ITU Centres of Excellence Network for Asia-Pacific Region

Advanced Level Telecom Training Centre
Online Training Course on
"Advanced Broadband QoS and Applications"

Ghaziabad (Near Delhi), India

24 August– 04 September 2020

COURSE OUTLINE

COURSE DESCRIPTION

Title	Online training course on "Advanced Broadband QoS and Applications"
Objectives	• This course aims to equip participants with an understanding of QoS and QoE in the context of broadband networks. It includes an introduction to broadband technology; QoS and QoE concepts and applications; relevant standards; measurement methodologies; and policies and regulatory aspects. • The course includes existing QoS and KPIs of HSPA, HSPA+, LTE, LTE Advance, 5G and also discuss the required QoS and KPIs for new latency based application in 5G. • Defining QoE Parameters for latency based services, discussing Mean Opinion Score Concept of new applications. • The QoS and KPIs parameters are linked to new QoE for latest applications. The KPI parameters are studied using Drive Test Tool, Planning Tool, Packet Tracer.
Dates	**24 August - 04 September 2020**
Duration	2 Weeks
Registration deadline	20 August 2020
Training fees	USD 100
Course code	20OI24882ASP-E

LEARNING OUTCOMES

Upon completion of this training, participants will be able to :

- Apply the concepts and technical aspects of wireless and wireline broadband technologies;
- Understand and apply the concepts of QoS and QoE;
- Understand the methodologies for QoS monitoring and measurements of broadband services from an end-user perspective.
- Apply Standards and international regulatory practices on QoS and QoE.
- Enhance the Skill enhancement and capacity building on developing a comprehensive regulatory framework
- Understand various wireline and wireless broadband access technologies.
- Concepts and technological aspects of mobile broadband technologies e.g. 3G, 3.9G, LTE, LTE advanced ,HSDPA, HSUPA, HSPA++, WifI Hotspot ,Off loading and 5G.
- Advanced Broadband Network Architecture , MNG-PAN including latest development, standards, services & data protection.
- Understand the required QoS and KPIs for new latency based application in 5G
- QoE Parameters for latency based services, discussing Mean Opinion Score Concept of new applications of 4G and 5G.
- Understand of the KPI parameters using Drive Test Tool, Planning Tool, Packet Tracer of 4G and 5G

TARGET POPULATION

This training is primarily targeted at executives, managers, engineers and technical staff interested in advanced wireline and wireless broadband networks, regulators and policymakers; telecom operators; industry and academia.

Other institutions and individuals who are interested in building their capacity in the field of advanced broadband network are also welcome to participate in this training course.

TUTORS/INSTRUCTORS

S.No.	NAME OF TUTOR(S)/ INSTRUCTOR(S)	POSITION	CONTACT DETAILS
1.	Mr. M. K. Seth	Chief General Manager, ALTTC, BSNL, Ghaziabad, India	cgm_alttc@bsnl.co.in
2.	Mr. Subhash Chand	PGM, ALTTC, BSNL Ghaziabad, India	subhash.iitr83@gmail.com
3.	Mr. A K Sharma	Dy. General Manager (CFA BB)	ashok1963sharma@gmail.com
4.	Mr. H K Dixit	DGM (Tx & Mobile)	dikshithk@rediffmail.com
5.	Mr. Anand Kumar	Assistant General Manager (Broadband)	anandkumarbsnl21@gmail.com

6.	Mr. Naresh Singh	Asst. Director (Broadband)	nareshsingh17@gmail.com
7.	Mr. Nikunj Goel	Asst. General Manager (Transmission)	nikunjgoelin@yahoo.com
8.	Mr. Abhay Gupta	Asst. General Manager (Mobile)	abhaybpl@gmail.com
9.	Mr. Rajesh Kumar	Asst. Director (Mobile)	rajeshbsnl@gmail.com
10	Mr. N P S Chauhan	Asst. Director (Broadband)	npsinghchauhan@gmail.com
11	Mr. Alock Tyagi	JTO (Broadband)	alocknoc@gmail.com
12	Mr. Jai Bachani	AD (Mobile)	Jai_bsnl2002@gmail.com

