

**Programa de Becas de Desarrollo profesional**

**OAS/DHDEE/PDSP/CIR.024/2017**

**Spectrum Management: Using the Latest Generation Tools<sup>1</sup>**

**Course Requirements:**

- **Target audience:** Medium and high management professionals of technical and operational areas of telecommunications/ICTs organizations. Technical staff in charge of Radio-electromagnetic Spectrum Management. Professionals of regulatory bodies who deals with Radio-electromagnetic Spectrum Management.
- **Education and Experience:** Engineering technicians, Engineers and professionals dealing with Spectrum Management.

<b>Institution offering the course:</b> International Telecommunication Union (ITU)
<b>Coordinator:</b> Ana Veneroso. E-mail: <a href="mailto:ana.veneroso@itu.int">ana.veneroso@itu.int</a>
<b>Dates of the course:</b> From 23 September to 19 October 2017
<b>Modalidad:</b> Online (ITU Academy Platform)
<b>Duration of the course:</b> 4 weeks (40 hours)
<b>Language of instruction:</b> English
<b>Benefits of the scholarship:</b> The OAS and UIT will cover 100% of the tuition.
<b>Deadline to Apply:</b> Please contact the <a href="#">ONE</a> in your country
<p><b>Benefits of the course:</b></p> <p>It is expected that at the end of the course the participants will be able to: Understand the importance of the International Telecommunications Union (ITU) World Radio Conferences (WRCs) and the role of CITEL and CTU in defining the new use of the radioelectric spectrum (RE) bands. Select the more convenient Engineering radiofrequency (RF) tools to support radioelectric spectrum assignment and enforcement and integrate in a practical way monitoring portable systems.</p>
<p><b>Certification:</b></p> <p>Electronic certificates will be issued by the ITU and CITEL to all participants who have fully completed the training course and met the evaluation criteria.</p>
<p><b>General objectives:</b></p> <p>The main purpose of this course is to transmit information on the importance of international cooperation in the field of spectrum management and to learn about the last generation radiofrequency (RF) Engineering tools for radio spectrum planning, assigning, monitoring and enforcement; to make more efficient use of the radio Frequency Spectrum, and be able to respond in a practical way to the</p>

<sup>1</sup> *The General Secretariat of the Organization of American States ("GS/OAS") reserves the right to cancel this scholarship announcement at any time. Moreover, the OAS, GS/OAS, and its personnel are not liable for any actions taken in reliance on or otherwise based upon information in this announcement.*

challenges of the digital dividend and the release of new spectrum bands for the International Mobile telecommunications (IMT).

**Specific objectives:**

- Impart to participants a global vision and perspective of Radio-communications and the tendencies and approaches to Spectrum Management of existing technologies and trends in the use of new broadband technologies.
- Understand the role and importance of international cooperation within the framework of the ITU's World Radio Conferences (WRCs), the Inter American Telecommunications Commission (CITEL) and the Caribbean Telecommunications Union (CTU) in the radioelectric spectrum management.
- Analyze and understand the theoretical concepts to incorporate processes that use last generation tools in the radio-electromagnetic spectrum management.
- Impart a clear understanding of the spectrum management framework, the type of structure and the technical verification tools and mechanisms supporting the administration and auditing that will provide reliability of frequencies assignments records in the spectrum management national data system
- Identify and understand enforcement process for an efficient use of the radioelectric spectrum.
- Identify the components and different alternatives for the integration of monitoring portable systems.

**Course Content**

**Curricular Structure (By week):**

**Week 1 : The ITU, CITEL, CTU and the World radio Conferences (WRCs)**

Analyze the reference framework that allows the participants to have a global vision of Radiocommunications as well as the tendencies in the use of the radioelectric spectrum bands taking into account the use of new broadband technologies.

