Training course outline

ITU and African Advanced Level Telecommunications Institute

Title	**Advanced Spectrum Monitoring**
Modality	Online Instructor Led
Dates	28 March – 22 April 2022
Duration	4 weeks
Registration deadline	1 April 2022
Training fees	**USD 960**
Description	The course is an advancement to the basic Spectrum Management Training Programme (SMTP) and offers advanced content in spectrum management. The learning modules include: ○ Spectrum monitoring ○ Investigating interference ○ Resolution techniques and best practices in spectrum management ○ Occupancy and utilization, measurement and analysis
Course code	**22OI28171AFR-E**

1. LEARNING OBJECTIVES

After completion of this course, the participant should be capable of handling spectrum management at an advanced level including advanced techniques in spectrum monitoring, investigating interference to more detail, providing resolution to more complex spectrum issues and application of best practices in spectrum management. Furthermore, the participant should be able to demonstrate his/her ability to define Spectrum measurements and analyse their results as well as monitor spectrum occupancy and utilization.

2. LEARNING OUTCOMES

- Participants will go through an overview of key areas covered in SMTP
- Participants will learn about Radio spectrum and Radio communication services as a basis for the understanding of spectrum allocation and monitoring
- They will learn about advanced spectrum monitoring with an overview of key emerging issues in spectrum monitoring across the globe. This will include ITU guidelines on spectrum monitoring

- Participants will learn about resolution techniques in spectrum management – new and alternative dispute resolution systems
- They will learn how to conduct authorisation and licensing using automated tools and authorization jurisdictions.
- Participants will learn about the evolving nature of accepted practices in spectrum management due to new services that require allocation and utilization of the spectrum
- They will acquire skills to implement new spectrum management systems in their respective administrations.

3. TARGET POPULATION

This course is targeted at engineers and officers tasked with planning, engineering, monitoring and operation of radio systems in developing and leased developed countries. Participants will be drawn from national regulatory authorities, fixed and mobile operators, broadcasters, service providers, government, military, security agencies, Aeronautical, maritime, meteorological, PMR Radio operators, Science and academia.

4. ENTRY REQUIREMENTS

Knowledge or qualification in basic Spectrum Monitoring, it is also important for the participants to be working for a regulator, or in the ICT/Telecoms sector as a provider or consultant. Students in the Engineering or ICT related courses could also be considered.

5. TUTORS/INSTRUCTORS

NAME OF TUTOR(S)/INSTRUCTOR(S)	CONTACT DETAILS
Eng. Edith Roseline Nginya Njeru	Roseline.njeru@gmail.com Tel: +254797504957
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6. TRAINING COURSE CONTENTS

The topics covered in this module are:

1. Advanced spectrum monitoring – ITU-R guidelines, modern systems for spectrum monitoring, advanced authorization regimes
2. Investigating interference
3. Resolution techniques and best practices in spectrum management
4. Occupancy and utilization, measurement and analysis

5. TRAINING COURSE SCHEDULE

Week / Session	Topic	Exercises and Interactions
Week 1	• Emerging issues in spectrum monitoring and the need for advanced spectrum monitoring.	**Forum 1:** What are the emerging complexities in Spectrum Monitoring in your country and what techniques are you employing to deal with them?

Advanced spectrum monitoring	• Radio spectrum and Radio communication services and new allocations • ITU-R Recommendations and Reports related to advanced spectrum monitoring	Why is your understanding of Radio spectrum and Radio communication services important in complying with monitoring and regulation of new services in the frequency spectrum? **Exercise** on Monitoring Software, reviewing available resources online **Live Lecture and discussion**: Tuesday and Thursday, 1500 Hours-1700 Hours EAT **Attempt Quiz 1**
Week 2 Investigating interference	• Investigating spectrum interference with country • Investigating spectrum interference across borders	**Forum 2**: How does your monitoring team detect interference by players within your country and across borders? **Exercise** on the Spectrum Monitoring Software **Live lecture and discussion**: Tuesday and Thursday, 1500 Hours-1700 Hours EAT **Attempt Quiz 2**
Week 3 Resolution techniques and best practices in spectrum management	• Résolution techniques in place and how they are being challenged by new technologies • Best practices in Spectrum management and emerging methods	**Forum 3:** What resolution techniques do you have in place and what challenges are you facing using them as new services emerge? Best practices and required changes to cope with the current scenarios **Exercise** on the spectrum monitoring software **Live lecture and discussions**: Tuesday and Thursday, 1500 Hours to 1700 Hours EAT **Attempt Quiz 3**
Week 4 Occupancy and utilization, measurement and analysis	• Jurisdictions of authorization • Utilization of spectrum and new requirements • Measurement and analysis	**Forum 4**: What's your knowledge on the various authorizations in place and how are you currently utilizing the available spectrum? What measurements and analysis do you carry out? **Exercise** on the Spectrum Monitoring Software **Live Lecture and discussion**: Tuesday and Thursday, 1500 Hours-1700 Hours EAT **Attempt Quiz 4** **End of course assignment:** You have been nominated by your company to come up with a design and RFP for a for an advanced spectrum monitoring system that can handle issues that you are not able to deal with currently. Mention the scope of the system and outline the expected reports and output data.

6. METHODOLOGY (Didactic approach)

This course will be delivered using instructor-led online learning. The course is delivered using power-point slides posted on the course page and selected reference materials that the participants have to study each week, participate in scheduled activities and undertake self-assessments. Students will reinforce their understanding of the topics

studied by drawing on their specific environments and are encouraged to consult with experienced colleagues who are working on a relevant topic. The following methods will be used for this course

- Self-study of PPTs and reference materials
- Instructor led presentations and discussions through ZOOM on Tuesday and Thursday from 1500 Hours to 1700 Hours EAT
- Forum discussions through the ITU Academy portal

7. EVALUATION AND GRADING

The evaluation is based on:

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

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

8. TRAINING COURSE COORDINATION

AFRALTI Coordinator:	**ITU Coordinator:**
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