

## Shivaji University, Kolhapur

### B. A. / B. A. B. Ed. - I

#### **SEC PO1: Basics of Remote Sensing - I (Geography) as per NEP 2020**

<b>Name of the Programme</b>	:	B .A. / B. A. B. Ed. (GEOGRAPHY)
<b>Class</b>	:	B.A.-I / B. A. B. Ed.-I
<b>Semester</b>	:	I
<b>Name of Vertical Group</b>	:	SEC (V-4)
<b>Course Code</b>	:	BAU0325SEL222A01
<b>Course Title</b>	:	<b>Basics of Remote Sensing- I</b>
<b>Total Credit</b>	:	02 Credits (Theory)
<b>Workload</b>	:	02 credit * 15 Hours= 30 hours in a semester
<b>Duration</b>	:	Semester
<b>Medium of instruction</b>	:	Marathi / English
<b>Eligibility of Admission</b>	:	As per eligibility criteria prescribed by the University
<b>Examination of Pattern</b>	:	40:10

#### **Preamble:**

Welcome to Basics of Remote Sensing - Part I, an immersive course designed to explore the foundational principles, historical context, and practical applications of remote sensing technology. Throughout this course, students will delve into the definition, evolution, advantages, and limitations of remote sensing, gaining insight into its significance in modern scientific research and practical domains. By understanding electromagnetic radiation, spectral bands, and sensor selection, students will develop the critical thinking and practical skills necessary to interpret remote sensing data and apply it to real-world scenarios.

#### **General Objectives of the Course:**

- To provide a comprehensive understanding of remote sensing, including its definition, principles, historical evolution, advantages, limitations, emerging trends, and innovations.
- To explain the principles of electromagnetic radiation, its interaction with Earth's surface and atmosphere, spectral bands, and their significance in remote sensing applications, aiding in practical knowledge and sensor selection.

### Course Outcomes:

Upon completion of the course, students will:

- Understand the fundamental principles, historical evolution, advantages, limitations, emerging trends, and innovations in remote sensing.
- Demonstrate proficiency in understanding electromagnetic radiation, its interaction with Earth's surface and atmosphere, and spectral bands utilized in remote sensing.
- Apply remote sensing principles to select appropriate sensors and techniques for specific applications.

### Nature of Question Paper:

The student's examination and evaluation methods are as per the guidelines of the Shivaji University.

- Internal evaluation should be based on Home Assignment/Unit Test/Case Study

### Modules

<b>Basics of Remote Sensing - I</b>			
<b>Module</b>	<b>Name of the Module</b>	<b>No. of hours</b>	<b>Credit</b>
<b>I</b>	<b>Fundamentals of Remote Sensing</b>	15	1
	1.1 Introduction to Remote Sensing: Definition and Principles		
	1.2 Historical Evolution of Remote Sensing and Key Milestones		
	1.3 Advantages and Limitations of Remote Sensing		
	1.4 Emerging Trends and Innovations in Remote Sensing		
<b>II</b>	<b>Electromagnetic Spectrum and Remote Sensing</b>	15	1
	2.1 Electromagnetic Radiation and the EM Spectrum		
	2.2 Interaction of EMR with Earth's Surface and Atmosphere		
	2.3 Spectral Bands Utilized in Remote Sensing		
	2.4 Remote Sensing Applications and Sensor Selection		

### Suggested Readings

1. Anji Reddy, M. (2008). Textbook of Remote Sensing and Geographic Information System. B.S. Publication, Hyderabad.
2. Bhatta, B. (2008). Remote Sensing and GIS. Oxford University Press.

3. Burrough, P. A., & McDonnell, R. A. (2000). Principles of Geographical Information System-Spatial Information System and Geo-statistics. Oxford University Press.
4. Campbell, J. B. (2007). Introduction to Remote Sensing. Guilford Press.
5. Chauniyal, D. D. (2010). Sudur Samvedan evam Bhogolik Suchana Pranali. Sharda Pustak Bhawan, Allahabad.
6. Hord, R. M. (1989). Digital Image Processing of Remotely Sensed Data. Academic.
7. Heywoods, I., Cornelius, S., & Carver, S. (2006). An Introduction to Geographical Information System. Prentice Hall.
8. Jensen, J. R. (2004). Introductory Digital Image Processing: A Remote Sensing Perspective. Prentice Hall.
9. Joseph, G. (2005). Fundamentals of Remote Sensing. United Press India.
10. Jha, M. M., & Singh, R. B. (2008). Land Use: Reflection on Spatial Informatics Agriculture and Development. Concept.
11. Kumar, D., Singh, R. B., & Kaur, R. (2019). Spatial Information Technology for Sustainable Development Goals. Springer.
12. Li, Z., Chen, J., & Batsavias, E. (2008). Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences. CRC Press, Taylor and Francis.
13. Lillesand, T. M., Kiefer, R. W., & Chipman, J. W. (2004). Remote Sensing and Image Interpretation (Wiley Student Edition). Wiley.
14. Mukherjee, S. (2004). Textbook of Environmental Remote Sensing. Macmillan, Delhi.
15. Rees, W. G. (2001). Physical Principles of Remote Sensing. Cambridge University Press.
16. Richards, J. A., & JiaXiuping. (2005). Remote Sensing Digital Image Analysis: An Introduction. Springer.
17. Sarkar, A. (2015). Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi.
18. Singh, R. B., & Murai, S. (1998). Space-informatics for Sustainable Development. Oxford and IBH Pub.
19. Wolf, P. R., & Dewitt, B. A. (2000). Elements of Photogrammetry: With Applications in GIS. McGraw-Hill.