ITU Spectrum Management Training Programme (SMTP) at a glance

An HCB presentation to the World Radio Assembly- 2018
Mike Nxele
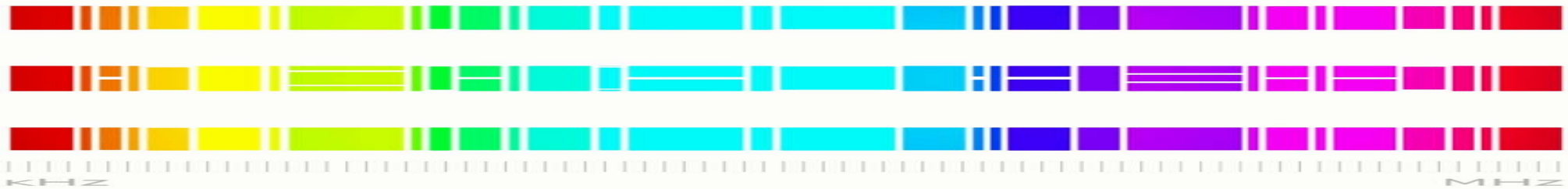**Senior Human Capacity Building Officer, HCB**

PRESENTATION OUTLINE

- **Addressed Problem, Solution and Development Process**

- **SMTP Structure, Composition and Certification Routes**

- **Delivery Options**

- **Pilot Test**

- **Partners(Development and Delivery)**

Addressed problem

- **No formal holistic SM education programmes;**

- **Current training in SM achieved through secondments in large administrations;**

- **Small administrations who cannot use secondments are not able to train.**
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The Solution

- The ITU establishes the SMTP:

- Access   to state-of-the-art holistic SM training and forward-looking professional vision;

- Formalized assessment;

- The SMTP programme was first developed in 2014

- All the materials of the programme were revisited and updated in 2018

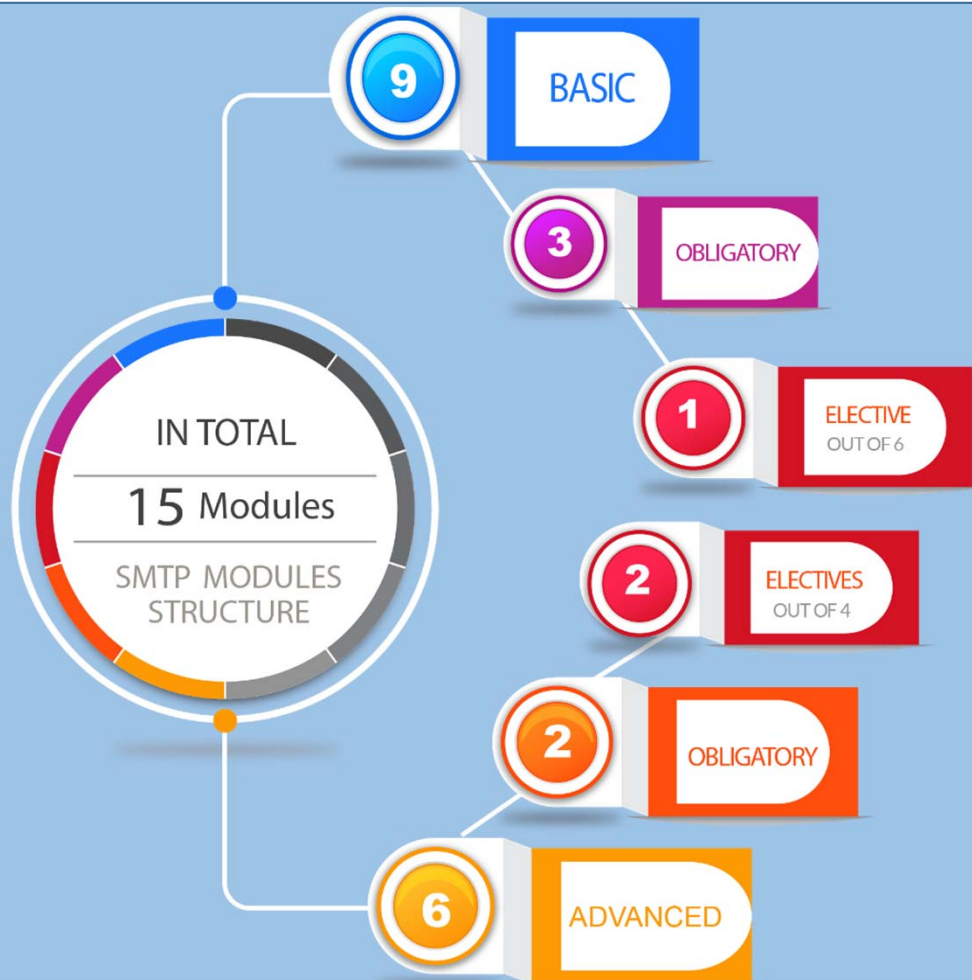- Certification to give international recognition, with possible option of university credits/diploma.

