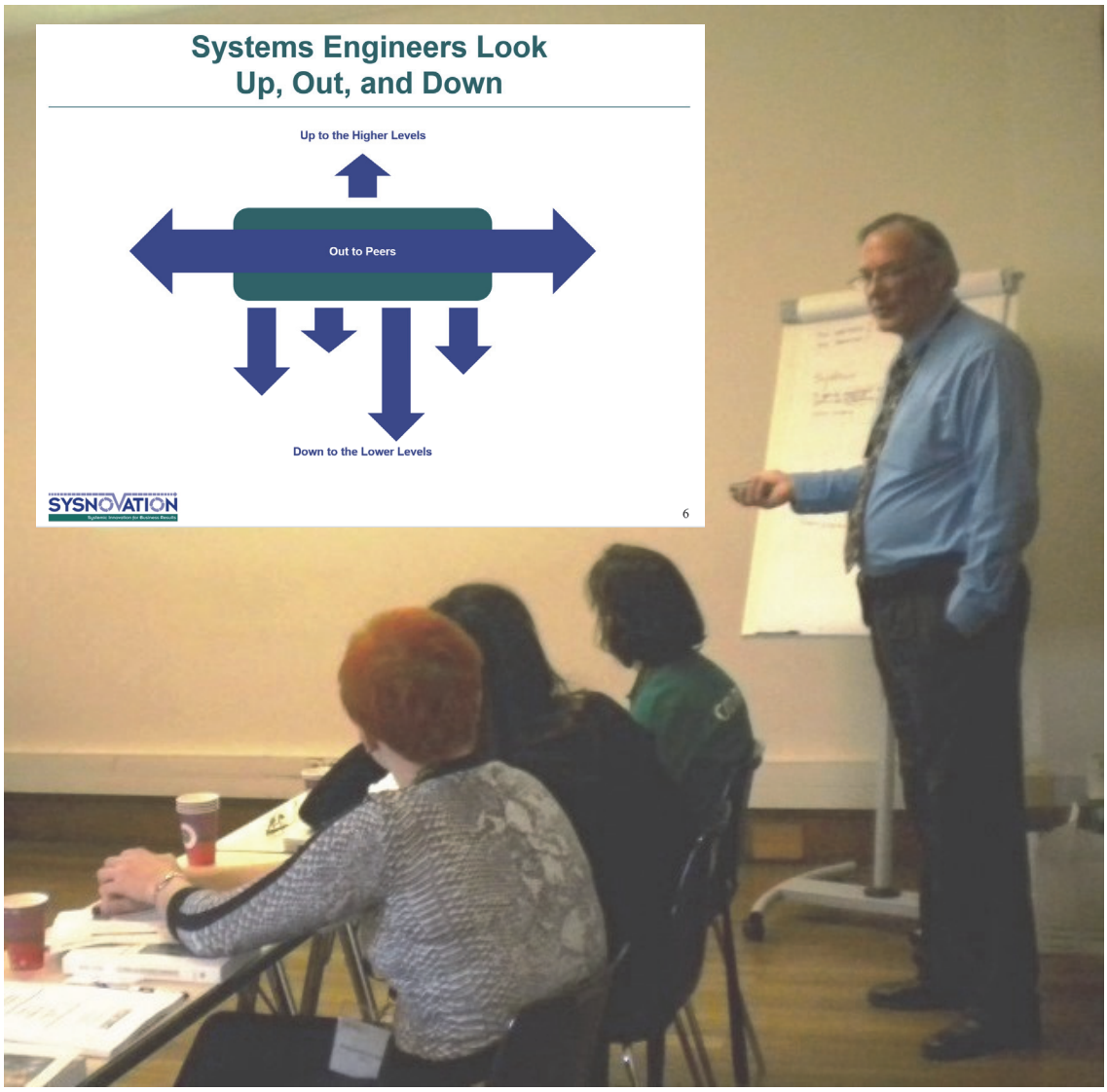
Sysnovation Training

Courses You Can Leverage for Business Results



Sysnovation training focuses on practical applicability and real-world effectiveness. All of our training can be customized for your individual needs.

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Printed in the USA

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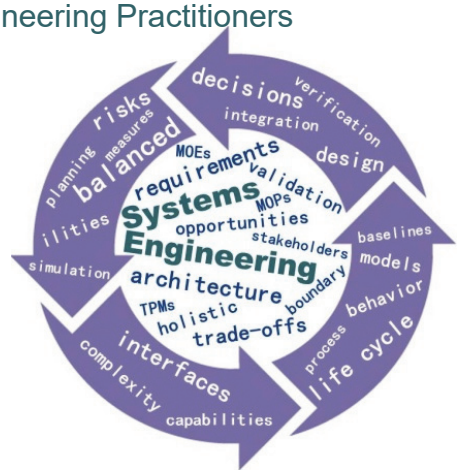
April 2018

Systems Engineering Principles

In-Depth Coverage for Systems Engineering Practitioners

Summary

- Five-day course (customizable)
- Provides a systemic overview of the fundamental principles of Systems Engineering, with its focus on holistic perspectives, balanced trade-offs, and life cycle considerations
- Shows how Systems Engineering is used as an effective way to manage increased system complexity, market pressures, and distributed development efforts
- Follows the basic outline and conventions of the INCOSE Systems Engineering Handbook, ISO/IEC/IEEE 15288, and the Guide to the Systems Engineering Body of Knowledge (SEBoK)
- Practical information and tools are provided
- Includes several in-class exercises to solidify the concepts being presented
- Each student will receive a complete set of lecture notes and an annotated bibliography



