Syllabus for

CMPE 312—Computer Networks and Communications

3 Credit Hours

Fall 2002

I. COURSE DESCRIPTION

An introduction to the growing areas of computer networks and communications. Topics include ISDN, LANs, fiber optics, and bridges with a detailed study of OSI protocols. Prerequisite: Senior standing in CMPE.

II. COURSE GOALS

The purpose of this course is to enable the student to understand basic analysis techniques which apply to all types of electronic communications. Specific areas include 1) the basic ideas of signal and system theory (for students not previously exposed to these areas); 2) noiseless modulation theory and; 3) basic topics in computer communications.

III. COURSE OBJECTIVES

The student who successfully completes the course will be able to do the following:

A. Analyze an existing communications devise in terms of its spectrum, bandwidth, signal-to-noise ratio, sampling ratio, etc.

B. Compute correlation, convolutions, power spectral densities, etc.

C. Design communication transmission devises with proper signal-to-noise ratios.

D. Design communication receivers with proper bandwidth/sampling rate to avoid aliasing.

E. Design Amplitude Modulation Systems.

F. Design Single Sideband, Double Sideband, and other Frequency Modulation Systems.

G. Design Pulse Modulation Systems.

H. Analyze Time and Frequency Multiplex signals.

I. Separate non-overlapping spectra through simple filtering.

J. Enhance desired signal characteristics through correlations and convolutions.

K. Identify the need for a network.

L. Identify the various modules required to setup an operational network.

IV. TEXTBOOKS

A. Required textbooks:

S. Haykin, Communication Systems. New York: John Wiley & Sons, 4th edition 2001.

Andrew S. Tanenbaum, Computer Networks. Prentice Hall, 1995.

B. References

T. A. Adamson, Electronic Communications: Systems and Circuits. Albany, NY: Delmar Publishers, Inc., 1988.

G. M. Miller, Modern Electronic Communications. Englewood Cliffs, NJ: Prentice Hall, 1988.

Ken Sherman, Data Communications, A User's Guide. Prentice Hall, 1990.

R. E. Ziemer and W. H. Tranter, Principles of Communications: Systems, Modulation, and Noise, fourth edition. Boston: Houghton Mifflin Company, 1995.

V. POLICIES AND PROCEDURES

A. University Policies and Procedures

1. Attendance at each class or laboratory is mandatory at Oral Roberts University.
2. Double cuts will be assessed for absences immediately preceding or following holidays.
3. Excessive absences can reduce a student's grade or deny credit for the course.
4. Students taking a late exam because of an unauthorized absence will be charged late exam fee.
5. Students and faculty at Oral Roberts University adhere to all laws addressing the ethical use of others' materials, whether it is in the form of print, video, multimedia, or computer software.
6. Final exams cannot be given before their scheduled times. Students need to check the final exam schedule before planning return flights or other events at the end of the semester.

B. Course Policies and Procedures

Evaluation Policy

Analog Homework	10%
Analog Exam	20%
Digital Homework	10%
Digital Exam	20%
Semester Project	20%
Final Exam	20%
Total	100%

VI. COURSE CALENDAR

Week	
1	Overview of Analog Communication Systems
2	Signals in the Time Domain
3	Signals in the Frequency Domain
4	Linear Systems and Sampling Theory
5	Amplitude Modulations (AM)
6	Frequency Modulation (FM)
7	Pulse Modulation (PAM and PWM)
8	Review and Exam on Analog Communication Systems
9	Physical Layer
10	Data Link Layer
11	Network Layer
12	Transport Layer
13	Session Layer
14	Presentation Layer
15	Application Layer
16	Topics in ATM/Projects

Name of Instructor

MISSION

The lifestyle at ORU is rooted in the word "Wholeness." ORU seeks to educate the whole person, with balanced emphasis placed on the development of mind, spirit, and body.

GENERAL OUTCOMES

1. Spiritual Development
2. Physical Development
3. Communication
4. Analysis
5. Problem Solving
6. Valuing in Decision-making
7. Social Interaction
8. Global Perspectives
9. Effective Citizenship
10. Aesthetic Responsiveness

CME 312
Course No.

MAJOR OUTCOMES

Analysis/Problem Solving: Has the ability to analyze, design, and obtain effective solutions to real world engineering and physics problems.

Communication/Team Work: Demonstrates ability to work on teams and communicate effectively in written and oral forms.

Fundamental Knowledge Base: Possesses fundamental knowledge of principles of engineering, physical sciences, and mathematics.

Christian Stewardship and Ethics: Ethically applies engineering technology to the solution of human problems using Christian principles.

Electronic Communications
Title of Course

COURSE OUTCOMES

The course will:

Enable the student to analyze and design a complete communication network.

Enable the student to analyze and design analog communication systems.

Expose the student to various analog communication protocols, such as AM, FM, PAM, PWM.

Engineering and Physics
Name of Department

ASSESSMENT OF COURSE GOALS

STIMULI:

Exams
Assignments
Design Projects

CRITERIA:

Please refer to syllabus.