AI, cybersecurity and QoS/QoE for future mobile broadband

ITU and National Institute of Telecommunications

Title	AI, cybersecurity and QoS/QoE for future mobile broadband
Modality	Face-to-face
Level	Intermediate
Dates	22 – 23 October 2026
Duration	2 days
Language	English
Region	Global
Location	National Institute of Telecommunications (NIT), Warsaw, Poland
Registration type	Application and selection
Registration deadline	21 October 2026
Training fees	500 USD

Description	New technologies, evolving regulatory considerations, and emergent business models are likely to shape how advanced digital services are delivered and managed. This course focuses on technical, business and regulatory aspects of AI, cybersecurity and Quality of Service (QoS) and Quality of Experience (QoE) for future mobile broadband. Through an in-depth exploration, participants will gain insights into key innovations such as 5G and 5G-Advanced technologies, including 5G RAN and Core, network slicing, service types and spectrum, followed by ITU framework for 6G (IMT-2030), covering immersive communication with integrated AI and sensing, edge clouds, massive and critical IoT, and ubiquitous 3D connectivity. The course introduces participants to future immersive, AI-driven, cloud-native mobile networks and their convergence with satellite networks, bridging this knowledge with AI, machine learning and generative AI use for 5G and 6G cybersecurity, as well as regulatory and business aspects of AI, data governance, and cybersecurity for 5G and 6G. The course also puts the spotlight on QoS and QoE in 5G and 6G, including mobile voice, video, Internet, OTT, XR, metaverse, and critical services. Participants will gain insights into KPIs and AI-based QoS and QoE assessment in these mobile networks, as well as AI-enhanced QoS and QoE for mobile metaverse, XR, digital twins, and IoT. The course also focuses on AI-driven spectrum management including dynamic spectrum sharing, and network neutrality for 5G and 6G, Finally, it concludes with QoS and QoE regulation in AI-native 5G and 6G, enforcement mechanisms, as well as QoS and QoE business models and drivers for future mobile networks and services.
Training topics	*Wireless and Fixed Broadband* *Artificial Intelligence* *Quality of Service* *Cybersecurity*
Certification	Certificate

1. TARGET POPULATION

This course is targeted at managers, engineers and employees from regulators, government organizations, telecom operators, telecommunication companies and academia, who are interested in technical, business and regulatory aspects of AI, Cybersecurity and QoS/QoE for Future Mobile Broadband, including technologies, standardization, regulation and content. This course also accepts all other institutions and individuals who are committed to building their capacities related to technical, business and regulatory aspects of AI, Cybersecurity and QoS/QoE for Future Mobile Broadband.

2. ENTRY REQUIREMENTS

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

Please note that there are 30 places available for this training.

Places will be allocated based on application and selection and on a first-come, first served basis. Participants requiring a visa to attend the training are kindly advised to apply before July 2026.

3. LEARNING OBJECTIVES

The training will support the following learning objectives, participants will be able to:

- Comprehend and compare 5G and 5G-Advanced technologies
- Gain an applied knowledge of ITU framework for 6G
- Understand future immersive, AI-driven, cloud-native, converged satellite-mobile networks
- Explain AI, machine learning and generative AI for 5G and 6G cybersecurity
- Analyse regulatory and business aspects of AI, data governance, and cybersecurity for future mobile broadband
- Contrast and discuss Quality of Service (QoS) and Quality of Experience (QoE) in 5G and 6G
- Reflect on KPIs and AI-based QoS and QoE assessment in 5G and 6G mobile networks
- Employ AI-enhanced QoS and QoE for future mobile services: Metaverse, XR, digital twins, and IoT
- Employ AI-driven spectrum management and network neutrality for 5G/6G
- Interpret regulatory and business aspects of QoS/QoE in future mobile networks

4. METHODOLOGY

This course will be delivered using face-to-face training methodology, which is defined as follows:

- The course will be conducted as two full days lecture sessions in a face to face manner at the premises of National Institute of Telecommunication (NIT) in Warsaw Poland, on 22 and 23 October 2026. The participants will attend lectures and interact with the tutor on the given topics.

- All presentations from face to face lectures/sessions used during the course will be made available on the ITU Academy platform (before the start of that course day).
- Course forum, asynchronous and online on the ITU Academy, will be organized based on discussion topics raised by the instructor (after participants return to their home countries), on 28 October 2026 for Day 1 lecture material, and 29 October 2026 for Day 2 lecture material, however different dates can be agreed in coordination with the course participants (depending on their travel plans back to home) at the end of Day 2.
- Final Quiz test which will be assigned online on the ITU Academy platform on 30 of October 2026 and will remain open for 72 hours, however different date can be agreed in coordination with the course participants (depending on their travel plans back to home) at the end of Day 2.
- All information in the course be given in a timely manner (prior to the event) by the course tutor on the ITU Academy platform.

5. ASSESSMENT AND GRADING

The evaluation of the participants will be based on 60% from the Final Quiz and 40% from the answers given in the course forum on the raised discussion topics by the tutor on the ITU Academy after the course, thus reflecting both the quality and the quantity of time spent on the course.

