CERTIFICATION
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INCOSE SEP PREPARATION COURSE

Over the course of 5 days, led by an experienced and qualified facilitator, you will be taken on a virtually-delivered and immersive journey into the INCOSE Systems Engineering Handbook (V4). This course will prepare you to take the INCOSE Knowledge Exam comfortably and covers all the information you need to know about applying for INCOSE's Associate Systems Engineering Professional (ASEP) or Certificated Systems Engineering Professional (CSEP) certification.

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

Throughout the course, there is a strong focus on interaction, the social aspects of learning, and integration with the learner's existing knowledge. Utilizing leading-edge adult learning principles and techniques enables the participants to absorb and recall the necessary information in the fastest possible way.

The role and benefits of systems engineering within the participant's organization will be clearly explained using the internationally recognized terminology contained within the INCOSE Systems Engineering Handbook.

Upon completing this course, participants will have the ability to use the Handbook as a reference and guide, not only in preparing for the INCOSE Knowledge Exam but also for future systems engineering developments.

INCOSE SEP
EXAM PREPARATION COURSE

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LEARNING OBJECTIVES

At the end of the course, the participant will confidently be able to:

- evaluate the Handbook and training materials in such a way as to successfully prepare for and pass the examination
- analyze the key principles, processes, activities, and relationships of the ISO/IEC/IEEE 15288 generic life cycle
- apply the terminology in the INCOSE Systems Engineering Handbook correctly
- relate the INCOSE material, approach and methodology to their existing Systems Engineering knowledge
- explain the elements of the system life cycle and how they play out across a project
- explain the different technical processes that support the system life cycle
- explain the different technical management processes and the role they play in planning, assessing and controlling a system development
- explain tools and techniques to enhance decision making throughout the system life cycle
- explain the agreement processes and how they influence the system life cycle
- explain the relationship between organizational level and project level processes
- explain the tailoring process at organizational and project levels
- recognize the application of systems engineering in different domains
- demonstrate the application of cross-cutting systems engineering methods
- demonstrate the application of speciality engineering activities and how they support the system life cycle
- explain the role of systems engineering on the basis of a project or intervention within their organization
- interpret the knowledge gained via reference to examples/cases from their own industry or organization
- evaluate current and future systems engineering activities using the INCOSE Systems Engineering Handbook 4th Edition as a reference and guide
- apply case studies to show how processes may be relevant in the real world.

COURSE OUTLINE

CHAPTER 1

1.0 Systems Engineering Handbook Scope
1.1 Purpose
1.2 Application
1.3 Contents
1.4 Format
1.5 Definitions of Frequently Used Terms

CHAPTER 2

2.0 Systems Engineering Overview Introduction
2.1 Introduction
2.2 Definitions and Concepts of a System
2.3 The Hierarchy within a System
2.4 Definition of Systems of Systems
2.5 Enabling Systems
2.6 Definition of Systems Engineering
2.7 Origins and Evolution of Systems Engineering
2.8 Use and Value of Systems Engineering
2.9 Systems Science and Systems Thinking
2.10 Systems Engineering Leadership
2.11 Systems Engineering Professional Development

CHAPTER 3

3.0 Generic Life Cycle Stages
3.1 Introduction
3.2 Life Cycle Characteristics
3.3 Life Cycle Stages
3.4 Life Cycle Approaches
3.5 What Is Best for Your Organization, Project, or Team?
3.6 Introduction to Case Studies

CHAPTER 4

4.0 Technical Processes
4.1 Business or Mission Analysis Process
4.2 Stakeholder Needs and Requirements Definition Process
4.3 System Requirements Definition Process
4.4 Architecture Definition Process
4.5 Design Definition Process
4.6 System Analysis Process
4.7 Implementation Process
4.8 Integration Process
4.9 Verification Process
4.10 Transition Process
4.11 Validation Process
4.12 Operation Process
4.13 Maintenance Process
4.14 Disposal Process

CHAPTER 5

5.0 Technical Management Processes
5.1 Project Planning Process
5.2 Project Assessment and Control Process
5.3 Decision Management Process
5.4 Risk Management Process
5.5 Configuration Management Process
5.6 Information Management Process
5.7 Measurement Process
5.8 Quality Assurance Process

CHAPTER 6

6.0 Agreement Processes
6.1 Acquisition Process
6.2 Supply Process

CHAPTER 7

7.0 Organizational Project-Enabling Processes
7.1 Life Cycle Model Management Process
7.2 Infrastructure Management Process
7.3 Portfolio Management Process
7.4 Human Resource Management Process
7.5 Quality Management Process
7.6 Knowledge Management Process

CHAPTER 8

8.0 Tailoring process and Application of Systems Engineering
8.1 Tailoring Process
8.2 Tailoring for Specific Product Sector or Domain Application
8.3 Application of Systems Engineering for Product Line Management
8.4 Application of Systems Engineering for Services
8.5 Application of Systems Engineering for Enterprises
8.6 Application of Systems Engineering for Very Small and Micro Enterprises

CHAPTER 9

9.0 Cross-Cutting Systems Engineering Methods
9.1 Modeling and Simulation
9.2 Model-Based Systems Engineering
9.3 Functions-Based Systems Engineering Method
9.4 Object-Oriented Systems Engineering Method
9.5 Prototyping
9.6 Interface Management
9.7 Integrated Product and Process Development
9.8 Lean Systems Engineering
9.9 Agile Systems Engineering

CHAPTER 10

10.0 Specialty Engineering Activities
10.1 Affordability/Cost-Effectiveness/ Life Cycle Cost Analysis
10.2 Electromagnetic Compatibility
10.3 Environmental Engineering/ Impact Analysis
10.4 Interoperability Analysis
10.5 Logistics Engineering
10.6 Manufacturing and Producibility Analysis
10.7 Mass Properties Engineering
10.8 Reliability, Availability, and Maintainability
10.9 Resilience Engineering
10.10 System Safety Engineering
10.11 System Security Engineering
10.12 Training Needs Analysis
10.13 Usability Analysis/Human Systems Integration
10.14 Value Engineering Appendix

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
- Cross-Cutting SE Methods
- Comprehension Style Questions on Cross-Cutting Methods
- Speciality Engineering Activities Part One
- Speciality Engineering Activities Part Two

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