


Power your team with a customized class taught by a world class instructor!

Learn from our 25+ years' technology experience and knowledge of industry best practices.



"Talk to us, an onsite class may be more affordable than you realize."

### 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 Performance and Optimization

COURSE ID TETRA2

| Duration 3 days

| Private Class taught onsite

### Course Overview

#### Course in a Nutshell



Intended as a follow-on to our TETRA Overview course (“TETRA 1”), this course should be scheduled after some time has elapsed since TETRA 1. Building on the knowledge and skills acquired in TETRA 1, this course will help you identify the performance issues with your network and how changes to the TETRA network will impact its performance.

Unlike courses that are presented in the “death by PowerPoint” format, we will employ lecture interspersed with discussion of your questions related to your implementation, discussion of your TETRA configuration and settings, hands-on exercises, and example troubleshooting scenarios and solutions.

#### Customize It!

Let us know your network architecture and performance challenges 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 an understanding of TETRA basics.

#### Prerequisites

Level of knowledge and skills equivalent to that gained from our TETRA Overview course.

### Related Courses

- [TETRA Overview](#) (TETRA1, 3 days)
- [TETRA](#) (TETRA, 3 days)
- [TETRA in Depth with RF Basics](#) (TETRA-ID, 7 days)

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Eogogics Inc | [www.eogogics.com](http://www.eogogics.com), [www.gogics.com](http://www.gogics.com) | ☎ +1 703 281 3525, ☎ USA 1 888 364 6442 | ✉ [info@eogogics.com](mailto:info@eogogics.com)

### Course Outline

- **TETRA Network Planning (to be able to understand how the installed network was designed)**
  - Frequency Planning and Re-use
  - C/I Requirement; Coverage Requirement
  - Coverage Planning
  - TETRA Link Budget
  - Capacity Planning
  - GoS Requirement and Traffic Load prediction
  - TETRA Planning Challenges
  
- **TETRA Physical Layer Performance**
  - Channel Quality Measurement
    - Received Signal Strength
    - Signal Quality
    - Round-trip MS-BS Path Delay
  - TETRA Receiver Sensitivity
  - TETRA Reference Channels
  - TETRA Receiver Classes
  - Area Coverage
  - Area Coverage in the Noise Limited Case
  - Area Coverage in the Interference Limited Case
  - Interference to Other Systems
    - Limits on Adjacent Carrier Interference
    - Limits on Emissions Far from the Carrier within the TETRA Band
    - Limits on Emissions outside the TETRA Band

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- Area Coverage Techniques
  - Cellular Channel Re-use
  - Quasi-synchronous Transmission
  - Time-shared Transmission
  - Antenna Diversity
  - Site Diversity
  - On-frequency Repeaters
- Attachment Management
  - Acquiring Cell Synchronization and System Information
  - Pathloss Calculation and Neighboring Cell Ranking
  - Cell Selection Criterion (Hysteresis Control)
  - Cell Selection and Reselection Procedures
  - The 5 Categories of Cell Reselection Supported by TETRA
- **Key Performance Indicators for QoS Assessment in TETRA networks**
  - Review of TETRA Features
    - Network Registration
    - Group Registration
    - Handover
    - Voice Services: Individual Calls; Group Calls; Broadcast Calls; Emergency Calls
    - Data Services: SDS and Status Messages; Packet Mode Data
  - QoS Assessment in TETRA
    - Perspectives: Required by Customer; Planned by Service Provider; Delivered by Service Provider; Perceived by the Customer
    - Monitoring Events and KPIs
  - Key Performance Indicators (KPIs) for TETRA

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- Event Counters for Network Resources
  - Network Resource Indicators, Their Calculation and Meaning
    - Voice/Data Occupancy; Total Traffic; Efficiency of Use of Network Capacity; Queuing Rate; Mean Queuing Time; Random Access Collisions
  - Event Counters for Group Attachment
  - Group Attachment Indicators, Their Calculation and Meaning
  - Event Counters for Handover
  - Handover Indicators, Their Calculation and Meaning
  - Event Counters for Voice Service
  - Voice Service Indicators, Their Calculation and Meaning
  - Event Counters for Data Service
  - Data Service Indicators, Their calculations and Meaning
- **Optimization of TETRA Network and Services**
    - Overview and Principles of TETRA Optimization
    - Optimization of the Radio Network
      - Coverage
      - Capacity
      - Handover
      - Neighbor Lists
    - Optimization of Network Performance for QoS
    - Example Scenarios and Solutions
    - Participant and Worked Examples
  - **Course Wrap Up**
    - Course Recap, Final Q & A Session, and Evaluations

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**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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