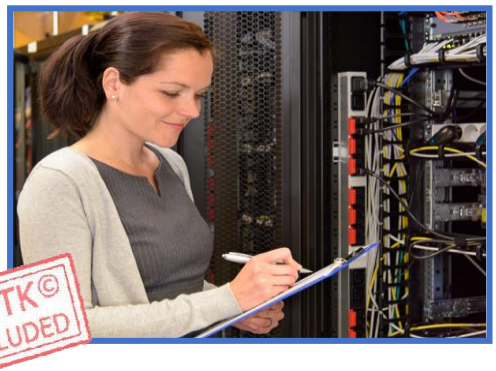
## COURSE OVERVIEW IE0013
# Fiber Optics Access Network Planning

**Course Title**
Fiber Optics Access Network Planning




**Course Date/Venue**
Session 1: March 14-18, 2027/Meeting Plus 9, City Centre Rotana, Doha, Qatar
Session 2: September 05-09, 2027/Meeting Plus 9, City Centre Rotana, Doha, Qatar

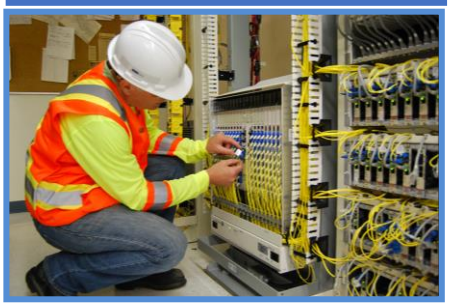
3.0 CEUs (30 PDHs) AWARD

**Course Reference**
IE0013

**Course Duration/Credits**
Five days/3.0 CEUs/30 PDHs

**Course Description**







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

This course is designed to provide delegates with a detailed and up-to-date overview of fiber optics access network planning. Participants will be provided with knowledge and skills to analyze optical fiber cables problems and adjust the splicing and termination of the optical fiber cables; employ optical fiber systems configurations and calculations; identify its components; evaluate optical fiber networks working in SDH; and follow the errors of the SDH networks.

The course will also cover the SDH fundamental's graphical introduction; SDH fundamentals revision; SDH & PHD comparison; SDH overview; network topology structures, protection classification, directional and fiber protection; SDH networks problems and its solutions; SDH networks graphical introduction; and WDM.

## Course Objectives/Outcomes & Benefits for the Participants

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

- Get certified as a "*Certified Fiber Optics Professional (CFOP)*"
- Analyze optical fiber cables problems and adjust the splicing and termination of the optical fiber cables
- Employ optical fiber systems configurations and calculations and identify its components
- Evaluate optical fiber networks working in SDH and follow the errors of the SDH networks
- Differentiate the SDH fundamental's graphical introduction -1 & 2 and discuss the SDH fundamentals revision and the SDH & PHD comparison & SDH overview
- Identify the network topology structures, protection classification, directional & fiber protection as well as explain the SDH networks problems and its solutions
- Explain the SDH networks graphical introduction 1, 2 & 3 and WDM

## Exclusive Smart Training Kit - H-STK®




*Participants of this course will receive the exclusive "Haward 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 covers systematic techniques and methodologies on fiber optics access network planning for communications and IT engineers and other engineers and technical staff who are working with optical fiber and SDH networks and who are involved in fiber optics including instrumentation, control, electronics and electrical.

## Course Fee

**US$ 6,000** per Delegate. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

## Accommodation

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

## Course Certificate(s)

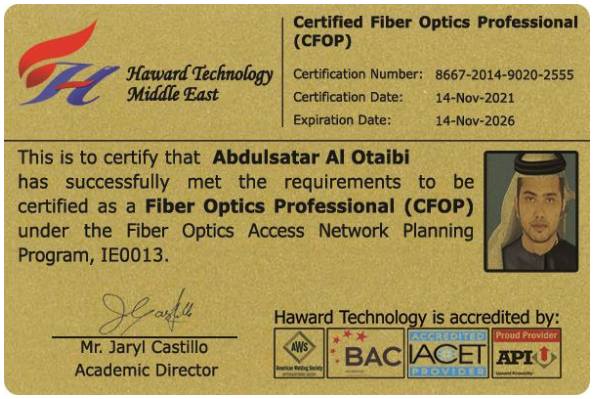
(1) Internationally recognized Competency Certificates and Plastic Wallet Cards will be issued to participants who completed a minimum of 80% of the total tuition hours and successfully passed the exam at the end of the course. Successful candidate will be certified as a "*Certified Fiber Optics Professional (CFOP)*". Certificates are valid for 5 years.

