Training course outline

ITU and African Advanced Level Telecommunications Institute

Title	**SMTP OM3 Wireless Telecommunications Technologies**
Modality	This course will be delivered Online
Dates	17 January – 11 February 2022
Duration	4 weeks
Registration deadline	16 January 2022
Training fees	USD 200
Description	This course covers a comprehensive view of some of the most dynamically developing business areas of radiocommunications. The course aims at describing the technologies and their lines of development which are present in the World in the given field. The independent course provides high-level technical knowledge and it is also connected to other modules.
Code	22OI28029MUL-E

1. LEARNING OBJECTIVES

Its aim is to provide a comprehensive view of some of the most dynamically developing business areas of radiocommunications. The course aims at describing the technologies and their lines of development which are present in the world in the given field.
The independent course provides high-level technical knowledge and it is also connected to other modules.

2. LEARNING OUTCOMES

It is expected that upon completion of the training session, participants will be able to:

Have knowledge of

- Basic technology principles of broadcasting-, mobile-, fixed-, satellite services and SRD applications.
- Becoming familiar with frequency bands used by these services, including why these bands are used for the given services.
- Developmental trends of radiocommunications services and technologies.

An understanding of

- Conditions of implementation and operation of the presented services and also their business and

regulatory environment.

- Role of regulation for successful development of radiocommunications services.

They should have the ability to

- to interpret the provisions of ITU Radio Regulations in respect of specific radiocommunications services
- to use the international and national rules and specifications (e.g. National Frequency Allocation Table)
- to interpret essential business development criteria and trends

3. TARGET POPULATION

This training is targeted those who are entering the regulatory environment and are interacting with technologies as operators, developers or managers. It is targeted at those aiming to understand workings of various technologies with a view to developing a general overview of trends.

This may include professionals working in the telecommunications industry, lawyers, regulatory staff across all departments.

Besides that, other institutions and individuals that are dedicated to building their capacity related to new technologies are welcome to participate.

4. ENTRY REQUIREMENTS

No prior knowledge or qualification in Spectrum Management is required, however it is important for participants to be working for a regulator, or in the ICT/Telecoms sector as a provider or consultant.

5. TUTORS/INSTRUCTORS

NAME OF TUTOR(S)/INSTRUCTOR(S)	CONTACT DETAILS
Dr John Mpapalika	**Email: mpapalika2016@gmail.com** **Tel: +255762545228**
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6. TRAINING COURSE CONTENTS

S/n.	Topic
1.	**Radio and TV Broadcasting Services**
1.1	Introduction and Background of Radio and TV Broadcasting Services
1.2	Development of ITU Regulations in respect of broadcasting services
1.3	Spectrum usage for broadcasting services
1.4	Broadcasting technologies
1.5	Cutting-edge technologies, peep into the future
2.	**Cellular mobile systems: evolution from 1G to 4G and beyond**
2.1	Market trends in the field of mobile communication
2.2	Evolution of Mobile Cellular Networks
2.3	Overall principles of Spectrum Management for mobile systems
2.4	Regulatory evolution of Spectrum Management for mobile systems
3	**Regulation of the Fixed Services**
3.1	Fixed Point to Point (P-P) and Point to MultiPoint (P-MP)

3.2	Deployment, Performance, Distances and Applications
3.3	System Parameters of digital Fixed and Broadband Wireless Systems
3.4	Frequency Planning
3.5	Link budget
3.6	Interference, Mitigation techniques, Diversity & RF sharing with other services
4	**Short Range Devices Regulation and Standardization**
4.1	Global and regional regulation of SRDs
4.2	Case studies of global, regional & national ruling
4.3	Three case studies of global, regional & national ruling (RLAN,WLAN, RFID)
5	**Introduction of the Satellite Systems and Services**
5.1	Fixed-Satellite Service
5.2	Mobile Satellite Service
5.3	Other Satellite Services
5.4	Satellite Link Budget

