

Teaching Schedule- Theory with weightages (%)

Lec. No.	Topic	Book No.	Topic No.	Page No.	Weightages (%)
1-2	Basic component of remote sensing (RS), advantages and limitations of RS, possible use of RS techniques in assessment and monitoring of land and water resources	1 2	3.1 – 3.2 1.0 – 1.1 1.4 – 1.7	65 – 69 1 – 3 11 – 21	30
3-4	Electromagnetic spectrum, energy interactions in the atmosphere and with the Earth's surface	1 3	3.3 – 3.6 1.2 – 1.4	69 – 94 4 – 29	
5-6	Principal applications of different wavelength regions	4	1	2 – 6	
7-8	Major atmospheric windows; Different types of resolution, spectral signatures	2	1.1 – 1.3 5.1 – 5.6	2 – 11 129 – 144	
9-10	Different types of sensors and platforms; contrast ratio and possible causes of low contrast	1 4	5.1 – 5.14 1	115 – 176 6 – 13	
11-12	Aerial photography; types of aerial photographs, measurements on a stereo-pair-vertical measurements by the parallax method; ground control for aerial photography	1 3	2.1 – 2.10 3.1- 3.8	24 – 51 123 – 165	40
13-14	Satellite remote sensing, multispectral scanner-whiskbroom and push-broom scanner; Typical spectral reflectance curve for vegetation, soil and water;	4	1	13 – 23	
15-16	Analysis of digital data-image restoration; image enhancement; information extraction	1 3 4	7.1 – 7.5 7.1 – 7.3 8	211- 235 482 – 500 258 – 281	
17-18	Image classification, unsupervised classification, supervised classification, important consideration in the identification of training areas	3	7.7 – 7.11	545 – 572	
19	Vegetation indices	2	4.1	74 - 76	
20	Microwave remote sensing	1	4.1 – 4.9	96 – 114	
21-22	GIS and basic components	1 2	9.1 – 9.8 12.0 – 12.1	302 – 317 390-396	
23-24	Different sources of spatial data, basic spatial entities, major components of spatial data	1	10.1 – 10.6	323 - 355	
25-26	Basic classes of map projections and their properties	1	1.1 – 1.11	1 - 23	30
27-28	Methods of data input into GIS, Data editing, spatial data models and structures	1	12.1- 12.5 10.1– 10.6	384 – 403 323 - 355	
29-30	Attribute data management, integrating data (map overlay) in GIS	1	11.1– 11.6 14.7– 14.8	356 – 381 434 – 448	
31-32	Applications of remote sensing and GIS for watershed management	1	18.1– 18.15	522 – 549	

Practical Exercises

Exercise No.	Title
1	Study of remote sensing and GIS hardware
2	Study of interpretation of satellites imageries
3-4	Study the basic GIS operation such as image display and geo-referencing
5	Study the various features of GIS software packages
6-7	Study the scanning and digitizing of contour maps
8	Downloading and analysis of DEM and Land use /land cover images
9	Supervised and unsupervised classification of images
10	Determination of Vegetative Indices
11-12	Estimation of Morphological characteristics of watershed
13-14	Case study in water resources management
15-16	Case study on application of RS and GIS techniques in watershed planning

Suggested readings

Text Books:

1. Reddy Anji, M. 2006. Textbook of Remote Sensing and Geographical Information Systems. 4th Edition, BS Publications, Hyderabad.
2. George Joseph. 2005. Fundamentals of Remote Sensing. 2nd Edition. Universities Press (India) Private Limited, Hyderabad
3. Lillesand, T., R.W. Kiefer and J. Chipman. 2015 Remote Sensing and Image Interpretation. 6th Edition, John Wiley and Sons Singapore Pvt. Ltd., Singapore.
4. Sabins, F. F. 2007. Remote Sensing: Principles and Interpretation. Third Edition, Waveland Press Inc., Illinois, USA.