**Recertification is FOC for a Lifetime.**

## 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



Haward Technology Middle East

Continuing Professional Development (HTME-CPD)

## CEU Official Transcript of Records

**TOR Issuance Date:** 14-Nov-21

**HTME No.** 8667-2014-9020-2555

**Participant Name:** Abdulsatar Al Otaibi

| Program Ref. | Program Title | Program Date | No. of Contact Hours | CEU's |
|---|---|---|---|---|
| IE0013 | Fiber Optics Access Network Planning | November 10-14, 2021 | 30 | 3.0 |

Total No. of CEU's Earned as of TOR Issuance Date **3.0**

**TRUE COPY**

Jaryl Castillo
Academic Director

Haward Technology has been approved as an Authorized Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2013 Standard which is widely recognized as the standard of good practice internationally. As a result of their Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for programs that qualify under the ANSI/IACET 1-2013 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 Association 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 is accredited by

P.O. Box 26070, Abu Dhabi, United Arab Emirates | Tel.: +971 2 3091 714 | Fax: +971 2 3091 716 | E-mail: info@haward.org | Website: www.haward.org

## Certificate Accreditations

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

- 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 **3.0 CEUs** (Continuing Education Units) or **30 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. Sydney Thoresson**, PE, BSc, is a **Senior Electrical & Instrumentation Engineer** with over **30 years** of extensive experience within the **Power & Water Utilities** and Other **Energy Sectors**. His specialization highly evolves in **Electrical Safety**, **Power System Equipment**, **Electrical Drawing**, **Electrical Forecasting**, **Transmission Networks**, **Substation**, **Distribution Networks**, **Substation Automation Systems & Application**, **Electrical** System, **HV/LV Electrical** Authorisation, **Variable Frequency Drives** (VFD), **HV/LV Equipment**, **Circuit Breaker**, **Motor Controllers**, **Hazardous Area Classification**, **Intrinsic Safety**, **Electrical Power Systems** Quality & Troubleshooting, **Protection & Relay**, **Electric & Control** System Commissioning, **Liquid & Gas Flowmetering**, Fault Analysis in **Electrical Networks & Distribution Cables**, **Custody Measurement**, **Ultrasonic Flowmetering**, **Loss Control**, **Gas Measurement**, **Process Control Instrumentation**, **Compressor Control & Protection**, **Control Systems**, Programmable Logic Controllers (**PLC**), **SCADA**, Distributed Control Systems (**DCS**) especially in **Honeywell DCS**, **H&B DCS**, **Modicon, Siemens**, **Telemecanique**, **Wonderware** and **Adrioit**. Moreover, he has vast experience in the field of Safety Instrumented Systems (**SIS**), Safety Integrity Level (**SIL**), Emergency Shutdown (**ESD**), **Flowmetering & Custody Measurement**, **Multiphase Flowmetering**, **Measurement and Control**, **Mass Measuring System Batching** (**Philips**), Arc Furnace Automation-Ferro Alloys, Walking Beam Furnace, Blast Furnace, Billet Casting Station, Cement Kiln Automation, Factory Automation and Quality Assurance Accreditation (**ISO 9000** and **Standard BS 5750**).

During Mr. Thoresson's career life, he has gained his thorough and practical experience through various challenging positions such as a **Project Manager**, **Contracts Manager**, **Managing Director**, **Technical Director**, **Divisional Manager**, **Plant Automation Engineer**, **Senior Consulting Engineer**, **Senior Systems Engineer**, **Consulting Engineer**, **Service Engineer** and **Section Leader** from several international companies such as **Philips**, **FEDMIS**, **AEG**, **DAVY International**, **BOSCH** Instrumentation and Control, **Billiton**, **Endress/Hauser**, **Petronet**, **Iscor**, **Spoornet**, **Eskom** and **Afrox**.

Mr. Thoresson is a **Registered Professional Engineering Technologist** and has a **National Higher Diploma** (**NHD**) & a **National Diploma** in **Radio Engineering** from the **Witwatersrand Technikon**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/Assessor/Trainer** by the **Institute of Leadership & Management** (**ILM**), an active member of the International Society of Automation (**ISA**) and the Society for Automation, Instrumentation, Measurement and Control (**SAIMC**).

## Training Methodology

Our courses employ an interactive, learner-centred methodology that integrates theoretical knowledge with practical application. The training is delivered through a suitable combination of some or all of the following methods, selected according to the course content and learning objectives:

- Instructor-led presentations and facilitated discussions
- Practical workshops and participant presentations
- Hands-on exercises and real-world case studies
- Equipment demonstrations and technical drawings
- Hardware- and software-based simulations
- Gamification & Role Play in soft-skills courses only
- Virtual Reality (VR) and Augmented Reality (AR)
- Instructional videos and other relevant training resources

This blended approach encourages active participation, strengthens practical skills and supports the effective application of acquired knowledge in the workplace.

## Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities in tailoring our courses to the training needs of our valued clients.

