

# Systems Engineering Principles

In-Depth Coverage for Systems Engineering Practitioners

## Summary

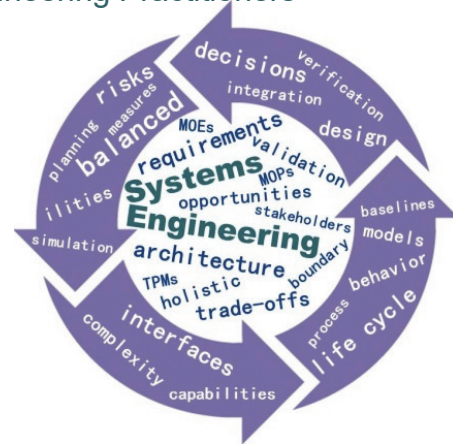
- Five-day course (customizable)
- Provides a systemic overview of the fundamental principles of Systems Engineering, with its focus on holistic perspectives, balanced trade-offs, and life cycle considerations
- Shows how Systems Engineering is used as an effective way to manage increased system complexity, 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.