PROFESSIONAL DEVELOPMENT SPECIAL

OptimiSE

Published by SyntheSys for the Engineering, Systems & Software Development Communities

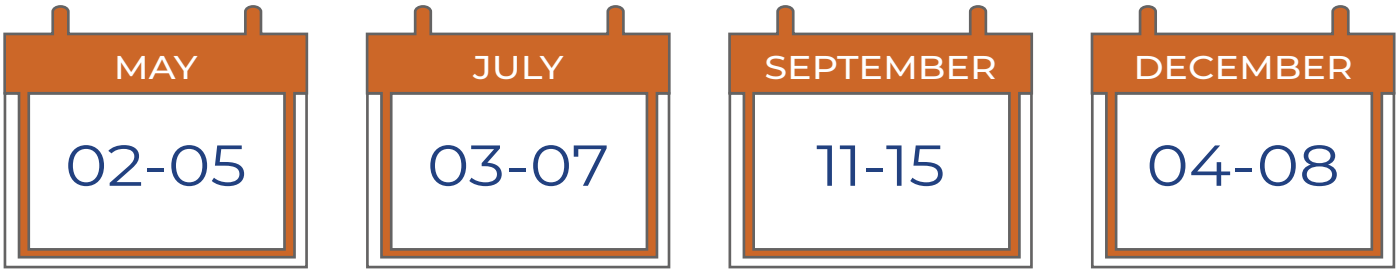
ISSUE 10
WINTER/SPRING 2023

Industry News & Events | Software & Systems Engineering Acceleration | Useful Resources

DEVELOP YOUR SYSTEMS ENGINEERING SKILLS IN 2023

SyntheSys TECHNOLOGIES
www.synthesys-technologies.co.uk

Systems Engineering Professional (SEP) Preparation Course



Prepare to pass the International Council On Systems Engineering (INCOSE) Certification Examination

Introduction to Systems Engineering with Requirements Writing

Learn the principles and practices of systems engineering

ENDORSED TRAINING PROVIDER

2023 Systems Engineering Training Calendar

SyntheSys TECHNOLOGIES

www.synthesys-technologies.co.uk | cet@synthesys.co.uk

Letter from the MD

Mark Williamson, Managing Director
SyntheSys Technologies

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2023 – Your Year for Personal and Professional Development?

I would like to welcome readers to Issue 10 of OptimiSE Magazine by wishing you a Happy New Year!! I hope you are entering the new year with the same positive sense of optimism as I am, ready for what the next 12-months will bring.

Some of you may know that we made a big commitment to attending industry events last year, and it's this engagement with our communities which drives the theme for this latest magazine. It's no secret that the skills market within the engineering and associated systems engineering domain is under pressure right now. Whilst there is seemingly a strong appetite to secure new talent, I can see that there is an urgency to develop skills within existing engineering teams.

Talking frankly, there is a real sense that the demand for systems engineering skills perhaps outweighs supply right now and this challenge was recognised at the 2022 INCOSE Annual Systems Engineering Conference (ASEC).
But this challenge brings an opportunity for growth, and we are certainly trying to contribute to the solution with some exciting initiatives planned for 2023, aimed at further contributing to a thriving systems engineering skills pool.
With that in mind, we have themed this latest magazine around our Systems Engineering Training offering. The next few pages detail how we can support Customers in developing and extending systems engineering specialist skills within your organisation.

We also offer a wealth of free training resources which can be found on our website at: https://www.synthesys-technologies.co.uk/downloads.html and also within the pages of previous issues of OptimiSE magazine, so be sure to bookmark the website.