Development Process

- In-depth review of subject area and development of a scope

- Development of individual modules by subject matter experts

- Peer-review of materials

- Editing of the training modules

- Delivery of the training programme

SMTP Modules Structure

IN TOTAL
15 Modules
SMTP MODULES STRUCTURE

9 BASIC
3 OBLIGATORY
1 ELECTIVE OUT OF 6
2 ELECTIVES OUT OF 4
2 OBLIGATORY
6 ADVANCED

- **15 Modules in total**
- 9 Modules at Basic level
- 6 Modules at Advanced level
- **Basic Level:**
  - 3 are Obligatory modules
  - 1 Elective out of the 6 Electives
- **Advanced Level**
  - Two obligatory
  - Two elective out of 4.

Composition of the programme-Basic Level

- Obligatory Modules (OM):
  - OM1 "Legal Basis and Regulatory Framework of SM"
  - OM2 "Spectrum Engineering Fundamentals"
  - OM3 "Wireless Telecommunications Technologies"

- Elective Module 1 (EM 1)includes 6 options:
  - EM1-1 "Spectrum Monitoring"
  - EM1-2 "Enforcement and Type Approval of Equipment"
  - EM1-3 "SM for Satellite Systems"
  - EM1-4"SM for HF Systems, Science, Maritime and Amateur Services"
  - EM1-5"SM for Aeronautical and Radio Determination Services and Military Systems"
  - EM1-6"Computer-aided Spectrum Management"

Composition of the programme-Advanced Level

- Obligatory Modules (OM):
  - OM4 "Economic and Market Tools of Spectrum Management"
  - OM5 "Strategic Planning and Policies for Wireless Innovation"

- Elective Module 2 (EM2). Legal Specialization:
  - EM 2-1"Advanced Spectrum Authorization Regimes"
  - EM 2-2"Socio-Economic Impact of Spectrum Regulation; Competition and Consumer Protection"

- Technical Specialization:
  - EM 2-3"Terrestrial TV Broadcasting Planning and Digital Transition"
  - EM 2-4"Opportunistic Spectrum Access and Cognitive Radio"

SMTP Modules:

OM1 - Legal basis and regulatory framework of spectrum management

OM2 - Spectrum engineering fundamentals

OM3 - Wireless telecommunication technologies

OM4 - Economic and market tools of spectrum management

OM5 - Strategic planning and policies for wireless innovation.

SMTP Modules:

EM1.1: Spectrum monitoring

EM1.2: Enforcement and type approval of equipment

EM1.3: SM for satellite systems

EM1.4: SM for HF systems, science, maritime and amateur services

EM1.5: SM for aeronautical and radio determination services and military systems

EM1.6: Computer-aided spectrum management

EM2.1: (Legal Specialization): Advanced spectrum authorization regimes

EM2.2: (Legal Specialization): Socio-economic impact of spectrum regulation; competition and consumer protection

EM2.3: (Technical Specialization)

Terrestrial TV broadcasting planning and digital transition

EM2.4: (Technical Specialization): Opportunistic spectrum access and cognitive radio.

