

PHY7252: REMOTE SENSING

1. **Course Name:** Remote Sensing

2. **Course Code:** PHY7252

3. **Credit Units:** 3

4. Course Description:

This course covers principles and concepts of remote sensing both on solid surface and in the atmosphere. Students will be exposed to data analysis using various transfer theories.

5. Course Objectives:

At the end of the course, the students should be able to:

- Define remote sensing in relation to properties of electromagnetic waves.
- Differentiate between active and passive remote sensing.
- Solve radiative transfer equations.
- Analyze the different theories in remote sensing.

6. Course Outline:

Content	Hours
Introduction to Remote Sensing- Principles and concepts.	5
Nature and properties of electromagnetic waves.	5
Electromagnetic wave scattering and emission.	5
Instrumentation: active and passive microwave remote sensing.	5
Solid surface sensing in- visible and infrared, thermal infrared, microwave and radio frequencies.	7
Basic principles of atmospheric sensing and radiative transfer; solution of radiative transfer equations; random discrete scatterers.	8
Data analysis, processing and interpretation.	5

Applications: Radiative transfer theory; Analytical wave theory; Solution to radiative transfer equations; Scattering by random discrete scatterers.	5
Total	45

7. Mode of Delivery:

This course will consist of lecture sessions and there will also be data analysis using theories learnt.

8. References:

1. Misra, P. & Enge, P., "Global Positioning Systems: Signals, Measurement and Performance" 2nd Ed. Ganga-Jamuna Press (2006).
2. Kilverson, M.G. & Russel, C.T. "Introduction to Space Physics". Cambridge Atms. & Space Sc. Series.
3. Corrol, B.W. & Ostile, D.A. "An Introduction to Modern Astrophysics" 2nd Ed. Addison-Wesley.