GIS 454: APPLIED GEOMORPHOLOGY AND GEOENVIRONMENTAL SCIENCE

Skills, employability and entrepreneurship: The applied geomorphology course provides a comprehensive understanding of the processes of Earth leading to the formation of landforms, including the formation of continents and oceans. Whereas, the geo-environmental science course is an interdisciplinary science connected with chemistry, physics, life science, geoscience, and computer science, especially instrumental for assessing human impacts on the natural environment. Students who qualify this course have promising careers in geomorphology, environmental and environmental research laboratories of private and government sectors.

Unit 1	Concepts of modern Geomorphology: Geomorphology and its applications in natural resources inventory. Geomorphology and its applications to Geoinformatics.	06 hrs
Unit 2	Geomorphic Environments: The Fluvial systems, Coastal and Marine geomorphology. Fluvial, Aeolian, Glacial, Karst and Dune Environments. Mid Oceanic. Ridges, Ocean Floor Topography. Geomorphology and GIS in exploration of the natural environment. Impact of Slope, Badlands, Pediments, Streams in Geomorphic Evolution.	06 hrs
Unit 3	Geomorphic controls on the groundwater resources of Coastal, Island and Hinter land terrains. Geomorphological factors to be considered while selecting the solid waste disposal sites. Solid waste management and its impaction on local and regional geomorphology. Geo-hazards and geomorphic controls. Application of Remote Sensing and GIS in quantitative and Quantitative interpretations of 'risk area mapping' including forest fires, floods, earthquakes and Tsunami effected terrains.	06 hrs
Unit 4	General Introduction: Definition of Environment, Environmental Pollutant, Environmental Pollution, Environment–Handling, Hazardous substance.	06 hrs
Unit 5	Environment Management Plan: Concepts and use of EMP in coastal and marine environments.	06 hrs
Unit 6	Environment Impact Assessment Act: Definition, use and implementation for specific areas such as Marine Environments, Ports, Harbours, Recreation, Water Quality Standards for class SW-I waters, SW-II, SW-III, SW-IV, SW-V.etc., Noise Standards.	06 hrs
Unit 7	Coastal Regulation Zones: Concept of coastal Regulation Zones. Classification of Zones, Criteria of Zonation and Evolution of CRZ norms. Application of cartography, Remote sensing and GIS in mapping of Coastal Regulation Zones.	06 hrs
Unit 8	Anthropogenic and Natural Environmental Hazards: Reconnaissance mapping of Landslides and use of DEM. Use of GIS and Remote sensing in detection of water– spread areas including monitoring flood scenarios. Use of high resolution satellite data (IKONOS) and other digital data products in assessing damage due to earthquakes, forest fires, flooding, etc. Impacts of Open-cast Mining and monitoring through multi-dated Remote Sensing and GIS techniques.	06 hrs