

## **COURSE OVERVIEW IE0641-4D**

### **FOC Cable Splicing**

#### **Course Title**

FOC Cable Splicing

#### **Course Date/Venue**

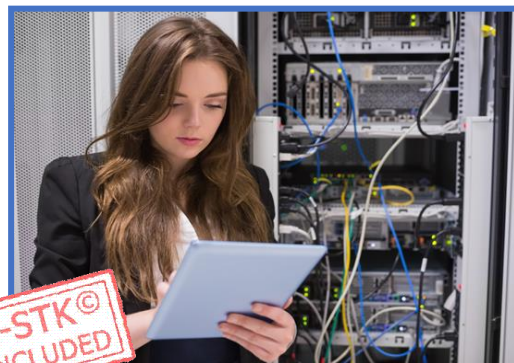
April 12-15, 2026/Meeting Plus 9, City Centre  
Rotana, Doha, Qatar

#### **Course Reference**

IE0641-4D

#### **Course Duration/Credits**

Four days/2.2 CEUs/22 PDHs

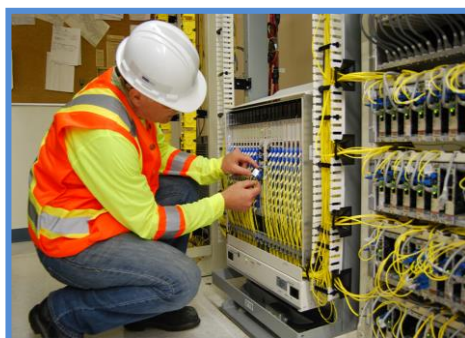


#### **Course Description**



***This practical and highly-interactive course includes practical sessions and exercises where participants carryout fiber optic splicing, testing and troubleshooting. Theory learnt in the class will be applied using our state-of-the-art equipment.***

This course is designed to provide participants with a detailed and up-to-date overview of Certified fiber optic Technician. It covers the fiber optics safety rules, installation standard and modern communications; the fiber optic applications, telecom/internet technology, fiber to the home (FTTH) and antenna systems; the data center architecture, remote-piloted vehicles (RPVs), industrial applications and data links and other networks; the fiber optic data links, coherent transmission, fiber optic link sources and datalinks and wavelengths; the fiber optic components, fiber types, fiber size comparison and fiber bandwidth; and the fiber optic cable, bend radius, fiber color codes and reading OSP cable jackets.



During this interactive course, participants will learn the fiber optic connectors and splices, connector color codes, connector termination processes, OSP prefabricated cabling systems and fiber optic splices; the fiber optic testing, connector inspection with microscope, visual tracing and fault location and optical power testing; the loss testing, optical time domain reflectometer (OTDR) testing, optical reflectance testing and DWDM testing; the fiber optic network design including design process and writing specifications for cable plants; and the fiber optic installations, cable pulling, cable installation, blowing or jetting cable in microducts, restoration and installation safety rules.





### Course Objectives

Upon the successful completion of this course, each participant will be able to:-

- Get certified as a “*Certified Fiber Optic Technician (CFOT®)*”
- Discuss fiber optics safety rules, installation standard and modern communications
- Carryout fiber optic applications and discuss telecom/internet technology, fiber to the home (FTTH) and antenna systems
- Describe data center architecture, remote-piloted vehicles (RPVs), industrial applications and data links and other networks
- Recognize fiber optic data links, coherent transmission, fiber optic link sources and datalinks and wavelengths
- Identify fiber optic components, fiber types, fiber size comparison and fiber bandwidth
- Discuss fiber optic cable, bend radius, fiber color codes and reading OSP cable jackets
- Recognize fiber optic connectors and splices, connector color codes, connector termination processes, OSP prefabricated cabling systems and fiber optic splices
- Carryout fiber optic testing, connector inspection with microscope, visual tracing and fault location and optical power testing
- Apply loss testing, optical time domain reflectometer (OTDR) testing, optical reflectance testing and DWDM testing
- Describe fiber optic network design including design process and writing specifications for cable plants
- Illustrate fiber optic installations, cable pulling, cable installation, blowing or jetting cable in microducts, restoration and installation safety rules

### Exclusive Smart Training Kit - H-STK®



*Participants of this course will receive the exclusive “Howard Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

### Who Should Attend

This course provides an overview of all significant aspects and considerations of fiber optics technology for all types of technicians, such as outside plant and premises installers, technicians working in specialty fields using fiber optics such as electrical utilities, oil and gas, wireless, platforms like ships and aircraft, component manufacturing technicians, network managers, network designers, etc. A well-prepared fiber optic technician will have job experience, a CFOT plus appropriate specialist certifications (CFOS) for the skills needed for the job (OSP, splicing, connectors, testing, design, etc.) and applications (FTTH, OLAN, Wireless, etc.).



