



ITU Centres of Excellence Network for Arab Region

Smart Tunisian Technoparks (S2T)

Online Training Course on

“Optical Access Networks and Fiber to the X (FTTX) Technologies”

02-08 November 2020

COURSE OUTLINE

COURSE DESCRIPTION

Title	Optical Access Networks and Fiber to the X (FTTX) Technologies
Objectives	<p>This course is designed to give participants a detailed insight on the Fundamentals of FTTx GPON Technology.</p> <p>Throughout the course, participants will start by learning the basics of each FTTx technology starting from an introduction to architectural principles of Access Networks including the different Topologies, site types, Fiber Termination Points and any factor influencing infrastructure deployment. During the second part of the course participants will acquire more knowledge on the passive optical networks (PONs), starting from the standards, learn how all the GPON elements communicate, including traffic management and QoS, together with the associated technical terms used on the field work.</p> <p>This course is very extensive on “practice”. A GPON FTTH platform will be at the disposal of the Participants, including an OLT, splitter 1x4 and 1x16 and ONUs.</p> <p>Participants will be able to practice the impact of power budget in the PON, ONUs setup and configuration, identify deviations for troubleshooting.</p>
Dates	02 - 08 November 2020
Duration	7 Days
Registration deadline	24 October 2020
Training fees	150 USD
Course code	200I24946ARB-E

LEARNING OUTCOMES

This training aims to focus on Optical Access Networks, specifically Fiber to the X (FTTX) technologies and different key topics related to Optical Access Networks.

By the end of this training, the participants should be able to:

- Understand Passive Optical Network (PON) architecture and its possible implementation.
- Identify the different varieties of PON architectures.
- Determine the differences between Broadband Passive Optical Network (BPON), Gigabit Passive Optical Network (GPON) and Ethernet Passive Optical Network (EPON).
- Specify the required components that facilitate Fiber to the Home (FTTx) technologies installations.
- Calculate the optical loss budget for a FTTx network.
- Testing FTTx Networks.

TARGET POPULATION

This training course targets engineers and technical staff working on Optical Access Networks FTTH, regulators, policy makers, telecom operators, industry, and academia. Other institutions and individuals who are interested in building their capacity in Optical Access Networks FTTH are also welcome to participate in this training course.

TUTORS/INSTRUCTORS

NAME OF TUTOR(S)/INSTRUCTOR(S)	CONTACT DETAILS
Mourad MENIF is an engineer and Professor and a researcher at Sup'Com (Higher School of Communication of Tunis) Dr. Mourad MENIF is delivering seminars in wide variety of subjects related to telecom and network at an international level with ITU (International Telecommunication Union).	Mourad.mnif@supcom.tn

EVALUATION

The assessment of the participants shall be based on the attendance and a final test. The latter will be based on QCM and Short Questions on the different parts of the course.

TRAINING SCHEDULE AND CONTENTS / AGENDA

Date for 1 st day	Time; Start time	Topics/Activities
02/11/2020	09:00 - 11:00 (online meeting from 9:00 to 11:00 AM Tunisia time)	FTTx standards: <ul style="list-style-type: none">– FTTX type (FTTH, FTTB, FTTC, FTTN, FTTA, etc.)– FTTX architecture (pt-2-pt, pt-2-mtp)– FTTX standards (BPON, GPON, NGPON1, NGPON2)

Date for 2 nd day	Time; Start time	Topics/Activities
03/11/2020	09:00 - 11:00 (online meeting from 9:00 to 11:00 AM Tunisia time)	Infrastructure: <ul style="list-style-type: none"> – Termination Options – Splitters – Panels, Closures, and Cabinets – WDM in FTTx Applications – Active Devices – OLTs and ONTs
Date for 3 rd day	Time; Start time	Topics/Activities
04/11/2020	09:00 - 11:00 (online meeting from 9:00 to 11:00 AM Tunisia time)	Components: <ul style="list-style-type: none"> – Optical fiber (G652, G657) – Optical connectors (FC, SC, LC, etc...) – Polishing (PC, UPC, APC)
Date for 4 th day	Time; Start time	Topics/Activities
05/11/2020	09:00 - 11:00 (online meeting from 9:00 to 11:00 AM Tunisia time)	Outside Plant Design: <ul style="list-style-type: none"> – Record and Field survey – Planning – Detail Design – Manholes – Handholes/Pullholes – Duct
Date for 5 th day	Time; Start time	Topics/Activities
06/11/2020	13:00 - 15:00 (online meeting from 1:00 to 3:00 PM Tunisia time)	Installation: <ul style="list-style-type: none"> – Planning the optical route – Choosing components for outside Plant and Premises installations – Link Power Budget – Cable Installation Techniques
Date for 6 th day	Time; Start time	Topics/Activities
07/11/2020	09:00 - 11:00 (online meeting from 9:00 to 11:00 AM Tunisia time)	Testing FTTx Systems: <ul style="list-style-type: none"> – Acceptance Testing – Reflection Testing – Span Testing and Splice Loss – Emergency Restoration – Troubleshooting

