IT COURSES

Course Title: Next Generation Wireless Networks Crash Course

Course code : 313
Course Duration: 3 Weeks

Course introduction:

Next Generation Wireless Networks Crash Course is an innovative training program covering trends in today's rapidly changing Wireless Industry.

Topics including current and next generation 802.11 and 5G technologies, concepts, standardization activities, regulation, products and services.

Course Objective:

- Overview of Current and Future Wireless Technologies
- Next generation wireless capability requirements
- Describe the fundamental concepts of LAN, PAN and BAN wireless technologies

- Describe similarities and differences between Wireless LANs, Wirless PANs and Wireless BANs
- Understand the fundamental concepts of 802.15.1, 802.15.4 and 802.15.6
- Describe similarities and differences between RFID, Bluetooth, Bluetooth LE, ZigBee and 6LowPAN
- Understand PHY and MAC modifications for different versions and releases
- List Coexistence mechanisms for different channels
- List 802.11 scenarios and configurations

Course Outline

Executive Summary of Trends in Wireless Industry

- Trends in Wireless
- Fixed vs. Mobile Wireless Trends
- Applications and Use Cases

Overview of Current and Future Wireless Technologies

- Overview of Wireless BAN, PAN, LAN and NAN Technologies
- Comparison between 802.11, 802.15 and 802.16: WiFi, Bluetooth/BLE, RFID, 6LoWPAN, ZigBee and BAN (Body Area Networks)

Executive Summary of 5G

- 5G (5th generation) Wireless
- 5G or "beyond 2020"
- 5G Mobile
- Next major phase of mobile telecommunications standards beyond the current 4G/IMT-Advanced standards

Principles behind 5G Wireless

- What is 5G?
- Evolution from 3G to 4G and 5G
- Relation Between 5G Radio Access and LTE
- Future Wireless Generations

Course Title: GPS (Global Positioning System) Fundamentals | GPS Training

Course code 3014
Course Duration: 2 weeks

Course Introduction

This course explores the fundamentals of Global Positioning System (GPS) systems. It addresses all aspects of the GPS, emphasizes GPS architecture and applications, examines the GPS signal structure, modulation, access technologies and covers the key types of measurement being utilized in the field today.

Course outline

- Introduction to GPS

- What is GPS?
- What is Navigation?
- GPS Principles and Applications
- Applications for Military, Civilian & Aerospace
- Location Based Services
- How Accurate is GPS?
- The GPS Satellite System
- GPS Applications
- Uses of GPS Technology
- GPS Operation
- Location
- Navigation
- Tracking
- Mapping
- Timing

Part B

- GPS Fundamentals
- GPS Elements
- GPS System Operation
- Position and Time from GPS
- GPS Satellite Signal Characteristics

- ⬇ Differential GPS (DGPS) Techniques
- ⬇ GPS Trends

Course Title : GSM, UMTS, and HSPA Network KPI Training Workshop

Course code: 3015
Course Duration: 2weeks

Course Introduction

GSM, UMTS and HSPA Network KPI Training Workshop covers all aspects of Key Performance Indicators used in UMTS, eHSPA, HSPA+ and LTE.

Key performance indicators (KPIs) in GSM, UMTS, HSPA and LTE are defined through the definition and measurement of key parameters of input and output of internal network system and/or maintenance & operation progress of mobile network operations.

Learn how to use KPIs and KQIs as the primary metrics to evaluate process performance as indicators of quantitative management, and to measure progress toward your organization goals.

Course Objectives

- Understand 3GPP defined and developed KPIs for GSM, UMTS, HSPA/HSPA+ and LTE
- Understand the complexities of working with KPIs
- Understand how to develop new KPIs based on your objectives and measurable goals
- List detailed of relevant 3GPP RAN and core counters and KPIs
- Customize and develop KPI templates
- Evaluate the performance of the main 3GPP RAN procedures
- Develop RAN and core Key Performance Indicators for 3GPP networks

Course Outline

- ⬇ **Concepts behind Key Performance Indicators (KPIs)**
- ⬇ **3GPP's KPI Architecture Frameworks**
- ⬇ 3GPP KPI Requirements for GSM, UMTS, HSPA and LTE

