Semester:	3		
Course Code:	ENCM 21743		
Course Name:	GIS and Remote Sensing		
Credit Value:	3		
Status:	Compulsory		
Pre-requisite:	ENCM 12742		
Co-requisite:	None		
Hourly Breakdown:	Theory	Practical	Independent Learning
	30	45	75

Intended Learning Outcomes:

After completion of this course unit, student will be able to:

1. describe concepts of GIS and remote sensing,
2. explain the spatial data models,
3. identify appropriate spatial methods used in environmental applications,
4. demonstrate the skills in using GPS technology, and
5. apply knowledge of geoinformatics to solve simple environmental issues.

Course Content:

GIS definitions, advantages, GIS applications, Spatial questions, Workflow in GIS. Map components and mapping procedure, Cartography. GIS components; Hardware, software, methods, data and user. Spatial data models; Raster and Vector models, advantages and disadvantages of data models. Map Projection. Spatial data: Sources, capturing methods, data editing methods. Spatial data analysis: Distances, area, perimeter, queries, reclassification, buffering, overlay. Spatial surfaces: Interpolation. DEM. Slope. Aspect. Visibility analysis. Soil water accumilation and catchment derivation. Web GIS. Internet GIS. Public participatory GIS. GPS and applications. Remote Sensing and satellite remote sensing process, applications of Remote sensing, Electromagnetic spectrum; Regions. Atmospheric windows. Target and sensor systems. Characteristics of Satellite images; spatial, spectral, radiometric and temporal resolutions. Spectral signature.

Laboratory sessions using a GIS software: Exploring the GIS software. Preparation of layer maps. Georeferencing. Updating the geodatabase. Data analysis: Buffering, interpolation, weighted overlay, image classification. Modelling habitat suitability for faunal species using available data. Mapping species distributions. Use of GIS, remote sensing and GPS for environmental conservation and management activities.

Teaching /Learning Methods:
A combination of lectures, practical sessions, computer-based learning, assignments, case studies and group discussions.

Assessment Strategy:
Continuous assessment and end of semester examination. Percentage given for each sub-component indicates the percent contribution to the final marks.

Continuous Assessment	Final Assessment
30 %	70 %

Details:	Theory	Practical	Other
Assignments 10 Case study 20	50	20	-

Recommended Readings:

1. Burrough, P. A., & R. A. McDonnell (2011). Principles of Geographical Information Systems; Spatial Information Systems and Geostatistics. 2nd edition. Oxford University Press. UK.
2. Fu, P (2010). Web GIS: Principles &Applications. ESRI press, USA.
3. Gorr, W. L (2013). GIS tutorial 1; Basic workbook, 10.1 Edition. ESRI press, USA.
4. Heywood, I., S. Cornelius, & S. Carver (2013). An Introduction to Geographical Information Systems. 4th edition. Pearson education Ltd., UK.
5. Law, M (2013). Getting to know ArcGIS for desktop. ESRI press, USA.
6. Recently published relevant scholarly reviews and research paper articles from peer reviewed scientific journals.