



Why Eogogics?

- **Unmatched Expertise:** Industry-leading 500-course curriculum based on first-hand technology experience. We have been engaged in ground-breaking projects worldwide for 25+ years.
- **High Client Satisfaction:** All of our classes rate good-to-excellent, high client retention, bulk of our business is from loyal clients or their referrals. See our website for enthusiastic testimonials.
- **World-class Instructors:** Advanced degrees, 15-30 years in the real world, publications, patents, awards, honors. They mix teaching with R&D and consulting to keep their tech edge razor sharp. They are as dynamic and entertaining as they are knowledgeable.
- **Customized, Practical Courses** that focus on your technical needs. Take a class onsite or, in some cases, on the Web. Flexible schedules.
- **Buy Coach, Travel First Class:** Using technology to lower our operating expense, we offer best-in-class instructors and tailored courses for 10-15% below market.

Power Your Organization with an Eogogics Workshop! Avoid the cost and delay of trial-and-error. Benefit from our 25+ year knowledge of industry best practices and unbiased advice.

Join a Distinguished Clientele of Fortune 100/500 Companies

Lockheed Martin, UBS, Boeing, Disney, Raytheon, Dell, AT&T, ABC News, Verizon, Sprint, Comcast, LightSquared, TruePosition, DIRECTV, L-3, ITT, SAIC, URS. Shaw, NII, Intelsat, Crown Castle, Harris, Booz Allen Hamilton, Spectra Energy, Xerox, Cooper, Bain & Co., DoD, DHS, DoE, DoC, DoJ, GSA, NASA.

*So minimize the time and money lost to the learning curve, synch up with the industry best practices, receive a second opinion on your technology strategy, and arrive at your technology destination happier, more successful.
Call or email us today!*

Contact us today for free consultation with a subject matter expert!

TETRA Overview

COURSE ID TETRA1 | Duration 3 days | Private Class taught onsite

Course Overview

Course in a Nutshell



This course will equip you with the understanding of TETRA principles, functionality, and procedures that you need to be able to operate, maintain, and troubleshoot your TETRA network. Unlike courses that are presented in the “death by PowerPoint” format, we will employ lecture interspersed with interactive diagrams, discussion of participant questions related to their implementation, example calls made with the clients handsets on your network, and discussion of your TETRA configuration and settings.

Customize It!

Let us know your network architecture and what you are trying to achieve from this course and we'll tailor our course to your specific requirements. The topics can be added/excluded and the course duration shortened/lengthened as needed.

Audience / Prerequisites

Aimed At

RF personnel with limited exposure to digital RF modulation and TETRA.

Prerequisites

Some prior exposure to RF, wireless, telecom, or IT will be helpful.

Related Courses

- [TETRA Performance and Optimization](#) (TETRA2, 3 days)
- [TETRA](#) (TETRA, 3 days)
- [TETRA in Depth with RF Basics](#) (TETRA-ID, 7 days)

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Course Outline

■ **Introduction**

- What Is TETRA?
- Trunked Mobile Communications: Concepts and Benefits
- ETSI and the TETRA Standards
 - Identifying the key Specification Documents
- TETRA features
 - Bearer Services, Teleservices, Supplementary Services
 - Voice and Data Services
 - DMO: Direct Mode Operation
 - TMO: Trunked Mode Operation
 - SDS: Short Data Service and How It Differs from SMS
 - Security
 - TETRA Applications

■ **TETRA Equipment, Addressing and Numbering**

- Radio Terminals: Handheld and Vehicle-mounted
- Terminal Capabilities
- TETRA Numbering and Addressing
- Identifiers and How They Are Used: TEI, MNI, ITSI, ISSI, GTSI, ATSI
- Terminal MMI: How the Menu System and MMI Are Used to Select Features/Functions
- TETRA Base Stations: Typical Capabilities
- TETRA Switching and Management Infrastructure: Typical Capabilities

■ **TETRA Architecture, Interfaces, and Call Handling Procedures**

- Distribution of TETRA Network Functionality

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- Functionality of BS, LSC, MSC, LS, MT, TE
- TETRA Standardized Interfaces
 - Trunked Mode Air Interface
 - Inter-System Interface
 - Peripheral Equipment Interface
 - Line Station Interface
 - Network Management Interface
 - Direct Mode Air Interface
 - Gateway Equipment
- **TETRA Call Handling Procedures (how calls make use of the TETRA Infrastructure)**
 - MS Operational Modes
 - Mobility Management
 - Attachment to Network
 - Cell Selection and Reselection
 - Group Call Handling
 - Individual Call Handling
 - Cell Selection/Reselection in Traffic Mode
 - Security, Authentication, and Encryption
 - Circuit Mode Data Operation
 - Packet Mode Data Operation
 - Direct Mode Call Handling
 - Repeater and Gateway Operation
- **TETRA Air Interface**
 - Frequency Spectrum Allocations and Channel Assignments
 - Structure of the Physical and Logical Channels
 - How FDMA and TDMA Are Used
 - Functions of Physical Layer

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- Functions of the Medium Access Control (MAC) Layer
- Functions of the Logical Link Control (LLC) Layer
- TDMA Frame, and Multi-frame Structure

■ **TETRA Physical Layer**

- Frequency Allocation
- Carrier Frequencies and Radio Channel Numbers

■ **TETRA Modulation Scheme ($\pi/4$ DQPSK)**

■ **Frame, Slot, and Burst Structures**

■ **Radio Resource Functions**

- Synchronization
- Frequency Reference
- Transmission Delays
- Scrambling
- Power Control

■ **TETRA Data Link Layer**

- LLC and MAC Sublayers
- Coding and Interleaving (how and why it is used)
- FEC and Error Correction (how and why it is used)
- Channel Coding for Data and Signaling
- Stealing (how and why it is used)
- The Random Access Procedure
- Mapping of Logical Interfaces onto Physical Layer
- System Modes: Normal, Extended, Minimum, Discontinuous
- Mobile Station Modes: Idle, Signaling and Packet Data, Traffic, Economy

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TETRA Overview

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■ TETRA Network Layer

- Network Layer Concepts
- TETRA Network Layer and Protocol Stacks
- Mobile to Base Link
- Mobility Management Protocols
- Circuit Mode Operation
- Packet Mode Operation
- TETRA Data Services

■ Course Wrap Up

- Course Recap, Final Q & A Session, and Evaluations

DCN LPnn215f

About Eogogics: Founded in 2005 and located in Washington, DC, Eogogics offers technology and soft skills training and consulting to organizations worldwide.

Our Skillset: Wireless (2G to 5G+, Bluetooth, WiFi), RF, Microwaves, Spectrum Management, SATCOM, Telecom (IP Networks, Intelligent Networks, SONET/SDH, DWDM, backhaul, tmforum™ courses, Defense/Security/Public Safety related, Telecom for Non-engineers), Technologies (Mechanical Engineering/Manufacturing, Reliability, Software/Systems, Cloud Computing, SDN, NFV, Technical and Project Management), Leadership/Management, Soft Skills.

About the Eogogics Team: Eogogics is led by KK Arora, formerly Founder and Managing Director, Wireless Institute and Vice President, Human Capital Management, LCC International. A wireless telecom industry pioneer, award winning teacher, and author with 25 years of executive experience, he leads a team of highly accomplished professionals who rank at the top of their chosen fields and who have earned many distinctions including patents, publications, awards, and honors. Our five-person leadership team collectively offers: 106 years of technology experience (91 years in telecom, 66 years in wireless), 156 years in training (106 years in technology training, 50 years in soft skills training), and 101 years in consulting (61 years in technology, 40 years in soft skills).

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