What You Will Learn

- Seven fundamental Systems Engineering maxims
- How to effectively plan and manage a systems development effort
- How to use Systems Engineering to develop and evolve a balanced system solution that takes into account risk and downstream life cycle activities
- How to effectively integrate your systems
- Effective verification and validation of systems
- How to manage your system suppliers
- The latest Systems Engineering lessons learned

Instructor – David D. Walden, ESEP

- An internationally recognized expert in the field of Systems Engineering
- Over 30 years of industry experience
- Taught over 100 courses to over 1600 students since 2006
- INCOSE Expert Systems Engineering Professional (ESEP)
- Senior Member of the IEEE
- Lead Editor of the INCOSE SE Handbook Fourth Edition
- Education
  - MS in MOT, University of Minnesota
  - MS in EE & CS, Washington University in St. Louis
  - BS in EE, Valparaiso University

Course Outline & Topics

1. Systems Engineering and its Importance. Introduction to and History of Systems Engineering. Fundamental Maxims. Systems Engineering Lessons Learned.

2. Requirements. Key Requirements Concepts. Stakeholder Requirements Definition. System Requirements Analysis. Requirements Allocation, Derivation, and Traceability.

3. System Architecture and Design. Key System Architecture and Design Concepts. System Architecting. System Design. Design Decisions. Design Reviews.

4. System Life Cycle Considerations. Introduction to the "ilities." Reliability, Maintainability, Availability. Supportability/Logistics. Usability/Human Factors. Training. System Safety. Security/Survivability. Producibility/ Manufacturability. Changeability. Commonality. Interoperability. Affordability. Disposability/Sustainability.

5. System Integration & Test through Disposal. System Integration. Verification. Transition and Validation. Operation and Maintenance. Disposal.

6. Agreements and Technical Management. Supply and Acquisition. Project Planning and Tailoring. Project Assessment and Control. Decision, Risk & Opportunity, Configuration, and Information Management. Measurement.

7. Organizational Influences and the Systems Engineering Environment. Organizational-Project Enabling Processes. Development Models. Modeling and Simulation

8. Optional Course Project Presentations and Wrap-up. Team Presentations. Systems Engineering Skills. Benefits of Systems Engineering. Systems Engineering as a Profession. Course Wrap-up.

Typical Course Duration - 5 Days
Typical Schedule 8:30am-4:00pm

Earn up to 30 INCOSE PDUs!

Please contact Sysnovation for availability, customization, and pricing.

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Leading Systems Engineering Success

A Systems Engineering Executive Overview

Summary

- Full or half-day course (customizable)
- Provides an executive overview of the fundamental principles of Systems Engineering, with its focus on holistic perspectives, balanced trade-offs, and life cycle considerations
- Shows how Systems Engineering is used as an effective way to manage increased system complexity, market pressures, and distributed development efforts
- Elaborates on Systems Engineering effectiveness and return on investment (ROI). Describes how Systems Engineering can reduce your Technical Debt.
- Follows the basic outline and conventions of the INCOSE Systems Engineering Handbook, ISO/IEC/IEEE 15288, and the Guide to the Systems Engineering Body of Knowledge (SEBoK)
- Practical information and tools are provided
- Includes in-class exercises to solidify the concepts being presented
- Each student will receive a complete set of lecture notes and an annotated bibliography

What You Will Learn

- The business value and return on investment of systems engineering
- How to effectively lead your systems engineering deployment and development efforts
- How Systems Engineering is used to develop and evolve a balanced system solution that takes into account risk and downstream life cycle activities
- The questions systems engineering leaders should be asking of their technical team
- The latest Systems Engineering best practices

Course Outline & Topics

1. Welcome and Introductions.

2. Introduction to Systems Engineering. Key Definitions. Importance of Systems Engineering. Systems Engineering Maxims. Introduction to the Systems Engineering Tool Belt. Best Practice ISO/INCOSE Systems Engineering Processes. Best Practice Systems Engineering Roles & Responsibilities.

3. Organizational Implications. What Systems Engineering Means to You and Your Organization.

4. Systems Engineering Questions to Ask. The Questions that Leaders Must Ask, and Systems Engineers Must Answer!

5. Course Wrap-Up and Conclusions.

Instructor – David D. Walden, ESEP

- An internationally recognized expert in the field of Systems Engineering
- Over 30 years of industry experience
- Taught over 100 courses to over 1600 students since 2006
- INCOSE Expert Systems Engineering Professional (ESEP)
- Senior Member of the IEEE
- Lead Editor of the INCOSE SE Handbook Fourth Edition
- Education
  - MS in MOT, University of Minnesota
  - MS in EE & CS, Washington University in St. Louis
  - BS in EE, Valparaiso University

Typical Course Duration – 4 to 8 Hours
Typical Schedule
8:30am-4:00pm (Full Day)
8:00am-Noon or 1:00-5:00pm (Half Day)

Please contact Sysnovation for availability, customization, and pricing.

