Training Course Outline

ITU and ITSO

Course Title	ITU/ITSO online training on Satellite Communications and Radio Regulations Procedures for America Region.
Modality	Online instructor-led
Dates	15 August – 25 September 2022
Duration	6 weeks
Registration Deadline	7 August 2022
Training fees	Free
Description	Under close cooperation between the ITSO and ITU, the online basic course program “Satellite Communications and Radio Regulations Procedures” has been developed and put in place with the primary objective of raising awareness amongst individuals, organizations and institutions on policies, regulations, licensing frameworks and technical aspects associated with the provision of satellite communications services. This program is also an essential component of ITSO Capacity Building Initiative, which has been supported by member states and various partnerships and is intended to offer to member states an access to basic capabilities and necessary tools to support the continuous development and effective use of satellite communications services.
Course code	22OI500084AMS-S-D

1. LEARNING OBJECTIVES

The main objective of the training is to provide a general initial understanding of the main concepts of Satellite Communications, the regulatory aspects, satellite orbit resources, among several others.

2. LEARNING OUTCOMES

Upon completion of this training course, learners will gain an understanding of the key aspects of:

- Basics of satellite communications;
- Policy and regulatory guidelines for satellite services;
- Radio Regulations related to satellite orbit and spectrum resources;
- Network planning and link budget analysis;
- Earth station and VSAT system;
- Radio Regulations related to earth station coordination and registration.

3. TARGET POPULATION

This program is a standard training course with three main areas of concentration: POLICY, REGULATION and TECHNICAL CONCEPTS that address to regulators, operators, and technicians in the satellite communications sector. It covers a wide range of issues relating to satellite communications and regulatory aspects, including the role of regional and international satellite communications organizations.

Policy Makers and Regulators

- ☐ BASIC OF SATELLITE COMMUNICATIONS
- ☐ POLICY ISSUES & REGULATORY FACTORS
- ☐ PROCUREMENT & COST CONSIDERATIONS

Satellite Coordination & Registration Procedures

- ☐ ORBIT SPECTRUM ALLOCATION
- ☐ COORDINATION & NOTIFICATION PROCEDURES
- ☐ BSS & FSS PLANS & LIST
- ☐ ELECTRONIC SUBMISSIONS & APPLICATIONS OF ITU-BR SOFTWARE PACKAGES

Technical & Regulatory

- ☐ BASICS OF SATELLITE COMMUNICATIONS
- ☐ POLICY & REGULATORY GUIDELINES FOR SATELLITE SERVICES
- ☐ NETWORK PLANNING & LINK BUDGET ANALYSIS

4. ENTRY REQUIREMENTS

This instructor-led online training course is addressed to regulators, policy makers and operators in the ICTs sector. It covers a wide range of issues relating to satellite communications and regulatory issues, including the role of regional and international satellite communications organizations. Participants should have the basic understanding of telecommunications and spectrum management.

5. COURSE TUTOR/INSTRUCTORS

The course will be tutored by:

- Mr. Jesus Rivera, ITSO Tutor, Email: jrrp72@gmail.com

- Jorge Ciccorossi and Diana Marin Lopez, ITU Tutors, emails jorge-alberto.ciccorossi@itu.int and diana.marin@itu.int.

6. TRAINING COURSE CONTENTS

Each module is intended to correspond to one week of the course.

A Conference call discussion by Zoom will be arranged for each Module, and then participants need to complete a quiz for the Module.

WEEK 1	**MODULE 1 – COMMUNICATION SATELLITES** i. Birth of Satellites and Satellite Launches ii. Orbits iii. Radio Waves iv. Signal, Noise and Spectrum v. Modulation vi. Propagation vii. Space and ground segment ✓ Transponder ✓ Antenna and Polarization ✓ Level, Gain and Loss ✓ Footprint ✓ Earth Stations in Motion ✓ Satellite Links
WEEK 2	**MODULE 2 – POLICY, INSTITUTIONAL AND REGULATORY FRAMEWORK** i. UN System and ITU ii. International Legal Framework: the Radio Regulations and World iii. Radiocommunication Conferences (WRC) iv. The Role of National Administrators and Regional Coordinating Agencies v. ITSO and other Specialized Agencies vi. Satellite Operator and Satellite Industry vii. Evolving Technologies and Technology Trends
WEEK 3	**MODULE 3 – ORBIT AND SPECTRUM RESOURCES** i. Satellite Services and Frequency Bands ii. Access to Satellite Orbit/Spectrum Resources iii. Coordination and Notification Mechanisms iv. BSS and FSS Plans v. BR IFIC (Space Services), Preface and ITU website for Space Services vi. Harmful Interference Cases
WEEK 4	**MODULE 4 – SATELLITE COMMUNICATION NETWORKS** i. Network Topologies ii. Access Schemes iii. C-Band vs Ku-Band iv. Internet Traffic over Satellite Networks v. Coding and Modulation vi. Introduction to Network Planning and Link Budget Analysis