### **Exam Eligibility & Structure**

This course does not assume prior knowledge of communications or fiber optics. It is recommended that participants complete a free online self-study program on Fiber U that will cover the basics of fiber optics in preparation for the classroom instruction and hands-on labs sessions. If the course attendees have finished the Fiber U online course, the classroom course will only need to review the material studied online and concentrate on hands-on skills that can only be learned in a lab environment.

FOA certifications can be achieved by one of two methods:-

- **Training at FOA Approved Schools:** The FOA certifications are available through FOA-approved schools that offer training that meets FOA standards and provide certifications to the students.
- **Work to Cert** - direct certification based on industry experience: FOA also recognizes industry experience and has many persons who qualified for direct certification based on their experience in the field. Reference materials for studying for these certifications are available with the FOA textbooks or online free with the FOA Guide or Fiber U.

For preparation, either to take a training course or using the direct Work To Cert program, you should take the Fiber U Basic Fiber Optics course that is preparation for the CFOT exam and get your Certificate of Completion.

### **Training Methodology**

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

30% Lectures  
20% Practical Workshops & Work Presentations  
30% Hands-on Practical Exercises & Case Studies  
20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

### **Training Fee**

**US\$ 5,000** per Delegate. This rate includes H-STK® (Howard Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

### **Exam Fee**

**US\$ 100** per Delegate.

### **Accommodation**

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.



### Course Certificate(s)

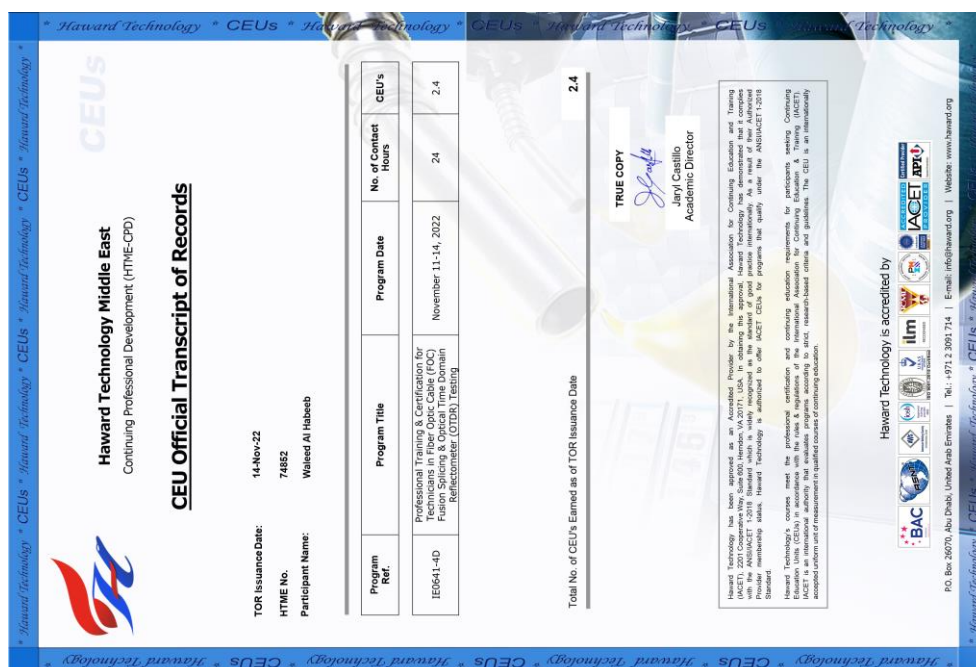
- (1) Internationally recognized Competency Certificates from FOA will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Successful candidate will be certified as a "Certified Fiber Optic Technician (CFOT)". Certificates are valid for 3 years.

### Sample of Certificates

The following are samples of the certificates that will be awarded to course participants:




- (2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.





### Certificate Accreditations

Haward's certificates are accredited by the following international accreditation organizations:

-  The Fiber Optic Association (FOA - USA)

Haward Technology Middle East is an FOA Approved Training Organization authorized to conduct classes for certification from **The Fiber Optic Association (FOA-USA)** with FOA school number 777. The FOA is an international non-profit educational association chartered to promote professionalism in fiber optics through education, certification and standards. FOA is the most widely recognized certifying body for fiber optic technicians worldwide.

