M.Tech. Remote Sensing course

An applicant for admission into the M.Tech. Remote Sensing should have at least a second class degree with not less than 55% marks in either:

- B.E. / B.Tech in any engineering
- Master’s degree in science

A) A regular course of study means attendance is not less than 75 per cent of lectures, practical, drawing exercises, workshop and practical and field and project work, if any, in such semester in such subject, according to the scheme of Instruction to be notified by the Head of the Institution, provided that in special cases for sufficient cause again the Vice-Chancellor may on the recommendation of the Principal, condone the deficiency in attendance, not exceeding 10 per cent, for reasons of ill-health when the application is submitted at the time of the actual illness and is supported by an authorized Medical Officer approved by the Principal.

B) However, in the case of students, who participate in activities, such as NCC, Inter-University Tournaments, National Tournaments Inter University Courses, NSS and any such other activities deemed genuine by the Head of the Department Concerned, the period of their absence for the above purpose can be condoned by the Principal on the recommendation of the Head of the Department.

A) There shall be a written examination at the end of each of the first two semester in the subjects offered in the respective semesters.

B) The candidates are required to submit, at the end of the third semester, three copies (as prescribed) of the dissertation on or before a date to be notified by the University from time to time, accompanied by three copies of a short summary, all of which will be retained by the University.
C) At the end of the third semester, there shall be (1) an evaluation of the dissertation, and (2) a viva voce on the dissertation and related subjects.

D) Marks for sessional work shall be allotted by the Teaching Staff of the college on the basis of class work, slip tests, practical works, etc., and the list of marks shall be sent to the Registrar, before the commencement of the written examination.

E) For taking the examination in the theory in any subject candidates shall be required to obtain a minimum of 50 per cent in sessional work in that subject, failing which, they shall be required to repeat the course in that subject in the semester in which it is offered again for study.

F) Candidates who fail to secure the minimum prescribed marks in that subject will be permitted to continue the studies in the next semester. They shall, however, be required to pass the examination in the subjects in which they have failed, in the subsequent examination.

G) Candidates who have secured not less than 40 per cent in any of the theory papers and not less than 50 per cent of the total maximum marks of the theory paper and sessionals put together shall be declared to have passed the examination in that subject. In the case of subjects in which no written examination is prescribed, candidates should secure 50 per cent of the marks allotted to each of these subjects.

A) The evaluation of project work / Research work will be done by conducting viva voce examination at the end of third semester by a Board of Examiners consisting of:

- Head of the Department
- Chairman, Board of Studies
- The Internal Research Director
- One or two experts from outside the Department / University nominated by the Vice-Chancellor.
- The dissertation shall be either "recommended", or "Not recommended".

Candidates who have passed all the subjects of the course and secured not less than 60 per cent of the aggregate of marks, shall be declared to have passed in first class. All the remaining successful candidates shall be declared to have passed in second class.

Candidates who fail in the subjects of any semester will be deemed to have been conditionally promoted. They shall however, have to appear and pass only in the subjects in which they have failed. Candidates have to take the examination in the subjects in which they have failed during these semesters, when the University conducts the examinations in those subjects.
M.Tech. Remote Sensing (Part-time)
Scheme of Instructions /Examinations as per credit system w.e.f. admitted batch 2007-2008.

