Three Rivers COMMUNITY COLLEGE

Course Syllabus

Course: **K251/2 Fiber Optic Systems and Devices**
Credits: **4**
Prerequisites: **EET* K105/106, MAT* K186, and PHO* K101**
Instructors: **Lecture - Dan Courtney – dcourtney@trcc.commnet.edu – 860-885-2338**
Lab – jdonnelly@lasertechonline.org – 860-885-2353
Office Hours: **As Posted – Office C134**
Text: **Understanding Fiber Optics, Fifth Edition, Jeff Hecht, Pearson Education, ISBN 0131174290**

Course Details:

CRN	Cred	Title	Day(s)	Time	Date
12359	1	Lab, Intro to Lasers	W	10:20 am-11:59 am	01/19-05/16
11312	3	Fiber Optic System and Devices	TR	11:00 am-12:15 pm	01/19-05/16

Course Descriptions:

This course will introduce parameters describing optical fibers, fiber optic system components, waveguide transmission as well as non-telecommunications uses of fiber. Fiber coupling, splicing, and testing will also be covered. Concepts from optics and electronics will be used extensively to explain the operation of fiber systems and devices.

This laboratory course accompanies PHO* K251 and provides practical experience applying and testing fiber optic connectors and splices, fusion splicing, and using instrumentation such as optical loss test sets and the optical time domain reflectometer (OTDR). Students will measure fiber optic parameters and work active and passive devices commonly found in fiber optic systems.

Course Topics:
Background and Applications
Fiber Types and Characteristics
Cables, Connectors and Splicing
Sources and Detectors
Transmitters and Receivers
Fiber Optic Components
Test Equipment
Fiber Optic Sensors and Other Applications
Integrated Optics

ABET Student Outcomes – Associate Degree Programs - 2011/2012

a. an ability to apply the knowledge, techniques, skills, and modern tools of the discipline to narrowly defined engineering technology activities;
b. an ability to apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require limited application of principles but extensive practical knowledge;
c. an ability to conduct standard tests and measurements, and to conduct, analyze, and interpret experiments;
d. an ability to function effectively as a member of a technical team;
e. an ability to identify, analyze, and solve narrowly defined engineering technology problems;
f. an ability to apply written, oral, and graphical communication in both technical and nontechnical environments; and an ability to identify and use appropriate technical literature;
g. an understanding of the need for and an ability to engage in self-directed continuing professional development;
h. an understanding of and a commitment to address professional and ethical responsibilities, including a respect for diversity; and
i. a commitment to quality, timeliness, and continuous improvement.

ABET Student Outcomes – Associate Degree Programs - 2011/2012

LFOT Program Outcomes

Upon successful completion of all program requirements, graduates will be able to:

1. use general electronic and optical test instrumentation as well as specialized instrumentation such as optical spectrum analyzers and laser beam analyzers.
2. specify, mount, and align optical components and install, align, and operate support and positioning equipment.
3. demonstrate proper optical fiber handling techniques, including connectorization, splicing and the use of optical sources, meters and OTDR.
4. survey a laser work area, citing unsafe conditions present.
5. work cooperatively with team members to gather and analyze data using applicable software and report results in both oral and written format.
6. read and interpret vendor catalogs and instruction manuals.

K251 Course Outcomes

1. Mastery of Fiber Optic concepts as defined in the course syllabus
2. Develop the necessary skills to safely handle fiber optic components
3. Develop basic skills for testing fiber optic components and systems
4. Demonstrate an ability to analyze and solve problems relating to basic fiber optic systems
5. Demonstrate senior level oral and written communication skills
6. Demonstrate an appreciation for lifelong learning
7. Demonstrate proper professional and ethical behavior
8. Demonstrate a commitment to quality, timeliness and continuous improvement

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Course Format: Classes will consist of topic discussions, classroom exercises and laboratory exercises. Classes will move fluently between these activities.

Course Grading: Class Participation, Course Portfolio, Laboratory Skills.

Attendance/Timeliness: Attendance is mandatory at all class and lab sessions. Tardiness of attendance and/or assignments will have a significant negative impact on grading.

Course Portfolio:

The Course Portfolio will be a major component of a student's grade. The Portfolio consists of a 3 ring binder with dividers. All class materials will be filed in the Portfolio. Course activities will consist of topic discussions, in class assignments, laboratory exercises, homework and reports.

During a class discussion, the instructor will record the notes from the discussion on the white board. Students will transcribe the notes into their individual portfolios. The instructor will also distribute supplementary materials which will also be filed in the portfolio. In class assignments, homework, laboratory and other reports will also be filed in the portfolio.

Portfolio Grading Factors: Completeness, Presentation, Timeliness

Portfolio Grading Frequency – Mid Term & Final

Portfolio Physical Requirements:

3 Ring Loose Leaf Binder (1" or greater)
3 Hole Punched 8 ½ X 11 Lined Filler Paper – No Spiral Bound Notebooks or Paper
Divider Tabs

Portfolio Sections:

- Class Notes
- Handouts
- In Class Assignments
- Lab Reports
- Homework
- Other

Other Required Course Materials:

Straight Edge
Scientific Calculator e.g. TI-30 – Calculators should be available at all times during classes.