**Main topics:**

- The ITU organizational structure
- The different radiocommunications services
- The World Radio Conference Preparatory Meetings (CPM) of February 2011
- The Radiocommunications Board (RRB) and its functions
- The World Radiocommunications Conference (WRC-07), agreements and its challenges for the WRC-12)
- The regional Agenda for the WRC-12
- CITEL and CTU as regional coordination bodies
- Regional situation of the TICs
- Tendencies and perspective by sector: revenues per sector
- Internet and broadband
- 4GM (IMT Advanced) spectrum and Mobile Digital TV
- Tendencies in technology, new uses for spectrum and I&D areas.
- Current ITU-R studies on spectrum management; ISM impact, ultra-broadband devices, impact

of the new technology in the radiocommunications National spectrum management and importance of the regulatory framework.

### **Week II : Spectrum management and Engineering tools required**

Review of the ITU general outlines on Radioelectric Spectrum management; review of the Engineering tools required to support it. In this module, the indicators that measure the efficiency of the system (collection, time of response for the new frequencies applications, solving interference problems, reliability and opportunity of the information requested by the different parties, among others) will be analyzed. The necessary theory to implement and use the Engineering tools will be reviewed.

Main topics:

- Radioelectric Spectrum Management Functional responsibilities of a Spectrum Management System
- Regulatory functions of the radioelectric spectrum Organization based on functional responsibilities
- Regional Environment
- Some strategies for the efficient implementation of Spectrum Management Software platforms to support spectrum administration, case ITU SMS4DC, WEB interphases
- How to measure Spectrum Management effectiveness; Radio-electric propagation and multi-purpose simulators
- Digital cartography in 3D medium and high resolution
- Geo-referencing, coordination systems and different methods of spatial geo-reference

### **Week III: Spectrum management, its structure and technical verification.**

Analyze the framework of reference within which the spectrum management takes place, the type of structure that support it and the technical verification as one of the elements of the process to support the administration and auditing that will allow to ensure the reliability of the records of frequencies assignments contained in the spectrum management national data system.

Main topics:

- Introduction
  - Reference Framework for the radioelectric spectrum management
  - National Law of Telecommunications.
  - Radiocommunications Regulations
  - National Table of frequency allocations
- Frequency assignment and the data base of the Radioelectric Spectrum Management System
  - Development of the organizational structure for the Radioelectric spectrum Management.
  - Small sized spectrum management organization
  - Medium sized spectrum management organization.
  - Big sized spectrum management organization
- Technical verification as an element of the spectrum management process.
  - Automation of technical verification
  - Automation of routine measurements
  - Automatic equipment for technical verification



- Informatics programs for automation
- Infringement automatic detection.
- Remote Access to the system resources.
- Presentation by the participants of:
  - The information related to the framework of reference, organizational structure and the technical verification processes
  - Personalization strategies of the informatics and monitoring systems applied by each Administration.
  - Experiences and database updating strategies for Radioelectric Spectrum Management.
  - When finalizing the module, the tutor will prepare an aid-memoire with consolidated information of the Americas region

## **Week IV :Monitoring and Control systems for services evaluation**

Analyze the different technological options to modernize and/or implement efficient and simple Monitoring and Control Systems. Identify the National and international references that allow the evaluation of different services.

Main topics:

- ITU –R radio monitoring activities Monitoring ,missions' functions The monitoring subjects in the RR
- What are the Monitoring and Control Systems
- Different configuration types: portable systems, mobile units
  - Composition of a portable monitoring system Antennas Pre-amplifiers
  - Spectrum analyzer
  - Control Platform
  - Typical settings
- Software platforms of last technology in “multi-provider” environment
- Existing systems renewal and updating strategies
- Process control that can be covered with portable monitoring systems

## **Teaching methodology:**

This course is an asynchronous online training activity. The methodology that guides this course will be eminently participatory. The methodological strategy used for the development of the course offers participants a diversity of activities. It is expected that each student participates by reading the material that will be available from the beginning of the course, providing written contributions within the electronic forums and activities, exercises and test required by the tutor. At the end of each module an evaluation will take place. It can be a questionnaire, a case study, analysis of a specific situation, among others.

