

Three Rivers Community Technical College
PHO 250 Fiber and Integrated Optics
4 credits
Professor Donnelly (Mod 1)

Course Description

This course is designed to introduce you to the basic principles of fiber optics and to give you a working knowledge of state of the art fiber optic systems. Course lectures will be supplemented with instructor handouts and demonstrations. The laboratory section is designed to complement the lecture as well as to give you hands-on experience with fiber optic termination and test procedures.

Prerequisites: EET K134/135, MAT* K186, and PHY* K141 or permission of instructor.*

Texts

1. Mynbaev and Scheiner, *Fiber-Optic Communication Technology*, Prentice Hall 2001
2. Instructors Notes and Handouts

References

The Thames Valley Campus library has a good collection of fiber optics texts and installers' manuals. Two of particular note are

1. DeCusatis et al, editors, Handbook of Fiber Optic Communications
2. Pearson, Fiber Optics Installation Handbook

Trade journals such as WDM and Fiberoptic Product News are available at no charge from the publishers. The New England Fiber Optic Council holds monthly talks on current fiber optics topics which may be of interest to students.

Attendance Policy

Students are expected to attend all classes, to be on time and to be prepared. Excessive absences will have a deleterious effect upon grades. Attendance will be taken.

Exam Policy: MODULE 1

There will be two hour exams. A sheet of equations will be allowed for each exam. Missed exams will receive a grade of "0". Makeup exams will only be given in the case of serious illness or other bona-fide excuse. Students may be asked for appropriate documentation to schedule a make-up exam.

Homework will be assigned on a regular basis but will not be collected. If you don't "get" any of the homework problems, be sure to ask about it in class. Homework problems are the basis of the tests.

Tentative Course Outline: MOD 1

class	chapter	topic	lab
1/22	1	intro/why fiber/optics review (homework)	ST MM connector
1/24	3	SI fiber and NA	polish/test ST MM
1/29	3,4.5	Attenuation and loss	
1/31	3	pulse spreading- modal distortion and dispersion	NA measurement
2/5	3	GRIN and SI fibers and bit rate for MM	
2/7	3	Practical fibers/ interpreting spec sheets	
2/12		test ch 3.4	attenuation measurement
2/14	5, 6.1	single mode fiber- cutoff wavelength, MFD, attenuation	
2/19		holiday	ST SM connector

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2/21	5, 6.3	material and waveguide dispersion; dispersion compensation	
2./26	5	PMD; pulse spreading and bit rate	polish/test ST SM
2/28	5,6	specialty fiber- including power delivery/sensors/active	
3/5	7	fabrication (fiber draw)	Trip to OFS in AVON OR couplers
3/7	13	couplers, splitters, WDM mux and demux	
3/12	13	isolators, circulators, attenuators	testing couplers OR distance sensor
3/14		test first half	
Spring break			

Lab Experiments

The lab experiments are chosen to complement the course material, and to introduce you to fiber optic termination and testing. Several of these labs require two weeks to complete. All laboratory reports are expected to be neat and complete, following the format presented in lab. Labs which are not complete will not be graded. **No lab reports will be accepted more than 2 weeks after the experiment is completed.**