
Prerequisites: ECE 304 and a grade of C or better in ECE 202.

Prerequisites by topics: Probabilities, random variables, and stochastic processes; signals and linear systems concepts; basic understanding of communication systems.

Instructor:
Dr. Dimitrie C. Popescu.
Office: Kaufman 231-G
Phone: 683-5414.
E-mail: dpopescu@odu.edu

Course Goals:
1. To learn fundamental principles of wireless communication networks.
2. To gain factual knowledge about wireless communication networks (terminology, classifications, and methods specific to wireless communications).
3. To understand the impact of wireless network technologies on individuals and society.

Textbook (used in class):

Topics:
1. Introduction to wireless networks. (Ch. 1 in Black et al.)
2. Basic concepts and historical perspective. (Ch. 1 in Black et al.)
3. The radio frequency spectrum and the radio link. (Ch. 2 in Black et al.)
4. Wireless channel models and link budgets. (Ch. 3 in Black et al.)
5. Digital signaling and modulation schemes for wireless systems. (Ch. 5 in Black et al.)
6. Spread spectrum systems. (Ch. 5 in Black et al.)
7. Medium access control methods: FDMA, TDMA, and CDMA. (Ch. 6 in Black et al.)
8. Cellular networks. (Ch. 4 in Black et al.)
9. Satellite systems, ad-hoc and vehicular networks (VANETs).
10. Emerging wireless applications.
Additional references (suggested for further reading):


Evaluation:

Final grade is determined based on a weighted score in which the weights are as follows:

<table>
<thead>
<tr>
<th></th>
<th>ECE 452 weights</th>
<th>ECE552 weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing assignment (reflection paper):</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>Homework:</td>
<td>15%</td>
<td>15%</td>
</tr>
<tr>
<td>In-class quizzes:</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Exam 1:</td>
<td>30%</td>
<td>25%</td>
</tr>
<tr>
<td>Exam 2:</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Term project:</td>
<td>–</td>
<td>10%</td>
</tr>
</tbody>
</table>

Course Policies:

- The reflection paper is a formal writing assignment for the course and supports the understanding of the impact of wireless networks in our daily lives. In addition, it prepares students for their future engineering jobs, where writing formal documents is required to report activity to supervisors in the office and/or to present project work for peer review at professional conferences. Specific instructions on how to prepare the reflection paper will be provided in a separate handout at the time of the assignment.
- Homework problem sets will be assigned throughout the semester approximately every other week. Solutions to homework assignments must be handed in-person to the instructor at the beginning of the lecture on the day it is due. Late homework will not be accepted without a serious reason (in which case some points will be taken off for delay).
- Students are expected to have read and follow the ODU Honor Code. Cheating is absolutely prohibited. Students may discuss problem assignments with each other; however, submitted solutions are to be one’s own original work. Identical homework solutions from different students are not acceptable and will be penalized.
- Quizzes will not be announced during the semester. All quizzes and exams will be closed books and notes. Students are not allowed to receive or give assistance on exams and quizzes.
- Both 400 and 500 level students use the same study materials. However, a more in depth understanding of the material is expected from the 500 level students, who are required also to complete a term project. Specific instructions regarding the term project will be given in a separate handout.

Class and Exam Schedule for Fall 2013:

Meeting time and place: Tuesday and Thursday, 11:00 – 12:15 pm in Kaufman Hall 225.
Office hours: Tuesday and Thursday 12:30 – 2:00pm, or by appointment.
Exam 1: October 17, 2013 (in-class).
Exam 2: December 5, 2013 (in-class).
Final exam: no final exam will be administered during final exam week.