

METROPOLITAN STATE UNIVERSITY OF DENVER
Office of Academic and Student Affairs

REGULAR COURSE SYLLABUS

College of: Professional Studies

Department: Engineering and Engineering Technology

Prefix & Course Number: CPE 3620 Crosslisted With*: _____

Course Title: A&D Communications

Transcript Course Title (30 characters): A&D Communications

Check All That Apply: Required for Major: Required for Minor: _____ Specified Elective: _____
Required for Concentration: _____ Elective: _____ Service Course: _____

To receive Title IV financial aid funds, all institutions of higher education must comply with the federal definition of a credit hour. The Higher Learning Commission requires institutions to maintain policies and procedures for verifying compliance with this definition.

Federal Credit Hour Definition: A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally-established equivalency that reasonably approximates not less than:
(1) one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or (2) at least an equivalent amount of work as required in paragraph (1) of this definition for other activities as established by an institution, including laboratory work, internships, practica, studio work, and other academic work leading toward to the award of credit hours. 34CFR 600.2 (11/1/2010)

Credit Hours: 3 (3+0) Schedule Type: L Grade Mode: L

Face-to-Face or Equivalent Hours per course:

Lecture 45 Lab _____ Internship _____ Practicum _____ Other (please specify type and hours): _____

Additional Student Work Hours per course: 90

Variable topics umbrella course: No Yes _____ If yes, number of credits/repeats allowed _____

Specified repeatable course: No Yes _____ If yes, number of credits/repeats allowed _____

Prerequisite(s): CPE 2145, CPE 2165 and MTH 2410 (with a grade of "C" or better for all prerequisites)

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

APPROVED:

Department Chair OR Program Director Date

Dean OR Associate Dean Date

Associate VP, Academic and Student Affairs Date

*If crosslisted, attach completed Course Crosslisting Agreement Form

Prefix and Course Number:

Banner Enforced Coding:

Prerequisite(s): CPE 2145, CPE 2165 and MTH 2410 (with a grade of "C" or better for all prerequisites)

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

Registration restrictions: Level _____ Class _____ Program/Major _____ Student attribute _____

Catalog Course Description:

This course is an introduction to communication systems. Topics include: information theory, channel capacity, A/D and D/A techniques, modulation (AM, FM, and digital), noise sources, quantization, and transmission lines including Smith Charts.

Specific Variable Topics Course Description (if applicable, umbrella course description included above):

Required Reading and Other Materials will be equivalent to:

Stanley & Jeffords (2006). *Electronic Communications: Principles And Systems, 1st Edition*. Or latest edition. Clifton Park, NY: Thompson Delmar Learning

Specific, Measurable Student Behavioral Learning Objectives:

Upon completion of this course the student should be able to:

1. Understand standard communication parameters for transmission and loss related to modulation, demodulation and noise
2. Understand analog and digital modulation techniques related to effects on noise and transmission medium
3. Analyze match and mismatched transmission lines and voice, data and video networks

Detailed Outline of Course Content (Major Topics and Subtopics) or Outline of Field Experience/Internship (experience, responsibilities and supervision):

- I. Communication Systems Overview
 - A. Power in Watts, dB and dBm
 - B. External and Internal Noise
 - C. Signal to Noise Ratio
 - D. Attenuation Loss
 - E. Information Capacity Theorems
- II. Modulation
 - A. Analog Communications
 1. AM DSBFC
 2. AM SSBSC
 3. FM
 4. FDMA
 - B. Digital Communications
 1. ASK, FSK and PSK
 2. M-ary, QPSK and QAM
- III. Digital Transmission
 - A. Nyquist Sampling Theorem
 - B. PCM
 - C. A/D and D/A
- IV. Transmission Medium

- A. Metallic Carriers (T1/E1, phone, Cable)
- B. Fiber
- C. Wave Propagation

V. Transmission Lines

- A. Theory
- B. Smith Chart
- C. Matching Sections

VI. Voice and Video Networks

- A. Telephone Network
- B. Cable Television Network

VII. Data Communications Fundamentals

- A. Modems
- B. Internet
- C. WAN and LAN
- D. Protocols

Evaluation of Student Performance:

1. Examinations
2. Written Assignments