DIPLOMA IN REMOTE SENSING (DRS)
(ODD SEMESTERS ONLY)

Delivered at
CENTRE FOR GEOINFORMATICS TECHNOLOGY
DOS in Geography, Manasagangothri, University of Mysore, Mysuru – 570006

Preamble:

University of Mysore approved Centre for Geoinformatics Technology (CGT) as a teaching and research centre housed at DOS in Geography, MGM. Currently CGT, offering M.Sc in GIS and P.G.Diploma in GIS. Being one of the important courses for the current technology era, there is an enormous amount of job vacancies are listed and majorly adopted in but not limited to Survey of India, Space Application Centre (SAC), ISRO, Indian Meteorological Department, Public Works Department(PWD), KPTCL, Central and State Pollution Control Board, Central Groundwater Board, Census of India, Karnataka IT&BT, MUDA, MCC, Forest Department, Tourism Department, GKVK, Health department, Department of Space Science and Technology (DST), National Institute of Disaster Management (NIDM), IISc and IIT's. Based on the technology adaptation at various sectors, CGT have a continues demands from various working professionals to get the course but currently CGT offering regular course only. Based on this situation CGT is indebted to offer Evening Diploma courses for working professionals and academic researchers as per their convenience.

Course Structure:

Course Delivery	**Diploma in Remote Sensing (DRS)**	July to December
Course Structure	Choice Based Credit System	16 Credits / Course
Time:	Evening Batches, weekly 6 days (Total 3 hours per day)	5.30pm – 8.30pm
Duration:	16 Weeks/ Course	
Eligibility:	• Working Professionals with any graduate degree or higher from any recognised Universities or equivalent. • Students pursuing graduation (UG) or Higher on regular basis can also apply for the course. • Admission eligibility is as per University of Mysore.	
Maximum Intake	25 / Course / Term	
Course Fee	As per the University (which may change time to time)	

Note: The Course Structure and Regulations are approved by BOS in GIS committee and meeting held on 13th December 2018 (Thursday), at GIS Lab, Centre for Geoinformatics Technology, DOS in Geography, Manasagangothri, Mysuru.

SYLLABUS DETAILS

		Diploma in Remote Sensing (DRS)	
Sl. No	**Type**	**Paper Name**	**Pattern (L:T:P)**
1	Theory	Basics of Remote Sensing	3:1:0
2	Practical	Satellite Image Processing	0:1:3
3	Theory	Applications of Remote Sensing	3:1:0
4	Project	Remote Sensing Capstone Project	0:1:3
		Total Credits	16

Tentative Regulations:

- The course of study for the Diploma in Remote Sensing (DRS) shall extend over a period of one term (Odd semester – July to December) and Diploma in Geographical Information Science (DGIS) shall extend over a period of one term (Even semester – January to June) , Each term course shall be of sixteen weeks duration. The academic calendar shall be as notified by the university from time to time.

- DRS and DGIS are not conducted simultaneously and it is clearly mentioned above that is conducted based on Odd-Even Term.

- The selection of eligible candidates for admission to diploma course shall be based on merit–cum-reservation policy of the Government of Karnataka and University of Mysore from time to time and there is no entrance examination of admission. At the exceptional case, if number of applications are less than 20. Then University shall permit applicants to consider all the applications as General Merit and direct admission were made without making seat matrix.

- Admission is considered based on the above said qualification and there is no requirement to hold the marks cards of previous year, hence candidate need to produce original certificates for the verification at the time of admission. Transfer Certificates/Migration Certificates are not required for the admission. Hence, working professional need to submit the NOC from the employer.

- Once the candidate admitted, in any circumstances no refund of fee will be made.

- The medium of instruction shall be English.

- There shall be four papers in each one term diploma course, in which two theory papers, one practical paper and one project paper. The hours of instruction shall be 3 hours/day/week.

- Total hours of course delivery is 18 hours per week for 4 months and For each theory paper (4 hours/paper/week), For practical paper (8 hours/Practical/week), and for project (2hours/paper/week) includes project guidance and field works.

- The students shall attend practical's and theory classes as prescribed by the University during the course and minimum of 75% attendance is required as per the norms of the university to fulfil the examinations.

- If the conduct/behaviour of the student is not found to be satisfactory, action will be initiated as per the University regulations.

- The performance evaluation of a candidate in a paper has C1, C2 and C3 components, where both C1 and C2 are purely based on continuous assessment each carrying 15 and 15 marks respectively. The C3 component is based on the semester end examination for 70 marks with 3 hours of exam durations for each paper.

- A candidate is said to be successful in a paper if he/she secures at least 40% marks due to all C1, C2 and C3 put together in that particular paper.

- The semester end examination (C3 component) is purely based on written examination the pattern **(Annexure-III)** of which shall be decided by BOS of the department.

- However, a candidate can take a maximum of one year for completion particular course as per double the duration norms of University of Mysore.

- For successful candidates, University will issue the official transcript with CBCS grade points and No convocation certificate will be issued.

- However, the course delivery, evaluation is done by faculty members of the department as regulated by the BOE and BOS committee.

- In the cases there are any issues not addressed in these regulations, the decision of Vice-Chancellor, on the advice of the Board of Studies will be final.

Note: The Course Structure and Regulations are approved by BOS in GIS committee and meeting held on 13th December 2018 (Thursday), at GIS Lab, Centre for Geoinformatics Technology, DOS in Geography, Manasagangothri, Mysuru.

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 (Onwards)

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

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
4. **Remote Sensing and GIS** - Bhatta, B.
5. **Remote Sensing and Image Interpretation** -Lillesand, T.M. &R.W.Kiefer

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.