Program Educational Objectives (PEOS):

PEO1: To prepare students to develop a strong background in geo-informatics, remote sensing and navigational surveying and in software development/IT, IT related areas/IoT.

PEO2: To train the students in developing practical solutions to the problems of the society using the cutting- edge technology.

PEO3: To develop professional competence in students through life-long learning and professional experience.

PEO4: To maintain state-of the art R&D facilities for constant improvement in the quality of education research and development.

PEO5: To train the students in coding related activities of Geospatial Technology.

Program Outcomes(POs)

PO1: Ability to independently carry out research /investigation and development work to solve practical problems

PO2: Ability to write and present a technical report/document

PO3: Students should be able to demonstrate a higher degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.

PO4: Shall be able to employ necessary techniques, advanced equipment and software tools for state of the art engineering methodologies for natural resources management.

PO5: To Develop Programming skills among Geospatial Technologies for Employment opportunity.

Program Specific Outcomes (PSOs):

PSO1: Import knowledge of Geospatial Technologies as basic objective of education.

PSO2: To apply design principles and best practices for developing quality products for Geospatial Technologies applications.

PSO3: To adapt to emerging information and communication technologies (ICT) to innovate ideas and solutions to existing/novel.

PSO4: A Scientific attitude to make students create open minded and curiosity.

PSO5: Develop skills in practical work, softwares,equipments in laboratory use along with collection and interpretation of Geospatial data.

R 17 - Course Structure (CBCS) For PG Programmes

M.Tech (SIT) 2017

I Year, I Semester

Core Electives*/Open Elective:**

1. Object Oriented Programming Concepts(CE)
2. Urban Geographic Information System (OE)
3. Concepts of Big Data – Geostatistics (OE)
4. Data Analytics(CE)

Core Electives*/Open Elective:**

1. Visual C#.Net (CE)
2. GIS Analysis and Applications(OE)
3. Global Earth Observation Systems(OE)
4. Oceanography and Atmospheric Sciences(CE)

SIT – 1.1 –Introduction to Remote Sensing

Course Outcomes:

At the end of semester the students will have exposure to various components of Remote Sensing including

1. Basics of Remote sensing consisting of characteristics of Electromagnetic radiation, its interaction with the atmosphere and terrain features, resolution and Remote sensing systems.
2. Various earth observation systems, sensors ,scanning & orbiting mechanism are used in natural resources management and other applications.
3. Working principles of Thermal Infrared sensor and its applications
4. The background on microwave remote sensing and its applications
5. Familiarization with   hyper spectral remote sensing technology and various issues related to acquisition, processing and interpretation of the data.

SIT – 1.2 – Geographic Information System

Course Outcomes:

After conclusion of the semester the students will have sound background in the following aspects of GIS

1. Fundamentals of GIS.
2. Various types of GIS data model including devices.
3. Familiarization with various data types,editing.
4. Concepts and components of DBMS and entity modeling.
5. concepts of data mining and data marts.

SIT –1.3 – Photogrammetry

Course Outcomes:

The outcomes of the semester includes

1. Concept of relief displacement and basics of photogrammetry .
2. Principles of stereoscopic parallax correction and error evaluation.
3. To provide an overview and methods of planimetric mapping and concepts of photomaps and photo mosaics.
4. To study the mensuration of Terrain parameters from Tilted photographs
5. To familiarize the students with fundamental and working principles of Stereoscopic Plotting Instruments

SIT 1.4 - [Elective] - Object Oriented Programming Concepts

Course Outcomes:

At the end of semester the students will have exposure to various modules in object oriented programming including

1. Concept of classes,objects and files .
2. Working with files and strings.
3. To provide an overview of |Java and its packages
4. Concept of Java AWT controls,Layouts .
5. To familiarize the students working with Javascript.

SIT-1.5 – [Elective] - Urban GIS

Course Outcomes:

At the end of semester the students will have exposure to various components of urban GIS including
1. Introduction to urban infrastructure and utilities and the planning guidelines developed by Ministry of Housing and Urban Affairs.

2. Familiarization with urban amenities.
3. Introduction to GIS and Web GIS for urban planning.
4. To comprehension of the health of urban environment using GIS.
5.