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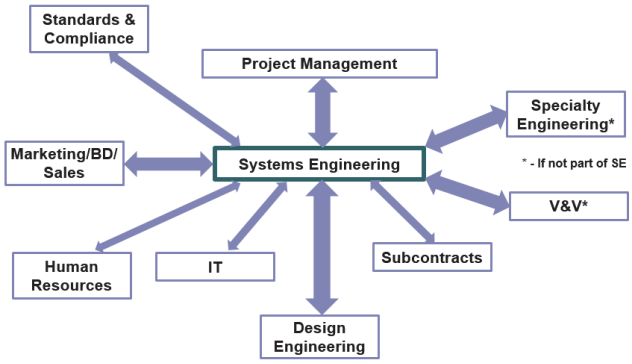
Enabling Systems Engineering Success

A Systems Engineering Overview for Non-Systems Engineers

Summary

- One-day course (customizable)
- Targeted for people who interact with systems engineers.
- Provides an overview of the fundamental principles of Systems Engineering, with its focus on holistic perspectives, balanced trade-offs, and life cycle considerations
- Shows how Systems Engineering is used as an effective way to manage increased system complexity, market pressures, and distributed development efforts
- Follows the basic outline and conventions of the INCOSE Systems Engineering Handbook, ISO/IEC/IEEE 15288, and the Guide to the Systems Engineering Body of Knowledge (SEBoK)
- Practical information and tools are provided
- Includes in-class exercises to solidify the concepts being presented
- Each student will receive a complete set of lecture notes and an annotated bibliography



What You Will Learn

- The key inputs and products of systems engineering
- How to effectively work with your systems engineers on development efforts
- How Systems Engineering is used to develop and evolve a balanced system solution that takes into account risk and downstream life cycle activities
- The questions others should be asking of their systems engineering team
- The latest Systems Engineering best practices

Course Outline & Topics

1. Systems Engineering and its Importance. Course Overview. Welcome & Introductions. Introduction to Systems Engineering. Key Definitions. Systems Engineering Best Practices and Lessons Learned. Introduction to the Systems Engineering Maxims. Introduction to the Systems Engineering Tool Belt.

2. Key Systems Engineering Competencies, Concepts, and Tools.
In the context of the 7 SE maxims:
- Introduce the 20 SE competencies
- Introduce some of the key SE tools

Application of Systems Engineering:
- COTS-Based SE
- Brownfield SE
- System of Systems Engineering (SoSE)

Course Wrap-up & Summary

Instructor – David D. Walden, ESEP

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- Over 30 years of industry experience
- Taught over 100 courses to over 1600 students since 2006
- INCOSE Expert Systems Engineering Professional (ESEP)
- Senior Member of the IEEE
- Lead Editor of the INCOSE SE Handbook Fourth Edition
- Education
  - MS in MOT, University of Minnesota
  - MS in EE & CS, Washington University in St. Louis
  - BS in EE, Valparaiso University

Typical Course Duration - 1 Day
Typical Schedule 8:30am-4:00pm

Earn up to 6 INCOSE PDUs!

Please contact Sysnovation for availability, customization, and pricing.

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Requirements Formulation

A Hands-on Course on Capturing, Analyzing, Deriving, and Managing Requirements

Summary

- Three-day course (customizable)
- Provides a systemic approach on how to capture, analyze, derive, and manage requirements
- Focuses on how stakeholder requirements, system requirements, and system element requirements are used to communicate, coordinate, track, verify, and validate system solutions
- Follows the basic outline and conventions of the INCOSE Systems Engineering Handbook, ISO/IEC/IEEE 15288, and the Guide to the Systems Engineering Body of Knowledge (SEBoK)
- Practical information and tools are provided
- Includes several in-class exercises to solidify the concepts being presented
- Each student will receive a complete set of lecture notes and an annotated bibliography

What You Will Learn

- The key characteristics and types of requirements
- How to formulate excellent requirements
- Common pitfalls in formulating requirements
- How to recognize, review, and correct poor requirements
- How requirements, functions, and system architecture/design are interconnected
- How to use requirements to effectively verify and validate your systems
- The latest requirements lessons learned

Instructor – David D. Walden, ESEP

- An internationally recognized expert in the field of Systems Engineering
- Over 30 years of industry experience
- Taught over 100 courses to over 1600 students since 2006
- INCOSE Expert Systems Engineering Professional (ESEP)
- Senior Member of the IEEE
- Lead Editor of the INCOSE SE Handbook Fourth Edition
- Education
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  - MS in EE & CS, Washington University in St. Louis
  - BS in EE, Valparaiso University

Course Outline & Topics

1. Requirements Concepts and Principles. Key Requirements Concepts. Types of Requirements. Requirements in the Context of the Systems Engineering Process. Characteristics of Good Requirements. Requirements Lessons Learned.

2. Stakeholder Requirements Formulation. Stakeholder Identification and Requirements Gathering Techniques. Context Diagrams, Concept Documents, Scenarios, and Use Cases. Life Cycle Considerations. Measures of Effectiveness. Analysis and Validation of the Stakeholder Requirements.

3. System Requirements Formulation. Translation and Derivation of Stakeholder Requirements into System Requirements. Formulating System Requirements from System Functions, Interfaces, and the System Environment. Life Cycle Considerations. The Role of Modeling and Simulation in Requirements Development. Measures of Performance. Analysis and Verification of the System Requirements.

4. System Element Requirements Formulation. Allocation and Derivation of System Requirements into System Element Requirements. Formulating System Element Requirements from System Requirements and the System Architecture/ Design. Analysis of the System Element Requirements. Acceptance of System Element Requirements.

5. Requirements Management. Planning, Monitoring, and Control of Requirements. Requirement Inspections and Reviews. Specifications and other Requirements Documents. Requirements Baselines. Support for Ongoing Change and Evolution of the Requirements. Project Requirements. Requirements Measures. Supplier Requirements Management. Requirements Management Tools. Course Wrap-up.

