

ENG315 Wireless Communication Systems

Level: 3

Credit Units: 5 Credit Units

Language: ENGLISH

Presentation Pattern: EVERY JAN

Synopsis:

This course is intended to give an introduction to the science and engineering of wireless communications.

The course introduces the basic concepts and algorithms for the design of a practical wireless communication transceiver and the challenges introduced by the propagation environment

Topics:

- Introductory concepts
- Signals and Systems
- Random process: An introduction
- Propagation characteristics of wireless channels
- Wireless communication receivers
- Modulation and demodulation methods
- Cells and interference
- Coverage, capacity and efficiency of cellular traffic
- Fading mitigation: Exploiting diversity, using equalizers
- Multiple access methods
- Wireless systems and standards

Textbooks:

P. Mohana Shankar: Introduction to Wireless Systems (eTextbook) John Wiley and Sons
ISBN-13: 9781119495802-AA

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Learning Outcome:

- Examine the characteristics of signals, radio channels, different multiple access methods and different methods used for fading mitigation.
- Calculate coherence bandwidth, path loss factor, signal-to-noise ratio (SNR), range and other parameters associated with wireless communication systems.
- Illustrate the different methods available for modulation and demodulation in communication systems.
- Show the encoded waveforms and signal constellations corresponding to various modulation schemes.
- Design the wireless communication system to meet the given requirements.
- Discuss the concept of cells, cellular traffic, and the various characteristics associated with cellular communication.
- Appraise the performance of wireless communication systems.
- Use software tools to simulate the signals and subsystems in wireless communication systems.

Assessment Strategies:

| Continuous Assessment Component | Weightage (%) |
|--|----------------------|
| PRE-CLASS QUIZ | 2 |
| CLASS TEST | 8 |
| PRE-CLASS QUIZ | 2 |
| CLASS TEST | 8 |
| PRE-CLASS QUIZ | 2 |
| LAB TEST | 8 |
| Sub-Total | 30 |

| Examinable Component | Weightage (%) |
|-----------------------------|----------------------|
| Written Exam | 70 |
| Sub-Total | 70 |

Weightage Total **100**