## 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***

| | |
|---|---|
| *0730 – 0800* | *Registration & Coffee* |
| *0800 – 0815* | *Welcome & Introduction* |
| *0815 – 0830* | ***PRE-TEST*** |
| *0830 – 0930* | ***Optical Fiber Systems Configuration & Components***<br>*Optical Fiber Signal Theory and Propagation ● Cables Types According to Cross Section ● Couplers and Connectors ● Optical Fiber Attenuation Components* |
| *0930 – 0945* | *Break* |
| *0945 – 1100* | ***Optical Fiber System Components***<br>*Cables Splicing* |
| *1100 – 1215* | ***Optical Fiber System Calculations***<br>*Link Budget* |
| *1215 – 1230* | *Break* |
| *1230 – 1420* | ***Practical Session***<br>*Optical Fiber Cable Splicing and Termination* |
| *1420 – 1430* | ***Recap***<br>*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**

| | |
|---|---|
| 0730 – 0930 | ***Communication Basics***<br>*Analog and Digital Signals ● Standard Voice Channel ● Pulse Code Modulation ● Sampling ● Bit Rate ● Band Width ● PDH ● Standard E1 Frame* |
| 0930 – 0945 | *Break* |
| 0945 – 1100 | ***SDH***<br>*SDH Standards ● SDH Multiplexing Principle ● SDH Frame ● SDH Network Elements* |
| 1100 – 1215 | ***SDH Hierarchy***<br>*SDH Hierarchy Details ● Frame Components* |
| 1215 – 1230 | *Break* |
| 1230 – 1420 | ***SDH Frame Details & Transport Modules***<br>*Path Overheads ● Section Overheads ● STM-1 ● STM-n* |
| 1420 – 1430 | ***Recap***<br>*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**

| | |
|---|---|
| 0730 – 0930 | ***SDH Fundamentals Graphical Introduction - 1*** |
| 0930 – 0945 | *Break* |
| 0945 – 1100 | ***SDH Fundamentals Graphical Introduction - 2*** |
| 1100 – 1215 | ***SDH Fundamentals Revision*** |
| 1215 – 1230 | *Break* |
| 1230 – 1420 | ***SDH & PDH Comparison & SDH Overview*** |
| 1420 – 1430 | ***Recap*** |
| 1430 | *Lunch & End of Day Three* |

**Day 4**

| | |
|---|---|
| 0730 – 0930 | ***Network Topology Structures***<br>*Classification of Topology Structures (Chain, Star, Tree, Ring & Mesh) ● Sub Network ● Survival Networks* |
| 0930 – 0945 | *Break* |
| 0945 – 1100 | ***Protection Classification***<br>*Linear Protection ● Protection Rings ● PP Ring ● MSP Ring ● SNCP* |
| 1100 – 1215 | ***Directional & Fiber Protection***<br>*Unidirectional and Bidirectional Rings ● 2 & 4 Fibers Protection Rings* |
| 1215 – 1230 | *Break* |
| 1230 – 1420 | ***SDH Networks Revision, SDH Networks Problems and Its Solutions*** |
| 1420 – 1430 | ***Recap***<br>*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 Four* |

**Day 5**

| | |
|---|---|
| 0730 – 0930 | ***SDH Networks Graphical Introduction - 1*** |
| 0930 – 0945 | *Break* |
| 0945 – 1100 | ***SDH Networks Graphical Introduction - 2*** |
| 1100 – 1215 | ***SDH Networks Graphical Introduction - 3*** |

| | |
|---|---|
| *1215 – 1230* | *Break* |
| *1230 - 1300* | ***WDM*** |
| *1300 – 1315* | ***Course Conclusion*** |
| *1315 – 1415* | ***COMPETENCY EXAM*** |
| *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.



**FSM-50S PROFILE ALIGNMENT FUSION SPLICER**

**Features & Capabilities:**

- Fully automatic core alignment with 9 second splice time for SM fibre
- Reduced splice protector shrink time – now only 35 seconds
- Extremely compact & lightweight – just 2.8kg
- Automatic fibre-type identification
- Multi-position monitor for front or top mounting
- Real-time arc calibration
- Fibre clamps integrated into wind protector to reduce operation time





**OptiFiber® OTDR**

**Features & Capabilities:**

- Integrates power/loss, fiber length measurement, OTDR analysis and fiber connector end-face imaging
- allows network owners of any experience level to certify fiber to industry specifications and standards, troubleshoot links, and thoroughly document results
- makes dual wavelength OTDR measurements - 850/1300 nm or 1310/1550 nm
- identifies and characterizes the fiber link and its events
- compares the results to user-defined limits for immediate pass/fail link and event certification



## Course Coordinator

Jaryl Castillo, Tel: +974 6652 9196, Email: jaryl@haward.org