Attendance on the course face to face lectures at the venue in Warsaw is mandatory in order to access the Course Forum and the Final Quiz which will be given later online on the ITU Academy (after the return of participants to their home countries).

The Course Forum will be open on the ITU Academy on 28 October 2026 (after the return of participants to their home countries) according to the GMT time.

The Final Quiz will be open on the ITU Academy platform from 00:00 hours on Friday (30 of October 2026, after the return of participants to their home countries) according to the GMT time, and will remain open at least for 72 hours after opening, so each participant can choose the most convenient time to solve it. It will consist of 20 questions (multiple choices). However, after the start of the attempt the Quiz should be completed in 90 minutes.

Activity	Weighting (%)
Mandatory forum contributions (discussion topics on the ITU Academy platform)	40%
Final Quiz test on the ITU Academy platform	60%
Total	100%

The course is completed successfully with a total grade of 70% or higher. The grading will be completed by the course tutor after the course is fully completed.Each fully registered participant who successfully completes the course with a total grade of 70% or higher will receive an ITU Certificate for this course.

The ITU certificates will be given to participants via the ITU Academy platform after completion of the course reporting and processing within the ITU.

6. TRAINING DETAILS & INSTRUCTIONAL APPROACH

Day 1:

Time (local)	Sessions	Learning outcomes	Activities
10:00 – 11:00	**1. 5G/5G-Advanced technologies**	Outline, discuss, use, analyze, design and evaluate the following topics using technical, business and regulatory aspects: • Mobile broadband evolution • ITU IMT-2020 framework • 5G New Radio and 5G RAN • 5G Core (5GC) and Software-Based Architecture (SBA) • 5G main service types: eMBB (enhanced Mobile Broadband), URLLC (Ultra-Reliable Low Latency Communications), mIoT (massive IoT) • 5G-Advanced service types: V2X (Vehicular to everything), HMTC (High-Performance Machine-Type Communications), HDLLC (High Data rate and Low Latency Communications) • Network slicing in 5G • 5G Non Public Networks (NPN) • 5G/5G-Advanced spectrum	Personal attendance at Lecture 1, with physical presence in the course and Q&A session with the tutor at the end of the lecture.
11:00 – 11:30	**COFFEE BREAK**		
11:30 – 13:00	**2. ITU framework for 6G**	Outline, discuss, use, analyze, design and evaluate the following topics using technical, business and regulatory aspects: • ITU IMT-2030 framework for 6G • 3GPP standardization from 5G to 6G • 6G immersive communication: metaverse, XR, holographs	Personal attendance at Lecture 2, with physical presence in the course and Q&A session with the tutor at the end of the lecture.

		• Hyper Reliable and Low-Latency Communication (6G critical IoT) • 6G massive communication: metaverse, smart cities, industrial monitoring • Ubiquitous connectivity (3D global coverage) • AI-native 6G networks • Integrated sensing and communication for XR and digital twins • 6G spectrum	
13:00 – 14:00	**LUNCH BREAK**		
14:00 – 14:45	**3. Future immersive, AI-driven, cloud-native, converged satellite-mobile networks**	Outline, discuss, use, analyze, design and evaluate the following topics using technical, business and regulatory aspects: • AI technologies for future mobile networks: Machine Learning and Generative AI • Future AI-native mobile network architecture • Multi-access edge computing (MEC) for 5G/6G: ITU and 3GPP frameworks • Cloud-native architecture for future mobile broadband • Future immersive mobile services: eXtended Reality (XR) • Mobile metaverse for merging physical and virtual/cyber worlds • Converged 5G/6G terrestrial and satellite networks: TN (Terrestrial Network) – NTN (Non-Terrestrial Network) integration	Personal attendance at Lecture 3, with physical presence in the course and Q&A session with the tutor at the end of the lecture.
14:45 – 15:30	**4. AI/ML and Generative AI for 5G/6G cybersecurity**	Outline, discuss, use, analyze, design and evaluate the following topics using technical, business and regulatory aspects: • ITU cybersecurity framework • Cybersecurity threats, risks and harms in mobile networks • IPsec, TLS, HTTP 3.0, and tokens for 5G/6G networks and services • Generative AI for security threat detection and response	Personal attendance at Lecture 4, with physical presence in the course and Q&A session with the tutor at the end of the lecture.