### **Eligibility Requirements:**

- Be a citizen or permanent resident of an [OAS Member State](#) with the exception of those residing in Brazil as it is the host country. The candidates who are not living in their home country, must send a copy of their visa. Citizens who are not living in Brazil, can participate in the course, after consulting with their respective [ONE](#).
- Have obtained a university degree by the time of applying for the Scholarship.
- Be in good physical and mental health to complete the program successfully.
- The [ONEs](#) in the [Member States](#) may have **additional eligibility requirements**. Please contact your country's [ONE](#) for more information.

### **Required Documents**

- [Online application](#)
- Copy of the university degree requested above.
- Copies of **transcripts of grades** for all academic degrees completed and to be completed.
- **Two (2) recommendation letters** using the [OAS Recommendation Statement Form](#). **Recommendation letters from relatives will not be accepted.**

\* Participants should ask their employer to complete the *Recommendation Form* indicating that the candidate's application is supported by a public, private or academic institution, and that they support and are committed for the candidate to return and apply the knowledge acquired during the program;

- **Curriculum Vitae** \* [a maximum of four (4) pages]
- Copy of a government issued identification document from the applicant's country of origin.
- [Certificate of Language Proficiency](#).

### **Application Process**

1. SCAN **all required documents** [see above] into one single PDF file, no larger than 5MB, making sure that all documents are legible.
- Complete the [Online application](#), and upload the PDF file to your online application.
2. After submitting the online application, you will receive a confirmation email which contains your application in PDF format. Print the application and attach the required documents, and submit them to your ONE.

\* If you do not receive the confirmation email, after submitting your online application, please send an email to: [pdsp@oas.org](mailto:pdsp@oas.org)

**NOTE:** The OAS will download applications directly from its database. Please make sure to upload all required documents.

**Incomplete applications will be deemed ineligible.**

The ONE will make an initial pre-selection of candidates. Applicants should make sure that the corresponding ONE physically receives all the required documents requested by both the OAS and ONE.

### **Responsibilities of the scholarships recipients:**

- The selected candidates must confirm their acceptance of the scholarship by signing and returning to the Department of Human Development, Education and Employment their completed "form of

acceptance of the scholarship award”; only after this has been done, will the OAS proceed with the necessary arrangements for the payment of the scholarship benefits.

- The selected candidates must participate in the evaluation of the effectiveness of the Professional Development course by completing the Scholarship Survey Reports, of which the first one is to be completed and submitted immediately after the end of the course, and the Scholarship Final Survey Report to be completed three months after the end of the course.
- Scholarship recipients participating in on-line courses are responsible for access to computer equipment and internet communication costs.
- The scholarship recipients must confirm their acceptance of the scholarship to the OAS Department of Human Development, Education and Employment within a week of having been informed of the scholarship award, in order for the Offering Institution to proceed with their registration for the course and to provide them with the necessary instructions to access the on-line Course; or, if the scholarship offer is declined, the next ranked candidate will be awarded the scholarship.
- The scholarship recipient will be responsible for reimbursing the total cost incurred by the GS/OAS, if he/she for no compelling reason and without written authorization from the Department of Human Development, Education and Employment terminates his/her on-line studies, or declines, the scholarship after it has taken effect.

#### **Contact Information**

Any questions or inquiries related to the course should be directed to:

Ana Veneroso

UIT. E-mail: [ana.veneroso@itu.int](mailto:ana.veneroso@itu.int)

Questions or inquiries related to the scholarship process should be directed to:

Lucrecia Zea-Yonker

Professional Development Scholarship Program

[pdsp@oas.org](mailto:pdsp@oas.org)

#### **IMPORTANT**

If you were awarded an OAS Professional Development Scholarship in the past twelve (12) months or if you currently hold an OAS Scholarship for Academic Studies, you are NOT eligible to apply for another OAS Professional Development Scholarship.