WEEK 5	**MODULE 5 - EARTH STATION AND VSAT SYSTEM** i. ANTENNA ✓ Types ✓ Parameters ii. UPLINK ✓ Modulation ✓ Up-converters ✓ Transmitters ✓ Inter Facilities Link iii. DOWNLINK ✓ LNA/LNB ✓ Down-converters ✓ Inter Facilities Link ✓ Demodulation
WEEK 6	**MODULE 6 – EARTH STATION COORDINATION AND REGISTRATION** i. Introduction to BR Space Software ii. Demonstration of Earth Station Coordination and Registration iii. Practical Exercise using Offline Earth Station Coordination Software (GIBC) iv. Comments to Special Sections v. Exercise on commenting with SpaceCom Software

7. TRAINING COURSE SCHEDULE

Week	Topic	Exercises and interactions
Week 1 (15 to 19 August 2022)	Communication Satellites	Online trainings that include recorded videos, reading materials, PowerPoint presentations, articles, Radio Regulations. Each attendee needs to participate to discussion forums, attend the online conference call each week, and take the corresponding test for each Module.
Week 2 (22 to 26 August 2022)	Policy, Institutional and Regulatory Framework	Online trainings that include recorded videos, reading materials, PowerPoint presentations, articles, Radio Regulations. Each attendee needs to participate to discussion forums, attend the online conference call each week, and take the corresponding test for each Module.
Week 3 (29 August to 2 September 2022)	Orbit and Spectrum Resources	Online trainings that include recorded videos, reading materials, PowerPoint presentations, articles, Radio Regulations. Each attendee needs to participate to discussion forums, attend the online conference call each week, and take the corresponding test for each Module.
Week 4 (5 to 9 September 2022)	Satellite Communication Networks	Online trainings that include recorded videos, reading materials, PowerPoint presentations, articles, Radio Regulations.

		Each attendee needs to participate to discussion forums, attend the online conference call each week, and take the corresponding test for each Module.
Week 5 (12 to 16 September 2022)	Earth Station and VSat System	Online trainings that include recorded videos, reading materials, PowerPoint presentations, articles, Radio Regulations. Each attendee needs to participate to discussion forums, attend the online conference call each week, and take the corresponding test for each Module.
Week 6 (19 to 23 September 2022)	Earth Station Coordination and Registration	Online trainings that include recorded videos, reading materials, PowerPoint presentations, articles, Radio Regulations. Each attendee needs to participate to discussion forums, attend the online conference call each week, and take the corresponding test for each Module.

8. METHODOLOGY (Didactic approach)

The course on "Satellite Communications and Radio Regulations Procedures" is an online course with a six-week length. It uses various educational methods and tools to meet the needs of learners in online education.

The course is structured around six Modules. Each learner should watch the recorded video for each of these Modules. The reading materials accompany the videos and can help learners to follow all topics covered.

After watching the video, each learner needs to read the accompanying documents (such as PowerPoint presentations and articles, etc.) and answer questions on a number of topics under the Module. These questions will also serve as guidance for discussion.

In addition, there is one discussion forum for each Module, where the participant should answer questions on a number of topics under the Module. These questions will also serve as guidance for discussion.

Conference call discussions are offered (one conference call per Module), during which the tutor will review the topics covered under the Module and answer learners' questions. The Conference Calls will take place every week and will have a duration of 1 hour. The exact date and time will be communicated in due course.

After the end of the Module, the learner needs to access the quiz regarding this Module, which consists of a set of multiple-choice questions, and the learner needs to reach above 60% of correct answers. Upon successful completion of the course and the feedback form, participants will be able to download certificates of achievement directly from the platform.

9. EVALUATION AND GRADING

The assessment of the participants shall be based on the time spent on the training and the following parameters:

Evaluation Parameter	Weightage
Exams	60%
Attendance to video conferences	20%
Participation to forums	20%
Total	**100%**

Important: participation to all 6 forums, to at least 4 video conferences and passed all 6 quizzes with at least 60% is required for obtaining a certificate of achievement.

10. TRAINING COURSE COORDINATION

Mr. Rodrigo Robles Programme Officer ITU Americas Regional Office E-mail: Rodrigo.Robles@itu.int	**Mr. Pablo Palacios** Programme Officer ITU Area Office Chile E-mail: Pablo.Palacios@itu.int