Haward Technology is approved to deliver **FOA Certified Fiber Optic Technician (CFOT®)** certification training.

-  British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

-  The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units (CEUs)** in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **2.2 CEUs** (Continuing Education Units) or **22 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.



### Course Instructor (s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



**Mr. Salah Zuriekat**, BSc, PMP, is a **Senior Electrical Engineer** with extensive years of experience within the **Power & Water Utilities** and other **Energy** sectors. His expertise widely covers **Fiber Optics** Access Network Planning, **Fiber Optic Applications** in Protective Relaying Systems, Advanced **Fiber Optics** Technology, **Fiber Optic** Termination Equipment Operation & Maintenance, **Cyber Security of Distributed Control System (DCS)**, **SCADA Cyber Security**, **Cyber Security** Fundamentals, **Variable Frequency Drives (VFD)**, **PLC & SCADA** for Automation & Process Control, **DCS** Automated

Process Control Systems, **PLC** for Process Control & Automation, **Process Control** Techniques & Troubleshooting, **Control Valves & Actuators**, Safety Integrity Level (**SIL**), **Transformer Maintenance & Testing**, **Electrical Substation & Design**, **Power Quality** Studies & Load Criteria, **LV/MV Electrical Safety (11 KV, 415 & 220 Voltage)**, **Substation Earthing System**, **Electrical Equipment** Maintenance, **Electrical Power** System, **Electrical** Installations & Utilities, **Electrical Distribution Systems & Control Circuits**, **Electrical Drawings**, **Relay Logic Circuits**, Troubleshooting **Transformers**, **System Grounding**, **Circuit Breakers**, **Protection Devices & Technology**, **Protection Relay**, **Transformers**, **Generators**, **Power Transformers**, **Motors**, **Substations**, **Switchgears & Distribution**, **Power System** Analysis, **Electrical Equipment** Control Systems, **Cables & Wiring**, **Cable & Overhead Line** Quality Control & Inspection, **Overhead Transmission Lines**, **Electrical Safety**, **Electrical Protection**, **Batteries**, **Chargers & UPS**, **Electrical Submersible Pumps (ESP)**, **Power Supply** Substations, Area Classification, Safety Management System, Permit to Work & Issuing Authority, Emergency **Diesel Generator**, High & Low Voltage **Electrical Safety**, **Electrical Inspection & Testing**, **Electrical Control & Monitoring System**, **Electric Power System**, Intensive **Overhead Transmission Line (OHTL)**, **Transmission** Line Networks, **Distribution** Engineering, **HVDC Transmission & Control**, **Substation** Maintenance Techniques, **Electrical Drawings & Schematics**, **Distribution Networks & Load Forecasting**, **Power Generation**, **Overhead Power Line** Construction & Patrolling, and **Generator** Maintenance & Troubleshooting. He is currently the **Electrical Construction Manager** of Hiba Engineering Construction wherein he is involved in managing and supervising electrical engineers, electricians and other electrical personnel to ensure proper staffing levels and effective teamwork.

Mr. Salah gained his expertise and experience through several positions as an **MEP Manager**, **Project Manager**, **Senior Electrical Project Engineer**, **Electromechanical Project Engineer**, **Site Engineer**, **Fiber Optic Sales Engineer**, **Sales Engineer**, **Maintenance Engineer**, **Optical Engineer**, **MEP Coordinator**, **Telecommunications Technician** and **Senior Instructor/Trainer** for various companies such as the Al Menthar of Medical investment, Drake & Scull International Company (DSI), Axal Arabia Contracting Company (SBG), Alsamah Contracting Company, Control & Communication Company (CCC) and Spectrum Company.

Mr. Salah has a **Bachelor's** degree in **Electrical Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified Project Manager Professional (PMI-PMP)** and has delivered various trainings, seminars, conferences, workshops and courses globally.