<table>
<thead>
<tr>
<th>Code No.</th>
<th>Name of the course</th>
<th>Periods per week</th>
<th>Examination Duration Hours</th>
<th>Max. marks</th>
<th>Credit</th>
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<td>Lectures Lab.</td>
<td>Semester end examination</td>
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<td>I SEMESTER</td>
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<tr>
<td>RSP 101</td>
<td>Mathematics &amp; Statistics</td>
<td>4 -</td>
<td>3</td>
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<td>Computer Fundamentals</td>
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<td>RS P104</td>
<td>Map Analysis Practicals</td>
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<tr>
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<td>Earth Systems</td>
<td>4 -</td>
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<tr>
<td>RS P202</td>
<td>Principles of Photogrammetry and Photo Interpretation</td>
<td>4 -</td>
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<td>Principles of Remote Sensing</td>
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<td>RS P205</td>
<td>Photo interpretation and Remote Sensing Practical</td>
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<td>Geographic Information system Practicals</td>
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<td>RSP 301</td>
<td>Digital Image Processing</td>
<td>4 -</td>
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<tr>
<td>RSP 302</td>
<td>Remote Sensing Applications</td>
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<td>3</td>
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<td>RSP 303</td>
<td>Satellite Meteorology Agriculture and Oceanography</td>
<td>4 -</td>
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<tr>
<td>RSP 304</td>
<td>1) Coastal Zone Management (or) 2) Natural Disaster Management (Elective)</td>
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<td>IV SEMESTER</td>
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<td>PROJECT/ DISSERTATION WORK AND VIVA-VOCE</td>
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<td>Total Credits</td>
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SEMESTER I
Course No. RSP 101 - Mathematics and Statistics

Unit-1
Fundamentals: Sets and Subsets, Sequences, Operations on Sets; Counting sequences, and subsets (permutations and combinations) Algorithms and Psudocode: Induction and Recursion: Division in the integers: Matrices

Unit-2
Relations and Digraphs; Product sets & Paths in Relations & Digraphs; Properties of Relations; Equivalence Relations; Computer Representation and Digraphs; Manipulation of Relations; Transitive closure and Warshall's Algorithm.

Unit-3
a) Functions;
Functions - The Pigeonhole principle; Permutations
b) Trees & Languages
Trees; Labeled Trees; Language; Representation of special grammars and Languages;
Tree searching; Undirected Trees

Unit-4
Measurement of Central Tendency, Mean, Mode, Median, Geometric mean and Harmonic Mean.
Measures of variations - Range, Quintile deviations, Mean deviation, Standard deviation and variance, Coefficient of variations.
Probability concepts - Additions and multiplication laws, Basic problems on these laws. Concept of random variables and probability distribution.

Unit-5
1. Theoretical distribution; Binomial, Poisson and normal with application.
3. Regression Analysis - Linear regression analysis; Curve fitting concept of multiple regression analysis.

Text Books
1) Statistics by S.P. Gupta
2) Statistical theory and methods by SANCHETIC and Kapoor
3) Statistics by S.C.Gupta
Course No. RSP 102 - Fundamentals of Computers

Unit-1
Introduction to Computers / Data representation, Conversion of data. Memory organization, Different secondary storage devices and Magnetic media devices - Magnetic tape; CCTs, DATs, Cartridges, Magneto-optical disks, CDs (read and write) ZIP drives, PHDs (Pocket Hard Disks), Floppies and DVDs.
Data Representation - Representation of Characters in Computers, Representation of Integers, Representation of Fractions, Hexadecimal Representation of Numbers, Decimal to Binary Conversion, Error Detecting Codes.
Computer Memory - Memory Cell, Memory Organization, Read-only Memory, Serial Access Memory, Physical Devices used to Construct Memories, Magnetic hard Disk, Floppy Disk Drives, Magnetic Tape Drives.

Unit-2
Binary Arithmetic, Complement representation, Boolean functions, Registers, I/O Devices Types and Printers.
Processor - Structure of Instructions, Description of a Processor, A Machine Language Program. An Algorithm to Simulate a Hypothetical Computer.

Unit-3
Operating System Concepts, Structures, Files, Directories, Process and Memory management.

Unit-4
Concepts of analysis of algorithms, fundamentals of data structures, arrays, stacks and queues.