➕ KPI Category "Retainability" use cases

Part B

➕ **Introduction to GSM, UMTS and HSPA/HSPA+ RAN Key Performance Indicators**
➕ **Details of 3GPP's KPIs**
➕ **Case Study: Analyzing GSM, UMTS and HSPA KPIs**
➕ **Workshop 1: Defining, Defining and Customizing GSM, UMTS and HSPA KPIs for your operation**

Course Title: Wireless Training Crash Course

Course code 3016
Course Duration: 3 weeks

Course Introduction:

Murg's Marion professional Wireless Training, Crash Course, Bootcamp Style, is a four-day intensive crash course designed for those needing to get up to speed, brush up in wireless field, fill in the gaps and gain a solid understanding of today's wireless technologies including RF, Wireless LANs, Bluetooth, Mobile Networks, 3G, 4G, LTE, 5G, Satellite Communications, VSAT, Microwave, and Radars.

Wireless Boot Camp begins with an overview of the motivations and justifications for wireless technologies and a review of the key technical constraints inherent in wireless communications. We'll then proceed to an overview of how radio communications works, and a look at key RF challenges and new developments in fundamental wireless technologies. From there we will explore different technologies and protocols in the radio and core networks and operational scenarios.

 Course Objective:

- Experienced instructors including senior technology leaders, project managers, technical authors, engineers, educators, consultants, course developers, and CTOs.
- Real life examples and practices.
- Small class size.
- Personalized instructor mentoring.
- Pre-training discussions
- Ongoing post-training support via e-mail, phone and WebEx.

Course Outline

Modules: Learn about Wireless and Cellular Networks:

- Wireless Basics
- Multiple Access
- Overview of 2G+ Cellular Networks
- Overview of 3G+ Cellular Networks
- Overview of 4G, LTE and LTE-A Cellular Networks
- Overview of 5G Wireless
- Convergence
- New Protocols and Interfaces
- Additional Elective Topics

Course Title : Fiber Optic Communications Training

Course code 3017
Course Duration: 2 weeks

Course Introduction

Fiber Optic Communications Training is a three-day training covering Fiber Optic Communication principles and fiber optic communication system. Learn how light wave technology can be used to transmit large bandwidth data over a optical fiber media by changing electronic signals into light. Optical fiber is used by many telecom and networking systems and networks to transmit telephony, data, video, multimedia and TV signals.

Course Objective

The objective of this class is to provide basic Fiber Optic Communications training for In-Service Engineering, installation, and design support to engineers and technicians.

Course outline

- **Introduction and Executive Summary**
- **Fiber Optic Principles**
- **Components of Fiber Optic**
- **Loss Management**
- **Optical Signal-To-Noise Ratio.**
- **Dispersion Management**
- **Advanced Lightwave Systems**
- **Optical Signal Processing**

- **Fiber Optics Transmission**
- **Elements of Optical Transmission**
- **Types of Optical Fiber**
- **Multi Mode vs. Single Mode**
- **Optical-to-Electrical Transducers**
- **Bandwidth-Distance Factor & Dispersion**
- **Optical Source and Detectors Source and Detectors**
- **Sensitivity**

Course Title : Telecom Regulation, Tariff and Rate Training Workshop

Course code 3018
Course Duration: 2weeks

Course Introduction

Telecom Tarif and Rate Training workshop is to provide participants with the basic concepts, methodologies and tools to gain an all-around understanding of telecom regulations, costs, tariffs and tasks and to ensure a fair, equitable telecom environment

Course Objectives

- Gain a sound understanding of the global and competitive telecommunications environment and its impact on the activities of a regulator
- Understand regulation and roles and responsibilities of the regulator
- Perform an in-depth review of competition policy and licensing concepts
- Present the role and responsibilities of the regulator related to interconnection and tariffs
- Understand numbering and spectrum management and the challenges it represents for the regulator
- Present the regulatory challenges and issues of Wireless, High-Speed Internet, Video, Multimedia, VoIP and Local Loop Unbundling
- Present the different dispute resolution mechanisms and the role of the regulator in settling disputes