SIT- [Elective] – Concepts of Big Data- Geo Statistics

Course Outcomes:

At the end of semester the students will have exposure to various components of Big data including

1. Sound background in Big data.
2. Hypothesis testing and regression
3. Advanced image classification techniques
4. Working principles of big data representation, computation and visualization
5. Concepts of Networks and graphical models

Course Outcomes: At the end of semester the students will have exposure to various components of Data Analytics including Complexity and volume of Big data acquisition

1. various methods of data collection
2. Comprehension of the pre-processing Big data
3. Sound background of predictive analytics and descriptive analytics

SIT – 1.6 – Arc GIS Lab

COURSE OUTCOMES:
The students will be able to
    CO1: Prepare remote sensing data for analysis/ interpretation, and will
        be familiar with the topographic maps and thematic maps.
    CO2: Prepare base maps.
    CO3: Develop different thematic maps like drainage map, slope map,
        watershed map and landuse / landcover map.
    CO4: To analyze the change in terrain features/ land use/ land cover
        from multi-temporal and multispectral data, and map updation.
    CO5: Carry out GPS survey

SIT – 1.7 –User Interface Development Lab

COURSE OUTCOMES:
    The students will be able to
        CO1: Prepare User Interface web pages for interpretation of UI data
        CO2: Prepare static and dynamic web pages.

I Year, II Semester
SIT – 2.1- Digital Image Processing

Course Outcomes:

At the end of semester the students will have exposure to various components in Digital image processing including

1. Digital image format and image restoration
2. Familiarization with various image enhancement techniques including image fusion
3. To study in detail each of above mentioned themes i.e Image processing, Restoration, enhancement,
4. Image analysis/interpretation.
5. Validation of the results of image interpretation/analysis and change detection

SIT – 2.2 –Satellite Geodesy

Course Outcomes:

At the end of semester the students will have exposure to various components of satellite geodesy including

1. Fundamentals of satellite orbital motion.
2. Working principles of satellite orbital motions &GPS receivers
3. Processing navigational data and assessment of error budget
4. Knowledge of the role of permanent reference points in the context of satellite navigation, networks and its applications

SIT – 2.3 – Remote Sensing Applications

Course Outcomes:

The conclusion of semester will lead to sound knowledge of remote sensing applications in natural resources and environment by way of

1. Acquiring conceptual framework for interpretation and/or analysis of remote sensing data
2. Scientific background of various natural resources and utility of remotesensing in development of thematic maps and generation of their thematic maps.
3. Having a future perspective of applications of geo spatial technology .

SIT 2.4 - [ELECTIVE]– Visual C# .NET

Course Outcomes:

At the end of semester the students will have exposure to various modules of visual C#.NET including

1. Basics of Dot Net framework and also working with CLR.
2. Familiarize the concepts of oops in DotNet.
3. Working principles of Data Base programming
4. The background of working with windows services.
5. Familiarization with assemblies and file concepts.

Course Outcomes:

At the end of semester the students will have exposure to various components of GIS analysis and applications including

1. Exposure to spatial analysis and spatial arrangements

2. Hands on experience on integration of spatial and attribute data for natural resource management.
3. Familiarization with various land information system, location based services applications.

4. Application of GIS in health and environment

SIT-[Elective]-Global Earth Observation Systems

Course Outcomes:

At the end of semester the students will have exposure to various components of GEOS including

1. Existing and emerging earth observation system.
2. IRNNS program and its data processing
3. Currently operating and future GEOS

SIT – [Elective] Ocenography and Atmospheric sciences

COURSE OUTCOMES:

At the end of semester the students will have exposure to

1. Introduction to atmospheric physics and its relevance in the solar system.
2. Recent trends in ocean physics.
3. Familiarization with world climatology.
4. Comprehension of ocean dynamics
5. Familiarization with the concept of Atmospheric dynamics

SIT – 2.6 –SIT LAB – III (DIGITAL IMAGE PROCESSING LABORATORY)

COURSE OUTCOMES:

The students will have hands –on experience in CO1: Data preparation for image analysis

CO2: Various types of digital image enhancements. CO3: Different digital image fusion techniques.

CO4: Digital image analysis- unsupervised and supervised approaches. CO5: Change detection techniques and spatial model make

SIT – 2.7 – SIT LAB –IV-GNSS Lab:

COURSE OUTCOMES:

Students will be able to

CO1: Familiarize various contents of GNSS CO2: Handling of the DGPS & RTK'S CO3: Handling of RTKP

CO4: Able to Handle different file formats CO5: Integrate Remote sensing data with GNSS