EVALUATION

Besides the weekly quiz and their assignment score, participants will be evaluated according to their substantive posts on the discussion forum, active participation in the online chat sessions and other course activities, reflecting both the quantity and quality of time spent on the course. Below are the evaluation schemes:

Quiz # 1	25%
Quiz # 2	25%
Individual Assignment:	20%
2 Chat Sessions (10% per session : Each Friday	20%
2 Discussion Forum (5% per forum)	10%
Total Evaluation:	100%

Important: A passing mark of 60% is required for obtaining a completion certificate.

TRAINING SCHEDULE AND CONTENTS / AGENDA

Agenda

Week	Module Title	Topics
1	**Module 1: Understanding key broadband technologies**	• ITU's IMT series and Mobile Network evolution. • Overview of next-generation broadband, UMTS, HSDPA, HSUPA, HSPA++, LTE, LTE Advanced (LTE-A), LTE- Pro., 5G • WiFi Hotspot, Offloading. • Wifi IEEE802.11

		• Copper based broadband access technologies, e.g. xDSL. • Fibre-based broadband access technologies, e.g. xPoN. • MNG-PAN network architecture components, connectivity & integration to the data core network.
		Discussion / Forum
		Chat Session Quiz 1
2	**Module 2:** **QoS and QoE from a** **Service provider and** **Regulatory** **Perspective**	• Moving from QoS to QoE • QoS and QoE monitoring and measurements from a regulatory perspective • Existing QoS and KPIs of HSPA, HSPA+, LTE, LTE Advance, 5G • QoS and KPIs requirements for new latency based application in 5G. • QoE Parameters for latency based services, discussing Mean Opinion Score Concept of new applications of 4G and 5G. • Study of the KPI parameters using Drive Test Tool, Planning Tool, Packet Tracer of 4G and 5G.
		Discussion / Forum
		Chat Session
		Quiz 2

METHODOLOGY

Course materials: Each week, one module will be discussed, and the relevant course material will be made available on the website.

Online Discussion Forums: Participants are expected to participate actively in discussion forums on selected topics throughout the week.

Chat sessions: Chat sessions will be conducted in real-time every week where discussions would be held with the instructor (s) on a particular topic. Participants are encouraged to join the discussion and exchange points of view.

Quizzes: Two mandatory quizzes will be held during the course. Course evaluation and feedback would be done at the end of the course and is a part of the mandatory activity.

COURSE COORDINATION

Institute Head:	Training Coordinators:	ITU Coordinator:
Mr. MK Seth	**Mr. Ashok Kumar Sharma**	**Mr. Sean Doral**
Chief General Manager	DGM (CFA & BB)	Program Officer,
ALTTC, Raj Nagar, Ghaziabad, UP, INDIA -201002	ALTTC, Raj Nagar, Ghaziabad, UP, INDIA -201002	ITU Regional Office for Asia-Pacific
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+91 120 2755121 (Works)	+91 9412220075(Mobile)	sean.doral@itu.int (Email)
Institute Coordinator:		+41 2273 05438 (Works)
Mr. Subhash Chand	**Mr. Anand Kumar**	+66 257 535 07 (Fax)
Principal General Manager	AGM (BB)	
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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/training-courses/full-catalogue/advanced-broadband-network-qos-and-applications.

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 100 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/training-courses/full-catalogue/advanced-broadband-network-qos-and-applications.

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 <u>borne by the payer</u>. 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 100
Payment Reference:	CoE-ASP- 24882-P.40593.1.04

*Please note that online registration should be done **before 20th Aug 2020**. The course coordinator will confirm the acceptance of the candidates and will supply with the relevant instructions for participation.*