



ITU Centres of Excellence Network for CIS
Institute of Electronics and Telecommunications
Face-to-Face Training Course on
Broadband Access Technologies

Bishkek, Kyrgyz Republic
25-29 November 2019

COURSE OUTLINE

COURSE DESCRIPTION

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| Title | Broadband Access Technologies |
| Objectives | <ul style="list-style-type: none">• This training course aims to introduce participants with broadband access (BBA) technologies, in particular with experiences in designing of modern wired and wireless broadband communication networks and new possibilities for development of wired BBA systems. The training will also cover the issues of electromagnetic compatibility to design new communication networks, BBA network security, 5G and IoT architecture and solutions.• The training will allow the participants to personally contribute to the implementation and development of the fiber-optic broadband access in the future. |
| Dates | 25-29 November 2019 |
| Duration | 5 days |
| Registration deadline | 22 November 2019 |
| Training fees | USD 95 |
| Course code | 19WS24292CIS-R |

LEARNING OUTCOMES

Upon completion of the training, the participants will have notion of:

- construction of modern broadband access (BBA) networks in the world;
- standards of wired and wireless BBA;

- peculiarities of designing, construction, and operations of communication networks on the basis of fibre-optic communication networks;
- frequency bandwidth allocated for BBA within the framework of WRCs and existing and perspective bandwidths allocated for BBA in Kyrgyz Republic;
- topical issues of BBA implementation studied at international level;
- different solutions on BBA equipment implementation;
- planning and ensuring electromagnetic compliance (EMC);
- solutions for 5G and IoT networks basic architecture.

TARGET POPULATION

The course is targeted at leading experts, top and middle managers of communication providers and telecommunication engineers. The course may be also of interest to employees of communication administrations dealing with the development and deployment of fiber-optic access networks. The participants are expected to have an understanding of technical communication principles.

TUTORS/INSTRUCTORS

| NAME OF TUTOR(S)/INSTRUCTOR(S) | CONTACT DETAILS |
|---|---|
| Ms. Zhanna Barakova Candidate of Science (Engineering), Associate Professor, Head, Department of Information Systems and Technologies, IET | Email: Janna05_05@mail.ru |
| Ms. Tatyana Bolshakova Associate Professor Zh.Bahlasagyn Kyrgyz National University | Email: boltn@yandex.ru |
| Mr. Maksat Dzhylyshbayev Candidate of Science (Engineering); Associate Professor; Deputy Chair, State Committee of information Technologies and Communications of the Kyrgyz Republic | Email: mdjylyshbaev@nas.gov.kg |
| Mr. Ilgiz Diberdiyev Service Platform Engineer ZTE Kyrgyzstan | Email: diberdiev.ilgiz@zte.com.cn |
| Mr. Igor Zimin Candidate of Science (Engineering) Associate Professor Head of Telecommunications Department IET | Email: igorzimin777@mail.ru |
| Mr. Kayrat Sharshenbiyev Leading Engineer for Radio Operation and Optical Network ZTE Kyrgyzstan | Email: ksharshenbaev@gmail.com |
| Mr. Kubanychbek Murzakmatov Deputy Chair Telecommunications Department IET | Email: murzakmatov.k@gmail.com |
| Ms. Apel Sarybayeva Acting Associate Professor, Department of Information Systems and Technologies, IET | Email: Apels2@mail.ru |

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| Mr. Almaz Tilenbayev Head Market Research and Technical Regulation Department State Communication Agency under the State Committee of Information Technologies and Communications of the Kyrgyz Republic | Email: atilenbaev@nas.gov.kg |
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EVALUATION

In addition to the evaluation based on the results of the training, the participants will be evaluated depending on how actively they participated in the sessions and other training activities, i.e. based on quality and quantity index of time they spent to complete the training.

