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TONEX Global Training Courses & Seminars

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- Workshop & Seminars
- Wireless Communication
- Business Management
- IP Networking
- Enterprise Architecture
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- Boot Camps

Quality Training

Delivered

Foundation Courses

901: Systems Engineering Training Level I

Duration: 4 Day(s)

Systems Engineering (SE) Fundamentals helps attendees to understand systems engineering processes, application, and its value to the successful implementations of the systems developments projects.

This two-day course will introduce attendees to the principles of Systems engineering (SE). After completion of the course, attendees will be able to implement SE processes, tools, and techniques in the design and development of products and services

The course is a key to achieving reliable, efficient, cost-effective products and services in diverse fields, including communication and network systems, software engineering, information systems, manufacturing, command and control, and defense systems acquisition and procurement. The course also teaches techniques for accurately eliciting, analyzing, and specifying software requirements.

Tonex systems engineering training provides a comprehensive overview of the activities that comprise software requirements engineering including software requirements elicitation, analysis, and specification. These activities are introduced as they occur in the context of systems engineering and various software development life-cycle models. Introduction to specific methods, tools, and notations for each of these activities is included:

- Operations
- Cost & Schedule
- Performance
- Training & Support
- Test
- Disposal
- Manufacturing

Of the many techniques for eliciting, analyzing, and specifying requirements, no one technique applies to every problem. Rather, a combination of techniques is often most appropriate to address an individual problem. Thus, in addition to acquiring skills in specific techniques and notations, students learn to recognize when the use of these techniques and notations is appropriate.

Software developers learn how to reduce the number of errors in software requirements by implementing appropriate combinations of elicitation, analysis, and specification activities for specific problems.

Systems Engineering Fundamentals helps your organization with Reducing Cycle Time, Meeting Complex Systems Requirements, and Ensuring Project Success. It provides ability to perform systems engineering well is pivotal to its ability to remain competitive.

We will guide your team through the process of using advanced systems engineering methods to:

- Reduce cycle time
- Reduce the risk of project failure
- Meet complex systems requirements
- Meet Quality of Service, performance and reliability requirements

13 PDH TO BE APPROVED BY PIE.

OBJECTIVES

UPON COMPLETION OF THIS INTENSIVE COURSE, THE PARTICIPANTS WILL:

- Understand systems engineering requirements analysis and design
- Explore system engineering management
- Utilize tools and techniques essential for development of complex systems
- Explore applied practical problems to aid understanding systems engineering reliability and performance issues

- Produce designs and cost estimates of complex products
- Work with customers to better translate user needs into outstanding delivered products
- Define optimal verification and validation programs tailored to the organization and its customers
- Effectively use advanced IT processes to increase product development productivity and effectively manage design data and interfaces
- Manage risk in a cost constrained environment
- Trade systems resources including technical, cost, and schedule
- Explore software requirements engineering
- Understand software life-cycle models
- Explore product technical quality assurance

Systems Engineering (SE) Process Training

904: Applied Systems Engineering - V-Model Training

Duration: 5 Day(s)

This course is an introduction to systems engineering and V-Model for project managers and project staff. It provides a high-level view of a broad and rich topic area, introducing basic concepts to individuals who are working on systems and software engineering and IT projects. The goal is to allow these individuals to understand the benefits of applying V-Model approaches as a means of developing quality systems. The course covers technical practices such as principles of V-Model, system modeling, prototyping, trade-off analysis and testing, and management practices such as risk assessment and mitigation, which make up "best practices" in the systems engineering arena.

OBJECTIVES

Upon completion of the course, participants will be able to:

- Define Systems Engineering and its application to ITS.
- Describe the system's life cycle and its relationship to systems engineering.
- Develop, derive, and validate requirements for a system.
- List the systems engineering tools available to mitigate risk.
- Define and apply the concept of earned value as a tracking mechanism.
- List three alternative strategies that may be applied to decision making under uncertainty.
- Identify where to find appropriate standards for developing ITS projects.
- Identify resources that may help project personnel to look at systems as a whole.

