



National Institute of Telecommunications

Online Training Course on

Wireless Access Technologies to Internet Network

8-15 March 2021

TRAINING COURSE OUTLINE

COURSE DESCRIPTION

Title	Wireless Access Technologies to Internet Network
Objectives	This course focuses on Wireless Access Technologies to Internet Network including technical, business and regulatory aspects. It includes wireless and mobile evolutions including mobility approaches by IETF and 3GPP, 4G access technologies by 3GPP (LTE/LTE-Advanced), as well as Evolved Packet Core (EPC). The course also covers the other 5G technology accepted by the ITU umbrella IMT-2020, 5G New Radio (5G NR) and 5G Core, as well as WiFi access technologies from the IEEE. Further, it includes QoS (Quality of Service) in mobile and wireless networks, mobile VoIP (Voice over IP) and mobile IPTV, OTT (Over The Top) broadband Internet services in wireless and mobile networks, as well as QoS assessment and QoS parameters for mobile services. Finally, the course focuses also on regulatory and business aspects for wireless and mobile broadband access to Internet.
Dates	8-15 March 2021
Duration	8 Days
Registration deadline	8 March 2021
Training fees	USD 150
Course code	21OI26403EUR-E

DESCRIPTION OF THE TRAINING COURSE

This course focuses on Wireless Access Technologies to Internet Network including technical, business and regulatory aspects. It includes wireless and mobile evolutions including mobility approaches by IETF and 3GPP, 4G access technologies by 3GPP (LTE/LTE-Advanced), as

well as Evolved Packet Core (EPC). The course also covers the other 5G technology accepted by the ITU umbrella IMT-2020, 5G New Radio (5G NR) and 5G Core, as well as WiFi access technologies from the IEEE. Further, it includes QoS (Quality of Service) in mobile and wireless networks, mobile VoIP (Voice over IP) and mobile IPTV, OTT (Over The Top) broadband Internet services in wireless and mobile networks, as well as QoS assessment and QoS parameters for mobile services. Finally, the course focuses also on regulatory and business aspects for wireless and mobile broadband access to Internet.

LEARNING OUTCOMES

At the end of the training, the participant should have gained an understanding of the key aspects of:

- Wireless and Mobile Internet fundamentals
- 4G access technologies by 3GPP: LTE/LTE-Advanced
- Evolved Packet Core (EPC) for mobile Internet network
- 5G technologies by 3GPP: 5G NR and 5G Core
- WiFi access technologies: IEEE 802.11n/ac/ad
- QoS in wireless and mobile networks
- Mobile VoIP and mobile IPTV
- OTT (Over-The-Top) broadband Internet services in wireless and mobile networks
- QoS assessment and QoS parameters for mobile services
- Regulatory and business aspects for wireless and mobile broadband access to Internet

TARGET POPULATION

This course is targeted at managers, engineers and employees from regulators, government organisations, telecommunication companies and academia, who are interested in understanding, implementation and regulation of Wireless Access Technologies to Internet Network, including technologies, standardization, regulation and content. Other institutions and individuals that are dedicated in building their capacity related to Wireless Access Technologies to Internet Network are also welcome to participate.

ENTRY REQUIREMENTS

No prior knowledge or qualification is required to register for this course, considering the given target population.

TUTORS/INSTRUCTORS

NAME OF TUTOR(S)/INSTRUCTOR(S)	CONTACT DETAILS
Prof. Toni Janevski	tonij@feit.ukim.edu.mk

TRAINING COURSE CONTENTS

There are in total eight days, from which first 5 days (8-12 March) there will be given recorded video lectures, 2 per day, five days in total and that gives the total of 10 video lectures in this course. The lectures are on the following subjects:

Lecture	Subject
Lecture 1	Wireless and Mobile Internet Fundamentals
Lecture 2	4G access technologies by 3GPP: LTE/LTE-Advanced
Lecture 3	Evolved Packet Core (EPC) for mobile Internet network
Lecture 4	5G technologies by 3GPP: 5G NR and 5G Core
Lecture 5	WiFi access technologies: IEEE 802.11n/ac/ad
Lecture 6	QoS in wireless and mobile networks
Lecture 7	4G mobile VoIP and mobile IPTV
Lecture 8	OTT (Over-The-Top) broadband Internet services in wireless and mobile networks
Lecture 9	QoS assessment and QoS parameters for mobile services
Lecture 10	Regulatory and business aspects for wireless and mobile broadband access to Internet

TRAINING COURSE SCHEDULE

Days	Activity	Exercises and interactions
Day 1	Learning	Watching and listening to video lectures 1 and 2. Answering on questions asked by the tutor, and possibility to ask questions to him via course forum.
Day 2	Learning	Watching and listening to video lectures 3 and 4. Answering on questions asked by the tutor, and possibility to ask questions to him via course forum.
Day 3	Learning	Watching and listening to video lectures 5 and 6. Answering on questions asked by the tutor, and possibility to ask questions to him via course forum.
Day 4	Learning	Watching and listening to video lectures 7 and 8. Answering on questions asked by the tutor, and possibility to ask questions to him via course forum.
Day 5	Learning	Watching and listening to video lectures 9 and 10. Answering on questions asked by the tutor, and possibility to ask questions to him via course forum.
Day 6-7	Consolidation of knowledge	Possibility to watch all video lectures one again with possibility to ask questions to the tutor.
Day 8	Solving the Final Quiz	Solving the Final Quiz.

METHODOLOGY (Didactic approach)

The course methodology will be as follows:

- Each day from 8 to 12 March 2021 there will be made available two recorded video lectures, which are recorded in the face-to-face ITU Centre of Excellence workshop organised by National Institute of Telecommunications in Poland. In total there are 10 video lectures during the course.
- Discussion forum will be organized based on discussion topics given on a daily basis, where students are highly encouraged to participate and interact with instructors and other students.
- Quiz test will be assigned on the last day of the course, 15 March 2021.
- All announcements for all events (lectures, quiz and forum) will be given in a timely manner (prior to the event) by the course tutor.

EVALUATION AND GRADING

On the last day of the course a quiz test will be assigned. It will consist of 20 questions (multiple choice) which should be solved in a time frame of 90 minutes, with at least 12 correct answers (60%).

The course evaluation for obtaining the certificate at the end is based primarily on the results from the Quiz, however, replies to the raised discussion topics may also be considered in the evaluation process.

TRAINING COURSE COORDINATION

Course coordinator: Name: Sylwester Laskowski Email address: S.Laskowski@il-pib.pl	ITU coordinator: Name: Jaroslaw Ponder Email address: euregion@itu.int
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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 course 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/training-courses/full-catalogue/wireless-access-technologies-internet-network-6>

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. Payment should be made via the online system using the link mentioned above for training registration at <https://academy.itu.int/training-courses/full-catalogue/wireless-access-technologies-internet-network-6>

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

Should you wish to pay for more than one participant using bank transfer and need one invoice for all of them, create an account as **Institutional Contact**. **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-EUR 26403 – P.40595.1.04

4. Other method of payment

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

CERTIFICATES

Each fully registered participant who successfully completes the course, based on the evaluation, will receive an ITU Certificate for this course.