



## دورة تدريبية في هندسة الألياف البصرية وشبكات الضوء البصرية



**AGILE LEADERS**  
Training Center

13 - 17 Jul 2027

روما

## دورة تدريبية في هندسة الألياف البصرية وشبكات الضوء البصرية

المرجع: 36307\_79754 التاريخ: 13 - 17 Jul 2027 الموقع: روما الرسوم: Euro 5700

### Course Overview:

This course offers an in-depth exploration of the rapidly evolving field of fiber optic technology. This course is designed to provide participants with a complete understanding of fiber optic engineering, optical networks, and the fundamental principles of fiber optic communications. Key areas of focus include optical fiber transmission, signal processing, and the latest advancements in semiconductor lasers and photodetectors. Participants will gain practical knowledge in fiber optic systems, optical network design, and the maintenance of fiber optic components, all essential for mastering telecommunications networking. The course also covers critical topics such as optical fiber theory, signal characterization, and high-speed optical communications, preparing attendees to tackle real world challenges in the industry. This training is ideal for those looking to enhance their expertise in fiber optic technologies and stay ahead in the competitive landscape of optical networking.

### Target Audience:

- Telecommunications Engineers
- Network Designers
- Optical Fiber Technicians
- IT Professionals specializing in Network Infrastructure
- Electrical Engineers
- Fiber Optic Installation and Maintenance Personnel
- Project Managers in Telecommunications

### Targeted Organizational Departments:

- Information Technology
- Telecommunications
- Research and Development
- Operations and Maintenance
- Network Infrastructure
- Technical Support
- Engineering
- Quality Assurance

## Targeted Industries:

- Telecommunications
- Internet Service Providers
- Manufacturing of Optical Components
- Defence and Aerospace
- Healthcare Medical Imaging and Diagnostics
- Energy Smart Grid and Communication
- Transportation Intelligent Traffic Systems
- Data Centres and Cloud Services

## Course Offerings:

By the end of this course, participants will be able to:

- Design and implement advanced fiber optic communication systems
- Analyse and optimize optical fiber transmission for high-speed data
- Develop and maintain reliable optical networks
- Understand the principles and applications of semiconductor lasers and photodetectors
- Apply knowledge of optical signal processing in various network scenarios
- Conduct thorough testing and measurement of fiber optic systems
- Implement fiber optic standards and best practices in installation and maintenance

## Training Methodology:

This course employs a blend of theoretical instruction and practical exercises. Participants will engage in case studies, hands-on labs, and group work, ensuring a deep understanding of fiber optic engineering concepts. Interactive sessions will facilitate knowledge sharing and collaborative problem-solving, while real-world scenarios will be used to illustrate the application of principles in fiber optic communications and optical networks. The course will also feature guest lectures from industry experts, providing insights into cutting-edge technologies and trends. Feedback sessions will allow participants to discuss challenges and solutions, enhancing their learning experience.

## Course Toolbox:

- complete course workbooks
- Checklists for fiber optic installation and maintenance
- Templates for network design and documentation
- Online resources for further reading and study
- Case study materials for practical application exercises

## Course Agenda:

## Day 1: Fundamentals of fiber Optic Communications

- Introduction to fiber Optic Communications Topic 1: •
- The Nature of Light in fiber Optics Topic 2: •
- The Wave and Particle Nature of Light Topic 3: •
- The Electromagnetic Spectrum Topic 4: •
- Elements of a fiber Optic Link Topic 5: •
- Light Sources, Detectors, and Glass fibers Topic 6: •
- Overview of Day 1 Concepts Reflection & Review: •

## Day 2: Advanced Concepts in Optical Networks

- Introduction to Communication Networks Topic 1: •
- Network Topologies Topic 2: •
- Telecommunication Networks Topic 3: •
- Networking Spans: LANs, MANs, and WANs Topic 4: •
- Hierarchical Structure of Networks and OSI Model Topic 5: •
- Circuit Switching vs. Packet Switching Networks Topic 6: •
- Key Learnings in Network Architecture Reflection & Review: •

## Day 3: Signal Characterization and Optical Components

- Signal Analysis in fiber Optics Topic 1: •
- Fourier Transform and Signal Representation Topic 2: •
- Digital and Analogue Signal Processing Topic 3: •
- High-Speed Electrical Signals in fiber Optics Topic 4: •
- Characteristics of Optical Signals Topic 5: •
- Spectral Characteristics of Optical Signals Topic 6: •
- Integrating Signal Concepts with fiber Optic Systems Reflection & Review: •

## Day 4: Semiconductor Lasers and Optical fibers

- Introduction to Semiconductor Lasers Topic 1: •
- Optical Gain and Oscillation Topic 2: •
- Physical Processes for Optical Amplification Topic 3: •
- Rate Equation Approximation and Laser Dynamics Topic 4: •
- Semiconductor Laser Structures Topic 5: •
- Introduction to Optical fibers and Their Properties Topic 6: •
- Laser Technologies and fiber Applications Reflection & Review: •