SMTP Structure – Entry Levels

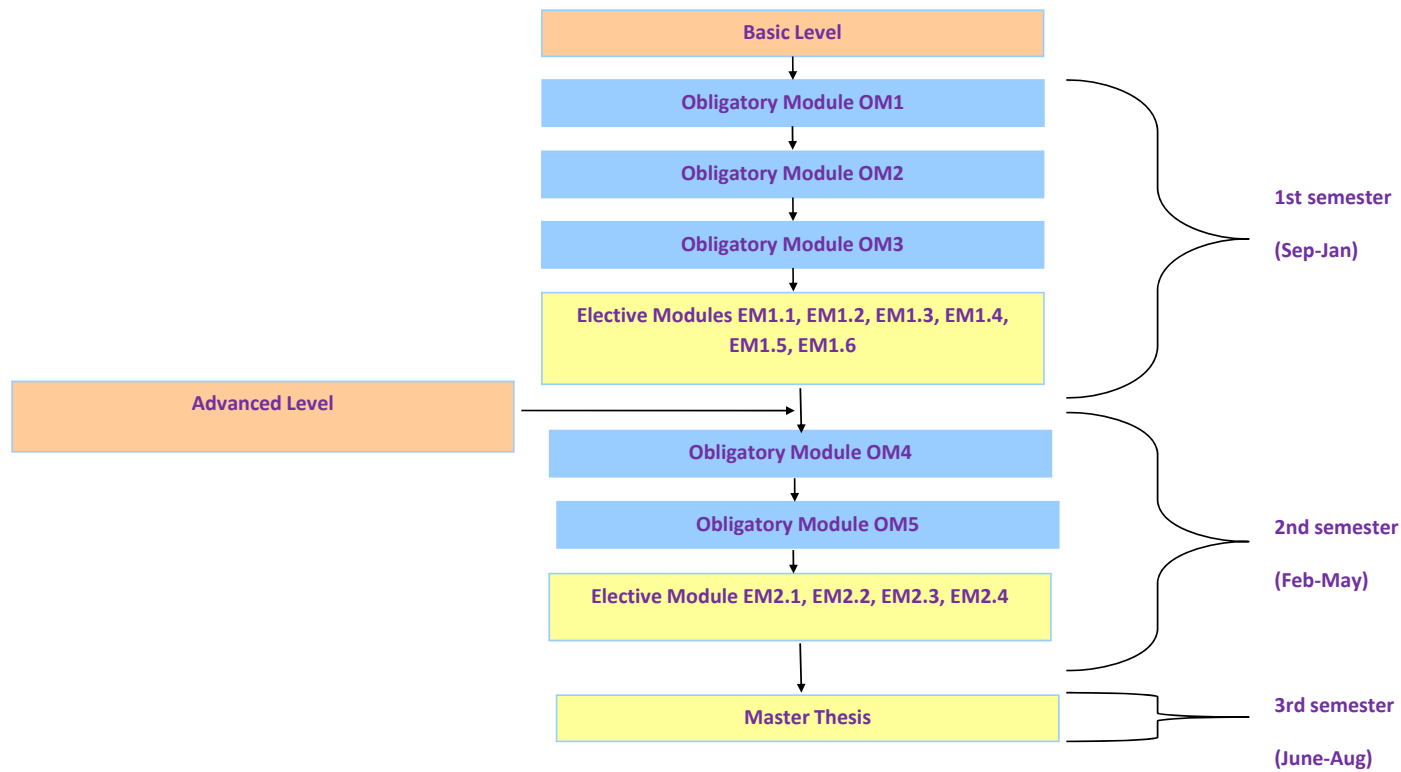|	
Basic Level	
Obligatory Module OM1	
Obligatory Module OM2	**1st semester**
Obligatory Module OM3	**(Sep-Jan)**
Elective Modules EM1.1, EM1.2, EM1.3, EM1.4, EM1.5, EM1.6	
Advanced Level	
Obligatory Module OM4	
Obligatory Module OM5	**2nd semester**
Elective Module EM2.1, EM2.2, EM2.3, EM2.4	**(Feb-May)**
Master Thesis	**3rd semester**
	(June-Aug)