## Course Program

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

### Day 1: Sunday, 12<sup>th</sup> of April 2026

0730 – 0800	Registration & Coffee
0800 – 0815	Welcome & Introduction
0815 – 0830	<b>PRE-TEST</b>
0830 – 1030	<b>Introduction</b> Safety Rules • What is the FOA (Fiber Optic Association)? • Reference Textbook • Other FOA Textbooks • FOA Online Guide • FOA YouTube Channel • Fiber U • FOA Standards • Fiber Optic Installation Standard • Lennie Lightwave's Guide • FOA on Social Media • Modern Communications • Going International • The Inventors of Fiber Optics • What is "Fiber Optics"? • Why Use Fiber Optics? • Fiber Optics has its Own Jargon • Let's Learn Some Jargon
1030 – 1045	Break
1045 – 1145	<b>Fiber Optic Communications</b> Submarine Cables Connect the World • Fiber Optic Applications • Telecom/Internet Technology • Fiber to the Home (FTTH) • FTTH Passive Optical Network (PON) • Wireless Phone & Mobile Device Usage • How Do You Connect Antennas? • Small Cells • DAS – Distributed Antenna Systems • CATV Technology
1145 – 1245	<b>Fiber Optic Communications (cont'd)</b> RFOG: CATV's FTTH Solution • Premises or Structured Cabling for Local Area Networks – LANs • Passive Optical LAN (POL) • Data Centers - Internet Servers • Data Center Architecture • Security & Video Fiber Optics • Military Tactical and Platforms • Video and Audio on Fiber • Remote-Piloted Vehicles (RPVs) • Industrial Applications
1245 – 1300	Break
1300 – 1420	<b>Fiber Optic Communications (cont'd)</b> Electrical Utilities • Energy – Oil and Gas • Alternative Energy • Metropolitan Networks • Data Links & Other Networks • Other Applications of Fiber Optics • Fiber Optic Data Links • Convert Electrical to Optical • Coherent Transmission • Fiber Optic Sources • Fiber Optic Link Sources • Fiber Optic Detectors • Loss in Datalinks • Wavelength-Division Multiplexing • WDM Wavelengths • Single Mode System Wavelength Bands • Regeneration - Fiber Amplifiers • Fiber Optic Datalinks • Fiber Optic Link Power Budget
1420 – 1430	<b>Recap</b> Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day One

### Day 2: Monday, 13<sup>th</sup> of April 2026

0730 – 0930	<b>Fiber &amp; Cable</b> Fiber Optic Components • Optical Fiber Technology • Fiber Tech - Total Internal Reflection • Fiber Types • Step Index Multimode Fiber • Graded Index Multimode Fiber Principle • Graded Index Multimode Fiber • Singlemode Fiber • Fiber Size Comparison • Singlemode Fiber Types • Multimode Fiber Types • Future Fibers? • Fiber Optics Links Use Infrared Light • Fiber Attenuation - Glass Fibers • Fiber Attenuation-Typical Specs • Low Water Peak Singlemode Fiber • Dispersion in Optical Fiber • Fiber Bandwidth: Modal Dispersion • Fiber Bandwidth: Chromatic Dispersion
-------------	---



0930 – 0945	Break
0945 – 1045	<b>Fiber &amp; Cable (cont'd)</b> Fiber Bandwidth: Polarization Mode Dispersion (PMD) • Multimode Fiber Bandwidth Grades • SM Fiber Types • Bend Insensitive Fiber (G.657) • Bend-Insensitive Fiber • Choosing Premises Multimode Fiber • Choosing Singlemode Fiber • Protecting the Fiber: Buffer & Cable • Fiber Optic Cable – Premises Cables • Zipcord and Simplex Cable • Distribution Cable • Breakout Cable • Outside Plant Cable • Loose Tube Cable Construction
1045 – 1140	<b>Fiber &amp; Cable (cont'd)</b> Armored Cable Construction • Ribbon Cable Construction • Ribbon Cable Design Changes • Microcables • Microcable/Microduct Options • High Fiber Count Cables • Aerial Cable Designs • OPGW Cable Construction • Air - Blown Fiber • Fiber Optic Cables • Specifications for Fiber Optic Cable • Bend Radius or Bend Diameter? • Bend Radius Limits • Bend Diameter Limits • Cable Jacket Color Codes (Premises) • Fiber Color Codes • Fiber Optic Cable Selection Criteria • Choosing Indoor (Premises) Cable Type • Cable Ratings and Markings • Choosing Outdoor Cable Type • Reading OSP Cable Jackets • Alternate Cable Designs
1140 – 1245	<b>Connectors &amp; Splices</b> Fiber Optic Connectors & Splices • Fiber Optic Connectors • Connector End Finishes • It's "Connection" Loss NOT Connector Loss • Causes of Loss • Reflectance (Return Loss) • Fiber Optic Connectors • Connector History • Connector Identifier • Connector Mix-Match
1245 – 1300	Break
1300 – 1420	<b>Connectors &amp; Splices (cont'd)</b> Duplex Connector Designs • Obsolete Connector Designs • New Connector Designs • Ruggedized Connector Designs • Fiber Optic Connector Types • Connector Color Codes • Connector Termination Processes • Adhesive/Polish Connector Termination • Anaerobic/Polish Connector Termination • Hot Melt/Polish Connector Termination • Splice-On Connector (SOC) Termination • Mechanical Splice-on Connector Termination • Fusion Splice-on Connector (SOC)
1420 – 1430	<b>Recap</b> Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow
1430	Lunch & End of Day Two

