

Bossier Parish Community College  
Master Syllabus

**Course Prefix and Number:** CTEC 125

**Credit Hours:** 3-1-2

**Course Title:** Fiber Optics I

**Course Prerequisites:** None

**Textbook(s):** None – online resources available through Fiber Optic Association’s online learning platform (Fiber U).

**Course Description:** this course provides an introduction and overview into fiber optics and cabling. Students will learn about applications, installations, and communication systems related to fiber optics and cabling. Students will also learn about splicing, terminating, and testing of fiber optic cable. This course is mapped to the CPCT (Certified Premises Cabling Technician) and the CFOT (Certified Fiber Optic Technician) certifications, by The Fiber Optic Association.

**Learning Outcomes:**

At the end of this course, the student will:

- A. explain fiber optic and cabling applications and installations
- B. explain how communications systems utilize fiber optics
- C. identify appropriate fiber optic components for fiber optic networks
- D. describe fiber optic cable installation of premises and outside plants
- E. demonstrate the ability to splice and terminate fiber optic cable
- F. Test fiber optic components and cable plants

To achieve the learning outcomes, the student will or will be able to:

(The letter designations at the end of each statement refer to the learning outcome(s).)

1. define fiber optic terms (A)
2. describe how communications systems use light to transfer information (B)
3. differentiate between OSP Systems: Internet, Telco, CATV, Utility, Municipal (B)
4. recognize components and their functions in a datalink such as sources: LED, Laser (FP, DFB, VCSEL) and detectors (photodiode, APD; Si, Ge, InGaAs) (B)
5. determine how well a datalink transmits data (B)
6. describe different types of optical fiber (SI MM , GI MM, SM) (C)
7. explain basic specifications that affect transmission related to attenuation and dispersion (C)
8. choose the appropriate fiber for a system (C)
9. describe different types of cables and their applications (A)
10. explain tight buffer applications (simplex, zipcord, distribution, breakout) (A)
11. explain loose tube applications (loose tube, ribbon) (A)
12. explain specialty applications (OPGW, underwater, air blown, flat sawn-groove) (A)
13. explain relevant specifications for applications such as water blocking, pulling strength, armoring, etc. (A)
14. choose the proper cable for application (C)
15. explain uses of terminating and splicing fiber optic cable (E)
16. describe the loss, reflectance, strength when terminating and splicing (E)
17. contrast a splice using various processes: mechanical, fusion, mass (ribbon) fusion (E)
18. identify hardware used when terminating cable (E)

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19. identify connector types (ST, SC, LC, MTP, etc.) (E)
20. explain the termination process related to adhesive (epoxy, anaerobic, HotMelt), prepolished splice/SOC, and prefab systems. (E)
21. identify hardware used when splicing cable (E)
22. explain cable tracing/polarity testing (F)
23. explain connector inspection and cleaning testing (F)
24. explain cable and cable plant testing (F)
25. describe the process to troubleshoot cable and cable plant (F)
26. explain optical power and system testing (F)
27. evaluate communications system requirements (B)
28. describe the design of a proper cable plant (B)
29. describe a layout of a fiber optic network design (B)
30. choose components fiber optic network (B)
31. determine loss budgets relate to fiber optic network (B)
32. identify appropriate forms of documentation relate to fiber optic network (B)
33. evaluate needs based on cable plant design (A)
34. plan for the installation related to (safety, eye safety, tool safety, chemical safety, and disposal of materials) (A)
35. explain basic knowledge of codes, standards, and regulations (A)
36. provide an overview of the installation process (A)
37. document the cable plant (A)
38. prepare cable for installation (A)
39. install fiber optic cable (A)
40. prepare cable for splicing or termination (E)
41. prepare cable for splicing (E)
42. perform a mechanical splice (E)
43. perform a fusion splice (E)
44. prepare cables for termination (E)
45. install connectors (E)
46. inspect connectors (E)
47. test connectors (F)
48. test cable tracing/polarity (F)
49. inspect connector and cleaning (F)
50. perform cable and cable plant testing and troubleshooting (F)
51. perform optical power and system testing (F)

**Course Requirements:**

- To pass the course, student must achieve a course average of 70% or above.
- Students must have access to a computer (not mobile device), Microsoft Office, and the Internet to complete the assignments. Computer, software, and the Internet are available to students on campus during scheduled computer lab times and in the Learning Commons located in the BPCC Library.
- Students are required to use BPCC's LMS and are encouraged to use the BPCC Library to research topics and employment opportunities.

**Course Grading Scale:**

- A = 90 - 100
- B = 80 - 89
- C = 70 - 79

- D = 60 - 69
- F = 0 – 59

**Attendance Policy:**

Each student is expected to attend class regularly; excessive unexcused absences constitute grounds for suspension. Refer to the student handbook for [Attendance Policy](#).

**Course Fees:** This course is accompanied with an additional non-refundable fee for supplemental materials, laboratory supplies, software licenses, certification exams and/or clinical fees.

**Nondiscrimination Statement:** Bossier Parish Community College does not discriminate on the basis of race, color, national origin, gender, age, religion, qualified disability, marital status, veteran's status, or sexual orientation in admission to its programs, services, or activities, in access to them, in treatment of individuals, or in any aspect of its operations. Bossier Parish Community College does not discriminate in its hiring or employment practices.

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Equity/Compliance Coordinator

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