

EECE 152 - Introduction to Communication Systems

Course Description:

Orthogonality and signal representation. The Fourier transform and applications, power spectral density, amplitude modulation, angle modulation, pulse modulation, frequency modulation and digital transmission.

Prerequisites: EECE 113

Course Materials:

Required: Introduction to Communication Systems, 3rd. edition, Ferrel G. Stremler, Addison-Wesley (1990).

Course Goals: To introduce students to the concepts of modern communications and to show them how to analyze the principal characteristics of communication systems and their practical realizations from a systems viewpoint using mathematical descriptions of the signals that characterize such systems.

Course Objectives:

By the end of this course, you should....

- Be able to define the various types of signal modulation, both qualitatively and quantitatively.
- Be able to enumerate the advantages and disadvantages of several types of signal modulation techniques.
- Be able to describe the evolution of modulation techniques used to enhance the ability of a modulation type to transmit information, particularly in regards to issues such as energy, SNR, signal bandwidth, etc..
- Understand the relationship between needed bandwidth and the sampling theorem for sampled modulation schemes.
- Understand the use of statistics in describing digital signal transmission techniques.

Course Topics:

	<u>In the (Required) Text</u>	<u>Schedule</u>
Review of linear systems and signal representations	Chapters 1, 2, 3	2 weeks
Spectral density and correlation	Chapter 4	2 weeks
Amplitude modulation	Chapter 5	2 weeks
Angle modulation	Chapter 6	2 weeks
Pulse modulation	Chapter 7	2 weeks
Probability and random variables	Chapter 8	2 weeks
Digital transmission	Chapters 9 and 10	2 weeks

Class Schedule: 3 credit hours, equivalent to 3-50 minute lectures

EECE 152: Introduction to Communication Systems
ABET Objectives,
Assessment Instruments, and
Assessment Criteria

- (A) **An ability to apply knowledge of mathematics, science, and engineering:**
Successful completion of all assignments, each of which focuses on one or more of the objectives in the EECE 152 outline.
Tests, homework and projects will be completed with a minimum grade of C to demonstrate minimum competence.
- (E) **An ability to identify, formulate, and solve engineering problems.**
Successful completion of all assignments, each of which focuses on one or more of the objectives in the EECE 152 outline.
Tests, homework and projects will be completed with a minimum grade of C to demonstrate minimum competence.
- (H) **The broad education necessary to understand the impact of engineering solutions in a global/societal context.**
Successful completion of all assignments, each of which focuses on one or more of the objectives in the EECE 152 outline.
Tests, homework and projects will be completed with a minimum grade of C to demonstrate minimum competence.
- (K) **An ability to use the techniques, skills and modern engineering tools necessary for engineering practice**
Successful completion of all assignments, each of which focuses on one or more of the objectives in the EECE 152 outline.
Tests, homework and projects will be completed with a minimum grade of C to demonstrate minimum competence.
- (L) **An ability to apply probability and statistics and higher mathematics to the solution of engineering problems.**
Successful completion of all assignments, each of which focuses on one or more of the objectives in the EECE 152 outline.
Tests, homework and projects will be completed with a minimum grade of C to demonstrate minimum competence.

Evaluation of Objective Attainment-Continuing Course Review

At the end of each semester, instructors of this course will submit a short written report to the Course Coordinator for EECE 152 which

- a) discusses their perceptions of student knowledge and ability to apply the listed prerequisites, and
- b) provides qualitative and quantitative information which discusses the attainment of objectives listed above for EECE 152.

The course coordinator will review these reports with the instructors and in consultation with the instructors recommend modification and/or enhancements to the objectives and criteria as needed. The recommendations will be forwarded to the EECE Undergraduate Committee for approval.

Last modified: July 13, 2000