Unit-5

Text Books
1. Fundamentals of data structures by Horowitz F and Sahani S
2. Modern Operating Systems by Andres S Tanenbanm
3. Fundamentals of computers. V. Rajaraman

Course No. RS 103 - Computer Programming in 'C' Practical

1. Introduction
2. Control Statements
3. Arrays
4. Functions
5. Storage classes
6. Pointer variables
7. Structures and Union
8. Command line Arguments
9. File Handling
10. Processor Devices & Data structures using C
Course No. RSP 104

Map Analysis Practical

1. Study of topographic maps
2. Morphometric analysis of a drainage basin
3. Slope analysis of a drainage basin
4. Analysis rainfall data
5. Estimation of evaporation and evapotranspiration
6. Determination of various meteorological instruments and data collection
7. Visit to meteorological data collection platform (INSAT)

SEMESTER II

Course No. RSP 201 - Earth Systems

Unit-1
a) Earth - Orbit, Rotation, Time
b) Oceans - Depth, Bottom relief
c) Oceans - Temperature, Salinity, Density of seawater
d) Oceans - Waves, Tides, Currents
e) Climate and the atmosphere - scope, origin and nature, composition & vertical division of the atmosphere.

Unit-2
a) Meteorological parameters and their measurements - pressure, temperature, wind, precipitation, humidity, and radiation.
b) Geographical, seasonal and vertical distribution of temperature, pressure, wind and precipitation.
c) Solar and terrestrial radiation: Distribution in clear, cloudy and average conditions. Mean heat balance. Role of ozone, water vapour and carbon dioxide.

Unit-3
a) Climate and agricultural factors in crop production.
b) Monsoons : Concepts of the origin of monsoon - Indian Monsoons
c) Fundamental concepts of Geomorphology
d) Weathering, Mass wasting and erosion.

Unit-4
a) Wind and associated land forms
b) Oceans and associated land forms
c) Land forms associated with faults and folds
d) Rivers and associated land forms
e) Glaciers associated land forms

Unit-5
a) Soil & Regolith, Soil forming processes, Soil profile, Soil components.
b) Pedogenic regimes.
c) Classification of soils
d) Soils of India
List of Text Books
1. Structural Geology by Billings, M. 1984
2. Earth History & Plate Tectonics by Carl K. Seyfert, Leslie A. Sirkin
4. General Climatology by H.J. Critchfield
5. Physical Geology by Arthur Holmes
6. Physical Geography by Stahler

Course No. RSP 202 Principles of Photogrammetry and Photo interpretation

UNIT- I
Fundamentals of Photogrammetry and Photo interpretation – types of photographs; Vertical photographs – principal point; scale; Stereoscopvy; Vertical exaggeration – factors involved and determination; Overlap, sidelap and flight planning

UNIT- II
Geometric elements of vertical aerial photographs; Relief Displacement on vertical aerial photographs; Parallax and parallax measurement – monoscopic and stereoscopic methods; Determination of horizontal ground length, direction and angles from photo coordinates;

UNIT - III
Aerial mosaics: comparison with maps; Elements of aerial photo interpretation – (a) landforms; (b) surface drainage patterns; (c) erosion features, (d) gray tones; (e) miscellaneous elements.

UNIT - IV
Digital Photogrammetry: definition and scope; Photographs and images; Geo-referencing – Interior orientation, exterior orientation; aerotriangulation – single frame and block triangulation - pass points, tie points; ground control points; Satellite photogrammetry

UNIT - V
3-D surface modeling – DEMs, DSMs and DTMs; Triangulated irregular networks; Gridded surfaces; interpolation methods; Contour representation; Terrain visualization; DEM user applications.

Text Books
2. Elements of Photogrammetry, Paul R. Wolf, McGraw-Hill, 2000
**Course No. RSP 203 – Principles of Remote Sensing**

**Unit-I Basics of Remote Sensing**
Principles of Remote sensing, History of Remote sensing, Remote sensing in India,
- Electromagnetic Radiation and Electromagnetic Spectrum, EMR quantities: Nomenclature and Units
- Thermal Emission of Radiation, Radiation Principles (Plank’s Law, Stephen Boltzman law), Interaction of EMR with the Earth Surface (Wien’s displacement law, Kirchoff’s Law)
- Spectral signature, Reflectance characteristics of Earth's cover types, Remote sensing systems.