Typical Course Duration - 3 Days
Typical Schedule 8:30am-4:00pm

Earn up to 18 INCOSE PDUs!

Please contact Sysnovation for availability, customization, and pricing.

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Systems Engineering Tool Belt

Hands-On Application of Tools Every Systems Engineer Should Know

Summary

- Two five-day courses (customizable)
- The Fundamentals course introduces tools that can be accomplished with Microsoft Office
- The Advanced course uses specialized commercially available Systems Engineering tools
- Provides hands-on exercises of essential Systems Engineering tools and techniques that help the Systems Engineer move from theory to practice
- Follows the terminology and conventions of the INCOSE Systems Engineering Handbook, ISO/IEC/IEEE 15288, and the Guide to the Systems Engineering Body of Knowledge (SEBoK)
- Practical information and tools are provided
- Includes several in-class exercises to solidify the concepts being presented
- Each student will receive a complete set of lecture notes and an annotated bibliography

What You Will Learn

- A set of Fundamental Systems Engineering tools
- A set of Advanced Systems Engineering tools
- How to effectively use Systems Engineering tools
- When and where to apply the tools
- How to use Systems Engineering tools to develop and evolve a balanced system solution that takes into account downstream life cycle activities
- The latest Systems Engineering tools lessons learned

Instructor – David D. Walden, ESEP

- An internationally recognized expert in the field of Systems Engineering
- Over 30 years of industry experience
- Taught over 100 courses to over 1600 students since 2006
- INCOSE Expert Systems Engineering Professional (ESEP)
- Senior Member of the IEEE
- Lead Editor of the INCOSE SE Handbook Fourth Edition
- Education
  - MS in MOT, University of Minnesota
  - MS in EE & CS, Washington University in St. Louis
  - BS in EE, Valparaiso University

Fundamentals Course Outline & Topics

1. Systems Engineering Review. Brief Introduction to Systems Engineering. Systems Engineering Fundamental Maxims. Introduction to the Systems Engineering Tool Belt.

2. Fundamentals SE Tool Belt: For Each Tool:

- Tool Introduction
- Tool Purpose, Description, Application, and Limitations
- Hands-on Student Exercises
- Lessons Learned Applying the Tool
- List of References for Exploration and Future Use

3. Course Wrap-up. Benefits and Limitations of the Systems Engineering Tool Belt. Wrap-up.

Advanced Course Outline & Topics

1. Systems Engineering Review. Brief Introduction to Systems Engineering. Systems Engineering Fundamental Maxims. Introduction to the Systems Engineering Tool Belt.

2. Introduction to the Formal Tools. Brief Introduction to the Commercially Available Systems Engineering Tools Used.

3. Advanced SE Tool Belt: For Each Tool:

- Tool Introduction
- Tool Purpose, Description, Application, and Limitations
- Hands-on Student Exercises
- Lessons Learned Applying the Tool
- List of References for Exploration and Future Use

4. Course Wrap-up. Benefits and Limitations of the Systems Engineering Tool Belt. Wrap-up.

Typical Course Duration – 5+5 Days
Typical Schedule 8:30am-4:00pm

Earn up to 60 INCOSE PDUs!

Please contact Sysnovation for availability, customization, and pricing.

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Fundamentals of COTS-Based Systems Engineering

Leveraging Commercial-off-the-Shelf Technology for System Success

Summary

- Three-day course (customizable)
- Provides a systemic overview of how to use Systems Engineering to plan, manage, and execute projects that have significant Commercial-off-the-Shelf (COTS) content (hardware, software, and services)
- Focuses on adjustments to the fundamental principles of Systems Engineering necessary when dealing with the unique aspects of COTS-based development efforts
- Follows the basic outline and conventions of the INCOSE Systems Engineering Handbook, ISO/IEC/IEEE 15288, and the Guide to the Systems Engineering Body of Knowledge (SEBoK)
- Practical information and tools are provided
- Includes several in-class exercises to solidify the concepts being presented
- Each student will receive a complete set of lecture notes and an annotated bibliography

What You Will Learn

- The key characteristics of COTS components
- How to effectively plan and manage a COTS development effort
- How using COTS affects your requirements and design
- How to effectively integrate COTS into your systems
- Effective verification and validation of COTS-based systems
- How to manage your COTS suppliers
- The latest COTS lessons learned

Instructor – David D. Walden, ESEP

- An internationally recognized expert in the field of Systems Engineering
- Over 30 years of industry experience
- Taught over 100 courses to over 1600 students since 2006
- INCOSE Expert Systems Engineering Professional (ESEP)
- Senior Member of the IEEE
- Lead Editor of the INCOSE SE Handbook Fourth Edition
- Education
  - MS in MOT, University of Minnesota
  - MS in EE & CS, Washington University in St. Louis
  - BS in EE, Valparaiso University

Course Outline & Topics

1. COTS Concepts and Principles. Key COTS and COTS-Based Systems Engineering (CBSE) Concepts. CBSE Compared and Contrasted with Traditional Systems Engineering. Key Challenges and Expected Benefits of CBSE. COTS lessons learned.

2. COTS Influences on Requirements Development. Tailored and New Approaches to Requirements. Stakeholder Requirements and Measures of Effectiveness. System Requirements and Measures of Performance. Flow Down of Requirements to COTS Components.