If you are currently looking at ways of addressing skills shortages within your engineering teams, or you have identified a specific opportunity for Systems Engineering training, we would love to hear from you. Please contact me directly via our Customer Engagement Team email address: cet@synthesys.co.uk

I hope that OptimiSE continues to be a useful and enjoyable resource within the engineering, systems and software development communities and I encourage you to subscribe to receive future issues directly to your mailbox at: https://www.optimisese.co.uk/

Very best regards,

Mark Williamson, Managing Director
SyntheSys Technologies

SyntheSys TECHNOLOGIES

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Free Resources

IBM® Engineering Lifecycle Management (ELM) Tool Training & Consultancy

We offer specialist training in the adoption, implementation and acceleration of IBM® Engineering Lifecycle Management tools. Our training solutions empower organisations to release the full value of their software investment by teaching teams how to implement, effectively use, and maximise benefits from IBM® Engineering Lifecycle Management tools.

Our training solutions are always job-specific, and we offer advice on best-practice application of the IBM® software to real-world product development. Our trainers are some of the leading IBM® Engineering Lifecycle Management software specialists in the UK.

We offer training, mentoring and advice around the following tools:

- **DOORS® Family | DOORS® Next**
- **System Design Rhapsody®**
- **Engineering Workflow Management**
- **Engineering Test Management**
- **Engineering Lifecycle Optimization**

Gold Business Partner IBM

INCOSE UK ENDORSED TRAINING PROVIDER

SyntheSys News

SyntheSys Technologies Maintains INCOSE Endorsed Training Provider Status

An important part of our operating philosophy is 'integrity' and we believe one way of maintaining integrity is to have credible, endorsed products and services. Which is why we are thrilled to maintain the International Council on Systems Engineering (INCOSE) Endorsed Training Provider status.

The scheme aims to differentiate systems engineering training providers by verifying that training meets a set of INCOSE standards. The standards focus on organisational activity, capability, course portfolio, competencies and reviews, as an indicator of training excellence.

Currently, SyntheSys joins the scheme as one of only a few UK organisations to have met the requirements of the assessment and we are confident this programme will give the Systems Engineering community a valuable criterion for selecting training providers.

For more information about our Systems Engineering and related training, visit: http://www.synthesys-technologies.co.uk/training.html

To read more about the INCOSE Endorsed training provider scheme, visit: https://incoseuk.org/Normal_Files/Technical/EndorsedTrainingScheme

SyntheSys Again Secures a Place on G-Cloud

Once again, we are pleased to share that our cloud services continue to feature as part of the Crown Commercial Service, G-Cloud Framework.

The latest framework iteration, G-Cloud 13, provides a mechanism for clients to access leading IBM® software and systems engineering solutions through our cloudbaSE product, with associated technical support and training from our team. Our services can be found under the 'Cloud Hosting' lot.

The initiative aims to improve public sector procurement by pre-qualifying suppliers who meet a set minimum standard.

We are pleased to feature our cloudbaSE toolset via the framework. cloudbaSE utilises the flexibility and versatility of Cloud computing to provide IBM® Engineering Lifecycle Management software in a more economical, adaptable way. The mix of powerful IBM® software, flexible licensing options and extensive experience, offers powerful solutions to everyday challenges faced by many Systems & Software Engineers, Developers and Testing professionals.

To find out more about our G-Cloud involvement, or to speak to us about your cloud hosting, software or support requirements contact: cet@synthesys.co.uk

Welcoming Matt Back to the Team!

As SyntheSys Technologies continues to grow, we were very pleased to welcome Matt Mendell to the team in October 2022. Matt's role as a Senior Consultant will focus on working with our IBM® Engineering Lifecycle Management (ELM) customers and wider community to optimise, extend and improve tool usage.

Matt has returned at an interesting time, not only for the team here at SyntheSys Technologies, but also for the high-growth and innovative markets we serve. We are positive that Matt's arrival will create internal and external value and further position us as the leading provider of IBM® ELM tools, services and training in the UK.

If you are involved in complex engineering development and are faced with challenges around integrated requirements, design, quality, workflow or test management, we would love to hear from you.

Or maybe you are using tools such as IBM® DOORS® Family or Rhapsody® and would like Matt's advice?

To talk to Matt directly, or for any general enquiries, please contact: cet@synthesys.co.uk

To read more about our specialist services, visit: www.synthesys-technologies.co.uk

Please join us in welcoming Matt back to the team!

