METROPOLITAN STATE UNIVERSITY OF DENVER
Office of Academic and Student Affairs

REGULAR COURSE SYLLABUS

School of: Professional Studies

Department: Engineering Technology

Prefix & Course Number: EET 4620 Crosslisted With*:
Course Title: Advanced Communications Systems

Banner course title (30 characters): Adv Communications Systems

Check All That Apply: Required for Major: _____ Required for Minor: _____ Specified Elective: _____
Required for Concentration: X Elective: X 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 the award of credit hours. 34CFR 600.2 (11/1/2010)

Credit Hours: 3 (3+0)

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

Schedule Type: L Grade Mode: L

Variable topics umbrella course: No X Yes _____ If Yes, number of credit hours allowed ____________

Specified repeatable course: No X Yes

APPROVED:

Department Chair OR Program Director

Dean OR Associate Dean

Associate VP, Academic and Student Affairs

*If crosslisted, attach completed Course Crosslisting Agreement Form
Prefix and Course Number: EET 4620
Prerequisite(s): EET 3620, with a grade of “C” or better
Corequisite(s): ____
Prerequisite(s) or Corequisite(s): ____

Banner Enforced:
Prerequisite(s): EET 3620, with a grade of “C” or better
Corequisite(s): ____
Prerequisite(s) or Corequisite(s): ____

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

Catalog Course Description:
This is a senior research course which requires student analysis of HF, VHF, UHF, microwave, spread spectrum, optical, video, and satellite systems. Analog and digital cellular and personal communication services, including AMPS, GSM, CDMA, wireless LANs, microwave satellite communication systems

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

Required Reading and Other Materials will be equivalent to:
No text is identified since students will be required to search appropriate sources for information

Specific, Measurable Student Behavioral Learning Objectives:
Upon completion of this course the student should be able to:
1. Analyze and design HF, VHF, UHF, and microwave systems.
2. Analyze spread spectrum systems.
3. Analyze optical, video, and satellite communication systems.
4. Evaluate optical, video, and satellite communications system performance.
5. Solve wireless transmission problems including quantization of system, performance such as bit error rate, processing gain, bandwidth utilization, link budgets, path loss, minimum C/I system requirements, probability of coverage.
6. Analyze the main wireless technology standards of current and future wireless communications systems.
7. Solve satellite orbital mechanics problems.
8. Solve power problems relating to various satellite configurations.
9. Compute path dispersion losses, noise figure, dynamic range, signal to noise ratios, C/N, GIT, and other system performance criteria.
10. Compute earth station antenna azimuth and elevation angles and be able to determine satellite visibility.

Detailed Outline of Course Content:
I. Operational wireless systems introduction
   A. Modes of wireless communication
      a. Mobile radio propagation concepts
      b. HF, VHF, UHF, and microwave
      c. Free-space optical propagation
      d. Other modes
   B. Wireless networks and services
   C. Applications

II. Fundamentals of wireless system design
   A. Video, voice and data communication services
   B. Spread spectrum systems
   C. Modulation techniques for cellular and PCS systems
   D. Access techniques for wireless packet data networks
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E. Spacecraft subsystems
   a. Satellite orbital aspects
   b. Current and future satellite services
   c. Satellite communications systems design
   d. Propagation issues in satellite communications

F. Laser and fiber optic transport systems

III. Current and emerging wireless system standards

Evaluation of Student Performance:
1. Homework
2. Projects
3. Examinations
4. Students Presentations