

METROPOLITAN STATE COLLEGE of DENVER
Office of Academic Affairs

REGULAR COURSE SYLLABUS

School of: Professional Studies

Department: Engineering Technology

Prefix & Course Number: EET 3620

Crosslisted With*: _____

Course Title: Analog and Digital Communications

Check All That Apply: Required for Major: X Required for Minor: _____ Specified Elective: _____

Required for Concentration: _____ Elective: _____ Service Course: _____

Credit Hours: 3 (3+0)

Total Contact Hours per semester (assuming 15-16 week semester):

Lecture 45 Lab 0 Internship _____ Practicum _____ Other (please specify type and hours): _____

Schedule Type(s): L Grading Mode(s): L

Variable Topics Courses (list restrictions, including the maximum number of hours that can be earned**):

**** NOTE: This information must be included in the course description.**

Restrictions (Variable Topics Course): _____

Prerequisite(s): (EET 2145 or EET 3010), and MTH 2410 with grades of "C" or better

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

Banner Enforced:

Prerequisite(s): (EET 2145 or EET 3010), and MTH 2410 with grades of "C" or better

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

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.

APPROVED: Rubal Puri 3/1/2011

 Department Chair OR Program Director Date

B. J. Morgan 3-11-11

 Dean OR Associate Dean Date

Shelby Houston 6/2/11

 Associate VP, Academic Affairs Date

*If crosslisted, attach completed Course Crosslisting Agreement Form

Required Reading and Other Materials will be equivalent to:

1. Stanley & Jeffords (2005). *Electronic Communications: Principles And Systems 1st Edition*, or latest edition. Clifton Park, NY: Thompson Delmar Learning
2. Etter (2004). *Intro To Matlab 7*, or latest edition. Upper Saddle Hill, NJ: Prentice Hall

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. Written exams
2. Homework
3. Written reports