A. Course Description

Credits: 4

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week :

MnTC Goals: None

This course is a Study of the theory and methodologies used in the construction of wireless networks. Topics include: Overview of computer networks and wireless systems; cellular concepts and design fundamentals; physical layer fundamentals; data link control protocols; security related concepts including authentication and privacy with message integrity; wireless medium access control (MAC) protocols; radio resource management (power control); resource allocation and call admission control; mobility management; wireless networking; wireless LAN; wireless mobile ad hoc networks and wireless sensor networks.

B. Course Effective Dates: 02/06/2006 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)

1. Analyze signal characteristics (such as channel capacity and multiplexing technique) to determine crucial performance indicators (such as the coverage distance).
2. Know the history, scope, and application areas of wireless technologies such as Wi-Fi, Bluetooth, and wireless sensor networks.
3. Apply appropriate signal encoding technique (Spread Spectrum, Direct Sequence Spread Spectrum, Code division multiple access) in appropriate situations.
4. Apply the knowledge of different types of networks (LANs, MANs, and WANs) and the TCP/IP protocols to appropriate problems.
5. Apply different error control algorithms to appropriate situations to improve reliability.
6. Demonstrate expertise in reading peer reviewed papers in wireless technologies and explain them in writing.
8. Know current network and wireless protocols and standards such as IEEE 802.11, IEEE 802.16, and know different types of switching technologies (packet switching, circuit switching, Asynchronous Transfer Mode (ATM))

E. Learning Outcomes (MN Transfer Curriculum)

This contains no goal areas.

G. Special Information

Note: Graduate standing. Students are responsible to both be aware of and abide by prerequisites for ICS courses for which they enroll, and will be administratively dropped from a course if they have not met prerequisites.