905: Agile Software Development Training

Duration: 4 Day(s)

Tonex Agile software development training course covers the shift in the way your organization think. It covers the impacts at all stages of the software development lifecycle (SDLC). The training covers the effect on all the stakeholders within that lifecycle, from business analysts to developers to testers.

This course emphasizes the rapid realization of system value through disciplined, iterative and incremental software development techniques, and elimination of wasteful practices.

Attendees will learn the full spectrum of Agile Methods, including Scrum, Extreme Programming, Lean, Crystal Methods, Dynamic Systems Development Method, and Feature-driven Development. These methods promote teamwork, rich and concise communication, and the frequent delivery of running tested systems containing the highest priority customer features. Agile methods are contrasted with common workplace practices and traditional methods such as CMMI, PMI/PMBOK, and RUP. Examples of agile adoption in industry are covered. Additional topics in the course include team dynamics, collaboration, software quality, and metrics for reporting progress.

We discuss challenges include smooth iteration and release planning, collaboration amongst cross-functional teams and reliable quality assurance for multi-layered and composite applications. We also address the most effective way to manage dynamic requirements and tests.

Global principles are presented with detailed practices that can be easily implemented by attendees, providing a comprehensive understanding of the important elements of agile software development methods.

OBJECTIVES

UPON COMPLETION OF THIS COURSE, THE PARTICIPANTS ARE ABLE TO:

- Understand software system engineering requirements analysis and design
- List Agile development and Agile testing processes
- Explore Agile software development methods and approaches
- Explore transitioning mechanisms from traditional waterfall software approaches to iterative Agile methodologies
- Utilize integrated application lifecycle management software and best practices
- Achieve better visibility, control and responsiveness across the lifecycle, from requirements management to delivery
- Utilize tools and techniques essential for development of complex software systems using agile development processes
- Explore applied practical problems to aid understanding software systems engineering reliability and performance issues
- Produce designs and cost estimates of complex products
- Work with customers to better translate user needs into outstanding delivered products
- Define optimal verification and validation programs tailored to the organization and its customers

911: System Verification and Validation (V&V) Training - Verification and Validation Training

Duration: 4 Day(s)

SYSTEM VERIFICATION AND VALIDATION (V&V) TRAINING

TONEX Verification and Validation training provides all aspects of the system engineering discipline employing a rigorous methodology for evaluating and assessing the correctness and quality of system and software throughout the system/software life cycle.

Verification is the process of determining whether or not the products of a given phase of the system/software life cycle fulfill the requirements established during the preceding phase.

Validation is the process of determining that the requirements are the correct requirements and that they form a complete set of requirements this is done in the early stages of the development process. Validation of the end product or system determines if the system meets the user's needs.

NASA Definitions of V&V

Source: www.nasa.gov

Validation is defined as: The process of determining the degree to which a model is an accurate representation of the real world from the perspective of the intended uses of the model. (AIAA G-077-1998) Verification is defined as: The process of determining that a model implementation accurately represents the developer's conceptual description of the model and the solution to the model. (AIAA G-077-1998)

After the completion of this course, the students will be able to:

- Describe system/software verification and validation and to discuss the distinction between them
- List V&V Techniques and Methods
- Describe the testing and inspection process and its role in V & V
- Explain Life Cycle V&V Tasks
- Explain static analysis as a verification technique

Special SE Courses

908: The Consultative Committee for Space Data Systems (CCSDS) Training

Duration: 2 Day(s)

The Consultative Committee for Space Data Systems (CCSDS) was formed in 1982 by the major space agencies of the world to provide a forum for discussion of common problems in the development and operation of space data systems. It is currently composed of ten member agencies, twenty-three observer agencies, and over 100 industrial associates.

Since its establishment, it has been actively developing Recommendations for data- and information-systems standards to a) reduce the cost to the various agencies of performing common data functions by eliminating unjustified project-unique design and development, and b) promote interoperability and cross support among cooperating space agencies to reduce operations costs by sharing facilities.

This course covers CCSDS's goals and benefits, end-to-end data systems, space data system physical interfaces, space data system functional model and recommendations.

