

# 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

### About SyntheSys

SyntheSys provides defence systems, training, systems and software engineering and technical management services over a spectrum of different industry sectors. Along with distinct support and consultancy services, our innovative product range makes us first choice provider for both large and small organisations. Established in 1988, the company focus is on fusing technical expertise with intuitive software applications to solve common industry challenges.

