and interpreting the conditions of an area using available data.
MT2GEO06-CP04	Practical-IV: Petroleum, coal and Radioactive Minerals. Oceanography and Climatology	For Petroleum Coal and Radioactive Minerals This practical course has following objectives: • Study the distribution of Coal deposits in Rajasthan, India and World • Study the distribution of Petroleum basins in Rajasthan, India and World • Study the distribution of Radioactive Mineral deposits in Rajasthan, India and	For Petroleum Coal and Radioactive Minerals The students upon successful completion of this course will be well versed with: • Distribution of Coal deposits in Rajasthan, India and World • Distribution of Petroleum basins in Rajasthan, India and World • Distribution of radioactive mineral deposits in Rajasthan, India and World • Identify and describe coal and radioactive minerals in hand specimen. • Calculate and able to solve problems in reservoir volume and yield calculations.

		World • Identification of Coal and Radioactive minerals in hand specimen • Numerical exercises on reservoir volume and yield calculation. • To study coal samples under microscope (Coal Petrography) For Oceanography and Climatology • To emphasize on different climate regimes • To introduce different ocean current and their role on global and regional climate • To introduce major wind patterns on world map • To make them understand use of different proxies for establishing chronology • To introduce different proxies used for paleoceanographic and paleoclimatic interpretation	• To identify and describe various microlith types of the coal samples under microscope. For Oceanography and Climatology • The students will be able to understand the role of ocean atmosphere coupling and their importance in global climate. • The student will be able to solve numerical exercises related to proxy interpretation and proxy correlation • The students will be able to establish chronology with the help of proxies.

Skill Papers

Course /Paper Code	Course /Paper Name	Outcome of Course
MT2GEO07-SE01	Geological and Mining Consultancy	Students learn about ore reserve estimation and planning of mine