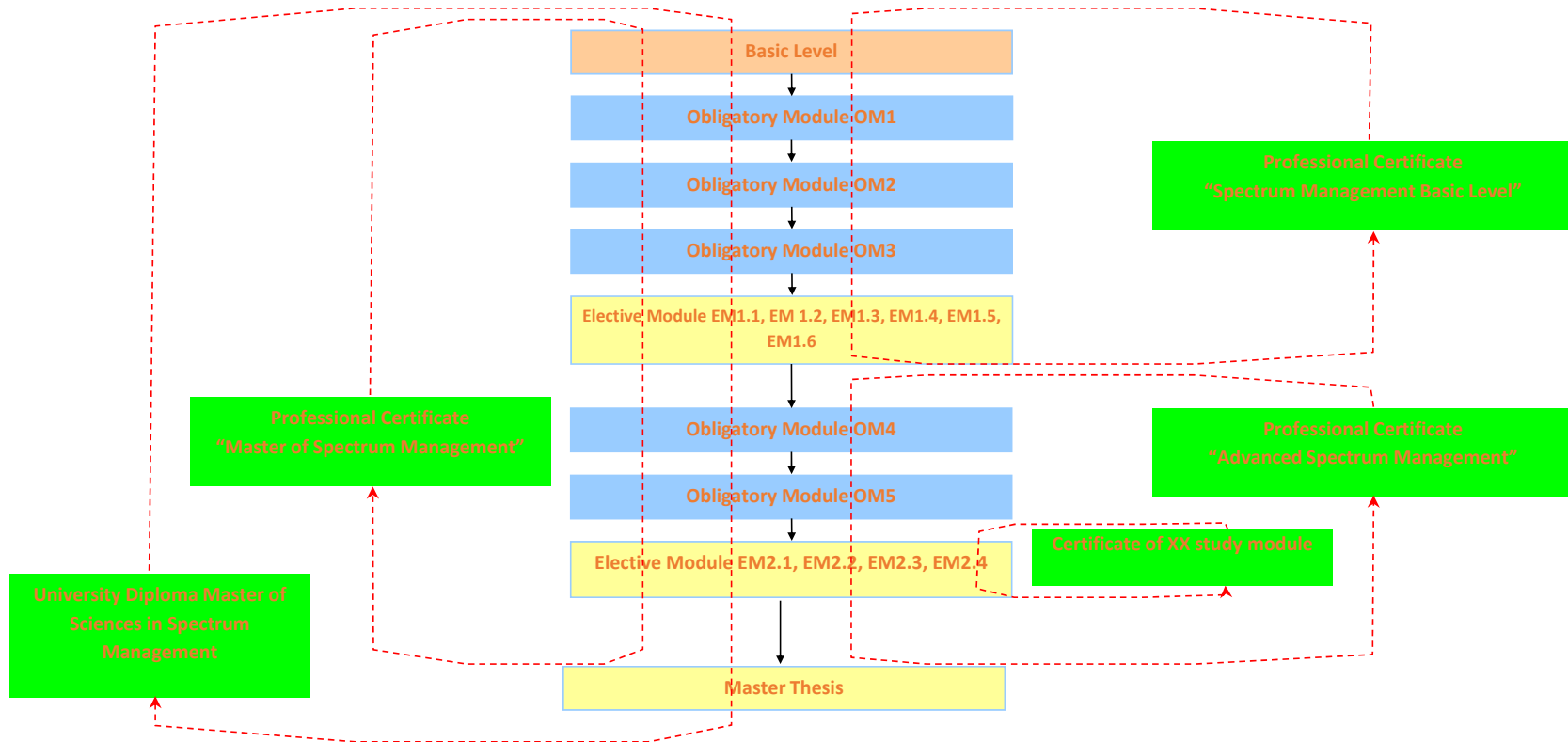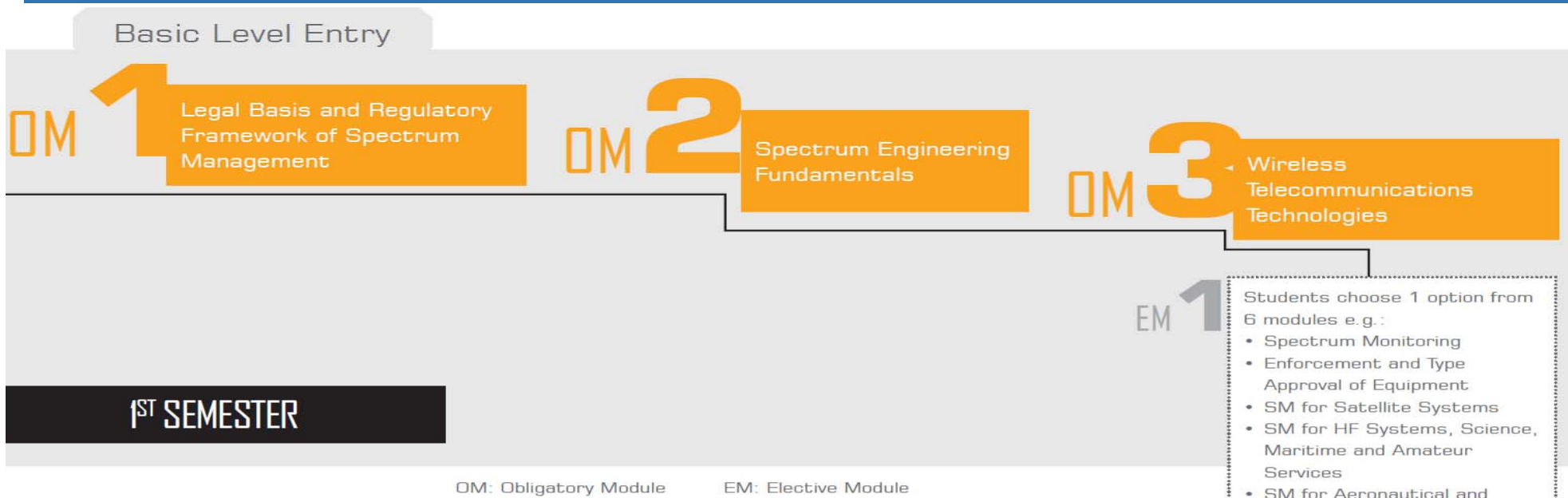Figure 1. Proposed composition and duration of the SMTP

