

EEE 262 WIRELESS COMMUNICATION SYSTEMS

Indicate Required or Elective Course here Elective

Date: Enter 02/28/2007

Indicate Course Area here Communications

Course Coordinator: B.P. Kumar

Catalog Description:

EEE 262. Wireless Communication. Wireless Communication techniques, systems and standards. Topics include cellular systems, RF transmission and analog/digital modulation techniques. Modern techniques such as multiple access and spread spectrum systems. Channel coding and diversity will also be included. 3.units.

Prerequisites: EEE 185 or equivalent.

Text: 'Wireless Communications: Principles and Practice' by Theodore S. Rappaport
Prentice Hall, 2nd Edition, 2001.

Additional Resources:

References: Student Edition of MATLAB/SIMULINK

'Modern Digital and Analog Communication Systems', by B.P. Lathi
'Wireless Personal Communication Systems' by D.J. Goodman

Course Objectives:

This course will provide senior-level undergraduate and graduate students with theoretical and practical aspects of modern wireless communications. The course material and projects will cover the following topics: cellular concepts, small-scale and large-scale propagation models, complex equalization and diversity system design, wireless networks, and spread-spectrum modulation techniques. Multiple access techniques such as Frequency Division Multiple Access (FDMA), Time Division Multiple Access (TDMA) and Code Division Multiple Access (CDMA) will also be covered.

Prerequisites by Topic:

1. Signals and systems
2. Analog Modulation
3. Digital Modulation

Topics Covered:

1. Cellular communication principles
2. Multiple access systems such as FDMA, TDMA, CDMA
3. Wireless Networks

Evaluation:

Midterm I :	20%
Midterm II:	20 %
Finals :	30 % (comprehensive)
Project:	20%
Homework:	10%

Contribution of Course to the Professional Education Component: Indicate how this course fulfills this ABET requirement (e.g., developing student's analytical and critical-thinking skills, science and design content, etc.) **Note: This section is not required for graduate courses.**

Relationship of Course to Program Outcomes: Indicate how this course fulfills this ABET requirement (e.g., knowledge of mathematics, engineering science, core topics in major, development of problem solving skills, etc.) **Note: This section is not required for graduate courses.**

Course Outline/Schedule

<i>Week</i>	<i>Topic</i>	<i>Text Reference</i>
1	Introduction	Ch. 1
2	Cellular Concept-Fundamentals	3.1-3.7
3	Mobile Radio Propagation- Large Scale Path Loss	4.1-4.4
4	Mobile Radio Propagation - Large Scale Path Loss	4.5-4.9
5	Review and Midterm 1	
6	Mobile Radio Propagation – Small Scale Fading	5.1-5.3
7	Mobile Radio Propagation – Small Scale Fading	5.4-5.7
8	Modulation Techniques for Mobile Radio	6.1-6.5
9	Modulation Techniques for Mobile Radio	6.5-6.11
10	Review and Midterm 2	
11	Equalization and Diversity	7.1-7.11
12	Multiple Access Techniques	9.1-9.4
13	Multiple Access Techniques	9.7
14	Wireless Networking	10.1-10.3 Ch. 2
15	Wireless Systems and Standards	11