CERTIFICATION TRAINING INTERNATIONAL
A PPI Company

INCOSE SEP
EXAM PREPARATION COURSE

Based on the *new* SEH 5E

# INCOSE SEP Exam Prep 5-Day Course

*What you'll get when you take this course:*

- Comprehensive knowledge of the INCOSE Systems Engineering Handbook, Fifth Edition
- Expert guidance from leaders in SE who are very familiar with the SEP certification process
- Structured learning to ease your SEP preparation journey
- Extensive exam practice with lots of questions in class and provided for practice
- Networking opportunities to connect with other aspiring SEPs

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This INCOSE Systems Engineering Professional (SEP) Exam Preparation Five-Day Course combines presentations, group discussions, workshops, plenty of practice questions, and a mock examination to ensure a high degree of learning on your journey to SEP certification. The course is facilitated by a world-class, qualified expert in systems engineering who is highly experienced and knowledgeable in all aspects of the SEP certification process.

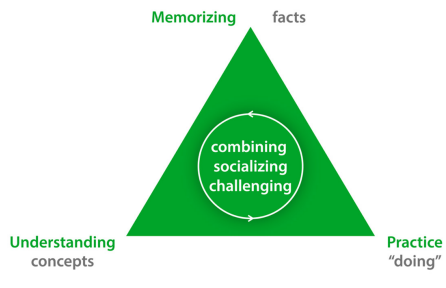
Throughout the five days, there is a strong focus on interaction, the social aspects of learning, and integrating with the learner's existing knowledge. Utilizing leading-edge adult learning principles and techniques enables participants to absorb and recall the necessary information quickly.

During this course, the role and benefits of systems engineering within the participant's organization will be clearly explained using the internationally recognized terminology from the INCOSE Systems Engineering Handbook, Fifth Edition. Upon completing this course, participants will be able to use the Handbook as a reference and guide, not only in preparing for the INCOSE Knowledge Exam but also for future systems engineering development.

## Learning Objectives

*The INCOSE SEP Exam Prep course aims to:*

- Provide participants with a thorough understanding of the concepts and content of the Handbook to facilitate a successful outcome on the Knowledge Exam.
- Offer sufficient insight into the certification application and maintenance process to support their attainment of SEP certification.
- Contextualize the Handbook's content within their work and organization to fortify understanding and support the practical application of their knowledge after the course.
- The full list of course objectives may be found on our website.



# Course Outline

**PART 1: SE INTRODUCTION**

1.1 What is SE?

1.2 Why is SE important?

1.3 Systems Concepts

1.4 Systems Engineering Foundations

1.5 Systems Science and Systems Thinking

**PART 2: SYSTEM LIFE CYCLE CONCEPTS, MODELS AND PROCESSES**

2.1 Life Cycle Terms and Concepts

2.2 Life Cycle Approaches

2.3 System Life Cycle Processes

**PART 3: LIFE CYCLE ANALYSES AND METHODS**

3.1 Quality Characteristics and Approaches

3.2 Systems Engineering Analyses and Methods

**PART 4: TAILORING AND APPLICATION CONSIDERATIONS**

4.1 Tailoring Considerations

4.2 SE Methodology/Approach Considerations

4.3 System Types Considerations

4.4 Application of Systems Engineering for Specific Product Sector or Domain Application

**PART 5: SYSTEMS ENGINEERING IN PRACTICE**

5.1 Systems Engineering Competencies

5.2 Diversity, Equity and Inclusion

5.3 Systems Engineering Relationships to Other Disciplines

5.4 Digital Engineering

5.5 Systems Engineering Transformation

5.6 Future of SE

**PART 6: CASE STUDIES**

6.1 Case 1: Radiation Therapy – the Therac-25

6.2 Case 2: Joining Two Countries – the Øresund Bridge

6.3 Case 3: Cybersecurity Considerations in Systems Engineering – the Stuxnet Attack on a Cyber-Physical System

6.4 Case 4: Design for Maintainability – Incubators

6.5 Case 5: Artificial Intelligence in Systems Engineering – Autonomous Vehicles

6.6 Other Case Studies

**WORKSHOPS**

- Daily Quiz Questions
- Sharing of Personal Project Experience
- What is a System?
- Definition of Systems of Systems
- Enabling Systems
- Definition of Systems Engineering
- Use and Value of Systems Engineering
- Generic Life Cycle
- Applying the Handbook to Case Studies
- Linking IPO Diagrams to Each Other
- Verification vs. Validation
- Concept of Operations vs. Operational Concept
- Technical Processes
- Technical Management Processes
- Comparison of Project and Organizational Processes
- Measurement Process
- Pulling It All Together – System Perspective
- Agreement Processes
- Organizational Project-Enabling Processes
- Knowledge Management Process
- Tailoring Process
- Quality Characteristics and Approaches
- Comprehension Style Questions on Quality Characteristics and Approaches
- Systems Engineering Analyses and Methods Part One
- Systems Engineering Analyses and Methods Part Two
- Systems States and Modes
- Uncertainty and Cognitive Bias
- SE Principles and Heuristics
- Technical Reviews and Audits
- Traceability
- Patterns
- Digital Engineering

**The INCOSE Systems Engineering Handbook (SEH) is the sole source upon which INCOSE Knowledge Exam is based.*