Course Title	Environmental GIS			Course Code	BST 32413		
Year	3	Semester	2	Credits	03	Theory (hr)	30
						Practical (hr)	30
						Independent Learning (hr)	

Aim of the Course:

To provide the basic knowledge of 'Geographic Information Systems' (GIS), 'Geographic Positioning Systems' (GPS), 'Remote Sensing' and applications of Geospatial modeling

Intended Learning Outcomes:

After completion of this course, the learner should be able to:

- Define the basic components of GISc.
- Describe the fundamentals and components of GIS and GPS.
- Identify the emerging areas in global navigation systems.
- Describe the fundamentals and components of Remote Sensing.
- Describe the fundamentals of spatial statistics.
- Describe the digital terrain modeling.

Course Capsule:

Theory
Definition, history, practical benefits, components of GIS, GPS and RS; Data models in GIS, Spatial database management systems, Components of GPS; Coordinate systems and map projections; Differential and real time kinematic GPS, Other global navigation systems; Types of resolutions in Satellite Remote Sensing; Satellite image pre-processing and interpretation; Image classification: Part 1 - Pixel based and Image classification: Part 2 - Post classification correction and accuracy assessment; Object based image classification and other emerging areas; Satellite remote sensing indexes and their applications; Geospatial modeling: Introduction to spatial statistics, digital terrain modeling; Applications of geospatial modeling: getting geospatial data from different sources, standardization and data interoperability, Steps towards GIS project and project evaluation; Digital soil mapping, Land use planning, watershed management, plantation management, suitability mapping, land use / land cover modeling

Practical
Components of GIS; Data models in GIS, Spatial database management systems; Fundamentals and components of GPS; Coordinate systems and map projections; Differential and real time kinematic GPS, Types of resolutions in Satellite Remote Sensing, Introduction of satellite remote sensing indexes and their applications in agriculture and environment; Introduction to spatial statistics and digital terrain modeling; Case studies: Digital soil mapping, Land use planning, watershed management, plantation management, suitability mapping, land use / land cover modeling

Assessment:

Continuous assessment: 30%
End semester assessment: 70%