Course Outline
Overview of Telecom services

- **Small Business**
- **Medium Business**
- **Enterprise & Large Business**

Telecom Tariffs

- **Rate and Pricing tools**
- **Tariff-extracted rating data**
- **Organization of a tariff Residential and Business Tariff Guide**
- **Local calling areas and plans, extracted right out of a tariff**
- **Tariffs and public disclosure documents**
- **Negotiated agreements**

Filings and agreements

- **State and Federal Tariff Filings**
- **Regulations issued by the Nigerian Communications Commission (nCC)**
- **Regulatory Service provider's network**
- **Price changes, and product change**
- **Long Distance Requirements**
- **Interconnection Agreements**

Course Title: Telecom Training for Non-Engineers

Course code 3019
Course Duration: 3-5 days

Course Introduction

This Telecom fundamentals course for non-engineers provides crucial insights into fast-changing and dynamic competitive landscape, regulations and impact of new technologies.

Course Objective:

- Understand the basics of telecoms
- Describe concepts behind PSTN and SS7
- Understand concepts behind triple and quad play
- Understand the basics of voice and data communications technologies
- Describe concepts behind VoIP, xDSL, IPTV, MPLS, VPN, IMS/SIP, UMTS/HSPAHSPA+, WiMAX, LTE, and LTE Advance
- Understand the future telecoms trends

Course Outline

- **Introduction and Overview**
- **Telecoms Market**
- **Telecoms Regulation**
- **Telecoms Competition**
- **The Network**
- **Evolution of Telecom**
- **Network Evolution**
- **The Fundamentals**
- **Evolution of Current Telecoms Landscape**
- **Access and Transport Networks**
- **Customer premises equipment and services**
- **Emerging Technologies**
- **The Future**
- **The Future of Telecommunications**
- **Telecom Market Segmentation**
- **Worldwide Subscribers**
- **Migration from circuit to packet switching**

Course Title: Telecom Training – Fundamentals

Course code 3020
Course Introduction

This Telecom training course provides an overview of the past and modern telecom industry, concepts, technologies and trends.

Course Objectives

Upon completion of this course the attendees will:

- Understand the communications industry structure, how it is changing, and how it affects competition
- Comprehend the basics of voice and data communications technologies
- Understand the differences between analog and digital transmission
- Understand private voice and data network design alternatives
- Understand the basics of local and wide area networks (LANs, WANs)
- Understand technologies such Ethernet, MPLS and IP

- Understand xDSL, cable modems, and wireless technologies
- Understand voice over IP (VoIP)
- Explore optical networking technologies
- Explore wireless technologies
- Apply best practices to deploy converged network

Course Outline

- INTRODUCTION TO TELECOM
- Carrier Access Network Architectures
- Basic Voice Telephony
- Telecom Network Components, Terms and Concepts
- The Public Switched Telephone Network (PSTN)
- Access and Transport Networks
- Private Voice and Converged Networks
- Introduction to Data Networking
- Overview of Wireless Technologies
- Review of Advanced Topics

Course Outline: RF Training | Radio Frequency Training Fundamentals

Course Code 3021
Course Duration: 3-5days

Course Introduction

RF, also known as Radio Frequency is incorporated into almost everything that transmits or receives a radio wave which including amateur radio, Cell Phones: GSM, CDMA, UMTS, LTE, LTE-Advanced, Wi-Fi, Bluetooth, Zigbee, RFID, NFC, medical devises, GPS, Microwave, Satellite Communications, Radar, Public Safety and more..

Course Objective:

- RF Overview
- RF Technologies and Deployment

- Types of RF Propagation Models and Their Uses
- Link Budget Calculations
- Antenna Theory
- Basic Principles of Traffic Engineering and Optimization
- RF System Design Considerations
- RF Regulatory Considerations

Course Objectives

After completing this course, students will be able to:

- Explain the Basics of RF
- Understand the engineering tools and procedures required for RF engineering and planning
- Understand existing and emerging standards for RF
- Understand RF Propagation and Antenna Principle
- Describe and understand a broad spectrum of antenna types
- Discuss RF Modulation Techniques
- Review RF System Design Considerations
- Review RF System Budget Profiles
- Calculate propagation lossess and link budgets.
- Explain RF performance and Optimization considerations
- Analyze system degradation due to RF components
- Evaluate the performance of different RF wireless systems
- Explore project planning process of RF
- Discuss successful and unsuccessful RF deployments
- Step through a practical process for managing RF networks
- Explore the current and future RF market trends