3. COTS Influences on Architecture and Design. Architecting Principles. Make vs. Buy Decisions. Architectural and Design Strategies for CBSE. Dealing with the Unique Interdependencies of Overlapping COTS and System Lifecycles. Support for Ongoing Change and Evolution of the COTS Components.

4. COTS Life Cycle Considerations. Reliability, Maintainability, Availability. Supportability/Logistics. Usability/Human Factors. Training. System Safety. Security/Survivability. Producibility/Manufacturability. Changeability. Commonality. Interoperability. Affordability. Disposability/Sustainability.

5. COTS Influences on Integration and Test. Integration, Verification, and Validation Approaches in a COTS Environment. Strategies for Dealing with the Dynamic and Independent Nature of the COTS Components. Acceptance of COTS Components.

6. COTS Influences on Technical Management. Planning, Monitoring, and Control. Risk and Decision Management, Configuration and Information Management. Supplier Identification, Selection, Agreements, Oversight, and Control. Supplier Technical Reviews. COTS Integrator Role. Course Wrap-up.

Typical Course Duration - 3 Days
Typical Schedule 8:30am-4:00pm

Earn up to 18 INCOSE PDUs!

Please contact Sysnovation for availability, customization, and pricing.

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Fundamentals of Brownfield Systems Engineering

Moving from Greenfield to Brownfield – Systems Engineering with Legacy Systems

Summary

- Three-day course (customizable)
- Provides a systemic overview of how to move from Greenfield to Brownfield development projects, which evolve or transform legacy systems (vs. clean-sheet Greenfield development projects)
- Focuses on adjustments to the fundamental principles of Systems Engineering necessary when dealing with the unique aspects of Brownfield development efforts
- Follows the basic outline and conventions of the INCOSE Systems Engineering Handbook, ISO/IEC/IEEE 15288, and the Guide to the Systems Engineering Body of Knowledge (SEBoK)
- Practical information and tools are provided
- Includes several in-class exercises to solidify the concepts being presented
- Each student will receive a complete set of lecture notes and an annotated bibliography

What You Will Learn

- The key characteristics of Brownfield development efforts
- How to effectively plan and manage a Brownfield development effort
- How Brownfield development affects your requirements and design
- How to effectively integrate your systems in a Brownfield development environment
- Effective verification and validation in a Brownfield development environment
- The latest Brownfield lessons learned

Instructor – David D. Walden, ESEP

- An internationally recognized expert in the field of Systems Engineering
- Over 30 years of industry experience
- Taught over 100 courses to over 1600 students since 2006
- INCOSE Expert Systems Engineering Professional (ESEP)
- Senior Member of the IEEE
- Lead Editor of the INCOSE SE Handbook Fourth Edition
- Education
  - MS in MOT, University of Minnesota
  - MS in EE & CS, Washington University in St. Louis
  - BS in EE, Valparaiso University

Course Outline & Topics

1. Brownfield Concepts and Principles. Key Brownfield Concepts. Brownfield Development Compared and Contrasted with Greenfield Development. Key Challenges and Expected Benefits of Brownfield Development. Brownfield Lessons Learned.

2. Brownfield Influences on Requirements Development. Tailored and New Approaches to Requirements. Stakeholder Requirements and Measures of Effectiveness. System Requirements and Measures of Performance. Flow Down of Requirements to Brownfield Systems.

3. Brownfield Influences on Architecture and Design. Architecting Principles. Architectural and Design Strategies for Brownfield. Supporting the Inherent Constraints of the Legacy Brownfield Systems. Dealing with the Unique Interdependencies of Overlapping Brownfield System Lifecycles. Support for Ongoing Change and Evolution of the Brownfield Systems.

4. Brownfield Life Cycle Considerations. Reliability, Maintainability, Availability. Supportability/Logistics, Usability/Human Factors. Training. System Safety. Security/Survivability. Producibility/Manufacturability. Changeability. Commonality. Interoperability. Affordability. Disposability/Sustainability.

5. Brownfield Influences on Integration and Test. Integration, Verification, and Validation Approaches in a Brownfield Environment. Strategies for Dealing with the Independent Nature of the Brownfield Systems. Acceptance of Brownfield systems.

6. Brownfield Influences on Technical Management. Planning, Monitoring, and Control. Risk and Decision Management, Configuration and Information Management. Course Wrap-up.

Typical Course Duration - 3 Days
Typical Schedule 8:30am-4:00pm

Earn up to 18 INCOSE PDUs!

Please contact Sysnovation for availability, customization, and pricing.

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Fundamentals of System of Systems Engineering

A Review of Key Approaches and New Innovations to Achieve System of Systems Success

Summary

- Three-day course (customizable)
- Provides a systemic overview of how to plan, manage, and execute system of systems (SoS) projects, where multiple systems must be developed, modified, and integrated to achieve the desired results
- Focuses on adjustments to the fundamental principles of Systems Engineering necessary when dealing with the unique aspects of SoS development efforts
- Follows the basic outline and conventions of the INCOSE Systems Engineering Handbook, ISO/IEC/IEEE 15288, and the Guide to the Systems Engineering Body of Knowledge (SEBoK)
- Practical information and tools are provided
- Includes several in-class exercises to solidify the concepts being presented
- Each student will receive a complete set of lecture notes and an annotated bibliography

What You Will Learn

- The key characteristics of an SoS
- How to effectively plan and manage a nSoS development effort
- How an SoS environment affects your requirements and design
- How to effectively integrate SoS-based systems
- Effective verification and validation of SoS-based systems
- How to manage your SoS suppliers
- The latest SoS lessons learned

Instructor – David D. Walden, ESEP

- An internationally recognized expert in the field of Systems Engineering
- Over 30 years of industry experience
- Taught over 100 courses to over 1600 students since 2006
- INCOSE Expert Systems Engineering Professional (ESEP)
- Senior Member of the IEEE
- Lead Editor of the INCOSE SE Handbook Fourth Edition
- Education
  - MS in MOT, University of Minnesota
  - MS in EE & CS, Washington University in St. Louis
  - BS in EE, Valparaiso University

Course Outline & Topics

1. SoS Concepts and Principles. Key SoS and System of Systems Engineering (SoSE) Concepts. SoSE Compared and Contrasted with Traditional Systems Engineering. Key Challenges and Expected Benefits of SoSE. SoS Lessons Learned.