OBJECTIVES

- Introduction to CCSDS
- Overview of the problem to solve
- Overview of CCSDS's data- and information-system Recommendations (Blue Books)
- Introduction to Space Protocol Stack
- Overview of CCSDS End-to-End Data System
- Introduction to space data system physical interface and space data system physical interface functional model

909: Systems Engineering Training for Intelligent Transportation Systems (ITS)

Duration: 4 Day(s)

The Systems Engineering for Intelligent Transportation Systems (ITS) training bootcamp provides an approachable introduction to systems engineering for ITS based on recommendations and guidance from United States Department of Transportation - Federal Highway Administration (FHWA).

This course is designed for ITS system engineers, project managers, system owners, operators, maintainers and anyone else in need of a comprehensive, approachable primer on the basics and advanced of systems engineering for ITS.

OBJECTIVES

This course is intended to introduce attendees to systems engineering and provide a basic understanding of how it can be applied to planning, designing, and implementing intelligent transportation systems (ITS) projects.

The course leads the attendees step by step through the project life cycle and describes the systems engineering approach at each step using a real project. It focuses on how to begin implementing the systems engineering approach on ITS projects and incorporate it more broadly into your organization's business processes and practices.

Systems Engineering (SE) training for Intelligent Transportation Systems focusing on the following competencies:

- SE Planning and Management
- Collaborating with Technical Specialties
- Building Successful Teams
- Communicating with Impact
- Results Orientation
- Adaptability
- System Concept Definition
- Concepts of Operations (ConOps)
- Requirements Engineering
- System Architecture
- System Design and Development
- Systems Integration
- Test and Evaluation
- Systems Implementation, O&M, and Transition

918: MIL-1553 Training

Duration: 4 Day(s)

MIL-1553 training course covers MIL-STD-1553 protocol, architecture, functional characteristics, technical components, design, operations, products, testing and trends.

MIL-STD-1553 is military standard published by DoD that defines the mechanical, electrical and functional characteristics of a serial data bus. It features a dual redundant balanced line physical layer, a (differential) network interface, time division multiplexing, half-duplex command/response protocol and up to 31 remote terminals (devices). MIL-STD-1773 is a version of MIL-STD-1553 using optical cabling.

Upon completion of this course, the attendees are be able to:

- Understand MIL-STD-1553 protocol, architecture and functional characteristics
- Describe MIL-STD-1553 mechanical, electrical and functional characteristics
- Explain technical components, design, operations and, testing aspects of MIL-STD-1553

Certification and Advanced Systems Engineering

902: Systems Engineering Training Level II

Duration: 2 Day(s)

Systems Engineering training Level II introduces attendees to a proven and advanced system engineering process and methodology that can be applied to any complex project. The course will assist with the organization of requirements, the identification and management of risks, the establishment of real system boundaries for development activity, reliability and quality assurance.

OBJECTIVES

UPON COMPLETION OF THIS COURSE, THE PARTICIPANTS ARE ABLE TO:

- Describe System Engineering Planning and Management
- Acquire System Engineering Project Management
- Applying standards (ISO, EIA, and IEEE), the SEI Capability Maturity Models - Integration (CMM - I) throughout the development process
- Understand advanced systems engineering processes
- Utilize advanced engineering disciplines and program/project management
- Demonstrate its role and value in the development of products, processes, and services
- Understand advanced concepts in the development cycle, generating requirements, selecting alternative solutions, QA, testing and measuring of solution development relative to requirements.
- Produce designs and cost estimates of complex products faster and cheaper
- Work with customers to better translate user needs into outstanding delivered products
- Define optimal verification and validation programs tailored to your company and your customer's risk threshold
- Manage risk in a cost constrained environment
- Trade systems resources including technical, cost, and schedule
- Explore case studies including templates, and checklists that support the systems engineering approach.

903: Specifications Writing Training

Duration: 2 Day(s)

Specifications Writing Training course addresses the techniques used to write, validate and verify requirements and convert them to technical design specifications. It gives attendees the basic tools necessary to write effective system design specifications.

