DEPARTMENT OF GEOGRAPHY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG (C.G.)
2022 – 2023

Certificate Course in Remote Sensing and Geographical Information System

Govt. V.Y.T. PG Autonomous College, Durg (C.G.)

25.7.22

Chairperson
H.O.D

Subject Expert

Subject Expert

Subject Expert

Subject Expert

Senior Professor of [redacted] Faculty

Departmental member

Alumnus

DEPARTMENT OF GEOGRAPHY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG (C.G.)
2022 – 2023

INTRODUCTION TO THE PROGRAMME

Course Details

- **Course type : Certificate**
- **Course Title : Certificate in Remote Sensing Technology and Geographic Information System**

Preamble :

Remote sensing (RS) deals with the use of satellite images and their analysis for providing up to date information of surface features. Geographic information system (GIS) is a technology, which enables the analysis of data related to entities, which have geographic distribution. RS & GIS are increasingly being used to monitor the natural resources, mining, telecommunications, utilities, Groundwater assessment, linking of rivers, National agriculture Atlas, state/district level crop yield estimation etc. RS & GIS can also be used to monitor the effect of environmental management techniques in adhering to global norms. The subject of Remote Sensing & GIS encompasses several disciplines and it is interdisciplinary nature of the technology that sets it apart from other technologies. This is evident from its wide applications in varied disciplines like Geosciences, Biosciences, Life sciences, Environmental sciences, Physical sciences, Hydrology, Engineering applications, Rural and Urban planning, Land cover and land use, Agriculture, Soil mapping, Medical sciences, IT, Detailed mapping, Library Information systems, Wild-life habitat, Wet land mapping, Utilities (Telecommunications, Electrical, Hydro), Business Decisions, Facilities Mapping, Asset Managements, etc.

Minimum Duration: 6 Months

Eligibility: 10+2 from any recognized secondary education board of any state of India.

Medium: English or Hindi

BM 25.7.22 — 25/7/22 — 25.7.2022

Chairperson/ HOD | Subject Expert | Subject Expert | Subject Expert | Subject Expert

Senior Professor of Science Faculty | Departmental member | Alumnus

DEPARTMENT OF GEOGRAPHY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG (C.G.)
2022 – 2023

Learning Outcomes:

This Certificate Course in Remote Sensing Technology and Geographic Information to impart domain knowledge, values, capacities and skills to:

1. Appreciate the development and uses of aerial and satellite remote sensing system and navigation satellite systems in India and other nations;
2. Understand the basics of EMR and energy interaction in atmosphere and on earth surface features;
3. Analyse and interpret the aerial and satellite data products and GNSS/GPS survey results.
4. Appreciate the basic principles and components of GIS;
5. Apply raster and vector data structure for GIS analysis;
6. Analyse the basic resources, land use and urban related data using GIS software for meaningful interpretation .

In Certificate in Certificate in Remote Sensing Technology and Geographic Information System shall be two theory papers each of 70 marks and assignments will be of 30 marks and practical 50 marks, thus total marks in the course will be 250.

25.7.22 25/7/22

Chairperson HOD **Subject Expert** **Subject Expert** **Subject Expert** **Subject Expert**

Senior Professor of Science Faculty **Departmental member** **Alumnus**

DEPARTMENT OF GEOGRAPHY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG (C.G.)
2022 – 2023

Minor component of the evaluation system

Assignments: -Submission of assignments is compulsory. Assignments of a Course carry 30% weightage. Student will have to submit one assignment for each paper. Students will not be allowed to appear for the final examination for a Remote Sensing Technology and Geographic Information System, if they do not submit the assignment in time. If student do not get a passing marks in any assignments student have to submit it again.

Major component of the evaluation system

Theory Paper:- Theory paper carries 70% weight age in the final result.
In case, student fail to secure a pass score (40% marks) in the final examination, student will be eligible to reappear in the next year final examination for Remote Sensing Technology and Geographic Information System .

