



## EE 457-Mobile and Wireless Networks (Elective Course)

**Code and Name:** EE 457 Mobile and Wireless Networks

**Credit Hours:** 3 (Lecture: 3, Tutorial: 1)

### Textbook:

- Wireless Communications & Networking, Vijay Garg, Morgan Kaufmann, 2007.

### Other References:

- G. Giambene, Queuing Theory and Telecommunications: Networks and Applications, 2<sup>nd</sup> edition, Springer 2013.
- T. L. Singal, Wireless communication systems, Tata McGraw-Hill Education, 2010
- T. S. Rappaport, Wireless Communications: Principles and Practice, Second edition, Prentice Hall, 2002.

### Course Description:

Introduce mobile and wireless networks – voice and data traffic models – efficiency metrics; RF Propagation Models and the Cellular Concept; Multiple Access Techniques and Examples of Networks; Advanced Wireless Networks: IEEE 802.11, Hiperlan, Bluetooth, WiMax, LTE-Advanced, Mesh Networks; Mobile IP: Reference model Mobile IPv4/IPv6, Routing issues, Mobile IP registration and tunneling, Mobility management. Session Initiation Protocol (SIP) and Mobile Stream Control Transmission Protocol (m-SCTP); Privacy, Security and Authentication for Wireless Networks; Quality of Service and Mobile Applications.

**Pre-requisites:** EE451.

**Co-requisites:** None

### Course Learning Outcomes:

With relation to ABET Student Outcomes (SOs: 1-7)

1. Apply propagation models to estimate signal propagation losses in outdoor environment. (1)
2. Apply propagation models to estimate signal propagation losses in indoor environment. (1)
3. Identify mobile IP functions and procedures. (2)
4. Differentiate different wireless mobile networks and protocols. (2)
5. Design cellular mobile systems. (2)
6. Use some techniques to support wireless network security. (2)

### Topics to be covered:

- Introduction: introduce mobile and wireless networks – voice and data traffic models – efficiency metrics.
- RF Propagation Models and the Cellular Concept.
- Multiple Access Techniques.
- Advanced Wireless Networks: systems and protocols.
- Mobile IP.
- Privacy, Security and Authentication for Wireless Networks.
- Quality of Service and Mobile Applications.

### Grading Policy:

The grading for the course are 60% coursework and 40% Final Exam. The coursework consists of two Midterm Exams, where each midterm exam is worth 20%. It also includes quizzes, homework, and projects for the remaining 20% that is modified by the course instructor.

