

## INCOSE Associate Systems Engineering Professional (ASEP) Training

**Length:** 2 Days

**Summary:** This course provides attendees 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.

**Upon Completion of this course, students will have learned how to:**

- 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

**Prerequisite(s):** N/A

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## COURSE CONTENT

### 1: OVERVIEW OF SYSTEMS ENGINEERING

- Systems engineering process
- Systems engineering technical management
- Risk management
- Organizational practices
- Requirements definition process
- Functional analysis/allocation
- System architecture synthesis
- Systems engineering analyses
- Integration, verification, and validation
- Human systems engineering

### 2: INCOSE ASEP EXAM PRINCIPLES

- Systems Engineering and Life Cycles
  - Understanding the System Environment
  - Defining the Problem and Purpose of the System
  - System Boundaries (System Context Diagram)
  - System Life Cycle (from Concept to Operations)
  - The SE Method (Requirements, Functional, Physical, Validation)
  - Requirements Analysis Process
  - Project Processes
  - Enterprise and Agreement Processes
  - Enabling Systems Engineering Process Activities
  - Systems Engineering Support Activities
  - Specialty Engineering Activities
  - Technical Processes
  - Project Processes
  - Enterprise & Agreement Processes
  - Specialty Engineering Activities
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#### **4: SYSTEMS ENGINEERING PROCESSES**

- INCOSE Processes
- Decomposition and Definition
- Integration and Verification
- Traditional Life Cycle Model Detailed

#### **5: NEEDS ANALYSIS**

- Business/mission needs
- Statement of Objectives
- Defining the Operational Requirements
- Concept of Operations (CONOPS)
- Independent operational scenarios
- Functional Definition of the System
- Physical Definition of the System
- Needs Validation

#### **6: CONCEPT DEFINITION**

- Describing System Requirements
- Analyzing the Operational Requirements
- Deriving and Validating System Performance Requirements
- Concept exploration
- Prototyping
- Analysis of Alternatives
- Trade Studies
- Pair Wise Comparisons
- Concept selection and validation
- System Functional Specification
- Allocation of Requirements
- The Design Review
- The Defined Concept

#### **7: REQUIREMENTS ENGINEERING**

- Characteristics of Requirements
- Writing requirements
- Analyzing Requirements
- Configuration Management of Requirements
- QA of Requirements
- Verification and Validation of Requirements
- Traceability of Requirements
- Deriving test requirements

#### **8: LEADING AND MANAGING SE ACTIVITIES**

- Planning for Design and Development (SEMP/TEMP)
- Managing System Projects
- Managing Risk
- SE Standards and Processes
- Collaborating with Teams and Technical Specialties
- Introducing the Team Project
- Introduce SE as an enabler of acquisition success
- Business/Mission Needs and Objectives

#### **9: CONCEPT OF OPERATIONS (CONOPS)**

- Independent Operational Scenarios
- Definition of the Problem
- Measures of Effectiveness/Measures of Performance
- Needs and Objectives Analysis
- Objectives (Statement of Objectives, Objectives Tree)

#### **10: DESIGN AND DEVELOPMENT**

- Conceptual Design
  - Interface Design (Physical Interfaces, User Interfaces)
  - Models and Simulations (includes Prototypes)
  - System Concept (candidate concepts and selected concept)
  - System Preliminary Design
  - System Functional Architecture
  - System Physical Architecture
  - System/Subsystem Detailed Design (hardware/software)
  - Validated System Model (Design Validation)
  - Test Requirements
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