Publication date : 02/26/2024

Course : Architecture and design of a fiber optic network

Synthesis course - 2d - 14h00 - Ref. ACR
Price : 2020 CHF E.T.

The program focuses on understanding fiber optic technology in communication networks. It enables you to integrate the essential aspects of this technology, and to approach the implementation of a network as a whole. This course is indispensable for understanding the implementation of components, choice of materials, testing and validation of fiber optic networks.

Teaching objectives

At the end of the training, the participant will be able to:

- Understand the fundamentals of fiber optic technology
- Analyze needs and constraints to design a fiber optic network
- Discover how to implement the essential points of a fiber optic network (splicing, connectors, measurements, etc.).

Intended audience

Anyone wishing to learn about or start a business and/or technical activity, decision-makers in town halls or local authorities, and managers of technical teams.

Prerequisites

None.

Course schedule

1 Introduction and background

- Origin of transmissions.
- Optical fiber applications: communication and light transport.
- History of network technologies: LAN, MAN, WAN, FTTx...
- ARCEP regulations.

PARTICIPANTS

Anyone wishing to learn about or start a business and/or technical activity, decision-makers in town halls or local authorities, and managers of technical teams.

PREREQUISITES

None.

TRAINER QUALIFICATIONS

The experts leading the training are specialists in the covered subjects. They have been approved by our instructional teams for both their professional knowledge and their teaching ability, for each course they teach. They have at least five to ten years of experience in their field and hold (or have held) decision-making positions in companies.

ASSESSMENT TERMS

The trainer evaluates each participant's academic progress throughout the training using multiple choice, scenarios, hands-on work and more.
Participants also complete a placement test before and after the course to measure the skills they've developed.

2 Fibre optics basics

- Wavelength, dBm/dB, n (refractive index).
- Electromagnetic spectrum of silica, transmission window.
- Principles of geometrical optics.
- Elementary structure of an optical fiber.
- Optical fiber manufacture, transmission performance characteristics.
- Singlemode and multimode propagation
- Summary table of optical fibers: OM1 - OM2 - OM3 - G652 - G655, etc.
- Fiber used.
- Principle of PON and GPON.

3 Operational networks

- Network components: cables, splitters, splice boxes, drawers.
- Loss factors and criteria for fiber optic links.
- Fiber to the home (FTTH): presentation of the FTTH network and its components.
- Street cabinets, overhead and underground connection points, building sharing points.

4 Network principles and implementation

- Connectors: PC and APC splices and connectors.
- Optical fiber preparation (stripping, cleaving).
- Optical soldering.
- Bending radii (fiber coiling in cassette).
- Humidity (cable protection).
- Terminology.
- Focus: cleaning of optical surfaces and network maintenance.

5 Measurement principles and methods

- Fresnel and Rayleigh.
- Theoretical balance calculation.
- Demonstration of photometric measurement.
- Demonstration of reflectometry measurement.

TEACHING AIDS AND TECHNICAL RESOURCES

• The main teaching aids and instructional methods used in the training are audiovisual aids, documentation and course material, hands-on application exercises and corrected exercises for practical training courses, case studies and coverage of real cases for training seminars.
• At the end of each course or seminar, ORSYS provides participants with a course evaluation questionnaire that is analysed by our instructional teams.
• A check-in sheet for each half-day of attendance is provided at the end of the training, along with a course completion certificate if the trainee attended the entire session.

TERMS AND DEADLINES

Registration must be completed 24 hours before the start of the training.

ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

Do you need special accessibility accommodations? Contact Mrs. Fosse, Disability Manager, at psh-accueil@orsys.fr to review your request and its feasibility.

Dates and locations

REMOTE CLASS
2026 : 2 Apr., 26 May, 10 Sep., 1 Dec.