

INTRODUCTION TO WIRELESS COMMUNICATIONS

CSCE 4510/5510

Spring 2019

Instructor: Dr. Qing Yang
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Office hours: MW 1PM- 2PM or by appointment
Class hours: MW 4:00PM - 5:20PM
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COURSE DESCRIPTION

The objective of this course is to provide an overview of the broad field of wireless communications. All forms of wireless communications such as cellular and wireless local and personal area networks will be comprehensively covered in this course. Particularly, this course will cover the basic principles and topics of fundamental importance concerning the technology and architecture of the wireless communication field. Topics such as transmission fundamentals, wireless communication techniques, protocols and medium access control, deployment and system management to coordinate the entire set of devices that compose wireless systems will be discussed.

COURSE OUTCOMES

1. Understand the calculation of path loss and channel capacity
2. Understand antennas, propagation, and satellites
3. Understand signal-encoding techniques
4. Understand spread spectrum communication and CDMA
5. Understand coding and error control
6. Understand Wireless LAN technology and Bluetooth
7. Understand cellular network technology

TEXTBOOK

Wireless Communication Networks and Systems Cory Beard and William Stallings
Pearson, 2016, ISBN-13: 9780133594171

PRE-REQUISITES: CSCE 2610

TOPICS TO BE COVERED

1. Fundamentals of Communication Networks
2. Wireless Channel
3. Signal Encoding
4. Multiplexing Techniques
5. Spread Spectrum
6. Coding and Error Control
7. Wireless LAN and PAN
8. Cellular Networks and LTE

ASSIGNMENTS

SEVEN (7) homework and FIVE (5) programming assignments will be provided throughout the semester and posted on Canvas. Electronic submission on Canvas of your solutions/answers by scanning or taking a clear picture is encouraged. It is expected of the students to show utmost sincerity and honesty in completing their assignments. While discussion among students is encouraged, sharing solutions and copying someone else's work is strictly prohibited. Any student engaged in such activities will get no credit for their assignment. MATLAB assignments will be provided as programming assignments throughout the semester.

DUE DATES

The due dates of all assignments can be found from the calendar on Canvas. The deadlines for all assignments are always 11:55 PM on the due dates. You will lose 25% points if you are late by a day to turn in your assignments. You will get only half of the points if you turn in the assignments up to a week late. Assignment turned in after a week without instructor's approval will receive zero points.

Deadlines will be made as generous as possible to a priori take into account illness, other courses, and nearly all conceivable excuses. If you have a documented illness preventing you from completing your assignments, you may submit all of your partial work and request an extension by sending email to Dr. Qing Yang. Extension is not automatic.

MIDTERM EXAM

All exams will be closed book, closed notes. Questions will be derived from lectures, homework, lab assignments, and discussions in classes. The mid-term exam is tentatively scheduled on Feb 27th, 2019 in room NTDP B157 during 4:00 – 5:20pm. The exam will cover the topics discussed up to one week ahead of the exam date. The students are expected to give the exams on their own and no discussions will be allowed.

FINAL EXAM

The final exam is scheduled on May 8th, 2019 in room NTDP B157 during 1:30 – 3:30pm. The exam will cover the topics discussed throughout the semester, with an emphasis on the materials covered after the mid-term. The students are expected to give the exams on their own and no discussions will be allowed.

GRADING

- Homework: 30%
- Programming Assignment: 25%
- Midterm: 20%
- Final Exam: 25%

The following letter grading system will be use in this class:

A [90, 100) , B [80, 90) , C [70, 80) , D [60, 70) , F [0, 60)

ATTENDANCE POLICY

Student attendance is highly recommended. Every student who misses a class is responsible to learn the materials discussed and obtain the homework assigned on the missed class. The instructor is not responsible for re-teaching the material missed by a student who did not attend the class. Absence in class and lack of participation in class discussions may result in lowering of the grades.

ADA STATEMENT

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course.

You may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information, see the Office of Disability Accommodation website at <http://disability.unt.edu>. You may also contact them by phone at (940) 565-4323.

ACCEPTABLE STUDENT BEHAVIOR

Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The university's expectations for student conduct apply to all instructional forums, including university and electronic classroom, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at <http://deanofstudents.unt.edu>.