CE/BOS/ CE E 61/0210

K L UNIVERSITY

REMOTE SENSING AND GIS (CE E61)

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SYLLABUS

UNIT – 1 Introduction of Remote Sensing

Definition, History of Remote Sensing. Basic components of Remote sensing, Electromagnetic Remote sensing process, Passive and active remote sensing. Electromagnetic Spectrum, Spatial Resolution, Spectral Resolution and Radiometric Resolution, Characteristics of Various sensors and satellites: IRS, Fundamentals of Image Processing.

UNIT-II Remote Sensing and Image Interpretation

Introduction, Map as a model, Spatial elements and terminology, Classification of maps, Map scale, Spatial referencing system, Computers in map production, General software's in map production. General software's in map production. Types of data products; Image interpretation strategy, Levels of interpretation keys; Topography, types of Drainage Pattern and Texture, Erosion, Process of image interpretation; Basic elements of image interpretation. Overview on visual image interpretation equipment.

UNIT- III Fundamentals of GIS

A brief history of GIS, GIS architecture, Components of a GIS, GIS workflow, Theoretical models of GIS: Functional elements, Fundamental operations, Theoretical framework, GIS categories, Levels/scales of measurement. The data stream, Data input methods: Keyboard entry, Manual digitizing, Scanning and automatic digitizing

UNIT- IV Data Input, Data Editing and Data Quality

Stages of GIS data modeling; Graphic representation of Spatial Data, Raster data representation, Vector data representation, Spatial data models; Raster GIS models: Types of raster GIS models, Compact raster data models; Vector GIS models Data editing, Detecting and correcting errors, Data reduction and generalization Edge matching and Rubber sheeting, Components of data quality. Accuracy, Precision and resolution, Consistency, Completeness, Sources of error in GIS.

UNIT- V Data Modelling and Mapping (Applications)

Land use /Land cover studies, slope mapping, preparation of structures map, Ground water prospects mapping, Watershed management and Action plan, Water quality modeling, Salt Water intrusion models, pipeline alignment studies, Solid and hazardous waste disposal site selection, Landslides mapping, Urban planning and Management, GPS applications.

TEXT BOOKS:

1. Remote Sensing and Image Interpretation- 5th Edition by Lillesand, Kiefer and Chipman, Published by John Wiley and Sons, Inc, New York, 2007

2. Text book of Remote sensing and GIS – 3rd Edition by M. Anji Reddy, BS Publications, Hyderabad, 2010.

REFERENCE BOOKS:

1. Geoinformatics for Environmental management" by M. Anji Reddy, B.S Publications, Hyderabad

2. Remote Sensing and GIS- by B. Bhatia Published by Oxford University Press, 2009