Requirements are the foundation for building systems and software. They determine WHAT the system must do and drive the system development. Requirements are used to determine [verify] if the project team built the system correctly. The requirements development process identifies the activities needed to produce a set of complete and verifiable requirements.

Specifications Writing Training provides the foundation to produce requirements for the system and sub-systems with set of activities . The systems engineering standard [EIA 632] defines "requirement" as "something that governs what, how well, and under what conditions a product will achieve a given purpose."

Requirements define the functions, performance, and environment of the system under development to a level that can be built:

Does the system do WHAT it is supposed to do? - These are Functional requirements.

How well does the system do its functions? - These are Performance requirements

OBJECTIVES

Upon successful completion of the course, attendees will:

- Describe the way the system is intended to operate from the user's perspective
- Describe Concept of Operations (ConOps) process where user needs, expectations, goals, and objectives are described
- Understand how feasibility Study can produce the conceptual high-level design and requirements which can be used as a starting point for the project.
- Demonstrate the ability to capture and validate requirements throughout the requirements analysis process.
- Learn how to conduct technical reviews, manage stakeholder involvement, and elicit requirements
- Understand traceability of requirements to user needs
- Understand the relationships among all stages of the system life cycle.
- Describe different levels of requirements
- Learn how to develop requirements, write and document requirements, check completeness of requirements, analyze, refine, and decompose requirements, validate requirements and manage requirements
- Describe communications techniques to elicit requirements
- Classify requirements as functional or design
- Demonstrate the ability to write functionally oriented and design oriented specifications
- Understand how to convert requirements into valid design specifications
- Learn how to separate System and Sub-system Requirements
- Learn how to create a Verification Plan to verify each system requirement
- Effectively produce design specification
- Effectively perform Verification (Functional, Non-Functional, and Interface reqs.) and Validation (ConOps)

913: JCIDS Training Course- Joint Capabilities Integration Development System

Duration: 3 Day(s)

Tonex JDICS training course introduces Joint Capabilities Integration Development System and capabilities-based approach to identify current and future gaps in the ability to carry out joint warfighting missions and functions and to develop requirements for weapons systems to close those gaps. The course also provides a fundamental understanding of various aspects of JDICS. Completion of this course will provide the attendees with a foundational knowledge of the JDICs including concepts, processes, policies and regulations.

The training course covers the Joint Capabilities Integration and Development System (JCIDS). process. The primary objective of the JCIDS is to ensure the capabilities required by the joint warfighter to successfully execute the missions assigned to them are identified with their associated operational performance criteria.

JCIDS training course covers topics such as: analysis of doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) in an integrated, collaborative process to define gaps in warfighting capabilities and propose solutions.

JCIDS is defined in CJCSI 3170.01G. There are three key processes in the DOD that must work in concert to deliver the capabilities required by the warfighter: the requirements process; the acquisition process; and the Planning, Programming, Budget, and Execution (PPBE) process. JCIDS implements the requirements process. JCIDS supports the Chairman of the Joint Chiefs of Staff (CJCS) and the Joint Requirements Oversight Council (JROC) in identifying, assessing, and prioritizing joint military capability needs as required by law. The capabilities are identified by analyzing what is required across all functional areas to accomplish the mission. (Source: DAU Glossary of Defense Acquisition Acronyms & Terms)

A Chairman of the Joint Chiefs of Staff process to identify, assess, and prioritize joint military capability needs. The JCIDS process is a collaborative effort that uses joint concepts and integrated architectures to identify prioritized capability gaps and integrated doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) solutions (materiel and non-materiel) to resolve those gaps. (Source: CJCSI 6212.01D – Interoperability and Supportability of Information Technology and National Security Systems, 8 March 2006).