**Day 3: Tuesday, 14<sup>th</sup> of April 2026**

0730 – 0800	<b>Connectors &amp; Splices (cont'd)</b> Do You have to Field Terminate at All? • OSP Prefabricated Cabling Systems • Prefabricated Cabling Systems • Fiber Optic Splices • Fiber Optic Splices – Fusion • Single Fiber Fusion Splicing • Ribbon Fiber Fusion Splicing • Fusion Splicing Process • Fusion Splice-On Connector (SOC) • Fiber Optic Splices – Mechanical • Fiber Optic Splices – Cleaving • Protecting Splices • Splice Closures
0800 – 0930	<b>Fiber Optic Testing</b> Fiber Optic Testing • Fiber Optic Test Equipment • Connector Inspection with Microscope • Video Microscopes • Visual Tracing and Fault Location • Optical Power Testing • Understanding Db • Understanding Measurements in "dB" • Understanding Measurements in "dBm" • Insertion Loss Testing • Loss Testing: Cable Plant or Patchcord? • Patchcord Loss Testing - FOTP-171 • Cable Plant Loss Testing: OFSTP-14 (MM) & OFSTP-7(SM) • 0 dB" Reference for Insertion Loss Testing: OFSTP-14 (MM) & OFSTP-7(SM) • Issues for Loss Testing



0930 – 0945	Break
0945 – 1145	<b>Fiber Optic Testing (cont'd)</b> Pass/Fail for Loss Testing • Fiber Optic Link Loss Budget • Fiber Optic Link Loss & Power Budget • Fiber Optic Link Loss Budget Example • FOA Loss Budget Web App • FOA Loss Budget App (iOS) • OTDR Testing • How OTDRs Work • Optical Time Domain Reflectometer: (OTDR) Testing • Information in OTDR Display • OTDR Measurement Issues • Real OTDR Trace • OTDR Trace Measurement • Finding Faults • FOA OTDR Trainer • Specialized Fiber Optic Testing • Optical Reflectance Testing • Reflectance and Optical Return Loss • Reflectance Testing - FOTP-107 • OTDR Test for Reflectance • Bandwidth & Dispersion • Chromatic Dispersion • Polarization Mode Dispersion (PMD) • DWDM Testing • Spectral Attenuation • Fiber Characterization
1145 – 1200	<b>Fiber Optic Network Design</b> Fiber Optic Network Design • The Design Process and Writing Specifications for Cable Plants
1200 – 1215	Break
1215 – 1420	<b>Fiber Optic Installation</b> Fiber Optic Installations - Outside Plant or Premises? • Fiber Optic Installations - Outside Plant • OSP Underground Cable Installation • Cable Pulling – OSP • Managing Cable Bend Diameter • Cable Installation – Microtrenching • Blowing or Jetting Cable in Microducts • Cable Installation - OSP Aerial • Midspan Access in Fiber Optic Cable • Cable Installation – Submarine • Fiber to the Home: FTTH PON (Passive Optical Network) Network • Fiber Optic Installations -Premises • Premises Installation • Premises Installation – Codes • Fiber Optic Network Installation • Restoration • Safety Rules • Installation Safety Rules
1420 – 1430	<b>Course Conclusion</b> Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course
1430	Lunch & End of Day Three

**Day 4: Wednesday, 15<sup>th</sup> of April 2026**

0730 – 0800	<b>Review for the FOA CFOT® Exam</b> The FOA CFOT Exam • Preparing for the FOA CFOT Exam • CFOT Certification Exam Review
0800 – 0815	Break
0815 – 1015	<b>MOCK EXAM</b>
1015 – 1030	Break
1030 – 1130	<b>Discussion on the MOCK EXAM</b>
1130 – 1145	Break
1145 – 1345	<b>FOA-CFOT EXAM</b>
1345 – 1415	<b>Go Through EXAM</b>
1415 – 1430	Presentation of Course Certificates
1430	Lunch & End of Course



### **Practical Sessions**

Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout fiber optic splicing, testing and troubleshooting exercises using the following state-of-the-art fiber optics technology and equipment, suitable for classroom training.



