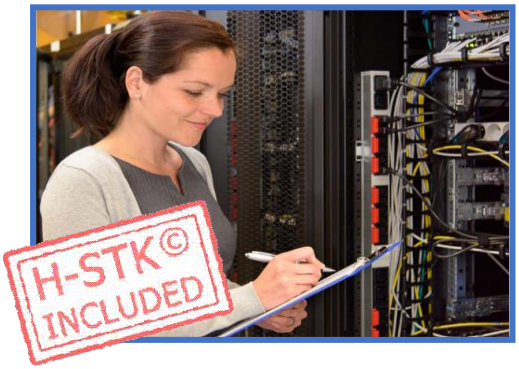
COURSE OVERVIEW IE0013
Fiber Optics Access Network Planning

Course Title
Fiber Optics Access Network Planning

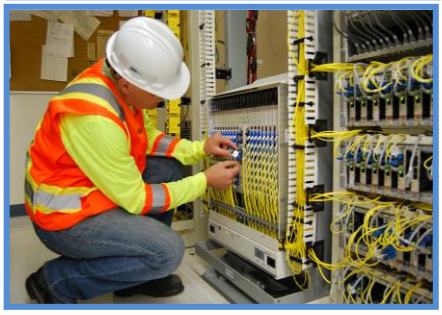
Course Date/Venue
October 07-11, 2024/Fujairah Meeting Room, Grand Millennium Al Wahda Hotel, Abu Dhabi, UAE



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 fundamentals 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

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 fundamentals 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, sample video clips of the instructor's actual lectures & practical sessions during the course 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.

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.

Accommodation

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

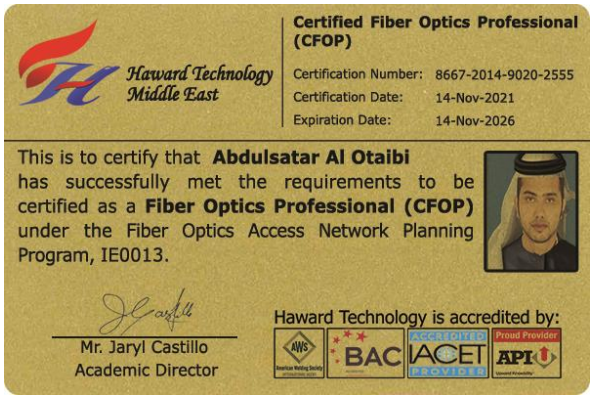
Course Certificate(s)

(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

Certificates are accredited by the following international accreditation organizations: -

- 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.

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. 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.

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:

Professor Mike Kanova is a **Senior Electrical** & **Instrumentation Engineer** with **over 35 years** of industrial experience within the **Oil & Gas**, **Petrochemical** and **Refinery** industries. His expertise extends widely over the areas of **Uninterruptible Power Supply** (**UPS**) Design & Maintenance, **UPS Construction**, **UPS DC & AC** Types & Application, **Static & Dynamic UPS**, **UPS Installation** Methods, **UPS Protection**, **Electric Heat Trace Syste**m, Foundation **Fieldbus Data Communication & Fieldbus Systems**, Data **Communication & Fieldbus** Systems, **Fiber Optics Access Network** Planning, **Overhead Power Line** Construction, **Power Systems** Control & Stability, **Fault Analysis** in Electrical Networks, OLE for Process Control (**OPC**), **Process Control & Instrumentation**, **Distribution Cables**, **Custody Measurement**, Loss **Control & Multiphase Flowmetering** of Petroleum Products, General **Instrumentation & Process Control** for Industrial Applications, **Process Instrumentation**, **Process Control & Instrumentation**, **Process Measurement & Control**, **Experion PKS** Operator, **SCADA** Systems, **Generator Excitation**, **Process Control** Techniques, Programmable Logic Controllers (**PLC**) Operation & Maintenance, **Allen Bradley PLC**, **Siemens SIMATIC S7** Maintenance & Configuration, Distributed Control System (**DCS**) Applications, Selection & Troubleshooting, **Compressor** Control & Protection, **GE Mark V**, **Power Systems** Control & Stability, Advanced **Electrical Safety**, **Switchgear** Maintenance & Troubleshooting, Electrical Fault Investigation, **Power System Planning & Economics**, **Distribution System**, **Electrical Networks & Power Flow Analysis**, **Electrical Power Distribution System** Performance & Methods of Improvement, Practical **Fiber Optics** Technology, Electric **Motor** Testing & Troubleshooting, Fundamentals of **Telecommunication**, Synchronous Digital Hierarchy (**SDH**) & Dense Wavelength Division Multiplexing (**DWDM**), **WiMax Broadband Wireless**, **SDH Networks**, **IPT Avaya Network**, **WAN & Satellite** Communication, **Wireless** Technology RC-400, National Electrical Code (**NEC**), National Electrical Safety Code (**NESC**), **Security Systems** Installation & Maintenance, **Protection Relay**, **Power Generation**, **Circuit Breakers & Switchgears** and **Gas Turbine**. Further, his experience has proven him well in the practice and has given him the chance to work with **international organizations** such as the Instrument Society of America (**ISA**), the Institute of Measurements and Control, the **United** Nations Educational Scientific and Cultural Organization (**UNESCO**) and the International Electrical Testing Association (**NETA**).