**PLATFORMS AND SENSORS**
Platforms, Remote sensing sensors, resolutions Across track and along the track scanning,
- Optical sensors,
- Thermal scanners
- Microwave sensing radar
- satellite missions: Landsat series, SPOT series, IRS satellite series, IKNOS, Metrological satellites

**Unit-II a) Data reception, Data processing & Data generation**
- Ground station, Data generation, Data processing & correction

**Radiometric and Geometric corrections**
- Radiometric corrections Random noise correction
- Atmospheric correction, Geometric errors and corrections,
- Distortion evaluated from tracking data, distortion evaluated from ground control Image correction.

**Ground Investigation in support of Remote sensing**
- Uses of ground data, calibration correction, Interpretation of properties, Training sets, Accuracy evaluation, test sites
- Ground truth Instruments and spectral signature,
- techniques and Instruments, Global Positioning system (GPS) – Fundamentals location Information,
- Spectral Reflectance and spectral signature of vegetation

**Unit-III Microwave Remote Sensing**
- Introduction - Electromagnetic spectrum, Airborne and Space borne radar systems basis instrumentation.
- System parameters - Wave length, Polarization, Resolutions, Radar geometry.
- Target parameters - Back scattering, Point target, Volume scattering, Penetration, Reflection, Bragg resonance, Cross swath variation. Speckle radiometric calibration.
- Radar - Grametry - Introduction, Mosaicing Stereoscope.
- Application : Geology, Forestry, Land use, Soils etc. Future trends and Research

**Unit-4 Thermal Imaging system**
IR - radiometers, Airborne and Satellite TTR scanner system
Characteristics of IR images
- i) Scanner distortion, ii) image irregularities, iii) Film density and recorded iv) Temperature ranges
Effects of weather on images
   i) Clouds, ii) Surface winds, iii) Penetration of smoke plumes
Interpretation of thermal imagery
   • Advantages of Thermal imagery

Unit-V: Image Interpretation
   • Introduction to image Interpretation
   • Basic principles of Image Interpretation
   • Elements of Image Interpretation
   • Techniques of image Interpretation
   • Interpretation Keys
   • Methods of searching and sequence of Interpretation
   • Methods of analysis and Reference levels
   • Computer compatible tapes – Band sequential format, Band interleaved by Line format, Run-length encoding format.
   • Hardcopy outputs – Generation of B/W and False Colour Composites. Generally supported scales of the data products, Information about annotation of the products.

List of Text Books

Course No. RSP 204 - Geographic Information Systems

Unit-1
a) Introduction to Data base systems - Data base system levels of abstraction in DBMS principles of data base. Model of real world. Introduction to data organization, information management system preliminary study of INGRES, ORACLE, RDBMS and DBASE.

Unit-2
b) Digital Elevation Models: The need of DEMs, methods of representing DEMs. Image methods, data sources and sampling methods for DEMs. Products that can be derived from a DEM. Automated landform delineation from DEMs.

c) Map projections in GIS

**Unit-3**

a) Data input, verification, storage and output: Data input, data verification, correction and storage data output; data user interfaces.


**Unit-4**

a) Data Quality, Errors and Natural Variation: Sources of error, Errors resulting from natural variation of from original measurements. Errors arising through processing, problem; and errors arising from overlay and boundary intersections. Errors resulting room rasterizing a vector map. Errors associated with overlaying two or more polygon networks. The nature of boundaries. The statistical nature of boundaries. Combining attributes from overlaid maps.

b) Classification methods: Classification, Multivariate analysis and classification, allocating individuals to existing classes. Expert systems for Geographical Information Systems. Classification methods in geographical information systems.