TRAINING SCHEDULE AND CONTENTS / AGENDA

| 25 November 2019 Monday | Topics/Activities |
|-------------------------------|---|
| 13:00-13:30 | Onsite registration of participants |
| 13:30-14:30 | Lesson 1: Standards for wired and wireless BBA <i>T.Bolshakova</i> |
| 14:30-15:30 | Lesson 2: BBA as a key factor of social and economic development: barriers, recommendations, and technologies <i>I.Zimin, K.Murzakmatov</i> |
| 15:30-16:00 | Coffee break |
| 16:00-17:00 | Lesson 3: Frequency bandwidth allocated for BBA within the framework of WRCs. Existing and perspective bandwidths allocated for BBA in Kyrgyz Republic <i>M.Dzhylyshbayev, A.Tilenbayev</i> |
| 17:00-18:00 | Lesson 4: BBA network electromagnetic compliance (EMC) with other communication networks <i>M.Dzhylyshbayev, A.Tilenbayev</i> |
| 18:00-19:00 | Lesson 5: Guidelines for the review of spectrum pricing methodologies and the preparation of spectrum fees schedules for radio communication systems, including BBA <i>M.Dzhylyshbayev, A.Tilenbayev</i> |
| 26 November 2019 Tuesday | Topics/Activities |
| 13:00-14:00 | Lesson 6: 5G development and standardization in ITU-R <i>T.Bolshakova</i> |
| 14:00-15:00 | Lesson 7: ZTE company: More than 10 years in Kyrgyzstan market. ZTE solutions for 5G network basic architecture evolution <i>I.Diberdiyev</i> |
| 15:00-15:30 | Coffee break |
| 15:30-16:30 | Lesson 8: Solutions for 5G network security <i>I.Diberdiyev</i> |
| 16:30-17:30 | Lesson 9: Solutions for LTE/5G network convergence <i>I.Diberdiyev</i> |
| 17:30-18:30 | Lesson 10: ZTE complete point solutions for 5G networks. Integration of virtualization solutions and presentation of ZTE Kyrgyzstan equipment related to running projects <i>I.Diberdiyev</i> |
| 27 November 2019 Wednesday | Topics/Activities |

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| 13:00-14:00 | Lesson 11: Internet of Things (IoT) <i>K.Sharshenbayev</i> |
| 14:00-15:00 | Lesson 12: ZTE solutions for CIoT. ZTE complete point solutions for IoT <i>K.Sharshenbayev</i> |
| 15:00-15:30 | Coffee break |
| 15:30-17:30 | Practice 1: Review of IoT protocols <i>Zh.Barakova, A.Sarybayeva</i> |
| 17:30-18:30 | Practice 2: Methods to automate administration of networks and its components <i>A.Sayrbayeva</i> |
| 28 November 2019 Thursday | Topics/Activities |
| 13:00-14:00 | Lesson 13: Optical connection high-speed backbone lines <i>K.Sharshenbayev.</i> |
| 14:00-15:00 | Lesson 14: Fiber-optic communication line fitting technologies. Recommendations, construction standards <i>I.Zimin, K.Murzakmatov</i> |
| 15:00-15:30 | Coffee break |
| 15:30-18:30 | Practice 3: Fiber-to-fiber coupling technologies <i>I.Zimin, K.Murzakmatov</i> |
| 29 November 2019 Friday | Topics/Activities |
| 13:00-14:00 | Practice 4: Methods of cyber protection <i>Zh.Barakova, A.Sayrbayeva</i> |
| 14:00-15:00 | Final test (tasks for remote participants will be sent via email) |
| 15:00-15:30 | Coffee break |
| 15:30-16:00 | Roundtable. DiscussionКруглый стол. Обсуждение |
| 16:00-16:30 | Official closure |

METHODOLOGY

Methodology used for the training course includes individual and group training, guided and supervised by the trainers. Face-to-face training is favorable for this course, which is provided through traditional methods to present material: lessons, workshops, and practices. Within the framework of the training, modern tools and other technical means to deploy BBA will be used. The course includes presentations by the trainers, case study, group work and assessment.

COURSE COORDINATION

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| Course coordinator: Ainura Sadyrbaeva Head Advanced Training Faculty Institute of Electronics and Telecommunications Email: sad.ainura@mail.ru | ITU coordinator: Farid Nakhli Programme Officer, Regional Office for CIS Region Email: farid.nakhli@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 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/broadband-access-technologies-2>

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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 95 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/broadband-access-technologies-2>

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:

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|---------------------------|--|
| 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 95 |
| Payment Reference: | 19WS24292CIS-R-P.40594.1.03 |

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.