EVALUATION

Evaluation consists of two parts: 1) assignments, and 2) final Examination and practical. In the final result, assignment of a Remote Sensing Technology and Geographic Information System carries 30% weightage, While 70% weightage is given to final examination, Following is the scheme of awarding divisions and grades:

Division	**Percentage Range**	**Grade**
First	80 and above	A - Excellent
First	60 to 79.99	B- Very Good
Second	50 to 59.99	C - Good
Pass	40 to 49.99	D - Satisfactory
Unsuccessful	Below 40	E - Unsatisfactory

Students are required to score at least 40% marks in assignments as well as final examination separately. In the overall computation also, student must get at least 40% marks in each paper to claim the Certificate in Remote Sensing Technology and Geographic Information System .

25.7.22

Chairperson HOD | **Subject Expert** | **Subject Expert** | **Subject Expert** | **Subject Expert**

Senior Professor of [redacted] Faculty | **Departmental member** | **Alumnus**

DEPARTMENT OF GEOGRAPHY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG (C.G.)
2022 – 2023

Re-evaluation:-

There is provision for re-evaluation of final exam (theory) answer copies (anyone or two). The students can apply for re-evaluation of final exam (theory) answer copies against payment of Rs.250/- per theory paper.

1. **There will be no ATKT.**
2. **Students will get one chance to appear for failed subject.**

EVALUATION PATTERN

Theory Paper		
Paper-I	Remote Sensing Technology	70 Marks
Paper-II	Geographic Information System	70 Marks

Question Paper Format and Distribution of Marks for Remote Sensing Technology and Geographic Information System .

Examination.

1. The question paper will be divided into three Sections - A, B & C.
2. Section A shall contain very short answer type questions (answer in one or two sentences) or objective type questions. (No Multiple choice questions, No 'Fill in the blank' type Questions).
3. Section B shall contain short answer type questions with the limit of 150 words.(50% internal choice)
4. Section C shall contain long answer/descriptive type questions. The students are required to answer precisely and the answer should not exceed the limit of 350 words.(50% internal choice)

25.7.22

Chairperson HOD | Subject Expert | Subject Expert | Subject Expert | Subject Expert

Senior Professor of ~~Science~~ Faculty | Departmental member | Alumnus

DEPARTMENT OF GEOGRAPHY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG (C.G.)
2022 – 2023

5. The scheme of marks should be as follows:

Question Type	MM 70. (Marks x No of Questions)
A (Very Short Answer)	1 x 10 =10
B (Short Answer)	4 x 5 = 20
C (Long Answer)	8 x 5 = 40

Syllabus and Marking Scheme for Remote Sensing Technology and Geographic Information System .

Paper No.	Title of the Paper	Marks Allotted	
		Theory	Assignment
I	Remote Sensing Technology	70	30
II	Geographic Information System	70	30
	Total	**140**	**60**
	Practical	**50**	
	Grand Total	**250**	

25.7.22

Chairperson HOD **Subject Expert** **Subject Expert** **Subject Expert** **Subject Expert**

Senior Professor of ~~Science~~ Faculty **Departmental member** **Alumnus**

DEPARTMENT OF GEOGRAPHY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG (C.G.)
2022 – 2023

Syllabus

Scheme of Certificate Course in Remote Sensing Technology and Geographic Information System .

Session 2022-2023

PAPER- I

Remote Sensing Technology

Max. Marks - 70

Unit – I

1: Meaning and Basic Concept of Remote Sensing.

2: Basic Principles of Remote Sensing.

3: Remote Sensing Platforms and Sensor.

Unit – II

1. Digital Image Processing.

2: Types of Image, Advantage of Digital Image.

3: Image Processing Methods, Reasons for low contrast, Contrast Enhancement Technique.

Unit – III

1: Fundamentals Concept of Aerial Photography.