An Introduction to Systems Engineering with Requirements Writing

This course has been designed to provide a high-level foundation to the principles and practices of systems engineering and contains specialist requirements writing modules

Presented by highly experienced systems engineering instructors, the course examines the role and benefits of applying systems engineering principles within your organisation.

We teach students how to define systems engineering, understand the approach and scope, and identify key systems engineering models. The creation of accurate requirements, traceable across the systems engineering life cycle, is critical for successful projects, which is why we have designed specialist modules which provide students with the techniques necessary for the creation of clear, concise, and correct requirements, independent of specific requirements management tools.

Best practice is drawn from the INCOSE handbook and the INCOSE guide for writing requirements.

Learning Outcomes

- Defining systems engineering
- Systems engineering approach and scope
- Modelling
- Application in an engineering environment
- Role of stakeholders
- Cost element of systems engineering
- Requirements writing skills

INCOSE UK ENDORSED TRAINING PROVIDER

For more information and to book, visit: https://bit.ly/3uZvxHi

Improve your Competitiveness through Systems Engineering Training

"There is a strong direct relationship between past experience and the likely success of future projects."

This is one of the conclusions from a Carnegie Mellon® survey[1] on the effectiveness of systems engineering, but it confirms what many people know intuitively.

The survey was carried out on projects identified with the aid of The United States' National Defence Industrial Association (NDIA), the Institute of Electrical and Electronic Engineers (IEEE), and the International Council On Systems Engineering (INCOSE).

The primary purpose of the survey was to identify systems engineering best practice on projects, collect performance data on these projects, and identify relationships between the application of these systems engineering best practices and project performance, but they also looked at how other factors might influence performance. Experience of similar projects was one of those factors.

The survey found that experience is an even more important factor in *challenging* projects. Challenging projects include those that deal with complexity, are innovative, or push the boundaries of the state of the art.

The survey results show that experience is critical to an organisation's success in a competitive environment. Experience can only be acquired quickly by buying services or by recruiting, but sustainable experience can often be achieved only through organic development.

The start of the process is always training, whether this be through private study and experimentation or in a formal classroom or lecture theatre environment.

What is a System?

A system is a combination of interacting elements organised to achieve one or more stated purposes.

As defined in ISO/IEC/IEEE 15288

An element is any identifiable entity.

As defined by Kuhn

What is Systems Engineering?

