

METROPOLITAN STATE COLLEGE of DENVER
Office of Academic Affairs

REGULAR COURSE SYLLABUS

School of: Professional Studies

Department: Engineering Technology

Prefix & Course Number: EET 3690 Crosslisted With*: _____

Course Title: Fiber Optics

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

Credit Hours: 3 (2+2)

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

Lecture 30 Lab 30 Internship _____ Practicum _____ Other (please specify type and hours): _____

Schedule Type(s): B 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 and MTH 2410 with a grade of "C" or better

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

Banner Enforced:

Prerequisite(s): Prerequisite(s): EET 2145 and MTH 2410 with a grade of "C" or better

Corequisite(s): _____

Prerequisite(s) or Corequisite(s): _____

Catalog Course Description:

Fiber optics is studied, including ray propagation, emitters, detectors, connectorization and systems, FDDI and SONET.

APPROVED:	<u>Richard Pegg</u>	<u>3/10/2011</u>
Department Chair OR Program Director	_____	Date
Dean OR Associate Dean	<u>R. Morgan</u>	<u>3-11-11</u>
Associate VP, Academic Affairs	<u>Heidi Thompson</u>	<u>6/2/11</u>
	_____	Date

*If crosslisted, attach completed Course Crosslisting Agreement Form

Required Reading and Other Materials will be equivalent to:

Hecht (2001), *Understanding Fiber Optics, 5th Edition*, or latest edition. Upper Saddle Hill, NJ: Prentice Hall
William J Palm III (2004) *Introduction to Matlab 7 for Engineers 2nd edition* or latest edition, McGraw-Hill

Specific, Measurable Student Behavioral Learning Objectives:

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

- 1 Perform fiber optic parametric calculations.
- 2 Define the types of optical fibers, their characteristics, and applications.
- 3 Identify and compare optical transmission standards
- 4 Analyze and design fiber optic networks.
- 5 Compare and contrast optical light sources and receivers with respect to:
 - a. Power Capacity
 - b. Spectrum and Spectral Width
 - c. Modulation types and speeds
 - d. Applications

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

- I. Light Ray Propagation:
 - A. Critical Angle
 - B. Angle of Acceptance
 - C. Types of Optical Fibers
 - D. Manufacture of Optical Fibers
 - E. Connectors, Splices and their losses
- II. Emitters:
 - A. Light Emitting Diodes (LED)
 - B. Diode Laser
- III. Detectors and Receivers:
 - A. PIN (P-Intrinsic-N) Diodes
 - B. Avalanche Detectors
- IV. System Design
- V. FDDI (Fiber Distributed Data Interface)
- VI. SONET (Synchronous Optical Network)

Evaluation of Student Performance:

1. Written examinations
2. Homework
3. Research Project with oral presentation
4. Laboratory reports