

Course ID
SPECMGT
Course Duration
2-3 days

Course Title
**Spectrum Management: Planning, Monitoring, Licensing,
and Economics**

**Related
Courses**

- Radio Measurements Equipment: Principles and Operation (RMEQUIP, 2-3 days)
- Spectrum Monitoring Workshop: Principles and Practice (SPECMON, 3-5 days)
- Spectrum Monitoring: Principles of Vector Network Analysis, Procedures, and Key Results (VECTOR, 3-5 days)
- Wireless All-in-One: RF Propagation, Cellular Principles, Personal Radio Services, WiFi, WiMAX, CDMA, and GSM (ALL-IN-ONE, 5 days)
- LTE: A Comprehensive Three Day Course (LTE-C3DC, 3 days)
- WIMAX: A Comprehensive Three Day Course (WIMAX-C3DC, 3 days)
- 3G Systems: WCDMA/UMTS and CDMA2000 (3G5D, 5 days)
- 3G Systems: WCDMA/UMTS and CDMA2000 Overview (3G3D, 3 days)
- GSM, GPRS, and EDGE: An Intensive Tutorial (GSMPLUS, 3 days)

Aimed At

Those with technical and non-technical background who wish to acquire an overview of the entire field of spectrum management.

Group Size

5-25

Prerequisites

Some prior exposure to and high-level knowledge of RF and wireless technologies, RF propagation, and spectrum analysis will be helpful. If the participants lack this background, the course can be extended to cover the prerequisite material upfront.

**Course
In a Nutshell**

This course is one of a series of courses on spectrum engineering and management. Starting with a review of the basics of spectrum management, this course goes on to discuss spectrum planning, frequency assignment and licensing, and spectrum monitoring, including inspection and investigative functions. The course concludes with a detailed study of spectrum economics, covering such topics as the methods for raising revenue from spectrum, spectrum pricing methodologies, spectrum licensing approaches, spectrum redeployment, and measurement of spectrum utilization efficiency. All in all, the course provides a comprehensive overview of the entire field of spectrum management. The course duration, indicated as 2-3 days, depends on the desired depth of coverage.

Customize It!

Customize this course to your own requirements at little-to-no additional cost. We can tailor the course to emphasize or exclude certain topics, make the course more or less technical, or adapt it to a particular audience, e.g., new hires, persons migrating from other fields, experienced personnel, or managers/executives.

**Course
Outline**

- Introduction and Course Overview
- Spectrum Management Fundamentals
 - Spectrum: An International Perspective
 - Major National Spectrum Management Directives/Laws
 - Organizational Structure and Processes
 - Functional Responsibilities and Requirements for Spectrum Management
 - Spectrum Management Planning, Regulation and Policy Making
 - Development of a National Allocation Table
 - Frequency Assignment and Licensing
 - Relationship between Spectrum Fees and the Spectrum Management Process
 - Radio Standards Specification and Equipment Authorization
 - Monitoring and Spectrum Enforcement
 - International and National Cooperation
 - Development of a Spectrum Management Organizational Structure
 - Decentralization versus Centralized Management
 - Matrix Structure Management
 - Summary of Principles
 - Spectrum Management Systems Overview
 - Types of Spectrum Monitoring Stations
 - Integration with Document Management System
 - Spectrum Management Fundamentals: A Summary and Discussion
- Spectrum Planning
 - Significance of Planning, Costs and Benefits
 - Planning Processes
 - Establishing Spectrum Planning Objectives
 - Elements to Consider
 - Spectrum Availability
 - Planning Options
 - Process Implementation
 - Consultative Approach
 - Inquiry into Future Spectrum/Service Requirements
 - Interaction among/with Representative Groups
 - Analytical Approach
 - Scenario Approach
 - Usage Trends
 - Spectrum Management System Planning and Review

- Planning Implementation
 - Short Term
 - Long Term
 - Strategic Planning
- Improving the Spectrum Management Planning System
- Spectrum Planning: A Summary and Discussion
- Frequency Assignment and Licensing
 - Assigning Frequencies to Radio Stations
 - Regulatory Aspects of the Frequency Assignment Process
 - Technical Aspects of the Frequency Assignment Process
 - Frequency Plans
 - Process Automation
 - Licensing
 - Requirements of Licensing
 - Licensing Radio Stations
 - Deregulation of Licensing
 - Licensing Practices
 - On-Line Licensing and Security Issues
 - Spectrum Licensing: A Summary and Discussion
- Spectrum Monitoring, Inspection and Investigation
 - Spectrum Monitoring as an Element of the Spectrum Management Process
 - Monitoring to Assist Frequency Assignment
 - Monitoring to Assess Spectrum Occupancy
 - Monitoring for Compliance with National Rules and Regulations
 - Monitoring Facilities Depending on a Frequency Band and Purpose
 - Automation of Monitoring
 - Integration of Monitoring Sub-System with Automated Spectrum Management System
 - Spectrum Inspection and Investigation as Elements of the Spectrum Management Process
 - Inspections and Investigations for Compliance with National Rules and Regulations
 - Verification of Technical and Operational Parameters
 - Detection and Identification of Unauthorized Transmissions
 - Inspections and Investigations to Identify the Source of, and to Resolve, Interference
 - Equipment for Inspections and Investigations
 - Spectrum Monitoring and Investigation: Session Review and Discussion
- Spectrum Economics
 - Traditional Mechanisms of Financing Spectrum Management
 - National Budget Financing

- Spectrum License and Usage Fees
 - Other Charges
 - Alternative Methods of Supporting Spectrum Management Activities
- Spectrum Licensing Approaches
 - First Come-First Served
 - Beauty Contests
 - Competitive Bidding
 - Lotteries
- Spectrum Pricing
 - Spectrum Fees
 - Auctions as Part of Bidding Approaches
- Spectrum Rights
 - Managing a Transition in Spectrum Funding
 - Cost of Spectrum Redeployment (as a Method of Spectrum Management)
- An Application of Spectrum Pricing
- Cost of Spectrum Redeployment
 - Interests Driving the Decision to Redeploy Spectrum
 - The Cost of Redeployment
 - Calculation of the Redeployment Cost using the Residual Book Value
 - Calculation of the Redeployment Cost Using Residual Economic Value
 - The Redeployment Fund and Redeployment Procedures
- Spectrum Economics: Session Review and Discussion
- Measures of Spectrum Utilization and Utilization Efficiency
 - Different Methods for Calculating Spectrum Utilization
 - Assessment of Economic Utilization of Spectrum
 - Applications
 - Spectrum Utilization of Satellite Systems
 - Measure of Spectrum Utilization Efficiency
 - Example of Spectrum Utilization Efficiency Calculations
 - Spectrum Quality Index (SQI)
 - Ratio of Spectrum Utilization Efficiencies, or Relative Spectrum Efficiency
 - Spectrum Utilization: Session Review and Discussion
- Course Recap and Conclusion

**How You Will
Learn**

- You will learn from an instructor who's well versed in spectrum engineering and management as well as a host of RF and wireless technologies.
- Along with the lecture, we will use exercises and interesting group activities to enrich the instruction and drive home the important points.
- If you already know something about this subject, we will build on that existing knowledge base. We will compare and contrast what's familiar to you with what's new, making the new ideas easier to learn as well as more pertinent.
- If your background is less technical, we will use meaningful examples and analogies to simplify the complex subject matter.
- The Participant Handbook will provide you with a framework to which you can add the information and insight provided in real-time, turning it into a valuable reference resource you can take back to your job.

Revised

November 2, 2010f