



COURSE CURRICULUM

Course Title: Principles of Remote Sensing

Course Code:

Credit Units:4

Course Level: PG

L	T	P/S	SW/F W	TOTAL CREDIT UNITS
3	1	-	-	4

Course Objectives: The course gives an insight into remote sensing, both in theory. After the course students will be able to understand the information content of remotely sensed data and how to retrieve the information. Students will be able to decide which remote sensing techniques suite your specific needs.

Pre-requisites: Student should have basic of physics and natural sciences.

Student Learning Outcomes:

- Analyses Remote Sensing data for finding the problems and develop appropriate methods for studying and/or solving the problems using remote sensing techniques.
- Develop a technical skills for data interpretation and analysis and generate a integrate results for solution findings.
- Formulate and carry out independent research in the general field of remote sensing, possibly as part of a multi-disciplinary research and development project.

Course Contents/Syllabus:

	Weightage (%)
Module I Introduction and Physics of Remote of Remote Sensing	
Descriptors/Topics	
Introduction of Remote Sensing, Advantages and limitations of Remote sensing technology. Electro Magnetic Spectrum, Effects of Atmospheric Scattering, Atmospheric window and Energy interaction with surface features.	20

Spectral reflectance, physical basis of spectral signatures of the objects and spectral signature for vegetation, soil, water and snow.	
<p>Module II Satellites and Platforms</p> <p>Descriptors/Topics</p> <p>Platforms – different types of aircrafts-Manned and Unmanned spacecrafts –sun synchronous and geo synchronous satellites – Types and Characteristics of different platforms. History and development of Space Programme; IRS, LANDSAT, IKONOS, QUICKBIRD and their characteristics. Scanner- multi spectral scanners and thermal scanners. Across track and along track scanners.</p>	20
<p>Module III Sensors</p> <p>Descriptors/Topics</p> <p>Sensors: Types and their Characteristics, optical Mechanical Scanners, MSS, TM, LISS, WIFS and PAN, Concept of Resolution – Spatial, Spectral, Temporal and Radiometric. Concept and basic applications of Thermal, Microwave and hyperspectral Remote Sensing.</p>	20
<p>Module IV Tool and Techniques of Image Interpretation</p> <p>Descriptors/Topics</p> <p>Satellite image interpretations, major steps and elements of Image interpretations. Techniques of Visual and digital image interpretations. Various keys and instruments used for visual Interpretation. Multi-concepts of remote sensing.</p>	20
<p>Module V Data Format and Application of Remote Sensing</p> <p>Descriptors/Topics</p> <p>Remote Sensing data products, formats and their procurement, Ground truth collection and commonly used equipment. Remote sensing based Case Studies.</p>	20

Pedagogy for Course Delivery:

The course is designed to be taught through the lecture mode and laboratory exercises. However seminar presentations on various themes related to the course and discussion on various case studies. Class room interaction will definitely have to be an integral part of the learning experience.

Lab/ Practicals details, if applicable: N/A

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)	End Term Examination
30 %	NA	70 %

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment					End Term Examination
Components (Drop down)	Class Test	Home Assignment	Presentation	Attendance	EE
Weightage (%)	10	05	10	05	70

Lab/ Practical/ Studio Assessment: N/A

Continuous Assessment/Internal Assessment					End Term Examination		
Components (Drop down)							
Weightage (%)							

Text &

- Jensen, J.R., 2006 “Remote Sensing of the Environment – An Earth Resources Perspective”, Pearson Education, Inc. (Singapore) Pte. Ltd., Indian edition, Delhi.
- George Joseph, 2004 “Fundamentals of remote sensing”, Universities press (India) Pte Ltd., Hyderabad.
- Sabins, F.F. Jr., 2007 Edition. ‘Remote Sensing – Principles and Interpretation’, W.H. Freeman & Co.

References:

- Reeves, Robert G. (1991), “Manual of Remote Sensing, Vol. I, American Society of Photogrammetry and Remote Sensing, Falls Church, Virginia, USA
- Lillesand, Thomas M. and Kiefer, Ralph, W., 2007 “Remote Sensing and Image Interpretation”, 4th Edition, John Wiley and Sons, New York
- Rampal, K.K., 1999 Handbook of Aerial Photography and Interpretation, Concept Publishing Company, New Delhi
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Research Journals

- International Journal of Geo-Informatics
- International Journal of Remote Sensing
- ISPRS Journal of Photogrammetry and Remote Sensing
- Journal of Indian Society of Remote Sensing
- Remote Sensing of Environment
- IEEE Geoscience and Remote Sensing
- Applied Earth Observation and Geoinformation