CSCE 3510.001 / EENG 4010.002: Introduction to Wireless Communications

Instructor: Dr. Kamesh Namuduri  
Office: NTDP B234  
Office Hours: T/Th: 2- 3 pm  
Phone: 940-369-8960  
Email: kamesh.namuduri@unt.edu

Teaching Assistant: Mr. Prakash Duraisamy, B245  
TA Office Hours:  Tuesday 9-11 PM, Thursday 3-5 PM (other times by appointment)

Course Description:
Fundamentals of wireless communications and networking, with emphasis on first, second, third, and fourth generation cellular systems. Topics include point-to-point signal transmission through a wireless channel, cellular capacity, multi-user transmissions, and mobility management.

Course Objectives:

By the end of the course, you be able to

- Understand the basic modules in a digital communication system
- Learn wireless networking concepts such as channel modeling, modulation schemes, and multiple access methods
- Understand the evolution of wireless and cellular communication systems
- Simulate an end to end digital communication system
- Understand security aspects in wireless communication systems
- Understand the policy issues governing spectrum allocation

Course Requirements:

Class participation is required. Lectures, videos, and class discussions will contain vital information needed to do well on the exams.

Text Book:


(2) Supplemental text: MATLAB Student Edition

References

Grading:

Homework 30%
Project 30%
Midterm 20%
Final 20%

Academic Dishonesty: Any form of cheating in home works, assignments, and examinations may result in “F” grade for the entire course.

Disabilities Accommodation:

The University of North Texas complies with Section 504 of the 1973 Rehabilitation Act and with the Americans with Disabilities Act of 1990. The University of North Texas provides academic adjustments and auxiliary aids to individuals with disabilities, as defined under the law. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring accommodation, please see the instructor and/or contact the Office of Disability Accommodation at 940-565-4323 during the first week of class.

Syllabus:

Transmission Fundamentals
   Analog and Digital Transmission
   Channel Capacity
   Multiplexing
Antennas and Propagation
   Radiation, Types and Gain
   Ground Wave, Sky Wave, Line-of-Sight
   Fading
Signal Encoding Techniques
   ASK, FSK, PSK, QAM
   Amplitude Modulation
   PCM
Spread Spectrum
   Frequency Hopping
   Direct Sequence
   CDMA
Cellular Technologies
   First Generation
   Second Generation
   Third Generation
   Fourth Generation
Coding and Error Control Techniques
   CRC
   BEC
   Convolutional Codes
IEEE 802.11 Wireless Protocols, Architecture, Medium Access Control, and Physical Layer