During Professor Kanova's career life, he gained extensive experience in the electrical, instrumentation and control systems engineering field through various challenging **engineering** & **managerial** positions that he filled while working as the **Scientist/Inventor**, **Project Manager**, **Development Engineer**, **Electronics Engineer**, **Stream Leader**, **Co-leader**, **Supervisor**, **Researcher**, **Conference Organizer**, **External Examiner**, **Lecturer** in Electronics, Opto-electronics and Power Electronics, **Course Developer**, **Organizing & Editorial Committee Member**, Part-time **Consultant** and Part-time **Lecturer** from the Cape Peninsula University of Technology, University of Cape Town, University of Western, University of Johannesburg Witwatersrand, Walter Sisulu University, **ESKOM**, NRF, SCINAC Tokai, Plessey Southern Africa Retreat, **Peninsula Technikon**, SA Nylon Spinners and R&B Electronics Rondebosch.

With the knowledge and skills he gained herein, he has produced **over 100 publications** and **papers** that were presented to numerous gatherings like the **International Conference on System Modelling & Control**; **International Conference on Industrial and Commercial Use of Energy**; **International Conference of Control Signals and Systems**; the **UICEE Annual Conference on Engineering Education**, the **ETMSA** (**Energy Technology Modelling**, **Simulation and Applications**), the **Symposium on Energy Technology**, **Modelling**, **Simulation & Applications**. Those papers were also published in journals such as the **NETA Journal**; the **IEEE Aerospace and Electronic Systems Journal**; the **International Journal of Power and Energy Systems**; the **Journal of the Electricity Supply Industry**; the **International Journal of Computers and Applications**; the **Journal of the Electronics Technology** and the **Quantum Journal**.

Professor Kanova is a **Registered Professional Engineer** and has a **PhD**, **Master** and **Bachelor** degrees in **Electrical Engineering**. Further, he is a **Certified Instructor/Trainer**, a **Certified Internal Verifier/ Assessor/Trainer** by the **Institute of Leadership and Management** (**ILM**) and a well-respected member of the **IEEE** and is actively engaged with numerous projects in affiliation with the **Society for Photo-optical Instrumentation** Engineers (**SPIE**), the **Aerospace and Electronic Systems Society** (**AESS-IEEE**), the **Circuits and Systems Society** (**CSS-IEEE**), the **Lasers and Electro-optics Society** (**LES- IEEE**) and the **Power Electronic Society** (**PELS-IEEE**). He has further delivered numerous trainings, seminars, courses, workshops and conferences internationally.

Course Fee

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

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, 07th of October 2024***

0730 – 0800	*Registration & Coffee*
0800 – 0815	*Welcome & Introduction*
0815 – 0830	***PRE-TEST***
0830 – 0930	***Optical Fiber Systems Configuration & Components*** *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*** *Cables Splicing*
1100 – 1215	***Optical Fiber System Calculations*** *Link Budget*
1215 – 1230	*Break*
1230 – 1420	***Practical Session*** *Optical Fiber Cable Splicing and Termination*
1420 – 1430	***Recap*** *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, 08th of October 2024***

0730 – 0930	***Communication Basics*** *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*** *SDH Standards ● SDH Multiplexing Principle ● SDH Frame ● SDH Network Elements*
1100 – 1215	***SDH Hierarchy*** *SDH Hierarchy Details ● Frame Components*
1215 – 1230	*Break*
1230 – 1420	***SDH Frame Details & Transport Modules*** *Path Overheads ● Section Overheads ● STM-1 ● STM-n*
1420 – 1430	***Recap*** *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, 09th of October 2024
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:	Wednesday, 10th of October 2024
0730 – 0930	**Network Topology Structures** Classification of Topology Structures (Chain, Star, Tree, Ring & Mesh) ● Sub Network ● Survival Networks
0930 – 0945	Break
0945 – 1100	**Protection Classification** Linear Protection ● Protection Rings ● PP Ring ● MSP Ring ● SNCP
1100 – 1215	**Directional & Fiber Protection** 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** 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:	Thursday, 11th of October 2024
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

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org