Unit 1
1.1 Basic concept of water resources: Hydrological cycle, Darcy's law
1.2 Porosity, permeability, transmissibility, Specific yield
1.3 Issues in water resources development, management and utilization
1.4 Spectral characteristics of water and Relevance of RS techniques for hydrological investigations

Unit 2
2.1 Ground water movement and factors affecting ground water occurrence
2.2 Types of aquifers, aquiclude, aquitard and aquifuge and Location of aquifers
2.3 Drainage mapping and Morphometric analysis
2.4 Hydrogeomorphological mapping and preparation of groundwater prospect maps

Unit 3
3.1 Remote Sensing in evaluating hydrogeological features and elements
3.2 Ground water targeting in various terrain types - hard rock terrain and in alluvial terrain
3.3 Water harvesting structures and optimum site selection for rain water harvesting
3.4 Estimation of evaporation and evapotranspiration – interpretation

Unit 4
4.1 Watershed management - introduction, philosophy and concept and Role of Remote Sensing in watershed conservation, planning and management
4.2 Watershed characterisation and mapping
4.3 Runoff estimates from watersheds
4.4 GIS database for watershed management

Unit 5
5.1 Snow – Snow in visible spectrum, middle infrared and microwave regions, Snow Mapping
5.2 Flood and flood plain mapping and zoning
5.3 Site location for river valley projects
5.4 Water quality monitoring and Hydrogeological modeling using RS and GIS

Books Recommended
Anji Reddy, M. 2004: Geoinformatics for environmental management. B.S. Publications
Chow, V.t., 1988: Advances in Hydro science McGraw Hill
Remote Sensing in Agriculture Soil and Land evaluation studies

Unit - 1
1.1 Remote Sensing in Agriculture – An Overview
1.2 Spectral characteristics of crops
1.3 Principles of crop identification and Crop acreage estimation
1.4 Crop yield modeling using Remote Sensing

Unit - 2
2.1 Crop condition and stress assessment using RS techniques
2.2 RS and GIS applications in Crop inventory
2.3 Agro-meteorology – its importance and application of RS in agro-meteorology
2.4 Drought assessment and monitoring through Remote Sensing

Unit - 3
3.1 Distribution of soil types in India and introduction of remote sensing in soil survey
3.2 Spectral characteristics of soil
3.3 Soil morphology and classification
3.4 Soil and water salinity

Unit - 4
4.1 Relationship of rock types and geomorphology to soil types
4.2 Soil erosion and erosion hazard assessment through Remote sensing
4.3 Soil moisture assessment using RS
4.4 Soil mapping using aerial and satellite remote sensing data

Unit - 5
5.1 Land degradation and erosion - degraded soils, their identification and mapping of degraded lands
5.2 Land use / land cover – Basic concept and classification
5.3 Land use / land cover mapping through remote sensing
5.4 Land evaluation for optimal land use planning

Books Recommended
Anji Reddy, M. 2004 : Geoinformatics for environmental management. B.S. Publications

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REMOTE SENSING IN FORESTRY

Unit – 1
1.1 Forestry – Introduction fundamental concept and Role of RS and GIS in forestry
1.2 Dynamics of forest ecosystem and forest canopy
1.3 Inventory of forest land, Temperate and tropical zones
1.4 Forest Classification, types and their distribution

Unit – 2
2.1 Photosynthesis fundamentals
2.2 Spectral characteristics of vegetation
2.3 Temporal characteristics of Vegetation
2.4 Vegetation indices

Unit – 3
3.1 Relationship of vegetation to rock types – geobotanical guides for rock and mineral identification
3.2 Vegetation type and density mapping / classification
3.3 Mapping of plant in stress condition
3.4 Forest cover mapping and change detection

Unit – 4
4.1 Microwave data interpretation in thick forest cover area
4.2 Seasonal plant condition and reflectance variation
4.3 Fores fire – identification, forecasting and Risk area mapping
4.4 Remote Sensing in forest damage assessment and disease detection

Unit – 5
5.1 Bio diversity characterisation and biomass estimation
5.2 Wildlife habitat mapping
5.3 Role of remote sensing in forest management and forest recreation
5.4 Forest Management Information System (FMIS)

Books Recommended
Anji Reddy, M. 2004 : Geoinformatics for environmental management. B.S. Publications

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Unit -1
1.1 Remote sensing in marine sciences – an Overview
1.2 Interaction of EMR spectrum with water
1.3 Ocean monitoring satellites and Coastal Sensing systems
1.4 Active Microwave Remote Sensing of the Sea

Unit -2
2.1 Ocean Colour mapping
2.2 Remote Sensing in Sea Surface Temperature Mapping
2.3 Remote Sensing in Suspended Sediment Concentration Mapping
2.4 Coastal/marine Bio-resource mapping

Unit -3
3.1 Coastal zone: Definition, Concept and Issues
3.2 Estimation of Wave, Current and Tide parameters by remote sensing
3.3 Coastal landforms analysis and shoreline changes
3.4 Applications of GIS and database design for coastal zone

Unit -4
4.1 Remote sensing applications in retrieval of wind data and air sea heat exchange
4.2 Sea Level Rise, Sea Surface Temperature, Fishery Forecasting.
4.3 Remote sensing applications in Coastal and Marine environment
4.4 Weather and Climate analysis

Unit -5
5.1 Potential fishing zone (PFZ) - Method and process
5.2 Indicators of Fish Potential
5.3 Potential fishing zone (PFZ), mapping using NDVI
5.4 Coastal change detection studies through RS & GIS

Books Recommended
Anji Reddy, M. 2004: Geoinformatics for environmental management. B.S. Publications
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