2. SoS Influences on Requirements Development. Tailored and New Approaches to Requirements. Stakeholder Requirements and Measures of Effectiveness. System Requirements and Measures of Performance Flow Down of Requirements to SoS Components.

3. SoS Influences on Architecture and Design. Architecting Principles. Architectural and Design Strategies for SoSE. Dealing with the Unique Interdependencies of Overlapping SoS and System Lifecycles. Net-Centric & Service-Oriented Architecture Approaches and Challenges. Dealing with Legacy Systems.

4. SoS Life Cycle Considerations. Reliability, Maintainability, Availability. Supportability/Logistics, Usability/Human Factors. Training. System Safety. Security/Survivability. Producibility/Manufacturability. Changeability. Commonality. Interoperability. Affordability. Disposability/Sustainability.

5. SoS Influences on Integration and Test. Integration, Verification, and Validation Approaches in a SoS Environment. Strategies for Dealing with the Dynamic and Independent Nature of the SoS Components.

6. SoS Influences on Technical Management. Planning, Monitoring, and Control. Risk and Decision Management, Configuration and Information Management. SoSE Development Models. SoSE Measures and Leading Indicators. SoSE Skills. SoS Teaming and Collaboration. Course Wrap-up.

Typical Course Duration - 3 Days
Typical Schedule 8:30am-4:00pm

Earn up to 18 INCOSE PDUs!

Please contact Sysnovation for availability, customization, and pricing.

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Beyond Greenfield Systems Engineering

Moving beyond "Clean-Sheet" Traditional Systems Engineering

Summary

- Three-day course (customizable)
- Provides a systemic overview of how to move from greenfield (clean-sheet) to non-greenfield (non-clean-sheet) development projects
- Focuses on the approaches for the following:
  - Commercial-off-the-Shelf (COTS)-Based Systems
  - Brownfield/Legacy Systems
  - Product Line/Modular Systems
  - Systems of Systems (SoS)
- Follows the basic outline and conventions of the INCOSE Systems Engineering Handbook, ISO/IEC/IEEE 15288, and the Guide to the Systems Engineering Body of Knowledge (SEBoK)
- Practical information and tools are provided
- Includes several in-class exercises to solidify the concepts being presented
- Each student will receive a complete set of lecture notes and an annotated bibliography

What You Will Learn

- The latest theory on, and practical insights into, non-greenfield development approaches
- The key characteristics of non-greenfield development efforts
- How to effectively plan and manage a non-greenfield systems development or procurement effort
- How a non-greenfield development affects your requirements, architecture, and design
- Effective integration, verification and validation in a non-greenfield development environment
- How a non-greenfield development affects your decision, risk, and life cycle analyses

Instructor – David D. Walden, ESEP

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- Over 30 years of industry experience
- Taught over 100 courses to over 1600 students since 2006
- INCOSE Expert Systems Engineering Professional (ESEP)
- Senior Member of the IEEE
- Lead Editor of the INCOSE SE Handbook Fourth Edition
- Education
  - MS in MOT, University of Minnesota
  - MS in EE & CS, Washington University in St. Louis
  - BS in EE, Valparaiso University

Course Outline & Topics

1. Key Systems Engineering Concepts and Principles. Review of Key Greenfield Systems Engineering Concepts. Introduction to Non-Greenfield Systems Engineering.

2. Moving to COTS-Based Systems Engineering. Key COTS and COTS-Based Systems Engineering (CBSE) Concepts. CBSE Influences on Traditional Systems Engineering. Key Challenges and Expected Benefits of CBSE. COTS Lessons Learned.

3. Moving to Brownfield (Legacy) Systems Engineering. Key Brownfield and Brownfield Systems Engineering (BSE) Concepts. BSE Influences on Traditional Systems Engineering. Key Challenges and Expected Benefits of BSE. Brownfield Lessons Learned.

4. Moving to Product Line (Modular) Systems Engineering. Key Product Line and Product Line Engineering (PLE) Concepts. PLE Influences on Traditional Systems Engineering. Key Challenges and Expected Benefits of PLE. Product Line Lessons Learned.

5. Moving to SoS Engineering. Key SoS and System of Systems Engineering (SoSE) Concepts. SoSE Influences on Traditional Systems Engineering. Key Challenges and Expected Benefits of SoSE. SoS Lessons Learned.

6. Summary & Wrap-up. Non-Greenfield Systems Engineering Compared and Contrasted with Greenfield Systems Engineering. Key Challenges and Expected Benefits of moving beyond Greenfield SE. Combining Multiple Non-Greenfield Approaches. Course Wrap-up.

Typical Course Duration - 3 Days
Typical Schedule 8:30am-4:00pm

Earn up to 18 INCOSE PDUs!