Certification Routes

Figure 2. Possible derivative options for university or professional, full or partial certification levels

Composition Of The Programme

Basic Level Entry

OM 1 Legal Basis and Regulatory Framework of Spectrum Management

OM 2 Spectrum Engineering Fundamentals

OM 3 Wireless Telecommunications Technologies

1ST SEMESTER

OM: Obligatory Module   EM: Elective Module

EM 1 Students choose 1 option from 6 modules e.g.:
- Spectrum Monitoring
- Enforcement and Type Approval of Equipment
- SM for Satellite Systems
- SM for HF Systems, Science, Maritime and Amateur Services
- SM for Aeronautical and Radio Determination Services and Military Systems
- Computer-aided Spectrum Management

More options might be offered in the future

OUTLINE OF THE SMTP

The figure illustrates the proposed outline and modular structure of the SMTP, with tentative subject indication.

Composition Of The Programme

Programme Duration

GUIDELINES FOR TEACHERS:

Power Point slides to fill 30 hours of lecturing per module	20 slides per lecture with a total of 600 slides per module	10 hours of tasks for practical exercises / lab (where applicable) per module	Exam questions for testing (50-100 questions)

GUIDELINES FOR STUDENTS:

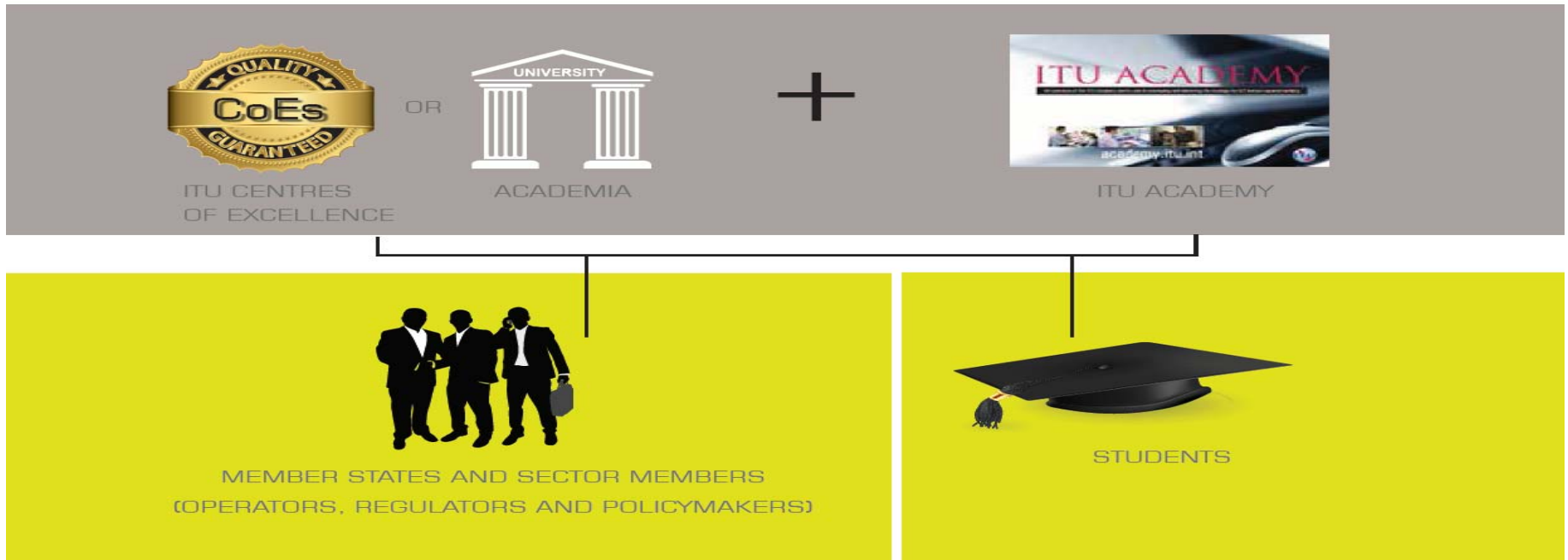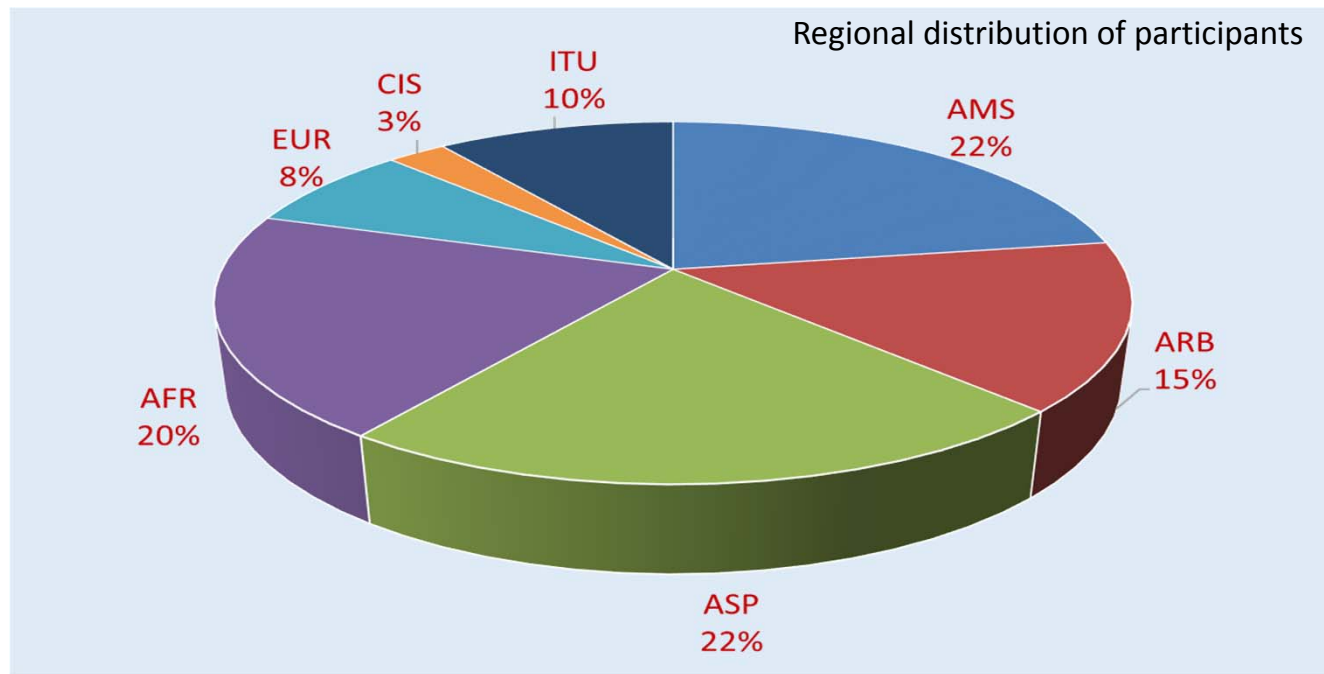| 125 hours per module, 40 hours of classroom training	4-5 weeks – module duration	All modules can be completed in no more than 1 year	60-90 European Credit Transfer and accumulation System (ECTS) credits for the whole SMTP	Combination of face-to-face sessions, remote teaching and self-studies	Formal assessment at the end of each module

Delivery Options

Pilot Test

- SMTP Pilot Training conducted (OM1)
  - 40 participants from across the world attended the training
  - Pilot was completed with 70% pass rate

Regional distribution of participants

ITU 10%
CIS 3%
EUR 8%
AMS 22%
ARB 15%
AFR 20%
ASP 22%

Development process: partners

- Funding partners

- Content development partners

Delivery partners

- Czech Technical University
- AFRALTI
- Expression of Interest
- Strathmore University in partnership with AFRALTI in Kenya
- ICESI University in Colombia
- COMTELCA (regional body of regulators, Central America)
- TRC Jordan

Success Story: certification

- Awarded by the Central Evaluation and Accreditation Agency (ZEvA), a member of the European Association for Quality Assurance in Higher Education.