TERMINOLOGY

AMA = Analysis of Materiel Alternatives
 AOA = Analysis of Alternatives
 CDD = Capabilities Development Document
 CPD = Capabilities Production Document
 DAB = Defense Acquisition Board
 DOTMLPF = doctrine, organization, training, materiel, leadership, personnel, facilities
 FAA = Functional Area Analysis
 FCB = Functional Capabilities Board
 FNA = Functional Needs Analysis
 FOS = Family of Systems
 FSA = Functional Solution Analysis
 GIG = Global Information Grid
 ICD = Initial Capabilities Document
 IER = Information Exchange Requirements
 ISP = Information Support Plan
 JCIDS = Joint Capabilities Initiative Development System
 JFC = Joint Functional Concept
 JIC = Joint Integrating Concept
 JOC = Joint Operating Concept
 JOpsC = Joint Operations Concept
 JROC = Joint Requirements Oversight Council
 NR KPP = Net Ready Key Performance Parameter
 SOS = System of Systems

OBJECTIVES

Objectives of this course are:

- To familiarize attendees with JCIDS and with the most up-to-date capabilities development guidance
- To understand the basic components of the JCIDS process and how it will impact your programs
- To understand the underlying analytical approaches for producing these products (and stabilizing our efforts)
- To understand the CJCSI 6212 and the impact to programs
- Insight into Joint initiatives and trends which effect solution development
- Describes Capabilities-Based Assessment Process
- Define Key Performance Parameters (KPPs) and Key System Attributes (KSAs)
- Insight into Initial Capabilities Document (ICD), Joint DOTMLPF Change Recommendation (DCR), Capability Development Document (CDD) and Capability Production Document (CPD)

914: Associate Systems Engineering Professional (ASEP) Certification Training

Duration: 3 Day(s)

TONEX INCOSE Certified Systems Engineering Professional (ASEP) training Bootcamp program provides the attendees with knowledge and tools to prepare for the INCOSE ASEP Certification application and exam. This course provides you with the detailed knowledge and practice that you need to pass the ASEP examination.

Associate Systems Engineering Professional (ASEP) is targeted towards Systems Engineers with basic knowledge and experience. ASEPs are certified against knowledge only.

Our experienced instructors work with you, tailoring the Boot Camp content to your needs. We can even conduct Boot Camp onsite at your business! Using real-life examples and interactive exercises, we teach practical ways to maintain your valuable systems engineering principals needs.

Once the application has been approved by INCOSE, TONEX will schedule the course attendees for the exam at one of the Prometric locations. There are no prescheduled group examinations at any events.

OBJECTIVES

Upon completion of this intensive course the participants will understand:

- How to pass the ASEP examination!
- Details of the INCOSE Handbook, the source for the exam
- The key processes and definitions including:
- Basics of Systems Engineering (SE)
- Requirements Engineering
- Risk and Opportunity Management
- Baseline Control
- Technical Planning
- Technical Effort Assessment
- Design Development
- Qualification, Verification, and Validation
- Process Definition
- Tool Support
- System Integration
- Quality Assurance

915: INCOSE Certified Systems Engineering Professional (CSEP) - INCOSE Certification

Duration: 4 Day(s)

Tonex INCOSE Certification Training - Certified Systems Engineering Professional (CSEP) is targeted towards Systems Engineers with five or more years work. CSEPs are certified against experience, education, and knowledge requirements

SE Disciplines Qualifying for SE Experience include:

- Requirements Engineering
- Risk and Opportunity Management
- Baseline Control
- Technical Planning
- Technical Effort Assessment
- Design Development
- Qualification, Verification, and Validation
- Process Definition
- Tool Support
- Training
- System Integration
- Quality Assurance
- Specialty Engineering

TONEX CSEP Bootcamp program provides SE professionals with knowledge and tools to prepare for the INCOSE Certification application and exam.

Our experienced instructors work with you, tailoring the Boot Camp content to your needs. We can even conduct Boot Camp onsite at your business! Using real-life examples and interactive exercises, we teach practical ways to maintain your valuable systems engineering principals needs.

TONEX assists the students in completion of the process for certification providing examples of the following forms:

- Application for Systems Engineering Certification
- Instruction Letter to References
- Certification Reference Endorsement Form

Once the application has been approved by INCOSE, TONEX will schedule the course attendees for the exam at one of the Prometric locations. There are no prescheduled group examinations at any events.

