

ಮೈಸೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ



UNIVERSITY OF MYSORE
(Estd.1916)

DIPLOMA
in
REMOTING SENSING



CHOICE BASED CREDIT SCHEME (CBCS)
CENTRE FOR GEOINFORMATICS TECHNOLOGY
DOS in Geography, Manasagangothri, University of Mysore, Mysuru – 570006

Diploma in Remote Sensing (DRS)
(Only during the Odd Semester)
For the students admitted to the academic year 2019-2020

ONE TERM COURSE

DRS-PAPER-I : BASICS OF REMOTE SENSING

Objective: *The objective of this theory paper is to make diploma students to familiar with basic concepts of Remote Sensing and to disseminate the theoretical skills which are necessary for remote sensing analysis and interpretation. So, that student will become flexible with subject and subject expertise in practical for learning.*

Introduction: Definitions, concepts, history and platforms of remote sensing, stages and advantages of remote sensing, physics of electromagnetic spectrum and regions; Satellites, orbits, types, characteristics, geometrical properties and resolutions.


Remote Sensing Technologies: Thermal remote sensing and governing principles; Microwave remote sensing, polarizations and advantages; LiDAR Remote sensing and its types;

Digital Image Processing: Formation of Image, Multispectral, pre-processing, image enhancement and classification; Visual Image Interpretation, stages, element and interpretation keys; generating thematic maps; thermal and radar image interpretation.

Aerial Remote Sensing: Basics of aerial Photography, Camera, Films, and Resolution; Unmanned Aerial Surveys, Drone Technologies and its data processing.

Reference:

1. **Digital Image Processing: A Remote Sensing Perspective** - Jensen, John R.
2. **Fundamentals of Remote Sensing and Air Photo Interpretation** -Avery, T.E.
3. **Introduction to Remote Sensing** -James B. Campbell
4. **Remote Sensing and GIS** - Bhatta, B.
5. **Remote Sensing and Image Interpretation** -Lillesand, T.M. &R.W.Kiefer


CHAIRMAN
Department of Geograph
University of Mysore
Mysuru 570006

DRS-PAPER-II : SATELLITE IMAGE PROCESSING (PRACTICAL)

Objective: *Remote Sensing is applied to solve geographical problems and issues in sustainable development. Remotely sensed data are manipulated for feature extraction, spatial analysis and raster based modelling for an effective decision and policy making.*

Image Acquisition: Obtaining remote sensing data from various satellites includes Landsat, IRS, MODIS Terra/Aqua, Terrain data from Cartosat - I, SRTM, ASTER, and Topographical Maps.

Image Pre-processing: Ground control points matching, Geometric correction; image rectification, realignment of images; Image enhancement through radiometric correction, panchromatic sharpening, Generation of composite images, mosaicking, obtaining area of interest.

Image Classification: Land use classification scheme; Unsupervised-Supervised classification and algorithms; Visual image interpretation and accuracy assessment of images.

Image Analysis: Spectral Indices, NDVI, NDWI, NDBI; Change Detection, Surface temperature and morphological studies.

Reference:

1. **Digital Image Processing: A Remote Sensing Perspective** - Jensen, John R.
2. **Fundamentals of Remote Sensing and Air Photo Interpretation** -Avery, T.E.
3. **Introduction to Remote Sensing** -James B. Campbell
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DRS-PAPER-III: APPLICATIONS OF REMOTE SENSING

Disaster Management: Earthquake prediction and post quake rehabilitation, disaster management, mapping tectonic lineament; Volcano field, mapping lava flows, volcano hazard management; Landslides mapping; soil erosion and sediment estimation;

Forestry and Agriculture: Forest cover mapping and monitoring, estimation of biomass wildlife tracking, forest fire surveillance, encroachment mapping and forecasting; Agro-climatic zonation, crop acreage estimation, RS based yield model, RS basis for crop insurance claim, damage assessment; crop stress detection, precision agriculture.

Urban Planning and Mapping: Importance and types of plans, urban and regional planning, LU/LC mapping, urban design, urban site selection for urban development, site suitability analysis for utilities and civic amenities; Urban mapping: physical structure and composition of urban areas, urbanization process, growth trend, problems of urbanization, urban sprawl and associated problems.

Irrigation and Watershed: Mapping and monitoring of catchment and command areas, land irrigability mapping, agriculture water demand estimation for different crops, tank information system, wetland mapping, siltation mapping; Watershed: delineation, morphometric analysis, rainfall-surface runoff model, reservoir sedimentation, water-harvesting structures, watershed development planning, mapping of drought prone areas.

REFERENCES:

1. **Action Planning for Cities: A Guide to Community Practice** - Hamdi, Nabeel
2. **Application of GIS in Hydrology and Water Resources Management** - K.Kovar
3. **Beach process and sedimentation** - Paul D.Kumar
4. **Disaster Management** - Gupta, H.K.
5. **GIS for Water Resources and Watershed Management** - John G Lyon
6. **GIS in oceanography & Fisheries** - Vasilis D. Valavanis
7. **Guidelines for land use planning**, UNFAO- FAO
8. **Introduction to Coastal Engineering and Management** - J. William Kamphuis
9. **Introduction to Environmental Remote Sensing** - Barrett E C
10. **Modeling in Resource Management and Environment** - Sharma H.S. and Binda P.R.
11. **Network Analysis in Geography** - Haggett, P. and Chorley, R.
12. **Remote sensing and urban analysis** - Jean-Paul Donnay, Michael John Barnsley
13. **The Environment as Hazards** - Kates, B.I and G.F. White.
14. **The Geography of Transport Systems** - Rodrique, Jean-Paul



DRS-PAPER-IV: REMOTE SENSING CAPSTONE PROJECT

Project work: This is a Capstone Project of during the term of study; the candidate has to choose the research topics as per the study interest. The project is should be within the scope of Geoinformatics domain, the candidate has to outline the research problems, hypothesis, and current gap in research, scope and aim of the study.

After the research work, candidate has to submit the report and it should contain diagrams and tables (Max: 40 pages) and text (Max: 50 pages). **Seminars** are a part of Project work in which seminars have specific purposes. Students make power point presentations on their chosen theme of research for project work, outlining the background, rationale and objectives of research, on their chosen Methodology and the rationale behind them and on their Draft Final report at the end of the semester under the guidance and supervision of their tutors/advisors/guides.

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