- SMTP can be aligned to Master's degree programmes internationally, making it easier for Universities to adopt the programme.

- The ZEvA panel of experts concluded that all SMTP modules correspond to Level 7 of the European Qualification Framework for lifelong learning.

- This will promote flexible study options and provide students with an opportunity to acquire an academic qualification in the specialized field of spectrum management.

Certificate

Upon application by the

International Telecommunication Union (ITU)

the **Central Evaluation and Accreditation Agency Hannover (ZEvA)** has awarded its quality label to the:

Spectrum Management Training Programme (SMTP)

The quality label certifies that the modules of the SMTP are equivalent in level and content to educational units in Master's programmes at higher education institutions, and that the ECTS key features are correctly implemented.

Expert Group:
- Prof. Dr.-Ing. Wolfgang Frohberg, AKAD University Stuttgart
- Prof. Dr.-Ing. Thomas Kürner, Technische Universität Braunschweig
- Günter Grüell, Consultant Engineer, Stuttgart

The certification of the Spectrum Management Training Programme is valid until 28 February 2023.

Prof. Dr. Wolfgang Lücke
Academic Director ZEvA

Hermann Reuke
Managing Director ZEvA

DELIVERY STORIES

- Since 2016, 150 participants trained at Afralti.
- Training is online through ITU academy platform
- Modules covered to date are:
  - SMTP OM1
  - SMTP OM2
  - SMTP OM3
  - SMTP EM1.3

https://academy.itu.int/index.php?option=com_content&view=article&id=102&Itemid=641&lang=en

Spectrum Management Training Programme (SMTP)

SMTP is a programme developed under the auspices of the ITU Academy. It comprises a set of high-level training materials in all areas of spectrum management, which were developed by experts drawn from within and outside ITU. In 2018, SMTP received international accreditation from the Central Evaluation and Accreditation Agency (ZEvA).

SMTP
Spectrum Management Training Programme

0:00 / 4:17

ABOUT SMTP

SMTP comprises two levels: basic and advanced. Each level includes a number of obligatory modules (OM) and elective modules (EM) which are the following:

BASIC

OM1: Legal Basis and Regulatory Framework of Spectrum Management
OM2: Spectrum Engineering Fundamentals
OM3: Wireless Telecommunications Technologies
EM1-1: Spectrum Monitoring
EM1-2: Enforcement and Type Approval of Equipment
EM1-3: SM for Satellite Systems
EM1-4: SM for HF Systems, Science, Maritime and Amateur Services
EM1-5: SM for Aeronautical and Radio Determination Services and Military Systems
EM1-6: Computer-aided Spectrum Management

ADVANCED

OM4: Economic and Market Tools of Spectrum Management
OM5: Strategic Planning and Policies for Wireless Innovation
EM2-1: (Legal Specialization): Advanced Spectrum Authorization Regimes
EM2-2: (Legal Specialization): Socio-Economic Impact of Spectrum Regulation; Competition and Consumer Protection
EM2-3: (Technical Specialization): Terrestrial TV Broadcasting Planning and Digital Transition
EM2-4: (Technical Specialization): Opportunistic Spectrum Access and Cognitive Radio

DELIVERY

SMTP is being delivered through our partner universities and Centres of Excellence. For upcoming deliveries of SMTP, please visit the ITU Academy training catalogue.

DOWNLOAD THE SMTP REPORT

Next Steps

- Translation of the SMTP to other UN languages
- Partner contributions welcome
- Continuing discussions with private sector and academic institutions for SMTP delivery options
- Tailoring modules to specific needs of the regions
- Discussions with Comtelca on this is ongoing
- Simplifying legal access to program by users

THANK YOU

**For more information please contact
Human Capacity Building division**

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or visit

https://academy.itu.int/