		• Zero Trust Architecture (ZTA) for 5G/6G RAN, Core, edge, and clouds • AI/ML-based security for mobile network slicing • AI, Blockchain and Quantum technologies for critical security in 5G/6G • AI-based cross-platform cybersecurity for converged fixed–mobile–satellite networks	
15:30 – 16:00	**COFFEE BREAK**		
16:00 – 17:00	**5. Regulatory and business aspects of AI, data governance, and cybersecurity for future mobile broadband**	Outline, discuss, use, analyze, design and evaluate the following topics using technical, business and regulatory aspects: • ITU frameworks for 5G/6G cybersecurity • Cybersecurity for digital assets and virtual mobile economies • Trust in 5G/6G autonomous networks (ITU trust framework) • AI for cost-efficient mobile network design, planning and optimization • AI/ML for 5G/6G mobile network automation • Business impact of AI in future mobile networks and services • Privacy, data governance, and digital identity management in 5G/6G • Regulation and governance of AI and cybersecurity for future mobile broadband	Personal attendance at Lecture 5, with physical presence in the course and Q&A session with the tutor at the end of the lecture.
Day 1 Conclusions			

Day 2:

Time (local)	Sessions	Learning outcomes	Activities
10:00 – 11:00	**6. Quality of Service (QoS) and Quality of Experience (QoE) in 5G and 6G**	Outline, discuss, use, analyze, design and evaluate the following topics using technical, business and regulatory aspects: • QoS and QoE fundamentals by the ITU • 5G/5G-Advanced QoS architecture • 6G QoS/QoE evolution • O-RAN (Open RAN) and QoS/QoE • Future mobile traffic management and QoE • QoS/QoE for mobile voice and video services • QoS/QoE for XR and mobile metaverse services • Deterministic QoS for critical 5G/6G services • QoS management for 5G/6G network slicing and edge clouds	Personal attendance at Lecture 6, with physical presence in the course and Q&A session with the tutor at the end of the lecture.
11:00 – 11:30	**COFFEE BREAK**		
11:30 – 13:00	**7. KPIs and AI-based QoS/QoE assessment in 5G/6G mobile networks**	Outline, discuss, use, analyze, design and evaluate the following topics using technical, business and regulatory aspects: • KPIs for 5G and 6G mobile networks • AI/ML-based QoS/QoE management • QoS/QoE metrics for Voice over 5G NR • KPIs and QoE metrics for mobile Internet and OTT services • KPIs for XR services and mobile metaverse • KPIs for mobile V2X and critical IoT services • AI/ML-based QoS and QoE measurements for mobile services • AI for QoS/QoE enforcement in 5G/6G mobile networks	Personal attendance at Lecture 7, with physical presence in the course and Q&A session with the tutor at the end of the lecture.

		• Personalized QoS and QoE in future mobile networks	
13:00 – 14:00	**LUNCH BREAK**		
14:00 – 14:45	**8. AI-enhanced QoS/QoE for future mobile services: Metaverse, XR, digital twins, and IoT**	Outline, discuss, use, analyze, design and evaluate the following topics using technical, business and regulatory aspects: • Network data analytics in 5G Core • AI-enabled edge computing and QoS in the Metaverse • QoS vs. network neutrality in future mobile Internet and metaverse • QoS/QoE for future Metaverse services • AI/ML-based QoS assurance • Future AI-driven traffic and QoS management • AI use for estimating QoE from the network QoS • ML-assisted network slicing using QoE feedback from verticals	Personal attendance at Lecture 8, with physical presence in the course and Q&A sessionwith the tutor at the end of the lecture.
14:45 – 15:30	**9. AI in spectrum management and network neutrality for 5G/6G**	Outline, discuss, use, analyze, design and evaluate the following topics using technical, business and regulatory aspects: • 5G/6G spectrum management • AI for dynamic spectrum sharing in 5G/6G networks • AI in spectrum monitoring • Impact of mobile spectrum management on QoS/QoE • Network neutrality vs. AI-driven QoS and dynamic spectrum management • Network neutrality vs. AI-native 5G/6G networks • QoS/QoE vs. network neutrality in 5G/6G networks	Personal attendance at Lecture 9, with physical presence in the course and Q&A session with the tutor at the end of the lecture.
15:30 – 16:00	**COFFEE BREAK**		

16:00 – 17:00	**10. Regulatory and business aspects of QoS/QoE in future mobile networks**	Outline, discuss, use, analyze, design and evaluate the following topics using technical, business and regulatory aspects: • QoS/QoE regulation guidelines by ITU • Regulatory approaches for QoS/QoE in 5G/6G mobile networks • KPIs for regulatory oversight of 5G/6G networks and services • Network neutrality and regulatory challenges for mobile Metaverse • QoS and QoE enforcement mechanisms in AI-native mobile networks • SLA frameworks for 5G/6G critical, industrial and ultra-reliable services • QoS/QoE business models for 5G/6G mobile services • Business drivers for future mobile networks and services	Personal attendance at Lecture 10, with physical presence in the course and Q&A session with the tutor at the end of the lecture.
Day 2 Conclusions			

7. TUTORS/INSTRUCTORS

Name of tutor(s)/instructor(s)	Title	Contact details
Prof. Dr. Toni Janevski	Professor Doctor	tonij@feit.ukim.edu.mk

8. TRAINING COURSE COORDINATION

Course coordinator	ITU coordinator
Name: Dr. Sylwester Laskowski Title: Doctor, Chief Training Specialist Email address: s.laskowski@il-pib.pl	Name: Praachi Kumar Title: Associate Capacity Development officer Email address: ituacademy@itu.int