

INCOSE Certified Systems Engineering Professional

Course Syllabus Overview

Duration - 5 days

Day 1

- INCOSE certification overview, including benefits and limitations of certification
- Introduction to the Handbook
 - Definition and concepts of a system
 - System hierarchies
 - Systems of Systems
 - Enabling Systems
 - Definition and origins of systems engineering
 - Use and value of systems engineering
 - Systems science and systems thinking
 - Systems engineering leadership and professional development
- Becoming familiar with terminology
- Generic lifecycle stages and approaches
- Case studies
- Learning review

Day 2

- Day 1 Consolidation
- Technical processes and how they support Systems Engineering
 - Business or Mission Analysis
 - Stakeholder Needs and Requirements Definition
 - System Requirements Definition
 - Architecture Definition
 - Design Definition
 - System Analysis
 - Implementation
 - Integration
 - Verification
 - Transition
- Learning review

Day 3

- Day 2 Consolidation
- Technical processes continued
 - Validation
 - Operation
 - Maintenance
 - Disposal
 - Technical management processes and their application
 - Project Planning
 - Project Assessment Process and Control
 - Decision Management
 - Risk Management
 - Configuration Management
 - Information
- Learning Review

Day 4

- Day 3 Consolidation
- Organisational Project-Enabling Processes
 - Lifecycle Model Management
 - Infrastructure Management
 - Maintenance
 - Project Portfolio Management
 - Human Resource Management
 - Quality Management Process
 - Knowledge Management
- Tailoring Process
- Application of Systems Engineering
 - Product Line Management
 - Services
 - Enterprises
 - Very small and micro enterprises
- Learning Review



Day 5

- Day 4 Consolidation
- Cross-cutting Systems Engineering methods
 - Modelling and simulation
 - Model Based Systems Engineering
 - Functions-Based Systems Engineering Method
 - Object-oriented Systems Engineering Method
 - Prototyping
 - Interface management
 - Integrated product and process development
 - Lean Systems Engineering
 - Agile Systems Engineering
- Specialty engineering activities – discussion of the range of specialty activities available and broadening knowledge regarding these activities
 - Affordability/Cost-Effectiveness/Life Cycle Cost Analysis
 - Electromagnetic Compatibility
 - Environmental Engineering/Impact Analysis
 - Interoperability Analysis
 - Logistics Engineering
 - Manufacturing and Producibility Analysis
 - Mass Properties Engineering
 - Reliability, Availability, and Maintainability
 - Resilience Engineering
 - System Safety Engineering
 - System Security Engineering
 - Training Needs Analysis
 - Usability Analysis/Human Systems Integration
 - Value Engineering
- Handbook Review
- Examination Structure, preparation and application
- Course Summary and Conclusion

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