## Day 5: System Design, Reliability, and Standards

- Optical Transmitter and Receiver Design Topic 1: •
- Reliability in fiber Optic Systems Topic 2: •
- Test and Measurement Techniques in fiber Optics Topic 3: •
- fiber Optic Standards and Compliance Topic 4: •
- Emerging Trends in Optical Networks Topic 5: •
- Practical Applications and Case Studies Topic 6: •
- Course Wrap-Up and Final Discussions Reflection & Review: •

## How This Course is Different from Other Fiber Optics Engineering Courses:

The course distinguishes itself by offering an integrated approach that combines fundamental theory with hands-on practical training. Unlike other courses, this program delves deeply into both the engineering aspects of fiber optics and the operational challenges of optical networks. The curriculum is designed to be current with industry trends, including topics like WDM Networks, PONs, and the latest in semiconductor lasers and photodetectors.

## فئات الدورات التدريبية

|                                                    |                                                     |
|----------------------------------------------------|-----------------------------------------------------|
| الدورات التدريبية في مجال البيئة والاستدامة        | دورات إدارة الجودة وتطوير العمليات                  |
| دورات إدارة و تحليل البيانات ودورات علم البيانات   | دورات إدارة و تطوير الموارد البشرية                 |
| دورات الذهن السيرياني ودورات تقنية المعلومات       | دورات الاتصال الجماهيري و السياسات والعلاقات العامة |
| دورات التدريب القانوني والهشتريات والتعاقدات       | دورات التسويق وإدارة علاقات العملاء وإدارة المبيعات |
| دورات الحوكمة وإدارة المخاطر والامتثال             | دورات السكرتارية و إدارة المكاتب                    |
| دورات الصحة والسلامة والذهن المهني                 | دورات الصيانة ودورات المجالات الهندسية المتنوعة     |
| دورات المحاسبة و التهويل و دورات الإدارة المالية   | دورات المهارات الشخصية وتطوير الذات                 |
| دورات في مجالات القيادة والإدارة                   | دورات معتمدة من قبل هيئات دولية                     |
| دورات مكتب إدارة المشاريع وإدارة المشاريع الرشيقية |                                                     |



## معدن التدريب

|                                      |                                         |                                    |
|--------------------------------------|-----------------------------------------|------------------------------------|
| أكرا<br>غانا                         | أثينا<br>اليونان                        | أبوظبي<br>الإمارات العربية المتحدة |
| الجبيل<br>المملكة العربية السعودية   | استنبول<br>تركيا                        | أهستردام<br>هولندا                 |
| الرياض<br>المملكة العربية السعودية   | الدوحة<br>قطر                           | الدار البيضاء<br>المغرب            |
| المنامة<br>مملكة البحرين             | الكويت<br>الكويت                        | القاهرة<br>مصر                     |
| بانكوك<br>تايلند                     | باكو<br>أذربيجان                        | باريس<br>فرنسا                     |
| برلين<br>ألمانيا                     | برشلونة<br>إسبانيا                      | براغ<br>جمهورية التشيك             |
| تيليسي<br>جورجيا                     | بوكيت<br>تايلاند                        | بورتو<br>البرتغال                  |
| جنيف<br>سويسرا                       | جاكارتا<br>جمهورية إندونيسيا            | تورنتو<br>كندا                     |
| روما<br>إيطاليا                      | حلي<br>الإمارات العربية المتحدة         | جوهانسبرغ<br>جنوب أفريقيا          |
| سنغافورة<br>سنغافورة                 | سان دييغو<br>الولايات المتحدة الأمريكية | زنجان<br>تنزانيا                   |
| شيكاغو<br>الولايات المتحدة الأمريكية | شرم الشيخ<br>مصر                        | سيول<br>كوريا الجنوبية             |
| طوكيو<br>اليابان                     | طشقند<br>أوزبكستان                      | طرابزون<br>تركيا                   |
| فرانكفورت<br>ألمانيا                 | عن بعد<br>منصة زووم                     | عمان<br>المملكة الأردنية الهاشمية  |



## مدن التدريب

|                          |                                       |                    |
|--------------------------|---------------------------------------|--------------------|
| كيب تاون<br>جنوب افريقيا | كوالالمبور<br>ماليزيا                 | فيينا<br>النمسا    |
| لندن<br>المملكة المتحدة  | لشبونة<br>البرتغال                    | لانكاوي<br>ماليزيا |
| مسقط<br>سلطنة عمان       | هدريد<br>اسبانيا                      | ماربيا<br>اسبانيا  |
| ميونخ<br>ألمانيا         | ميلان<br>إيطاليا                      | مونترو<br>سويسرا   |
|                          | نيويورك<br>الولايات المتحدة الأمريكية | نيروبي<br>كينيا    |