OBJECTIVES

Upon completion of this intensive course the participants will:

- Explain Systems and Systems Engineering Processes
- Describe Requirements Analysis and Requirements Engineering Process
- Identify Project Processes
- Describe Enterprise and Agreement Processes
- List Enabling Systems Engineering Process Activities
- Explain Systems Engineering Support Activities
- Explain Specialty Engineering Activities
- Describe Training Needs Analysis
- Explain Tailoring Processes
- Describe Qualification, Verification, and Validation Processes
- Explain Risk and Opportunity Management
- Baseline Control
- Technical Planning
- Technical Effort Assessment

9009: Systems Engineering Training Boot Camp

Duration: 4 Day(s)

TONEX Systems Engineering Bootcamp is the unique answer to your Systems Engineering training needs from current to next generation technologies. Our mission is to clarify highly complex technical standards and topics in a training bootcamp. Emphasis is on the development of fundamental skills and knowledge in engineering, systems analysis, modeling, and planning, combined with advanced computational techniques, to address problems affecting various applications and industries.

Systems engineers play a critical role in the technical management, development, and acquisition of complex technology systems. They are the professionals responsible for planning, coordinating, and overseeing group efforts that translate operational need into technology solution, and whose tools and skills determine whether a system will meet cost, schedule, and performance goals.

Systems Engineering Training Bootcamp is designed for professional engineers and scientists who have basic systems engineering responsibilities or who want to grow into this role. The program's challenging bootcamp style sessions emphasize ongoing technical change and the technical, business, project management, communications, collaboration and interpersonal skills characteristic of systems engineering positions. The program covers analysis, design, integration, production, testing, and operation of modern high technology systems. It also supplies attendees with underlying theoretical knowledge and practical experience applicable to diverse disciplines including:

- Concept Definition
- Requirements Engineering
- System Architecture
- System Design and Development
- Systems Integration
- Test and Evaluation
- Validation and Verification
- Systems Implementation, O&M, and Transition
- SE Planning and Management
- Collaborating with Technical Specialties
- Building Successful Teams
- Communicating with Impact
- Results Orientation
- Adaptability

Systems Engineering is an interdisciplinary approach and means to enable the realization of successful systems. The program focuses on the analysis, planning, design, testing, integration, operation, and management of modern systems. This program integrates all the disciplines and specialty groups into a team effort forming a structured development process that proceeds from concept to production to operation:

- It considers both the business and the technical needs of all customers with the goal of providing a quality product that meets the user needs

Our program starts with focusing on defining customer needs and required functionality early in the development cycle, documenting requirements, and then proceeding with design synthesis and system validation while considering the complete problem:

- Project Management
- Cost & Schedule
- Risk Analysis
- Performance
- Quality Assurance
- Training & Support
- Operations
- Test
- Manufacturing
- Disposal

OBJECTIVES

Upon completion of the bootcamp, the attendees will :

- Acquire a practical approach to the engineering of system requirements
- Acquire a practical approach to the engineering design, development, and integration of complex systems
- Employ conceptual design of complex systems and System of Systems (SoS)
- Describe Requirements Analysis, Functional Definition, Physical Definition, and Design Validation
- Generate and work with the core SE products
- Describe phases of the systems engineering life cycle to a hypothetical systems problem
- Describe how the systems engineer manages systems projects and mitigates risks
- Explore approaches to architecture at the system
- Create an awareness of the activities required to deploy, maintain, and sustain a complex system in the operations environment

SCADA (Supervisory Control And Data Acquisition) Training

1450: Advanced SCADA Training (Level II)

Duration: 2 Day(s)

Tonex SCADA Training course provides advanced SCADA technical overview of the emerging trends, advanced applications, operations, management and security.

