



Trainings proposed for 2020 by ITU CoE at FEEIT in Skopje

Steering Committee meeting
for the ITU Centres of Excellence in Europe for 2020

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Priority area of FEEIT for the 2019-2022 cycle of activities

- The priority area of FEEIT for 2019-2022 ITU CoE trainings in Europe is **“Wireless and Fixed Broadband Access”**.
- Broadband access topics are the following:
 - Fixed broadband/ultra-broadband access,
 - Mobile broadband/ultra-broadband access,
 - Next Generation Networks (NGN) evolution and Next Generation Access (NGA),
 - Broadband Internet technologies,
 - Future networks,
 - Future Internet,
 - 4G/4.5G/5G mobile networks and services,
 - Business aspects of broadband access, regulation aspects of broadband access.



Key strategy for success of ITU CoE: Increase and maintain the appeal for trainings offered via the ITU Academy

- Main approach which brings success is:
 - To **continue the successful** programmes
 - To use **multiple delivery channels**: e-learning, face-to-face, blended
 - To use **ITU Academy platform** as a medium for capacity-building.
- To create and deliver **well structured and well designed courses**.
- To use already **proven successful practices** (where participants are satisfied) and to provide **consistency** in the courses delivery
 - Participants that are satisfied by a given course will join some of next ITU courses, and vice-versa.



Continuing ITU CoEs collaboration: E-learning based on face-to-face training

- ITU face-to-face training at NIT in Warsaw is video recorded and after the post-production it is used for ITU e-learning course on the ITU Academy.

The screenshot shows the ITU Academy interface. The top navigation bar includes the ITU Academy logo, the language 'English (en)', and a user profile for 'Toni Janevski'. A left sidebar contains a course menu with items like 'Participants', 'Badges', 'Competencies', 'Grades', 'General', 'Final Quiz', 'Feedback Form', 'Introduction', and four numbered sections: '1. Mobile broadband evolution', '2. LTE-Advanced-Pro: transition from 4G toward 5G mobile networks', '3. 5G network architecture: network slicing', and '4. 5G New Radio access'. The main content area displays the course title 'Technical, business and regulatory aspects of 5G network' and a breadcrumb trail: 'Dashboard > My courses > 19OI24247EUR-E > 8. 5G Quality of Service (QoS) > Video lecture 8. 5G Quality of Service (QoS)'. Below this is a video player showing a lecture titled 'Video lecture 8. 5G Quality of Service (QoS)'. The video frame shows a presenter pointing to a slide titled 'New QoS type in 5G: Delay critical GBR'. The slide contains a bulleted point and a table with the following data:

QoS	Resource Type	Priority	Delay Budget	Packet Loss rate	Default maximum data burst volume	Remainder
10		11	5 ms	10 ⁻⁴	500 Bytes	Remainder available
11		12	15 ms	10 ⁻⁴	500 Bytes	100 Bytes reserved
12	Delay Critical GBR	13	20 ms	10 ⁻⁴	500 Bytes	Other delay critical
16		16	10 ms	10 ⁻⁴	500 Bytes	Other delay critical
17		17	10 ms	10 ⁻⁴	500 Bytes	Other delay critical

“ITU Centre of Excellence at FEEIT in Skopje”, Prof. Dr. Toni Janevski



Key strategy for success of ITU CoE: Marketing of the ITU CoE courses

- **Course marketing** can be based on several **methods**:
 - **Official information sent from ITU** to focal points in member states
 - This is good, but not enough to inform all interested parties
 - **Email marketing** is the fundamental mean, sending information to interested parties
 - Having in mind potential interest of the contacts
 - **Web-based marketing** for ITU elearning courses
 - Information on ITU Academy web site attracts students globally, since elearning courses are open (and should be open) to all interested parties
 - Information about the course on other web sites (e.g., web sites of the institution which holds the training)
 - **Other types** of marketing
 - Marketing can be also provided via brochures, social networks, etc.





Key strategy for success of ITU CoE: Operational business plan the ITU CoE courses

- The CoE courses are **self-sustainable**:
 - All revenues comes from the collected course fees.
- The **operational business plan** for CoE courses are based on:
 - 150 USD/participant for ITU CoE elearning course
 - 500 USD/participant for ITU CoE face-to-face course
 - The course fees are based on revenue split 20:80 between ITU and CoE (based on practices in previous ITU CoE cycle)
 - Revenues are collected by the ITU, because ITU is the globally trusted party for all course participants, and 80% of the collected fees are transferred to the CoE after the course.
 - ITU Academy platform has established tools for:
 - Online payments (with credit cards),
 - Offline payments (with automatic invoicing),
 - including individual an group payments.