**Unit-5**

a) Methods of Spatial interpolation. The available methods for interpolation, global methods of interpolation, location interpolators, optimal interpolation methods using spatial auto covariance. Extensions of krigging to large areas. Comparing krigging with other interpolation techniques. Choosing a Geographic Information System. Designing the needs for GIS. The procedure to following when setting up a geographical information system.

b) Tools for Map analysis: Single maps, Map reclassification, operations and attribute tables, spatial topological and geometric modeling and operations on spatial Neighborhood. Tools for map Analysis: Map pairs, map overlay and map modeling correlation between two maps. Tools for map analysis: Multiple maps, types of models, Boolean logic models, Index overlay models, Fuzzy logic methods.

**List of Text books**

RSP 205 Photointerpretation and Remote Sensing Practicals

Testing stereo vision
Use of Lens stereoscope and Mirror stereoscope
Determination of vertical exaggeration
Use of Parallax Bar for height calculation from aerial photographs
Calculation of scale of the photographs
Marking Principal point and conjugate principal point on the stereopairs
Preparation of aerial mosaics
Interpretation of aerial photographs for identification of landforms of fluvial, Aeolian, glacial, coastal, volcanic and arid processes
Identification of tectonic elements from aerial photographs
Digital photogrammetry – digital image matching and collection of mass points
Construction digital terrain models
Application of DTMs – contour generation; fill; fly though; slope and aspect; viewshed analysis; watershed and drainage extraction; volumetric analysis; preparation of orthoimages.
Study of Remote Sensing Imagery for :
1. Identification of geological, geomorphologic and cultural forms (IRSIA & 1B)
2. Water resources studies (TMIRS & SPOT)
3. Environmental Impact assessment (SPOT)
4. The student should select a theme for visual interpretation and prepare a practical report as one of the inputs to the practical examination assessment.

RSP 206 - Geographic Information Systems (GIS) Practical

1. Familiarity with D Base Commands including record updating and processing.
2. Theme representation by usage of graphics command resources data maintenance - Theme filling and retrieval and usage.

Exercise: Development / updating of data base management software packages for a selected practical problem using available GIS package. Arc-info, Arc-View practice and ILWIS software packages
Creation of different spatial layers.
Map analysis.
SEMESTER III  
Course No. RSP 301 - Digital Image Processing

Unit-1
a) Introduction - Image processing display systems.
b) Initial statistical extraction - univariate and multivariate statistics, histograms and its significance in remote sensing data.
a) Preprocessing - Introduction, missing scan lies, desk tripping methods, geometric correction and registration, atmospheric corrections, illumination and view angle effects

Unit-2
a) Image reduction, image magnification, contrast enhancement; linear, non-linear, rationing, edge enhancement; linear, non-linear. low pass filters, high pass filters, edge detection, , point and neighborhood operation
a) Image transform - Arithmetic operations' based image transforms, principal component analysis, discriminate analysis. Fourier transforms, Fast Fourier frequency domain filters and vegetation indices.

Unit-3
Image compression fundamentals: Coding, interpixel and Psychovisual redundancy, and fidelity criteria.
Image compression models: Source encoder and decoder, channel encoder decoder.
Elements of information theory: Measuring information, the information channel, fundamental coding thermos and using information theory.

Unit-4
a) Image segmentation: Detection of points, lines and edge detection and combined detection 
b) Edge linking and boundary detection: local processing, Global processing via Hough transform 
c) Thresholding: foundation, role of illumination, simple global thresholding, optimal thresholding . Split and merge and Texture based Segmentation.

