

Electrical Eng

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PROPOSAL NUMBER: 99-462

CURRICULUM PROPOSAL FORM

*DEADLINES:

REGULAR COURSE PROPOSALS: OCTOBER 23, 1998 FOR FALL, 1999 AND FEBRUARY 19, 1999 FOR SPRING, 2000
SHORT-TERM COURSE PROPOSALS: DECEMBER 11, 1998 FOR FALL, 1999 AND MARCH 26, 1998 FOR SPRING 2000

PROPOSAL TITLE: Optical Fiber Communications
SPONSOR/S: R. Kuchnarek, S. Maudagam, J. Schmalzer
DEPARTMENT: ENGINEERING ECE 0909.431

CHECK ALL THAT APPLY:
 UNDERGRADUATE GRADUATE
COLLEGE: ENGINEERING
If LAS: History/Humanities
 Math/Sciences
 Social/Behavioral Sciences

TYPE OF PROPOSAL (Check ALL that Apply)
 General Education
 New Course in Bank
 Existing course, Add To Bank
 Multicultural/Global Designation
 Writing Intensive Designation
 New Course (NOT Gen. Ed.)
 Name Change (Dept., School, Major)
 Changes in Degree Requirements
 Changes Involve Gen. Ed. requirements
 Minor Changes to Existing Courses
 Course is NOT General Education
 Course IS General Education
 New Minor/Concentration/Specialization
 New Major/Degree Program
 Short Term Course Proposal

DEPARTMENT (SIGNATURE INDICATES APPROVAL)
Ravi Prakash Rameshbabu 03/09/99 John Seif 06/22/99
DEPT. CURRICULUM CHAIR / DATE DEPT. CHAIRPERSON / DATE

COLLEGE CURRICULUM COMMITTEE
DATE OF OPEN HEARING (if necessary) 4/20/99
 APPROVED
 NOT APPROVED
Comments:
Robert P. Hesketh 4/20/99
SIGNATURE DATE

ACADEMIC DEAN (& GRADUATE DEAN, for New Graduate Programs Only)
 APPROVED
 NOT APPROVED
Comments:
James P. ... 3/9/99
SIGNATURE (Academic Dean) DATE
SIGNATURE (Graduate Dean) DATE

UNIVERSITY CURRICULUM COMMITTEE

DATE OF OPEN HEARING (if necessary) 7/20/99 College level

APPROVED

NOT APPROVED

Comments:

Patricia Reeder 7/7/99

SIGNATURE DATE

SENATE

Date announced at Senate 4/30/99

Voted upon at Senate: _____ Approved _____ Not Approved _____ Date: _____

EXECUTIVE VICE PRESIDENT/PROVOST

APPROVED

NOT APPROVED If no, reasons are as follows:

STUDENT CREDIT HOURS _____ FACULTY LOAD HOURS _____ EQUALIZED CREDIT HOURS _____

OFFICIAL COPY & APPROVAL SHEET FILED (DATE): _____

DATE/SIGNATURE EXECUTIVE VICE PRESIDENT/PROVOST [Signature] 5/20/99

REGISTRAR

DATE APPROVED COURSE DESCRIPTION RECEIVED _____

HEGIS TAXONOMY & COURSE NUMBER ASSIGNED 0909.431

DATE/SIGNATURE OF REGISTRAR Robert A. Kulbat 7/6/99

NOTIFICATION FORWARD:

- SENATE CURRICULUM COMMITTEE CHAIRPERSON
- DEPARTMENT CHAIRPERSONS
- ACADEMIC DEAN(S)
- REGISTRAR
- _____ SPONSOR(S)

[Signature] 7/6/99

Course Proposal

1. Details:

a) Course Title:	Optical Fiber Communications (0909.431)
b) Sponsor:	Dr. Robert R. Krchnavek, Dr. Shreekanth Mandayam, Dr. John L. Schmalzel and the Electrical and Computer Engineering Curriculum Committee
c) Credit Hours:	3 credit hours
d) Course Level:	Senior
e) Curricular Effect:	Elective course for electrical and computer engineering majors
f) Prerequisites:	Electronics I (0909.311) Engineering Electromagnetics I (0909.301) Engineering Electromagnetics II (0909.302)
g) Suggested Time/ Scale of Implementation	Spring 2000 One section
h) Resources	Laboratory equipment will be obtained consistent with the Engineering School multi-year budget. Library acquisitions will be required.

2. Rationale:

The proposed course is a revision to part of the Engineering Curriculum Proposal approved by the College Senate in December, 1994. The proposed course is consistent with the establishment of the School of Engineering approved by the Board of Trustees in February, 1995.

Today's communication systems are highly dependent on optical techniques to provide high-bandwidth, point-to-point links. As optical technology continues to mature in the telecommunications network, the demand for ever-increasing bandwidth is a major factor in future installations. Furthermore, the distance over which the optical solution is considered viable continues to shrink as optical technology continues to drop in price.

The increase use of optical technology in a wide range of systems makes it pertinent that our students be given the opportunity to obtain a working knowledge of optical fiber communication systems.

3. Essence of the Course:

a) Objectives:

The proposed course has a number of objectives:

- (i) Provide a detailed understanding of the fundamental technologies in optical fiber communication systems.
- (ii) Develop the skills necessary to evaluate the trade-offs in various optical technologies and systems.
- (iii) Develop the ability to design, analyze, simulate, build, and test optical systems.

b) Topical Outline:

- Optical Fibers: waveguiding, structures, materials, dispersion and signal degradation.
- Optical Sources: light emitting diodes, laser diodes, optical amplifiers.
- Optical Coupling: source-to-waveguide coupling, analytical techniques, numerical techniques.
- Optical Receivers: photodetectors, noise, receiver operation, performance calculations.
- Digital and Analog Systems: point-to-point links, system performance, noise effects on system performance, carrier-to-noise ratio.

c) Evaluation and Grading Procedures:

Student grades will be based on projects, examinations, homework, laboratory reports and written and oral technical communication.

d) Course Evaluation:

The proposed course will be evaluated based on student evaluations and critical review by engineering faculty.

e) Texts:

Optical Fiber Communications, Gerd Keiser, McGraw-Hill.

Fundamentals of Optoelectronics, Clifford R. Pollock, Irwin.

4. Results of Consultations:

a) Consulted Departments: Computer Science – In progress.

b) Consultants and Consultant Statements: N/A

c) Written Consultations: N/A

5. Additional Supporting Information: N/A

6. Catalog Description:

Optical Fiber Communications (0909.431)

Optical communications is an integral part of the world-wide telecommunications system. This course will consider the numerous technologies that comprise such systems as well as the techniques to design, analyze, simulate, and test such systems. Topics include: theory of optical waveguiding, waveguide structures, materials, dispersion, signal degradation in fibers, laser diodes, optical amplifiers, optical coupling, photodetectors, noise, receiver operation, and numerical and analytical techniques for performance calculations and system evaluation.

Prerequisites: Electronics I (0909.311), Engineering Electromagnetics I & II (0909.301 & 0909.302).