

CASPER COLLEGE COURSE SYLLABUS

**ELTR 2925  
Fiber Optics**

<b>Semester/Year: Fall 2015</b>		
<b>Lecture Hours: 2</b>	<b>Lab Hours: 4</b>	<b>Credit Hours: 4</b>
<b>Class Time:</b> Lec: 10 – 11:50 AM , Lab: 8 – 11:50 AM	<b>Days:</b> Lec: T Lab: TH	<b>Room:</b> Lec: GW 207 Lab: GW 116
<b>Instructor's Name: David Arndt</b>		
<b>Instructor's Contact Information:</b> Office GW 116E	<b>Office Phone:</b> 307- 268-2521	<b>Email:</b> darndt@caspercollege.edu
<b>Office Hours:</b> M, W      8-8:50 AM M, W, F :    9-9:50 AM		
<b>Course Description:</b>		
<p>This course covers the fundamentals of light-wave communications and transmission. The course content includes the fundamentals of light, light sources, optical fiber characteristics, splices, connectors, couplers, receiver, and driver systems. System maintenance and splicing will be stressed. Safety procedures will be stressed throughout the course of instruction.</p>		
<b>Statement of Prerequisites:</b>		
None		
<b>Goal:</b> Demonstrate knowledge of how fiber optics works, and how to terminate optical fibers,		
<b>Outcomes:</b>		
Upon the completion of this course, the student will:		

1. Demonstrate understanding of how communications is accomplished over optical fiber.
2. Demonstrate understanding of how optical is terminated using connectors and splices.
3. Demonstrate understanding of the design and installation of fiber optic systems.

**Objectives:**

The student will:

1. List and define the main areas of a communication medium.
2. List and define the types of information transmission methods used in communications.
3. List and define the advantages of fiber optics communications.
4. Explain how light is used to transmit and receive information in a fiber optic system.
5. Explain how reflection and refraction are used to transmit light in an optical fiber.
6. List and define the different types of optical fiber and explain how they are used to transmit information.
7. List and explain the characteristics of optical fiber.
8. Explain how fiber optic cables are constructed.
9. Explain how LEDs and Lasers are designed and how convert electrical current to light.
10. Explain how PIN and Avalanche Photo diodes are designed and how the convert light to electrical current.
11. Explain how optical transmitter and receiver systems work.
12. Attach connectors to optical cables with a loss of .75dB or less.
13. Splice two optical fibers together with a .02dB loss or less.
14. Demonstrate knowledge of the design and installation of optical systems.

**Methodology:**

Students will spend two hours a week, in lecture, learning the fundamentals of fiber optic communication systems. A laboratory period of four hours, once a week, will be conducted to supplement the knowledge, gained through class lecture periods, given during the same week and to develop the skills needed to troubleshoot and maintain fiber optic systems. Lab periods will include demonstrations, experiments, and performance assignments centered on lecture material and using maintenance and test equipment.

**Evaluation Criteria:**

Student comprehension, of materials covered in lecture, will be evaluated through test and homework assignments. A lab report will be written for each laboratory experiment that the student completes. Tests will be 50% and lab reports 50% of the student's final grade.

Grading:                      Tests                      = 50%

Lab Reports = 50%  
Total = 100%

**Casper College may collect samples of student work demonstrating achievement of the above outcomes. Any personally identifying information will be removed from student work.**

**Required Text, Readings, and Materials:**

Woodward Bill, Fiber Optics Installer (FOI), Sybex, A Wiley Brand

Reference Materials

Course Handouts

Materials:

Safety glasses

**Class Policies: Last Date to Change to Audit Status or to Withdraw with a W Grade:**

Please refer to the current Casper College Catalog

**Student Rights and Responsibilities:** Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

**Chain of Command:** If you have any problems with this class, you should first contact the instructor to attempt to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Head/Program Director, the Dean, and lastly the Vice President for Academic Affairs.

**Academic Dishonesty:** (Cheating & Plagiarism) Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct for more information on this topic.

**Official Means of Communication:** Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly. This is also, where you will find course evaluation links during course evaluation periods.

**ADA Accommodations Policy:** If you need academic accommodations because of a disability, please inform me as soon as possible. See me privately after class, or during my office hours. To request academic accommodations, students must first consult with the college's Disability Services Counselor located in the Gateway Building, Room 344, (307) 268-2557, [bheuer@caspercollege.edu](mailto:bheuer@caspercollege.edu). The Disability Services Counselor is responsible for reviewing documentation provided by students requesting accommodations, determining eligibility for accommodations, and helping students request and use appropriate accommodations.

**Calendar or schedule indicating course content:**

**Tentative Schedule:**

**Calendar or schedule indicating course content:**

Week 1	Chapter 6 Safety Chapter 8 Connectors
Week 2	Test 1, Chapter 6 and 8 Chapter 1 History of Fiber Optics Chapter 2, Fiber Optic Communications
Week 3	Chapter 2, Fiber Optic Communications
Week 4	Chapter 3 Principles of light
Week 5	Test 2, Chapter 1, 2, and 3 Chapter 4 Optical Fiber Construction
Week 6	Chapter 5 Optical Fiber Characteristics
Week 7	Test 3, Chapter 4 and 5 Chapter 10 Sources and Transmitters Chapter 9, Splicing
Week 8	Chapter 10, Sources and Transmitters Chapter 11, Detectors and Receivers
Week 9	Chapter 11, Detectors and Receivers
Week 10	Test 4, Chapters 9, 10, and 11 Chapter 7, Fiber Optic Cables
Week 11	Chapter 7, Fiber Optic Cables

Week 12	Chapter 12, Cable Installation National Electrical Code (NEC)
Week 13	Chapter 14, Test Equipment and Link Testing
Week 14	Chapter 14, Test Equipment and Link Testing
Week 15	Test 5, Chapters 7, 12, 14, and NEC
Finals Week	FOI Certification Test