Course Outline
- RF Overview
- History of RF
- Characteristics of a Radio Signal
- Basic Problems of Radio
- RF Technologies and Deployment
- Radio Propagation
- Introduction to Microwaves
- Definition of RF/microwave
- RF Propagation Principles
- Types Of Propagation Models And Their Uses
- Simple Analytical models
- General Area models
- Antenna Theory
- Antenna Basics
- Basic Principles of Traffic Engineering and Optimization
- RF System Design Considerations

Course Title: Cellular Networks Performance Workshop Training

Course code 3021
Course Duration:

Course Introduction

This course provides a complete overview of the QoS and performance on the entire GSM, CDMA, UMTS, LTE, and 802.11 systems. It provides an introduction to the performance and QoS complete evolution of GSM towards a radio access and core IP networks that efficiently supports UMTS, LTE and 802.11 services

It features a comprehensive study of system performance with simulations and field trials. Covers all the major features such as basic QoS of voice, data and multimedia applications in GSM, GPRS, EDGE, CDMA, W-CDMA/UMTS, LTE and AMR and the full capability of the GERAN radio interface for 3G service support is envisaged.

We will discuss different 3G technologies and the position of CDMA, and W-CDMA/UMTS/LTE within such technologies.

Course Objectives:

After completing this course, the student will be able to:

- Describe the basic GSM, GPRS, EDGE, CDMA and W-CDMA/UMTS architecture
- Overview of operations and the configurable QoS/Performance parameters
- Overview of the major performance enhancing features
- Understand the key network performance KPIs
- Describe how control channels and traffic channels should be dimensioned to ensure QoS and service availability/reliability
- Analyze the QoS and performance features, counters and parameters of your network equipment

Course Outline:

Optimizing GSM Networks

- **Review of GSM Principles**
- **GSM network architecture**

Optimizing GPRS Network

- **Review of GPRS Principles**
- **GPRS network architecture**

Optimizing EDGE Network

- **Review of EDGE Principles**
- **EDGE network architecture**

Optimizing CDMA Network

- **Review of CDMA Principles**
- **CDMA network architecture**

Optimizing UMTS Network

- **Review of UMTS/W-CDMA Principles**
- **UMTS network architecture**

Optimizing HSDPA/HSUPA (UMTS R5 and R6) Networks

- **Review of HSDPA/HSUPA Principles**
- **HSDPA/HSUPA network architecture**

Course Title : Scope Management and Baseline Development

Course code 3023
Course Duration: 5 days

Course Introduction

The scope management and baseline development training course offers advanced techniques in project management. During the scope management and baseline development training course you will learn the fundamentals of the project scope, work breakdown structure, and performance managing baseline. The scope management and baseline development training course helps you take the control of your project by analyzing the risks and uncertainties of the project.

Course Objectives:

Upon completion of the scope management and baseline development training course, the attendees are able to:

- Understand and describe the scope, schedule, and cost concepts
- Plan the scope of the project
- Plan the process of a project
- Truly appreciate the importance of a good project scope management
- Describe the process of planning scope management
- Understand and explain the importance of validating scope and how it relates to defining the scope and controlling it
- Develop methods for collecting and documenting requirements to meet stakeholder needs and expectations
- Explain the scope definition process and describe the contents of a project scope statement
- Discuss the process for creating a work breakdown structure using the analogy, top-down, bottom-up, and mind-mapping approaches
- Evaluate a practical and useful work breakdown structure (WBS)
- Validate a project schedule
- Discuss schedule compression techniques
- Evaluate cost estimations
- Validate cost
- Identify warning indicators and offer corrective actions
- Develop an on-the-job action plan

Course Outline

Overview of Scope Management and Baseline Development

- Scope
- Performance Managing Baseline (PMB)
- Managing Project Performance

Project Scope Definition

Work Breakdown Structure (WBS)

Assigning Scope Plan

- Work assignment sheet

- Scope of Work (SOW)