7. TRAINING COURSE SCHEDULE

Week / Topic	Activity	Exercises and Interactions
Week 1 **Regulation of the Fixed Services** • Fixed Point to Point (P-P) and Point to MultiPoint (P-MP) • Deployment, Performance, Distances and Applications • System Parameters of digital Fixed and Broadband Wireless Systems • Frequency Planning • Link budget • Interference, Mitigation techniques, Diversity & RF sharing with other services	Read Topic 1 course Materials and references. Participate in Forum 1 discussion. Take a short quiz 1.	**Forum 1:** Discuss the RF Interferences and the Mitigation Techniques. **Live Lecture through ZOOM:** Monday and Wednesday from 1500 Hours to 1700 Hours EAT. **Quiz 1:** Friday
Week 2 **Cellular Mobile Systems: Evolution from 1G to 4G and beyond** • Market trends in the field of mobile communication • Evolution of Mobile Cellular Networks • Overall principles of Spectrum Management for mobile systems • Regulatory evolution of Spectrum Management for mobile systems	Read Topic 2 course Materials and references. Participate in Forum 2 discussion. Take a short quiz 2.	**Forum 2:** Trends in Fixed and Mobile services are moving from circuit-switched and Time Division Multiplexed (TDM) networks to the Internet Protocol (IP) based packet-switched Next Generation Networks (NGN). What are the real steps being taken in your country towards deployment of the IP based packet-switched NGN services in the light of the existing circuit switched fixed and mobile services? **Live Lecture through ZOOM:** Monday and Wednesday from 1500 Hours to 1700 Hours EAT. **Quiz 2:** Friday

Week 3 **Short Range Devices (SRDs)** • Regulation and Standardization • Global and regional regulation of SRDs • Case studies of global, regional & national ruling • Three case studies of global, regional & national ruling (RLAN,WLAN, RFID) **Introduction of the Satellite Systems and Services** • Fixed-Satellite Service • Mobile Satellite Service • Other Satellite Services • Satellite Link Budget	Read Topic 3 and Topic 4 course Materials and references. Participate in Forum 3 discussion. Take a short quiz 3	**Forum 3:** What are the technologies used to mitigate harmful radio frequency interference from Short Range Devices and Satellite Services to licensed radio communications services? What are the main technological advances in SRD and Satellite services? **Live Lecture through ZOOM:** Monday and Wednesday from 1500 Hours to 1700 Hours EAT. **Quiz 3:** Friday
Week 4 **Radio and TV Broadcasting Services** • Introduction and Background of Radio and TV Broadcasting Services • Development of ITU Regulations in respect of broadcasting services • Spectrum usage for broadcasting services • Broadcasting technologies • Cutting-edge technologies, peep into the future	Read Topic 5 course Materials and references. Participate in Forum 4 discussion. Take a short quiz 4. Do an end of course assignment.	**Forum 4:** How Transition of Terrestrial Television Broadcasting from Analogy to Digital met your National Development Objectives of your country? **Live Lecture through ZOOM:** Monday and Wednesday from 1500 Hours to 1700 Hours EAT. **Quiz 4:** Friday **Assignment:** One of the main reasons for the transition (migration) of terrestrial television broadcasting from analogy to digital was to gain some Radio Frequency (RF) spectrum referred to as Digital Dividend and allocate it to the International Mobile Telecommunications (IMT) technology families such as Long Term Evolution (LTE) for usage of broadband communications services. Explain how your country utilized the Digital Dividend RF spectrum in terms of licensing methods and deployment of the IMT related broadband communications networks and services.

8. METHODOLOGY (Didactic approach)

- Instructor-Led online learning with presentations, case studies, exercises and assignments.
- Live lectures and discussions through ZOOM to be conducted on every Monday and Wednesday from 1500 Hours to 1700 Hours EAT.

9. EVALUATION AND GRADING

The evaluation is based on:

- Participation in all the four (4) Forums (10%)
- Quiz week 1 (10%)
- Quiz week 2 (10%)
- Quiz week 3 (10%)
- Quiz week 4 (10%)
- Written assignment (50%)

Participants should score an overall mark of 60% to receive ITU Certificate.

10. TRAINING COURSE COORDINATION

AFRALTI Coordinator:	**ITU Coordinator:**
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