

ITSC 106: FIBER 2

Foothill College Course Outline of Record

Heading	Value
Units:	0.5
Hours:	8 lecture, 9 laboratory per quarter (17 total per quarter)
Prerequisite:	Completion of recognized sound and communication apprenticeship or equivalent and recent employment as an installer/technician in the sound and communication industry.
Advisory:	ITSC 105.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Description

Covers fiber optic transmission, testing, networks, installation and testing practices.

Course Objectives

The student will be able to:

- Recognize components used in transceivers
- Describe types of sources and detectors used in transceivers
- Recognize the instruments used in fiber optic testing
- Describe how to perform basic fiber optic testing
- Identify components needed for a network
- Discuss how an optical loss test set functions
- Prepare fiber optic cabling for termination
- Install breakout/fanout kit
- Terminate an anaerobic fiber connector
- Terminate a Unicam connector using the Unicam tool
- Apply and operate a mechanical fiber splice
- Apply and operate an optical fiber fusion splice
- Operate an optical power loss test set
- Operate an optical time domain reflectometer (OTDR)

Course Content

- Fiber Optic Transmission (Lec)
 - Fiber optic data links
 - Sources for fiber optic transmitters
 - Detectors for fiber optic receivers
 - Specialty fiber optic transmission components
 - Data link performance and link power budget
- Fiber Optic Testing (Lec)
 - Fiber optic tests
 - Visual inspection
 - Power measurements
 - Testing optical power
 - Testing optical loss or insertion
 - OTDR testing
- Fiber Optic Networks (Lec)

- Transmission equipment
- Components
- Link loss budget
- Fiber Optic Hands-on Lab (Lab)
 - Fiber optic strip and prep
 - Access fibers for various cable types
 - Outside plant cable
 - Distribution cable
 - Cleaning
 - Anaerobic connector
 - Process
 - Scribe and polish
 - Unicam connector
 - Process
 - Index matching gel
 - Unicam tool
 - Mechanical splice
 - Process
 - Index matching gel
 - Fusion splice
 - Process
 - Splice protectors
 - Testing
 - VFL - visual fault locator
 - Optical loss test set - power meter
 - Optical time domain reflectometer (OTDR)

Lab Content

- Work individually and in teams with basic tools of the trade, test instruments and tool safety.
- Included will be the installation of sound and/or communication devices using fiber optical cables.
- Equipment safety and safe handling practices are reviewed and applied.

Special Facilities and/or Equipment

- Fiber optic cable (OSP, distribution), fiber connectors, Corning Unicam tool, specialty fiber optic strippers and cleavers, optical fusion splicers, proper testing equipment (visual fault locator, optical loss test set, optical time domain reflectometer).
- When taught via Foothill Global Access, on-going access to email software and hardware; email address.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

- Results of assessments
- Results of quizzes and tests
- Discussion participation

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

- Lecture
- Group discussion
- Demonstration

Representative Text(s) and Other Materials

National Joint Apprenticeship and Training Committee (NJATC).
Reference Guide to Fiber Optics. MD: NJATC Publishers, 2013.

NOTE: This is the standard Sound & Communications textbook/workbook used for this course. Although it may not be within 5 years of the required published date, it is the most current book used when teaching this course. We will adopt the next edition, as it is published.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

A. Reading assignments:

1. Read Reference Guide to Fiber Optics Chapter 4: Analog or Digital
2. Read Reference Guide to Fiber Optics Chapter 8: Testing Optical Loss or Insertion Loss
3. Read Reference Guide to Fiber Optics Chapter 9: Media Options: Copper, Fiber, or Wireless

B. Writing assignments:

1. Describe the difference between analog signals and data signals. Include which signal type is best for transmission over fiber optics
2. Explain how an optical loss test set works and what it is used for. Include which testing method is most often used for testing an installed fiber optic plant and why
3. Explain which media option you would install for a premises cabling installation (copper, fiber, or wireless). Include examples of why you would choose that particular media

Discipline(s)

Telecommunication Technology