OBJECTIVES

Upon completing this course, students will be able to:

- Explain the basic SCADA operations
- Explore Advanced SCADA Systems
- Review telecommunications services related to SCADA
- SCADA Network Operations and Management
- Describe SCADA security architecture
- Describe the security issues with a SCADA system
- Design a SCADA Security Policy
- Look at access control to field devices with Microsoft Active Directory
- Review interception and analyzing Modbus/TCP network traffic with a sniffer
- Understand unauthorized commands to field device
- Setup and configure a Modbus/TCP firewall
- Review SCADA security policies
- Understand Firewall architecture, DMZ, and rulebases
- Review SCADA protocol security issues
- Understand Securing field communications
- Explore user authentication technologies and integration with SCADA applications
- Review access control principles and implementation
- Look at active Directory integration with SCADA applications
- Explore how to Detect cyber attacks on SCADA systems
- Explore vulnerability scanning
- Review security patch management
- Review anti-virus protection and management
- Review SCADA security standards

1499: SCADA (Supervisory Control And Data Acquisition) Training

Duration: 2 Day(s)

This course provides a thorough technical overview of the principles behind SCADA engineering. The course covers the basics of SCADA system components, architecture, protocols, security and theory of operations. The course shows you how to evaluate potential SCADA benefits of applying the technology to your process application.

OBJECTIVES

After completing this course, students will be able to:

- Explain the basic architecture and components of a SCADA system
- Describe the component technologies behind a SCADA system
- Apply potential benefits of SCADA applied to NYCT
- Understand the base standards that apply to SCADA
- Calculate the "scan time" required for SCADA systems of various sizes
- Recognize that Human Machine Interfaces are just a part of SCADA
- Understand the terms used in describing the technology
- Understand digital coding, protocols and modulation

- Discuss the technical aspects of RTUs, PLCs, MTUs, and communications methods
- Review SCADA System Design Considerations
- Explain SCADA performance and Optimization considerations
- Explore project planning process of SCADA
- Discuss successful and unsuccessful SCADA deployments
- Step through a practical process for managing SCADA Systems
- Explore the current and future SCADA market trends

SE/PE Continuing Education

10001: RF Theory & Technical Training

Duration: 2 Day(s)

RF THEORY & TECHNICAL TRAINING

- In Full compliance with NYS Mandatory Continuing Education requirements for Professional Engineers by PIE (Practicing Institute of Engineering, Inc.)
- Program Submittal Number - PIE PS 002345 for 13 PDH
- RF Theory & Technical Training has been evaluated by Peter vom Scheidt, PE and has been approved for 13 Professional Development Hours (PDH)

10002: Systems Engineering (SE) Training (Fundamentals - Level I)

Duration: 2 Day(s)

In Full compliance with NYS Mandatory Continuing Education requirements for Professional Engineers by PIE (Practicing Institute of Engineering, Inc.)

Program Submittal Number - PS 002580

Systems Engineering Level 1 Training has been evaluated by Lawrence J. O'Connor, P.E., L.S. and has been approved for 13 Professional Development Hours (PDH)

10003: Specification Development Training for Communication Systems

Duration: 2 Day(s)

SPECIFICATION DEVELOPMENT FOR COMMUNICATION SYSTEMS

- In Full compliance with NYS Mandatory Continuing Education requirements for Professional Engineers by PIE (Practicing Institute of Engineering, Inc.)
- Program Submittal Number - PS 003134 – Specification Development for Communication Systems has been evaluated by Peter J. McClive, PE and has been approved for 13.0 PDH(s)

10004: Applied RF (RF Level II) Training

Duration: 2 Day(s)

APPLIED RF TRAINING (LEVEL II)

In Full compliance with NYS Mandatory Continuing Education requirements for Professional Engineers by PIE (Practicing Institute of Engineering, Inc.)

Program Submittal Number - PS 003272

Applied RF Training (Level II) has been evaluated by Donald W. Kane, P.E. and has been approved for 13 Professional Development Hours (PDH)

Electromagnetic Compatibility (EMC/EMI) Training

910: Applied EMI/EMC Training

Duration: 3 Day(s)

Applied Electromagnetic Compatibility (EMC) and Electromagnetic Interference (EMI) training course serves as a technical program to electromagnetic compatibility (EMC) and electromagnetic interference (EMI). It is a technical overview of many topics.

