

MGE508:OCEAN ANDATMOSPHERICSSCIENCE(OpenElective)

Skills, employability and entrepreneurship: This paper is useful to the sister department students of the Earth Science, such as chemistry, physics, life sciences, statistics, computer as well as computing sciences. Usually science students other than earth science qualify NET exams/interviews in the institutes join earth science related organizations, and they have to learn earth, atmosphere and ocean science in their area of research. However, with the knowledge of this subject (earth science), students can perform better in their career thereby utilizing the intensity of studying the interdisciplinary science. Students have employability in many branches of science in different government organizations and MNCs.

OCEANOGRAPHY

Unit 1	Physical Oceanography-Physical properties of seawater. Waves, tides and currents. Coastal protection and management.	6 hrs
Unit 2	Chemical Oceanography - Composition of seawater: Constancy of composition of seawater and its limitations. Distribution of elements in seawater and biogeochemical processes regulating the composition and climate change. Residence times of elements in the ocean and its importance. Tracers for understanding the present and past oceanographic processes.	6 hrs
Unit 3	Biological and Geological Oceanography- Introduction, classification of marine life. Primary, secondary and tertiary production. Planktonic and benthic life in the ocean. Diversity index and its use in biological oceanography, food-web. Geological oceanography: Origin and evolution of the ocean floor. Continental drift, sea-floor spreading and plate tectonics. Ocean morphological features, development and significance.	6 hrs
Unit 4	Marine mineral resources: Distribution and classification of minerals of economic importance in different oceanographic settings: Seawater as a source of elements/minerals. Placer and heavy mineral deposits, petroleum and coal, phosphorites, gas hydrates, poly-metallic nodules, metals enriched crusts, hydrothermal and metalliferous sediments. Interactive sessions of teaching to enhance students-teacher interactions through hands-on demonstrations and exercises in the recent advancement of the subject related to the curriculum.	6 hrs

ATMOSPHERIC SCIENCE

Unit 5	Introduction to atmospheric Science - Structure and composition of the atmosphere. Processes regulating the composition of the atmosphere, and human interference - Greenhouse effect, ozone hole and global warming. Introduction to meteorology and elements of the weather system.	8 hrs
Unit 6	Climatology and Paleoclimatology: Difference between weather and climate. Climate and its principles of classification. Climate change, climate cycles and tools/proxies for studying paleoclimatology. Interactive sessions of teaching to enhance students-teacher interactions through hands-on demonstrations and exercises in the recent advancement of the subject related to the curriculum.	8 hrs