Please contact Sysnovation for availability, customization, and pricing.

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Leading Effective Technical Reviews

Preparing, Executing, and Closing Major Project Reviews

Summary

- Two-day course, plus optional workshop (customizable)
- Provides a systemic overview of how to prepare for, execute, and follow-through on a major technical review – such as a System Requirements Review (SRR), Preliminary Design Review (PDR), or Critical Design Review (CDR)
- Focuses on the important steps that must be taken to ensure the needs of all external and internal stakeholders are met in these types of reviews
- Participants will also learn the power of the *Dead Horse on a Stick* and how it should be used
- Follows the terminology and conventions of the INCOSE Systems Engineering Handbook, ISO/IEC/IEEE 15288, and the Guide to the Systems Engineering Body of Knowledge (SEBoK)
- Practical information and tools are provided
- Includes several in-class exercises to solidify the concepts being presented
- Each student will receive a complete set of lecture notes and an annotated bibliography

What You Will Learn

- The major types of technical reviews
- How to effectively plan and manage the elements associated with a technical review
- Activities that need to be accomplished and products that need to be produced prior to a technical review
- Effectively managing the actual technical review
- Effective follow-up and closure of a technical review
- How to manage your team, suppliers, and customers in the context of a technical review
- The latest technical review lessons learned

Instructor – David D. Walden, ESEP

- An internationally recognized expert in the field of Systems Engineering
- Over 30 years of industry experience
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- Senior Member of the IEEE
- Lead Editor of the INCOSE SE Handbook Fourth Edition
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  - MS in EE & CS, Washington University in St. Louis
  - BS in EE, Valparaiso University

Course Outline & Topics

1. Concepts and Principles. Key Technical Review Concepts. Types of Technical Reviews. Key Challenges of Technical Reviews. Technical Reviews Lessons Learned.

2. Preliminaries. Defining the Technical Review Goals and Objectives. Obtaining Stakeholder Buy-in. Technical Review Roles, Responsibilities, and Authorities. Planning and Budgeting the Technical Review. Establishing the Baseline to be Presented at the Technical Review.

3. Preparation. Satisfying Entry and Exit Criteria of the Technical Review. Technical Preparation. Administrative/ Logistical Preparation. Performing Dry Runs for the Technical Review. Team Preparation.

4. Execution. Leading and Facilitating the Technical Review. Effectively Presenting During the Review. Recording the Results of the Technical Review.

5. Follow-Through. Publishing the Minutes of the Technical Review. Closing the Action Items Generated During the Technical Review. Dealing with Any Issues that Come Up After the Review. Technical Review Closure with Customer. Providing Team Recognition. Evaluation of the Technical Review Effectiveness.

6. Summary and Conclusions. Course Wrap-up.

Optional Review Workshop. Detailed guidance and support for your specific upcoming technical review.

Typical Course Duration - 2 Days
Plus an Optional 1+ Day Workshop

Earn up to 12 INCOSE PDUs!

Please contact Sysnovation for availability, customization, and pricing.

SYSNOVATION
Systemic Innovation for Business Results

Info@sysnovation.com

Soft Skills for Systems Engineers

Mastering the Non-Technical Aspects of Successful Systems Development

Summary

- Three-day course (customizable)
- Introduces the participants to soft skills essential for Systems Engineering success
- Focuses on soft skills that ensure your systems ideas are effectively implemented, communicated, and delivered
- Follows the terminology and conventions of the INCOSE Systems Engineering Handbook, the INCOSE SE Competency Framework, and the Guide to the Systems Engineering Body of Knowledge (SEBoK)
- Practical information and tools are provided
- Includes several in-class exercises to solidify the concepts being presented
- Each student will receive a complete set of lecture notes and an annotated bibliography

What You Will Learn

- Describe important Systems Engineering soft skills
- Understand the role and importance of soft skills to the Systems Engineer
- Identify and understand key soft skills-related methods, tools, and techniques
- Understand your strengths and areas in need of improvement relative to the soft skills needed for Systems Engineers
- Understand the competency implications of Systems Engineering soft skills for both individuals and teams

Instructor – David D. Walden, ESEP

- An internationally recognized expert in the field of Systems Engineering
- Over 30 years of industry experience
- Taught over 100 courses to over 1600 students since 2006
- INCOSE Expert Systems Engineering Professional (ESEP)
- Senior Member of the IEEE
- Lead Editor of the INCOSE SE Handbook Fourth Edition
- Education
  - MS in MOT, University of Minnesota
  - MS in EE & CS, Washington University in St. Louis
  - BS in EE, Valparaiso University

Course Outline & Topics

1. Introduction to Systems Engineering. Systems Engineering Key Concepts. Systems Engineering Fundamental Maxims. Review of Important Systems Engineering Hard Skills.

2. Introduction to Soft Skills. What are Soft Skills? Why are They Important? Characteristics of Systems Thinkers. Introduction to Systems Engineering Soft Skills.

3. Soft Skills for Systems Engineering:

Skills for Relationships
- Communicating (Oral and Written)
- Team Working and Collaboration
- Negotiating and Influencing
- Leading Change
- Conflict Management
- Leadership

Skills for Technical Accomplishment
- Creativity and Idea Generation
- Knowing When to Ask
- Knowing When to Stop
- Decision Making Under Uncertainty
- Flexibility and Adaptability

Skills for Yourself
- Time Management
- Networking and Social Skills
- Teaching, Mentoring, and Knowledge Sharing
- Personal Integrity and Ethics

4. Summary and Conclusions. Competency Frameworks. Skills Self-Assessment. Personal Action Plan. Course Wrap-up.

Typical Course Duration - 3 Days
Typical Schedule 8:30am-4:00pm

Earn up to 18 INCOSE PDUs!

