

Government PG College, Ambala Cantt
Course File: 2023-24 odd semester
Name of Professor: Ajay Chauhan
Class: M.Sc. Geography_3rd Semester
Subject code and Name: Geog 305 A_ Introduction to Remote Sensing
(Theory)

SYLLABUS

Maximum Marks: 50

External: 40

Minimum Pass Marks: External 16 and Internal 4

Internal: 10

Note: - There will be seven questions in all. Question No.1 is compulsory and consists of 5 short notes (required to be answered in not more than 25 words each). Short notes shall cover entire syllabus. There will be 6 long questions, three from each unit. The candidate shall attempt THREE long questions selecting at least one from each unit. All questions carry equal marks.

UNIT-I

1. Fundamentals: Remote Sensing, definition, and scope, EMR characteristics, Interaction with matter, remote sensing regions and bands, types of remote sensing.
2. Aerial Photographs: aerial photos, types and scale, resolution, geometric properties of single aerial photos, stereoscopy, stereoscopic parallax, relief displacement.

UNIT-II

3. Satellite Imagery: General orbital characteristics of remote sensing satellites, general characteristics of remote sensing sensors, characteristics of Indian remote sensing satellite and raw Remote Sensing data.
4. Interpretation and Application: Elements of image interpretation, image processing techniques: Visual and Digital. Applications in resource mapping and monitoring

Suggested Readings: -

1. Avery T.E., and G.L. Berlin (1992): Fundamentals of Remote Sensing and Air Photo Interpretation, 514 Ed. Macmillan, New York, USA.
2. Campbell, J.B. (2002) Introduction to Remote Sensing, 3rd ed., Taylor & Francis, New York, USA.
3. Lillesand, Thomas M. and R. Kiffer (1994), Remote Sensing and Image Interpretation, 3rd edition, John Willy & sons, Inc New York, USA.
4. Sabins, F (1982): Remote Sensing Principles and Application, Freeman and Compare, New York, USA
5. Jensen, J.R. (2000), Remote Sensing of the Environment: An earth Resource Perspectives, Pearson Education Inc. India.
6. Aggarwal C.S. and P.K. Garg (2000). Remote Sensing, A.H. Wheeler & Co. Ltd, New Delhi.
7. Nag and Kudrat (2002), Remote Sensing and Image Interpretation, Concept Publishers,

Delhi.

8. Meenakhi Kumar(2000), Text book on Remote Sensing; NCERT, New Delhi.

9. Anji Reddy (2000) Remote Sensing and Geographical Information System (An Introduction), Hyderabad.

COURSE OBJECTIVES

The course objectives outlined are as follows:

1. Understand the fundamentals of remote sensing, including its definition, scope, and the characteristics of electromagnetic radiation (EMR) relevant to remote sensing.
2. Explore the interaction between EMR and matter, and identify the various remote sensing regions and bands utilized in data acquisition.
3. Differentiate between the types of remote sensing techniques and their applications in various fields.
4. Analyze aerial photographs, including their types, scales, resolution, and geometric properties, and comprehend the principles of stereoscopy and relief displacement.
5. Examine the general orbital characteristics of remote sensing satellites and the key features of remote sensing sensors.
6. Evaluate the characteristics of Indian remote sensing satellites and raw remote sensing data, understanding their significance in various applications.
7. Develop skills in interpreting remote sensing imagery, including identifying and analyzing elements within images.
8. Gain familiarity with both visual and digital image processing techniques and understand their role in enhancing remote sensing data.
9. Explore the applications of remote sensing in resource mapping and monitoring, including its importance in environmental studies, land use planning, agriculture, and disaster management.
10. Develop the ability to critically analyze and apply remote sensing techniques to address real-world problems and challenges.

Course Outcomes (COs)

- 1: Acquaintance with the fundamentals of remote sensing and its process.
- 2: Knowledge about types and uses of aerial photographs along with fundamental concepts.
- 3: Understanding about general characteristics of satellites and remote sensing sensors.

- 4: Awareness about digital image processing and its applications in resource monitoring and mapping.

Lesson Plan

Sr. No	Topics	No. of Days	To be Completed up to	Activities
1	Fundamentals: Remote Sensing, definition, and scope, EMR characteristics, Interaction with matter, remote sensing regions and bands, types of remote sensing.	12	05 September	Class Test 1
2	Aerial Photographs: aerial photos, types and scale, resolution, geometric properties of single aerial photos, stereoscopy, stereoscopic parallax, relief displacement.	12	27 September	Assignment 1
3	Satellite Imagery: General orbital characteristics of remote sensing satellites, general characteristics of remote sensing sensors, characteristics of Indian remote sensing satellite and raw Remote Sensing data.	12	19 October	Class Test 2
				Student's power point presentation
4	Interpretation and Application: Elements of image interpretation, image processing techniques: Visual and Digital. Applications in resource mapping and monitoring	12	21 November	Assignment 1
5	Revision	07	06 Dec. Till Exams	