

PEI207: REMOTE SENSING AND TELEMETRY

L	T	P	Cr
3	1	0	3.5

Course Objectives: To understand the concepts of remote sensing, to enable selection and design of remote sensing and telemetry systems

Remote Sensing: Electromagnetic radiation, Energy interactions, Energy recording technology, Across track and along track scanning, Resolution, Multispectral remote sensing, Thermal remote sensing, Hyper Spectral Remote sensing, Microwave Remote sensing, LIDAR, Earth resource satellites, Application of remote sensing.

Introduction to Telemetry: Classification of Telemetry Systems: Voltage, current, Position, Frequency, and time. Components of Telemetry and Remote Control Systems. Quantization theory: Sampling theorem, Sample and hold, Data conversion: Coding.

Multiplexing: Frequency Division Multiplexing with constant bandwidth and proportional bandwidth, Demultiplexing; Time division multiplexers, Demultiplexers: Theory and circuits, Scanning procedure, Pulse Code Modulation (PCM) Technique.

Data acquisition and distribution system: Fundamentals of audio and radio telemetry systems, Digital Modulation and demodulation Techniques in Telemetry Systems. Standard for telemetry e.g. IRIG etc. Microwave links, Practical Telemetry Systems: Pipe line telemetry, Power system telemetry, Supervisory telecontrol systems, Introduction to ISDN.

Minor Project : Nil

Course learning outcome (CLO): After the completion of the course the students will be able to

1. Study remote sensing applications.

Use components of telemetring and remote control systems

Use data acquisition and distribution system, digital modulation and demodulation techniques in telemetry system

Recommended Books:

1. Lillesand, M.T. and Ralph, W., *Remote Sensing and Image Interpretation*, John Wiley (2004) 6th ed.
2. Patranabis, P., *Telemetry Principles*, Tata McGraw–Hill Publishing Company (2004) 2nd ed.
3. Swobada, G., *Telecontrol Method and Application of Telemetry and Remote Control*, Von Nostrand, (1971).

Evaluation Scheme:

S.No	Evaluation Elements	Weightage (%)
1.	MST	30
	EST	45
	Sessionals (May include Assignments/ Projects/ Tutorials/ Quizes/ Lab Evaluations)	25