Please contact Sysnovation for availability, customization, and pricing.

SYSNOVATION
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INCOSE CSEP/ASEP Preparation

Helping You Earn the Coveted Systems Engineering Professional Recognition

Summary

- Four-day course (three-day Boot Camp also offered)
- Provides a systemic overview of how to prepare for the International Council on Systems Engineering (INCOSE) Certified Systems Engineering Professional (CSEP) and Associate Systems Engineering Professional (ASEP) certifications
- Focuses on the overall INCOSE certification process and how to submit a high-quality application
- Participants will learn the fundamental principles of Systems Engineering necessary to pass the certification examination
- Follows the basic outline and conventions of the INCOSE Systems Engineering Handbook Fourth Edition – the basis for the CSEP & ASEP knowledge examination
- Participants will complete several in-class exercises to solidify the concepts being presented
- Practical test-taking strategies will be presented and students will be exposed to sample questions similar to what they will encounter on the exam
- Each student will receive a complete set of lecture notes, a copy of the INCOSE SE Handbook (an $80 value), and an annotated bibliography

What You Will Learn

- Background and perspectives on the INCOSE Systems Engineering certification program
- All of the key topics in the latest INCOSE Systems Engineering Handbook Fourth Edition
- How to effectively plan and manage your certification application
- How to effectively prepare for and take your certification exam
- What it truly means to be an INCOSE Systems Engineering Professional

Instructor – David D. Walden, ESEP

- An internationally recognized expert in the field of Systems Engineering
- Over 30 years of industry experience
- Taught over 100 courses to over 1600 students since 2006
- INCOSE Expert Systems Engineering Professional (ESEP)
- Senior Member of the IEEE
- Lead Editor of the INCOSE SE Handbook Fourth Edition
- INCOSE Certification Program Manager 2007-2013
- Education
  - MS in MOT, University of Minnesota
  - MS in EE & CS, Washington University in St. Louis
  - BS in EE, Valparaiso University

Learn from the Lead Editor of the INCOSE SE Handbook and former INCOSE Certification PM!

Course Outline & Topics

1. The INCOSE Certification Program. CSEP and ASEP Overview. Requirements for Certification. Application Process. Basis of the Examination. Renewal Requirements.

2. Systems Engineering Handbook Chapters 1-3. Scope (Chapter 1). Systems Engineering Overview (Chapter 2). Systems Engineering Life-Cycle Stages (Chapter 3).

3. Systems Engineering Handbook Chapters 4-7 & 10. Technical Processes (Chapter 4). Specialty Engineering (Chapter 10). Technical Management Processes (Chapter 5). Agreement Processes (Chapter 6). Organizational Project Enabling Processes (Chapter 7).

4. Systems Engineering Handbook Chapters 8-9. Tailoring and Application of Systems Engineering (Chapter 8). Cross-Cutting Systems Engineering Methods (Chapter 9). Handbook Appendices.

5. Your Path to becoming an INCOSE Systems Engineering Professional. Application Preparation. Exam Preparation/Self-Study. Scheduling the Exam. Taking the Exam.

6. Sample Examination & Wrap-up. Sample Examination. Being a Systems Engineering Professional. Maintaining Your Credentials. Course Wrap-up.

Standard Course - 4 Days
Typical Schedule 8:30am-4:00pm

Boot Camp – 3 Days
Typical Schedule 8:00am-5:30pm

Helps you earn your CSEP or ASEP!

Please contact Sysnovation for availability, customization, and pricing.

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Student Feedback on Sysnovation Courses & Instruction

"Instructor is expert in 'Systems Engineering.' This was evident during the course."

Systems Engineering Principles

"Overall, this has been a great experience and I have learned a lot. It broadened my perspective of system engineering beyond my individual company and taught me a lot of new ideas and concepts."

Systems Engineering Principles (Online)

"As a requirements specialist, this was relevant training providing an in-depth understanding of how needs become developed requirements."

Requirements Formulation

"Provided a great capture of COTS effects on systems, as well as core Systems Engineering concepts."

COTS-Based Systems Engineering

"I liked the general [brownfield] overview without the deep-dive. I think that is suited for my interest/positon, as well as the rest of the people who attended."

Brownfield Systems Engineering

"I am very fortunate to be in a team developing a system and eventually a component in the SOS. The course reinforced my knowledge in the subject which will be very relevant to my further tasking. The course also provided ideas on how to improve our methodology towards our SOS approach."

System of Systems Engineering

"Good material and the speaker was very effective in his ability to present the material."

Systems Engineering Soft Skills

"Presenter very knowledgeable of content. Obviously presenter has lived through successful presentations."

Leading Effective Technical Reviews

"I feel this course addresses the needs of both the CSEP & ASEP students very well. I thought the slides were great and highly appreciated that the book was used as the additional material, rather than the primary. I appreciate how Dave was willing to answer questions and took adequate time to answer them thoroughly."

CSEP/ASEP Preparation

"More than recommend, I intend to advocate that our SE team attend and that all get certifications."

CSEP/ASEP Preparation

"I am able to apply my learnings immediately to my work. This is more than a CSEP/ASEP preparation course."

CSEP/ASEP Preparation