Tonex Applied EMC/EMI course is applicable to professional engineers and technicians practicing in EMC fields to include bonding, grounding, shielding, EMI prediction, EMI analysis, conducted and radiated interference, lightning protection and more.

Learn about the requirements that commercial and military electronic systems must meet to get certified. Master techniques that can be used to protect systems against these threats. Explore unconventional high power EM threats, including nuclear electromagnetic pulse and high power microwave weapons (optional topics)

In a nutshell, Engineers know the math and the physics of EMC. Technicians know the instruments and test setups. Engineers need good writing and verbal skills. Technicians need to know the pitfalls of real measurements. All applicants have to be competent in the fundamentals, i.e., coupling, filters, shielding, etc. as well as the specifications which apply to their particular specialty.

OBJECTIVES

Upon completion of this course, the attendees will:

- Understand EMI/EMC Concepts, Definitions, and Requirements
- Understand military and commercial EMI/EMC requirements
- Explore EMC Methodology, Environments, and Measurements
- Calculate electromagnetic propagation
- Understand EMC Modeling and Analysis
- Master EMC measurement, modeling, and analysis techniques
- Analyze EM Propagation and Crosstalk
- Understand EM Hardening Techniques
- Master Unconventional High Power Electromagnetic Threats
- Analyze potential EMI problems by identifying the source, the receptor, and the coupling path
- Harden electronic systems using the appropriate EMC protection technique(s): grounding, bonding, shielding, filtering, and printed circuit board design

917: Electromagnetic Compatibility (EMC/EMI) Training Boot Camp

Duration: 4 Day(s)

Electromagnetic Compatibility (EMC/EMI) Training

Reliability and Maintainability Engineering

906: Reliability and Maintainability Engineering Training

Duration: 3 Day(s)

Reliability and Maintainability Engineering is the function of analyzing the expected or actual reliability of a product, process or service, and identifying actions to reduce failures or mitigate their effect.

Engineers analyzing reliability typically carry out reliability predictions, FMEA or FMECA, design testing programs, monitor and analyze field failures, and suggest design or manufacturing changes.

Once perceived as a practitioner or manufacturing issue, reliability and maintainability engineering is now considered a business issue of urgent priority. Reliability engineering can be done by reliability engineers, design engineers, quality engineers, or system engineers. The overall goal of reliability engineering is to make your product more reliable in order to reduce repairs, lower costs, and to maintain your company's reputation. To best meet this goal, reliability engineering should be done at all levels of design and production, with all engineers involved.

Reliability and Maintainability Engineering training provides the concepts of reliability engineering, practical issues and methodology in reliability prediction, design and optimization. This multidisciplinary training program focuses on the use of management systems, analysis techniques and advanced condition-based and preventive technologies to identify, manage and eliminate failures leading to losses in system function.

OBJECTIVES

This course provides you with a comprehensive reliability fundamentals covering today and tomorrow's technologies and concepts:

- New tools in reliability engineering principles
- How operations can improve reliability of their processes
- How to influence improvements in availability
- How someone can assist in reducing process failures
- How someone can calculate the cost of unreliability for making business decisions to attack problems of unreliability.
- Find out reliability tools helpful for providing supporting evidence during root cause analysis failure investigations
- Find reliability tools and techniques helpful for understanding failure data
- How to make business decisions, based on the failure data
- Justify making equipment more reliable

907: Root Cause Failure Analysis Training

Duration: 2 Day(s)

Root Cause Failure Analysis training (RFCA training) provides the concepts needed to effectively perform industrial troubleshooting investigations. It covers the methodology to perform RFCA one of the hottest topics currently in maintenance engineering. It also includes detailed equipment design and troubleshooting guidelines, which are needed to perform RCFA on machinery found in most production facilities.

OBJECTIVES

- Identify common manufacturing errors and deviations
- Understand how to prioritize failure events to analyze, preserve failure data, and order a failure analysis
- Explore systems failure analysis methods and techniques
- Develop and implement effective and efficient root cause failure analysis programs
- How to make RCFA a structured, team based, analytical approach
- and more...