Verifying The Work

- Scope verification
- Work acceptance
- Change requests

Adapting The Scope

- Incorporate approved Scope Changes to baseline
- Update and Communicate Approved Scope Statement and WBS
- Register Lessons Learned

Organizational Breakdown Matrix

- Responsibilities assignments matrix
- Work authorization
- Contractual documentation

The Scope Baseline

- Baseline definition
- Performance Measurement Baseline (PMB)
- Management Reserve
- Performance Measurement
- Managing Process
- Performance Management
- Corrective Action
- Change Control

Scope Management and Baseline Development

Course Title: Spectrum Intelligence

Course code 3024
Course Duration: 5days

Course Introduction

Spectrum Class is an ideal training resource for professionals involved in or wishing to learn more about the radio spectrum, particularly those working for operators, regulators and other telecommunications Organisation's.

Course Objective:
The course will provide trainees with

- Knowledge Of The Latest Developments In Spectrum Regulation
- The Importance Of Spectrum Management
- Spectrum Policy And Planning
- The Role Of Spectrum Monitoring.

Course Outline:

- Introduction to Spectrum Management
- Making Spectrum Policy
- Legal Foundations
- Making Spectrum Changes
- Radio Propagation Fundamentals
- Spectrum Engineering and Planning Considerations
- Modern Wireless Basics
- Impact of Modern Wireless Technologies and Services on Spectrum Requirements
- Assignment and Allotment

Part B

- Using the Radio Spectrum More Efficiently
- Introduction to Spectrum Economics
- Spectrum Economics
- From Policies and Procedures
- Spectrum Management
- Spectrum Monitoring and Enforcement
- Overview and Outcome and What the Future Holds

■ The Future of Spectrum Regulation

Course Title: Competitive & Marketing Intelligence Training Options

Course Code: 3025
Course Duration: 5 days

Course Introduction

Murg's Marion consults specialises in in-house training covering all aspects of Competitive and Marketing Intelligence from the basics to advanced analysis. Unlike most public courses, which tend to be standardised and non-industry or skill specific, our courses are customised to your needs.

Course Outline:

- Building a Competitive Intelligence Function
- Competitive Intelligence Theory & Practice
- Competitive Intelligence Techniques
- Primary Research for CI
- Secondary / Online Research for CI
- Social Media Intelligence
- Competitive Analysis
- Competitive Intelligence Communication & Reporting
- War Game Organization & Facilitation
- Scenario Planning & Forecasting
- Marketing Research
- Marketing Planning for SMEs
- Financial Analysis for Marketers / CI Analysts
- Internet Research & Analysis (OSINT) for general researchers
- Due Diligence research

Course Title: Cyber Security Basic (Simple Safety Measures For Organizations Data)

Course code 3026
Course Duration:

Course Introduction

Prepare End-Users to be Security Savvy with Company Data

Regardless of your computer experience, this class will help you become more aware of technology-related risks and what you can do to protect yourself and your organization from them. This course will help you to understand security compliance considerations, social engineering, malware, and various other data security-related concepts. In this course, you will explore the hazards and pitfalls and learn how to use technology safely and securely.

There is an increasing reliance on workplace technologies and ensuring their proper use is critical to the protection of our information systems. This course is designed to meet the needs of all organizations, irrespective of size, industry, or geographic location. Validate your knowledge of cybersecurity preparedness with a short assessment at the end of class.

Course objectives:

- Identify many of the common risks involved in using conventional end-user technology
- Identify the need for security.
- Secure devices like desktops, laptops, smartphones, and more
- Secure your use of the Internet
- This course is designed for you as a non-technical end-user of computers, mobile devices, networks, and the Internet, to enable you to use technology more securely to minimize digital risks.

Course Outline:
1. **Identifying the Need for Security**
- Identify Security Compliance Requirements
- Recognize Social Engineering

2. **Securing Devices**

- Maintain Physical Security of Devices
- Use Passwords for Security
- Protect Your Data
- Identify and Mitigate Malware
- Use Wireless Devices Securely

3. **Using the Internet Securely**
- Browse the Web Safely
- Use Email Securely
- Use Social Networking Securely
- Use Cloud Services Securely