Unit-5
Classification - Geometrical basis of classification, unsupervised classification, supervised classification techniques - training sample selection, parallelepiped classifier, cancroids classifier, maximum likelihood method, Hybrid methods and decision - tree classifiers. Use of external data, contextual information, feature - sub-feature study, classification accuracy. Change detection - the nature of change detection, change detection algorithms, image differencing, and image rationing classification comparisons. Hyper spectral remote sensing, Imaging Spectroscopy, Data Processing techniques-N-Dimensional Scatter plots, Spectral angle mapping, Spectral mixture analysis

List of Text Books

Course No. RS 302 - Remote Sensing Applications

Unit-1
1. Scope of Remote Sensing applications - potentials and limitations
2. Resource mapping and integrated information for sustainable development
4. Fundamental concepts of GPS, Various segments, Observation principle and signal Structure, Basic concepts of GPS Receiver and its components, Classification of GPS receivers.

Unit-2
Applications in land use and land cover analyses
1. Land use classification principles and systems
2. Mapping and monitoring of land use / land cover and regional planning
3. Urban land use, Urban sprawl and urban planning.

Unit-3
Water Resource Applications
1. Mapping, monitoring of surface water bodies, tanks, lakes / reservoirs
2. Snowmelt forecasting, Rainwater harvesting, Quantification
3. Hydrogeomorphic mapping, ground water zoning from unconsolidated, semi-consolidated and hard rocks.
4. Groundwater quantification

Unit-4
Coastal and near shore applications
1. Satellite sensors for Coastal zone environment
2. Coastal landforms and evolution
3. Coastal dynamics and shore line changes
4. Coastal wetland and Bioresources

Unit-5
Environmental applications
1. Mapping and monitoring of Natural hazards
   a) Cyclones / floods b) Droughts c) Landslides d) Volcanoes e) Earthquakes
2. Analysis of human-induced hazards
   a) Pollution b) Deforestation c) Erosion
d) Siltation e) Degradation of water bodies and wetlands

Text Books
2. Remote Sensing in hydrology, Engman, E.T. Gurney, R.J.
3. Remote Sensing in water management in command areas, Govardhan, V.

Reference material
Course No. RSP 303 Satellite Meteorology and Agriculture & Oceanography

Unit-1
1. Fundamentals of Remote Sensing in Meteorology
2. Meteorological satellite characteristics and their orbits, TIROS, NIMBUS, NOAA, TIROS N, SEASAT, GOES, METEOSAT, INSAT. Role of LANDSAT, SPOT and IRS in collecting meteorological, agricultural and oceanographic data.
4. Atmospheric temperature retrieval techniques and surface radiation studies.
5. Wind measuring techniques from satellite data.

Unit-2
1. Cloud classification techniques.
3. Interpretation of Satellite meteorological images for weather systems and cyclones.
5. Spectral behavior of different crops and vegetation in VIS, NIR, MIR, TIR and Microwave regions.

Unit-3

Unit-4
1. Principles of Remote Sensing of Sea
2. Visible wavelength ocean - color sensors: introduction to color sensors on Landsat, Coast zone color scanner (CZCS) on Nimbus, application and oceanographic uses of Land sat and CZCS data.
3. Introduction to infrared scanning radiometers, atmospheric correction and Sea - Surface temperature calibration techniques, interpretation and uses of SST data from satellites.
4. Passive microwave radiometers: Physical principles of passive microwave radiometry microwave radiometer design and oceanographic interpretation of microwave data.

Unit-5
1. Satellite altimetry of sea - surface topography: Application of altimetry to the study of ocean currents, tides, bathymetry and wave heights.
3. Introduction to Synthetic Aperture Radar, Principles of operation, SAR imaging of ocean waves, observations of ocean waves with Seasat SAR, Interpretation of ocean waves.
4. Introduction to microwave scatter meters, oceanographic application of scatterometer data. Application of wind and wave scatterometry.
List of Text Books
4. Remote Sensing in water management in command areas, Govardhan, V.

Reference Books
5. Environmental satellites,; systems data interpretation and applications, Jimmie D. Johnson, Frances, C. Parmenter, Ralph Anderson, Department of Commerce, NOAA.