ITU elearning: “Future Broadband Internet, Cloud Computing and Internet of Things“

- **Dates:** 26 May - 22 June 2020
- **Duration:** 4 weeks
- **Course fee:** 150 USD

- **Target audience:** 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 Future Broadband Internet, Cloud Computing and Internet of Things, including technologies, regulatory and business aspects. Other institutions and individuals that are dedicated in building their capacity related to Future Broadband Internet, Cloud Computing and Internet of Things are also welcome to participate.



ITU elearning: “Future Broadband Internet, Cloud Computing and Internet of Things“

WEEK	TOPICS
1	Internet Fundamentals and Governance
2	Future Broadband Access, SDN, and Cloud Computing
3	Internet of Things, Big Data, and Artificial Intelligence
4	Future Telecom, IoT/BigData/AI and OTT Services



ITU elearning: “Mobile broadband Internet, 5G and future services“

- **Dates:** 17 November - 14 December 2020
- **Duration:** 4 weeks
- **Course fee:** 150 USD
- **Target audience:** 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 Mobile Broadband Internet, 5G and Future Services, including technologies, regulatory and business aspects. Other institutions and individuals that are dedicated in building their capacity related to Mobile Broadband Internet, 5G and Future Services are also welcome to participate.



ITU elearning: “Mobile broadband Internet, 5G and future services”

WEEK	TOPICS
1	Mobile broadband Internet, IPv6 and governance
2	LTE/LTE-Advanced Pro, WiFi and 5G access
3	5G Next Generation core, IoT, clouds and AI
4	Future mobile services: telecom, 5G/IoT/AI, and future mobile OTT services



Summary

- ITU CoE at FEEIT in Skopje aims to continue its successful delivery of ITU training courses established over past 10 years (2009-2019).
- The following two e-learning courses are proposed for 2020:
 - **"Future Broadband Internet, Cloud Computing and Internet of Things"**, proposed delivery dates 26 May - 22 June 2020 (duration: 4 weeks).
 - **"Mobile Broadband Internet, 5G and Future Services"**, proposed delivery dates 17 November - 14 December 2020 (duration: 4 weeks).
- The distance learning courses held by the ITU CoE at FEEIT have proven to be self sustainable and very interesting for the targeted audience worldwide, hence ITU CoE at FEEIT believes that it is able to continue such practice in 2020 training activities.



Thank you!



ITU elearning: “Future Broadband Internet, Cloud Computing and Internet of Things“

Short description

This course will focus on Future Broadband Internet, Cloud Computing and Internet of Things, including technologies, regulation and business aspects. It will cover Internet technologies, including IPv6, migration from IPv4 to IPv6, DNS, DHCP, Internet networking, HTTP 2.0, IP interconnection, IP QoS, cybersecurity, as well as Internet governance. Also, the course will include MPLS/IP transport, VPNs, Carrier Ethernet, as well as future gigabit copper, fiber optic, submarine cable, and satellite broadband access. Further, it will cover Software Defined Networking (SDN) and network virtualization (NFV) for fixed and mobile access and core, ITU’s Cloud Computing architectures and models (SaaS, PaaS, IaaS), cloud security and privacy, OTT and telecom clouds, edge and fog computing services, as well as clouds governance. It will also include Internet of Things (IoT) and Web of Things (WoT), including critical IoT and massive IoT, data management, Big Data architectures, Big Data-driven networking, as well as IoT/data security, privacy and trust. The course will also include use of Artificial Intelligence (AI) for Internet and telecoms. Finally, it will cover future broadband OTT services (video, social, AR/VR, Web 3.0) and net neutrality, future IPTV, Industry 4.0, smart city, future clouds, future IoT/Big-Data/AI services, including their business and regulatory aspects.



ITU elearning: “Mobile broadband Internet, 5G and future services“

Short description

This course will cover mobile broadband Internet, 5G and future services, including technologies, regulation and business aspects. The course will cover Internet and IP mobility management approaches, Mobile IPv6, and mobile Internet governance. Also, it will include 4G/4.5G access, LTE-Advanced and LTE-Advanced Pro, Evolved Packet System (EPS) architecture, WiFi traffic offload, 4G QoS, small cells approaches, and spectrum management. Further, the course will cover 5G New Radio (NR) access, 5G Next Generation core, 5G network slicing/virtualization and SDN (Software Defined Networking), 5G QoS, 4G to 5G transition, and 5G spectrum management including 5G practical implementations. It will also include mobile/wireless Internet of Things (IoT) in 4G and 5G, including massive and critical IoT services, as well as Multi-access Edge Computing (MEC) and fog computing. It will also include enhanced Mobile Broadband (eMBB), Ultra-Reliable and Low-Latency Communication (URLLC) and massive Machine Type Communication (mMTC), as well as use of Artificial Intelligence (AI) and Machine Learning for 5G. Finally, the course will cover future mobile OTT services and Internet net neutrality, VoLTE and VoNR, 5G media streaming, AR/VR, 5G TV broadcast, 5G fixed-wireless access, vehicular to everything (V2X), industrial automation, 5G smart services, as well as business and regulatory aspects of future services.