Date for 7 th day	Time; Start time	Topics/Activities
08/11/2020	09:00 - 11:00 (online meeting from 9:00 to 11:00 AM Tunisia time)	Practical session: OTDR <ul style="list-style-type: none"> – Setting OTDR test parameters – Lunch cable – Dead zone – Ghosts and Gainers – Reading OTDR traces – Measuring Reflectance – Testing Splitters
	12:00 - 13:00	Test Evaluation

METHODOLOGY

The online program will include Instructor-led presentations, Case Studies, Group Exercises, and Quizzes.

COURSE COORDINATION

<p><u>Training Coordinator:</u></p> <p>Mrs. Houda Jarraya Focal point at S2T Tel: + 216 71 856 073 Mobile: +216 97 879 228 / 28 300 878 Fax: +216 71 857 803 Email : houda.jarraya@s2t.tn houda.jarraya@gmail.com</p>	<p><u>ITU Coordinator:</u></p> <p>Eng. Mustafa Al Mahdi Programme Officer Arab Regional Office-ITU Tel: +202 3537 1777 Mobile: +20114 117 75 73 Fax : +202 3537 1888 Email : mustafa-ahmed.al-mahdi@itu.int</p>
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REGISTRATION AND PAYMENT

ITU Academy portal account

Registration and payment should be made online at the ITU Academy portal.

To be able to register for the course you MUST first create an account in the ITU Academy portal at the following address:

<https://academy.itu.int/index.php/user/register>

Training registration

When you have an existing account or created a new account, you can register for the course online at the following link: <https://academy.itu.int/index.php/training-courses/full-catalogue/optical-access-networks-and-fiber-x-fttx-technologies>. You can also register by finding your desired course in our training catalogue <https://academy.itu.int/index.php/training-courses/full-catalogue>

Payment

1. On-line payment

A training fee of USD 150 per participant is applied for this training. Payments should be made via the online system using the link mentioned above for training registration at <https://academy.itu.int/index.php/training-courses/full-catalogue/optical-access-networks-and-fiber-x-fttx-technologies>

2. Payment by bank transfer

Where it is not possible to make payment via the online system, select the option for offline payment to generate an invoice using the same link as above. Download the invoice to make a bank transfer to the ITU bank account shown below. Then send the proof of payment/copy of bank transfer slip and the invoice copy to Hcbmail@itu.int and copy the course coordinator. All bank transaction fees must be borne by the payer.

Failure to submit the above documents may result in the applicant not being registered for the training.

3. Group payment

Institutional Contacts are users that represent an organization. Any student can request to be an institutional contact or to belong to any existing organization.

To do this, head to your profile page by clicking on the **“My account”** button in the user menu. At the bottom of this page you should see two buttons:

- a. If you want to **become an institutional contact**, click on the **“Apply to be an Institutional Contact”** button. This will redirect you to a small form that will ask for the organization name. After you fill the name of the organization you want to represent, click on **“continue”** and a request will be created. An ITU Academy manager will manually review this request and accept or deny it accordingly.
- b. If you want to **belong to an existing organization**, click on the **“Request to belong to an Institutional Contact”** button. This will redirect you to a small form that will ask you to select the organization you want to join from an organization list. After you select the correct organization, click on **“continue”**, a request will then be created. The Institutional Contact that represents that organization will manually accept or deny your request to join the organization.

ITU BANK ACCOUNT DETAILS:

Name and Address of Bank:	UBS Switzerland AG Case postale 2600 CH 1211 Geneva 2 Switzerland
Beneficiary:	Union Internationale des Télécommunications
Account number:	240-C8108252.2 (USD)
Swift:	UBSWCHZH80A
IBAN	CH54 0024 0240 C810 8252 2
Amount:	USD 150
Payment Reference:	CoE-ARB [24946]-[WBS No. P.40592.1.03]

4. Other method of payment

If due to national regulations, there are restrictions that do not allow the payment to be made using options 1 & 2 above, please contact the ITU Coordinator for further assistance.