Syllabus for Elective Subjects
Elective 1 – RSP 304.1 Coastal Zone Management

Unit 1
Coastal and littoral zones – definitions and scope of study
Shore zone processes – waves, tides and currents
Coastal landforms;
River deltas and dynamics of the delta-fringe coasts
coastal classification

Unit 2
Coastal wetlands – Mangrove swamps, marshes, lagoons, tidal channels/creeks and their significance in coastal stability and economic importance
Continental margins – forms and processes; territorial waters and Exclusive Economic Zone
Sea level changes – factors involved; effects of sea level oscillations on coastal zones

Unit 3
Coastal Hazards:
Storm surges and Tsunamis
Origin, propagation and run-up of tsunamis;
Tsunami impact – role of coastal topography and vegetation;
Global warming and Sea-level rise - impact on coastal zones; coastal vulnerability assessment
Coastal hazard preparedness – coastal protection, education and awareness of coastal communities

Unit 4
Human activity and coastal environment – deforestation, agriculture/aquaculture, pollution and coastal structures, and their effect on coastal zones
Coastal vegetation; shelter belts; coastal aquifers; fresh water-sea water interface
Morphology of Indian coasts
Unit 5
Coastal zone management – concepts, models and information systems
Application of remote sensing in coastal zone studies
Role of Geographic Information Systems in coastal zone studies

Text books
2. Deltas, Coleman, J.M., Continuing education Publication Co.Inc. 1976
5. Introduction to Marine Geology and Geomorphology, King, C.A.M., Edward Arnold, 1974

Elective 2 – RSP 304.2 - Natural Disaster Management

Unit-1
Various types of Natural Disasters - Cyclones, Floods and Tidal waves with most well known Indian examples, Classification of Disasters and nature of Impacts.

Unit-2
Various types of Natural Disasters - Earth quakes, land subsidence and Land slides, Forest fires, Drought with most well known Indian examples, Classifications and nature of impacts.

Unit-3
Vulnerability factors and Risk analysis of Natural disasters and Hazard estimations.

Unit-4
Natural disaster management plans, Shelterbelts, Special structures, Disaster preparedness and Mitigation.

Unit-5
Information needs of Disaster management, Remote Sensing Applications, GIS applications.

References
1. Krishna Prem & Bhanfari, N.M. (1967): Risk assessment due to strong Wing storms / Cyclones and preventive measures for Habitat Buildings; Proceedings volume 1 of International Conference on Habitat and sustainable Development, December 1-2-1997 organized by Institute of Engineers (India) and World Federation of Engineering Organisations.
RSP 305 - Digital Image Processing Practical

Programme writing in C. language for Data handling and processing of Remote Sensing data including histogram construction, scene enlargement, rationing, enhancement and application of spatial filters: transformations, colour display techniques, Radiometric correction techniques, for existing satellites. Segmentation, classification methods: supervised and unsupervised techniques for different applications.

RSP 306 Satellite Meteorology, Agriculture and Oceanography Practical

Mapping of cloud patterns and cloud types and weather systems
Rainfall monitoring using INSAT data
Surface water bodies mapping
Turbidity mapping in reservoirs, sea/ocean waters
Identification of erosion prone areas in watershed
GIS applications in watershed management and irrigation, command area development
Wetland mapping using satellite data
Mapping of water logged areas using remote sensing data
Flood mapping using remote sensing data
Sea surface temperature retrieval
Estimation of wind parameters
Crop and vegetation estimation and crop type identification and crop yield modeling

SEMESTERS IV
Dissertation and Viva Voce

A. Dissertation
The student for the fulfillment of M.Tech Degree in Remote Sensing, must carry out individual dissertation work.

B. Comprehensive Viva Voce
a) Viva Voce will be conducted to the student by the external examiner and the internal research guide along with the Head of the Department and Chairman Board of Studies, on the topic of the dissertation carried out by the student.