

3-day Open Course in Systems Engineering Fundamentals

14th – 16th October 2025

Course Description

Systems Engineering is applying Systems Thinking to the creation of systems. When done correctly, it gives considerable strategic advantage to an organisation. It reduces introduction time, improves system performance and reduces through-life costs.

However, applying Systems Engineering correctly requires not only skills and knowledge but also an understanding of the systems' principles. This course shows participants how **to do** Systems Engineering as well as showing them what it is.

Put simply; its purpose is to help people create better systems.

Who Should Attend?

The 3-day Systems Engineering Fundamentals course is specifically aimed at those people who would like to practice Systems Engineering.

Benefits to the Individual and Business

During an intensive three days of teaching and practical 'hands on' exercises, participants will be challenged to develop the skills and mindset that can be applied to any system design irrespective of type, scale or context.

At the end of the course participants will have:

- A greater understanding of systems concepts and thinking that underpin Systems Engineering.
- A profound understanding of the fundamental Systems Engineering processes
- Improved knowledge and skill in applying Systems Engineering tools to:
 - Gather and Analyse Requirements
 - Create System Concepts
 - Optimize Systems Design and subsystem specification
 - Confirm through Verification and Validation

Course Structure

| Day 1 | Day 2 | Day 3 |
|---|--|--|
| <ul style="list-style-type: none"> • Course Introduction, Aims and Agenda • Why Systems Engineering <ul style="list-style-type: none"> ◦ Complexity and Undesirable Emergence • Systems Thinking Concepts used in Systems Engineering • This is Systems Engineering <ul style="list-style-type: none"> ◦ Process ◦ People ◦ Tools • A Systems Approach to Requirements <ul style="list-style-type: none"> ◦ Requirement issues ◦ Requirement Models ◦ Requirements Engineering • Gather Requirements <ul style="list-style-type: none"> ◦ A Systems Approach to Collecting ◦ Stakeholder Needs – the Rationale and Process | <ul style="list-style-type: none"> • Day 1 Review • Specifying Stakeholder Requirements • Analyse Requirements <ul style="list-style-type: none"> ◦ Analyse Stakeholder Requirements • Analyse Requirements <ul style="list-style-type: none"> ◦ Deducing Unspoken Basic Requirements using Viewpoint Analysis • Analyse Requirements <ul style="list-style-type: none"> ◦ Understanding the concept of operation using Functional Modelling • Analyse Requirements <ul style="list-style-type: none"> ◦ Finding and avoiding undesirable behaviour using Sensitivity and Failure Analysis by FMEA • Specifying System Requirements | <ul style="list-style-type: none"> • Day 2 Review • A Systems Approach to Systems Design • Design System <ul style="list-style-type: none"> ◦ Generating System Concepts ◦ System Architecting using N2 Analysis ◦ Concept Generation using Morphological Analysis • Design System <ul style="list-style-type: none"> ◦ System Concept evaluation and selection using a Pugh Matrix • Design System <ul style="list-style-type: none"> ◦ A Systems Approach to Detailed Design ◦ Introduction to Robust Design • Confirm System <ul style="list-style-type: none"> ◦ A Systems Approach to Verification and Validation ◦ Design Verification through Quality Function Deployment ◦ Determination Testing ◦ Progressive Validation • Summary, Review and Close |

Course Dates

The 3-day course will be held on 14th – 16th October 2025.

Course Costs

The cost of the 3-day course, which includes all courseware, lunch and refreshments is **£1,125 + VAT per delegate**. It will be held at our Rugby office. Accommodation is not included.

Course Booking

Contact **Sharon King** on +44 (0)1788 550015, visit our website, www.burgehugheswalsh.co.uk or email orders@burgehugheswalsh.co.uk for a booking form.



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