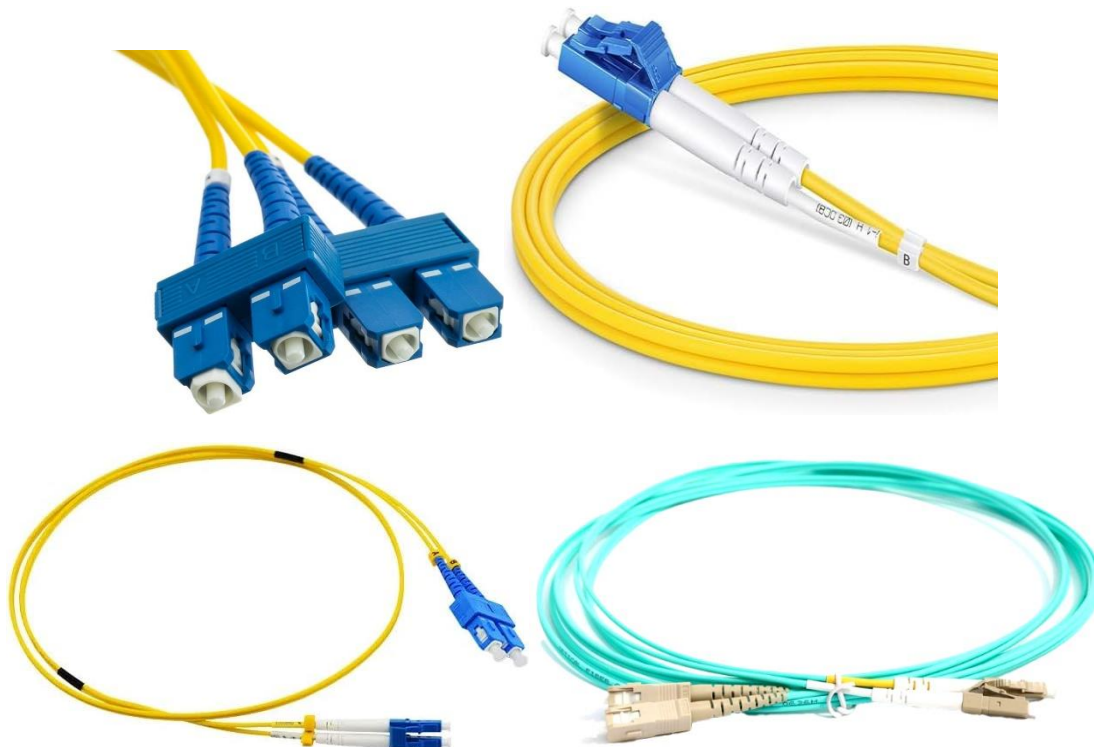
**Optical Fiber Fusion Splicer**



**Optical Fiber Comprehensive Tester**



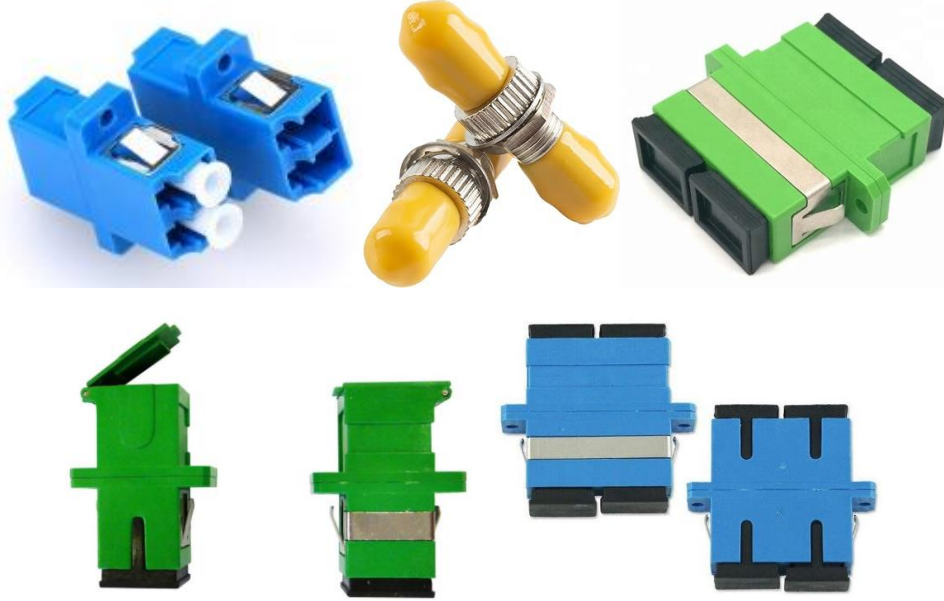
**Optical Fiber Cold Connection Tools Set**