2: Stereoscopic Vision. Air Photo Interpretation,

Types of Stereoscopic,parallax

Unit – IV

1: Fundamental Concept of Photogrammetry

2: Meaning, Development. Geometry of Photographs,

4: Method of Scale Determination of Aerial Photographs and Maps.

Unit – V

1: Remote Sensing Applications - Land use and Land cover.

2: Applications of Remote Sensing in Geology.

3: Applications of Remote Sensing in Hydrology.

4: Applications of Remote Sensing in Forestry.

Suggested Readings

1. American Society of Photogrammetry : Manual Remote Sensing ASP
   Falls Church V.A. 1983.
2. Barrett E.C. and L.P. Curtis : Fundamentals of Remote Sensing and Air
   Photo Interpratation on. Mc MILLAN. New York.1992.
3. Curran. Paul J. : Principles of Remote Sensing : Longman, London. 1985.
4. Luder D. : Aerial Photography Interpretation : Pinciples and Application. C.C.Graw Hill, New York, 1978.
5. Rao D.P. (eds) : Remote Sensing For Earth RESOURCES, Association of
   Exploration Geography, Hyderbad,1998.
6. चौनियाल देवी दत्त : सुदूर संवेदन एवं भौगोलिक सूचना प्रंणाली , भारदा पुस्तक भवन हलाहाबाद ,2009

25.7.22

Chairperson HOD | **Subject Expert** | **Subject Expert** | **Subject Expert** | **Subject Expert**

Senior Professor of [redacted] Faculty | **Departmental member** | **Alumnus**

DEPARTMENT OF GEOGRAPHY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG (C.G.)
2022 – 2023

Scheme of Certificate Course in Remote Sensing Technology and Geographic Information System .

Session 2022-2023

PAPER- II

Max. Marks - 70

Unit – I

Geographic Information System (GIS): Definition, History, Components; Concept, Ojectives, Approach.

Unit – II:

GIS Data Structures: Function, Types (Spatial and Non-spatial), Raster and Vector Data Structure.

Unit -III

Dta Inputing Methods: Spatial Data Input, Aspatial Data Input, metadata.

Unit- IV

Internet GIS : Definition of Internet, Services,Special Work, Capabilities Components.

Unit- V

Issues and Prospects of GIS: Data issues, Issues Pertaining to people, Application and issues

Suggested Readings

1 Aronoff S. Geographic Information Systems: A Management Perspective, DDl Publication Ottawa, 1989.

2 Fraser Taylor D.R. Geographic information System, Pergamoon Press,Oxford 1991.

3. Mark S Monmonier, Computer- assisted Cartography, Prentice-Hall,Englewood Cliff, New Jerseyy,1982.

4 Star J and J. Estes, Geographic Information Systems: An Introduction, Prentice Hall, Englewood Cliff, New Jersey, 1994.

5. Yeung Albert K.W. ,Concepts and Techniques of Geographic Information Systems, Prentice jHall of India Private limited New Delhi –110001, 2004.

5. चैनियाल देवी दत्त : सुदूर संवेदन एवं भौगोलिक सूचना प्रणाली, , भारदा पुस्तक भवन इलाहाबाद–211002.

25.7.22

Chairperson HOD | **Subject Expert** | **Subject Expert** | **Subject Expert** | **Subject Expert**

Senior Professor of ~~Science~~ Faculty | **Departmental member** | **Alumnus**

DEPARTMENT OF GEOGRAPHY
GOVT. V.Y.T. PG AUTONOMOUS COLLEGE, DURG (C.G.)
2022 – 2023

PRACTICAL

Max. Marks – 50

: COMPUTER MAPPING 2.0,
Introduction to Image Processing and Data Analysis: Geo-Referencing; Editing and Output; Overlays.

25.7.22

Chairperson HOD | **Subject Expert** | **Subject Expert** | **Subject Expert** | **Subject Expert**

Senior Professor of [redacted] Faculty | **Departmental member** | **Alumnus**