



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Introduction to Wireless Networking

CSE 5463

Credit Hours:

3.00

Course Levels:

Undergraduate (1000-5000 level)

Graduate

Course Components:

Lecture

Course Description:

Fundamental concepts in cellular design, Wireless-LANs, MANETs, and sensor networks will be explored. Specific topics will include propagation, fading, cellular-design, power-management, routing, scheduling, and control.

Prerequisites and Co-requisites:

Prereq: 3461, 5461, or ECE 3561; or Grad standing in Engineering or Math and Physical Sciences.

Course Goals / Objectives:

- Be exposed to basics of propagation and fading
 - Be familiar with notions of SINR and cell design, as well as notions of handoffs and channel allocation
 - Be familiar with different forms of multi-access systems (FDMA, CDMA, TDMA, OFDMA, etc.)
 - Be familiar with power management and current implementations in cellular systems
 - Be familiar with routing and current implementations in both cellular
 - Be familiar with cellular scheduling as well as be exposed to scheduling in multi-hop networks
 - Be familiar with various wireless systems such as cellular, Wireless LAN, sensor, mobile ad hoc, sensor, etc.
 - Be exposed to some major issues facing the design of future wireless systems
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Course Topics:

- Historical Milestones and Current Wireless Networks
 - Understanding the Wireless Communication Channel
 - Multiple Access Techniques (FDMA, TDMA, CDMA)
 - Concept of Cellular Communications, Handoff, and Location Management
 - Power Control
 - Opportunistic Scheduling for cellular networks and extensions to multi-hop networks
 - Proactive and Reactive Routing
 - Congestion control
 - System case studies (802.11, Bluetooth, etc.)
 - Energy management in sensor networks
 - Project presentations
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Designation:

Elective