2002 Catalog Data: 484 Communication System Design (3 Sp) Design and analysis of analog and digital communication systems. System models, requirements development, performance analysis and component selection techniques. Comprehensive system design project. 

Prerequisites: EE 364 (Probability and Statistics for Electrical Engineering), EE 475 (Wireless Communication Technology).

Textbooks: Digital Communications, Sklar, Prentice Hall, 1988
Satellite Communications Fundamentals, Kadish and East, Artrech House

Coordinator: Marvin S. Stone, Adjunct Associate Professor of Electrical Engineering

Topics:
1. Introduction to Communication systems engineering: system models, requirements/specifications, factors affecting system design.
2. Noise in communication systems: sources of noise, statistical characteristics of noise, noise calculations.
3. Data transmission techniques: data multiplexing, carrier modulation/demodulation, probability of bit error calculations.
4. Communication link analysis: the channel, link budget analysis, system tradeoffs.
5. Satellite communication system design: geometry of satellite orbits, satellite transponder and ground station components, satellite uplink/downlink performance analysis.
6. Design project: configure a satellite communication system that meets specific project requirements, prepare final report.

Course Objectives: To give the student the opportunity to apply knowledge gained in linear systems, probability, communications and device technology to the design of modern communication systems. The course is intended to prepare students for entry-level jobs in the communication industry or for advanced study.

Course Outcomes: The student will be able to:
1. understand the process of translating operational requirements into communication system design requirements.
2. calculate communication system design parameters such as noise figure, signal-to-noise ratio, and bit error rate.
3. analyze communication links and construct detailed link budget tables.
4. understand the principles of satellite communication link design.
5. function on a design team.

Relation of Course outcomes to the Electrical Engineering Program outcomes:
The course contributes primarily to Program outcomes: a, c, d, e, g, i, k, l, m, n, o.

Prepared by: Marvin S. Stone
Date: October 18, 2002
EE 484: Communication System Design
Spring 2003

Instructor: Dr. M.S. Stone   EEB 500; (213) 740-4685; marvs@cox.net
Messages: (213) 740 7875

Lecture: 2-3:20 P.M. in OHE 230

Office Hours: Mon. and Wed. 3:30-4:30 P.M., other times by appointment

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Course Grades:
- Class participation: 15%
- Midterm Exam: 25%
- Design Project: 60%