**Fiber Optic Patch Cables**



**Fiber Optic Cable Tester**



**Fiber Optic Adapters**



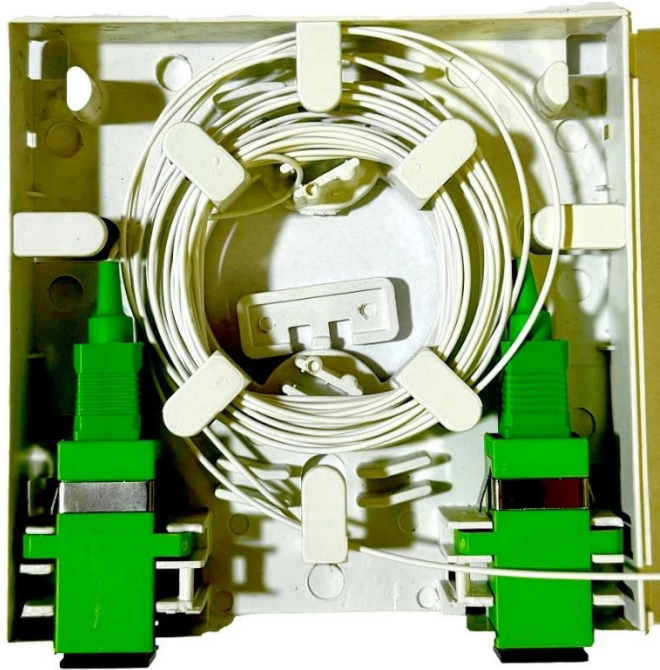
**Fiber Optic Connectors**



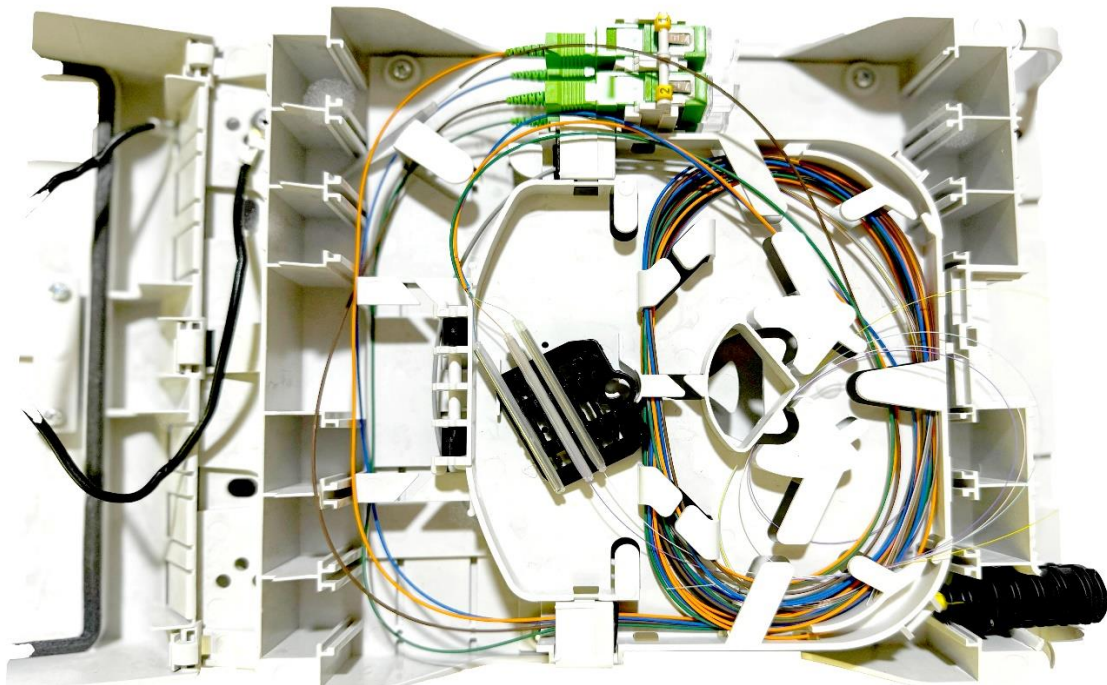
**Fiber Optic Sleeves**



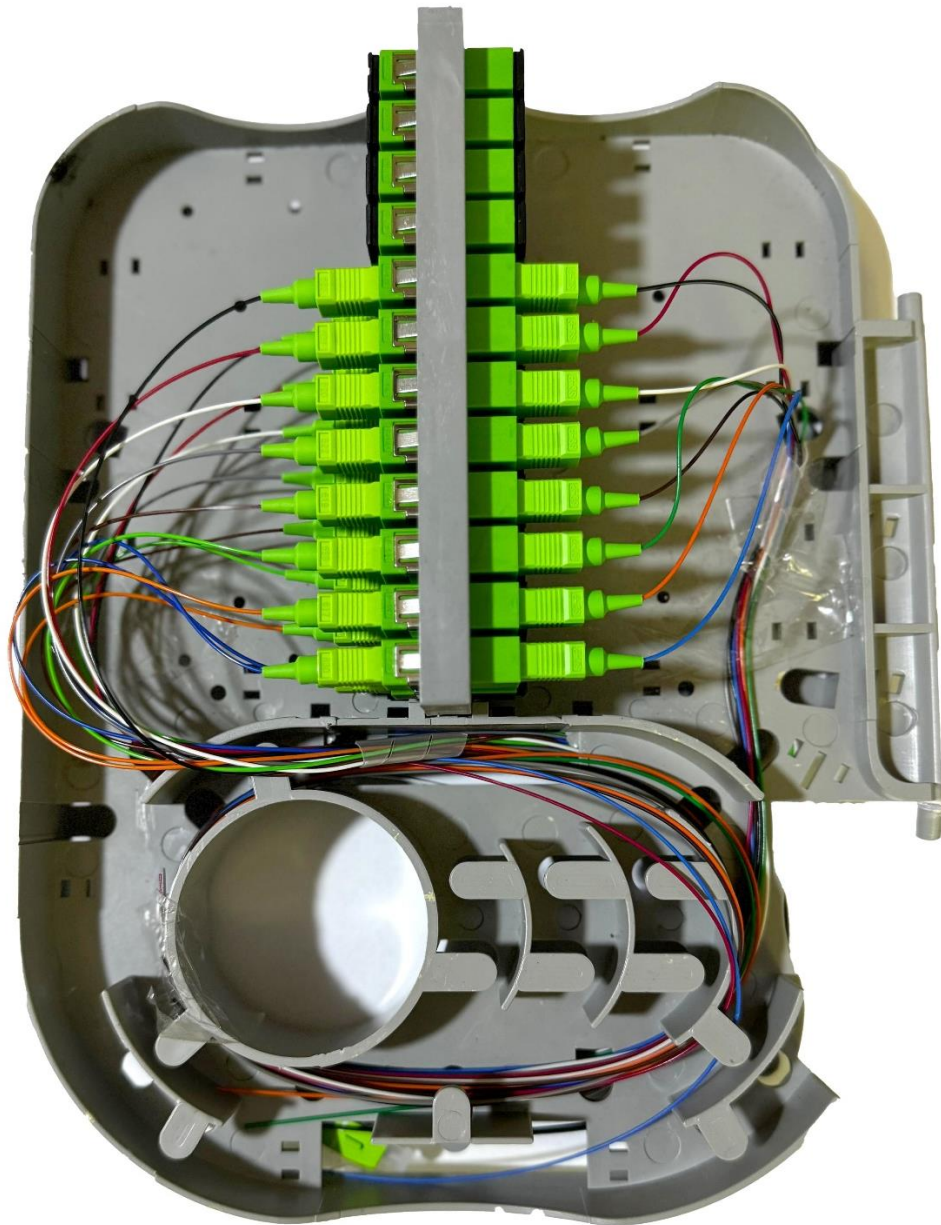
**Fiber Optic Cables**



**Termination Box with Two Splicing Distribution**



**Patch Panel Using Direct Terminal**



**Fiber Optic Cable Box Connection with Multiple Terminations**

**Course Coordinator**

Jaryl Castillo, Tel: +974 6652 9196, Email: [jaryl@haward.org](mailto:jaryl@haward.org)