

# 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

**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 (Evening Class):**

<b>Components</b>	<b>Description</b>	<b>Weightage Allocation (%)</b>
Overall Continuous Assessment	PRE-CLASS QUIZ 1	2
	PRE-CLASS QUIZ 2	2
	PRE-CLASS QUIZ 3	2
	CLASS TEST 1	8
	CLASS TEST 2	8
	LAB TEST 1	8
Overall Examinable Components	Written Exam	70
<b>Total</b>		<b>100</b>