MANGALORE UNIVERSITY

DEPARTMENT OF MARINE GEOLOGY

MSc GEOINFORMATICS

GIE 457: GEOINFORMATICS OF NATURAL RESOURCES

(OPEN ELECTIVE)

Course Outcome:

CO1: Student will understand the basic of Geoinformatics (RS, GIS, GPs, and Computer Application) and how best this technology can be effectively used in natural resources mapping/inventory.

CO2: Geoinformatics and other Information Sciences. Geoinformatics-Spatial and Non – Spatial data Management. Spatial information Technology

Unit 1	**Definition** of data and information, historical evolution and need for information, Basic Concepts of Spatial Data and a spatial data, spatial information. sources of spatial data- survey data, air photos, satellite images and field data	6 hrs
Unit 2	Scope and Importance of Geoinformatics; Basic concepts of remote sensing; aerial photography and satellite remote sensing. Indian Space Program and Indian remote sensing satellites	6 hrs
Unit 3	**Principles of Thermal and Microwave Remote Sensing:** Introduction, Black body radiation, Temperature Radiations from the earth's surface, Applications of thermal remote sensing. Basic concepts of microwave remote sensing, Real Aperture Radars and Synthetic Aperture Radars, Microwave sensors, Interferometry. Applications of Microwave Remote Sensing. Visual and digital image analysis techniques.	6 hrs
Unit 4	Map Concept: Map features, scale, resolution, accuracy, projection and database extent. Map Projection and parameters: Geographical co-ordinate system, spheroid and spheres. Types of projection and parameters. Indian geodetic system and Everest spheroid, world geodetic system -084 (WGS-084)	6 hrs

Unit 5	Geographic Information System: Definition, components, packages, capabilities and purpose of GIS. Data Models: Spatial and non-spatial databases. Vector and Raster models. Applicationand limitations of GIS	6 hrs
Unit 6	Fundamentals of GPS- Introduction, space segments, user segments and control segments, observation principle and signal structure, accuracy of GPS measurements, point positioning and relative positioning, methods of surveying with GPS, Static and Kinematic positioning, navigation with GPS, differential GPS, navigational receivers	6 hrs
Unit 7	Geoinformatics and other Information Sciences. Geoinformatics- Spatial and Non –Spatial data Management. Spatial information Technology	6 hrs
Unit 8	Applications of Geoinformatics: Geoinformatics technologies and the technologies used in Geographical Studies.	6 hrs

References

1. Goodchild M.F. and Kemp K – 'Developing a curriculum in GIS: The NCGIA Core Curriculum Project', University of California, Santa, Barbara 1990.
2. Ian Haywood Cornelius and Steve Carver – An introduction to GIS, Longman, New York, 2000.
3. Misra HC – A Handbook on GIS, GIS India, Hyderabad, 1995.
4. Smith T.R. and Piquet, GIS, London Press, London, 19085.
5. Taylor DRF – GIS: The Micro computer and Modern Cartography, Pergamon Press, Oxford, 1991.
6. Heywood I, et al, An Introduction to Geographical Information System,
7. Longman, New Delhi, 19908.
8. 7. Lo CP & Young AKW, Concepts & Techniques of Geographical Information
9. Prentice Hall of India, New Delhi – 2003.