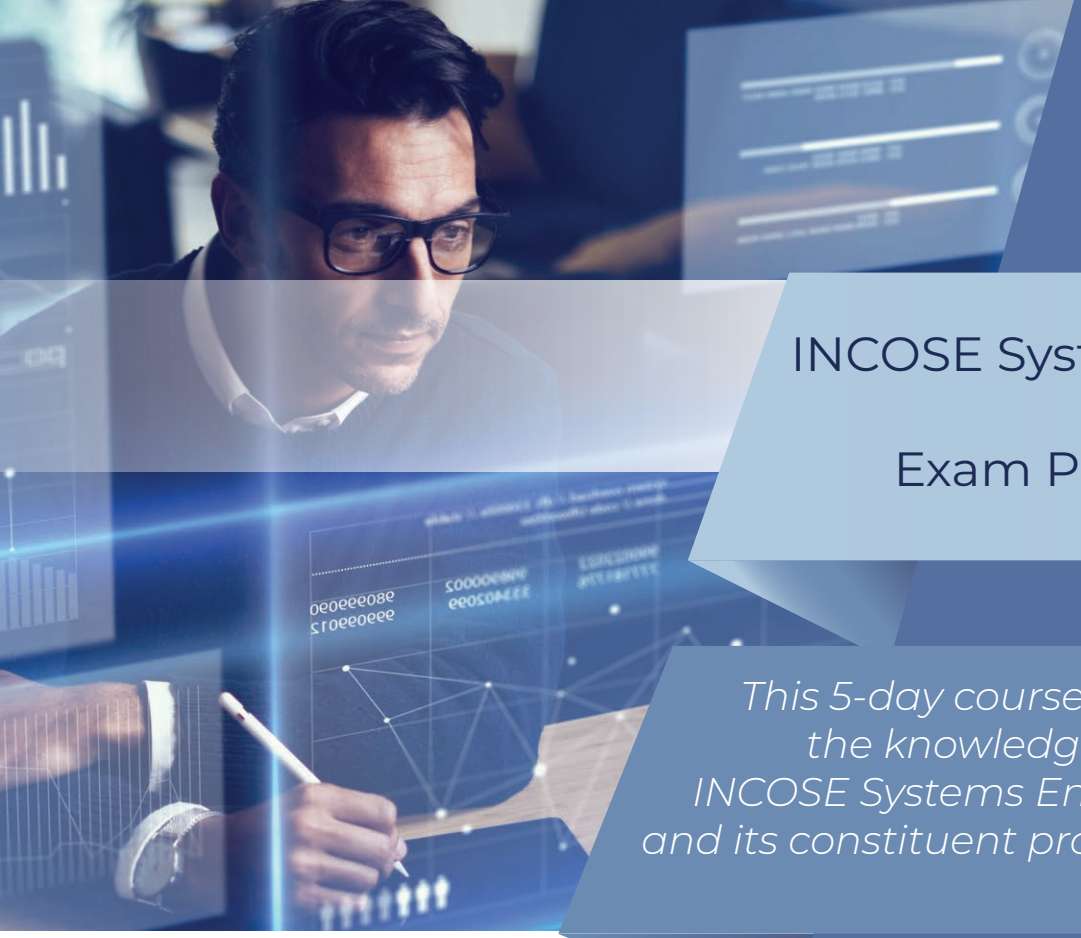
Systems engineering is an interdisciplinary approach governing the total technical and managerial effort required to transform a set of stakeholder needs, expectations, and constraints into a solution and to support that solution.

As defined in ISO/IEC/IEEE 15288

SyntheSys provides coaching, mentoring, and formal training courses to organisations to help them improve their processes and introduce software tools.

Please contact us to find out more.

Reference:
[1]"The Business Case for Systems Engineering Study: Results of the Systems Engineering Effectiveness Survey", Joseph P Elm and Dennis R Goldenson, November 2012, Carnegie Mellon® University. Available at: https://resources.sei.cmu.edu/asset_files/SpecialReport/2012_003_001_34067.pdf



INCOSE Systems Engineering Professional (SEP) Exam Preparation Course

This 5-day course equips students with the knowledge and structure of the INCOSE Systems Engineering Handbook, and its constituent processes, to prepare for the SEP examination

The course combines real world scenarios with theory, presented in the INCOSE Systems Engineering Handbook, to provide students with a unique learning experience which will enable them to comfortably sit the INCOSE SEP examination.

Presented by a fully accredited, qualified SEP instructor, the course examines the role and benefits of applying systems engineering principles within your organisation. We teach students how to apply this theory and how to use the correct terminology to convey this process and complete a series of exercises which will prepare them for the exam.

This prepares students who are workings towards the Associate or Certified level examination.

Learning Outcomes

- The significance of SEP certification
- Processes from the INCOSE Systems Engineering Handbook
- Understanding systems engineering in a broader context
- **Comfortably sit the SEP examination** having gained knowledge and skills over the 5 days of the course

ENDORSED TRAINING PROVIDER

For more information and to book, visit: https://bit.ly/3jaLd7P

Getting Certified with the International Council On Systems Engineering (INCOSE)

As a Systems Engineer, are your capabilities recognised and does it matter?

Certification within any industry sector is a sure-fire way to accelerate one's career, yet there are many Systems Engineers, Developers and Managers who do not tap into the benefits of certification.

Certification Options

There are a plethora of organisations and societies across Information Technology (IT) and systems engineering domains that aim to support recognition of skills and ability for the benefit of the practitioner, and for the employer who typically funds the process.

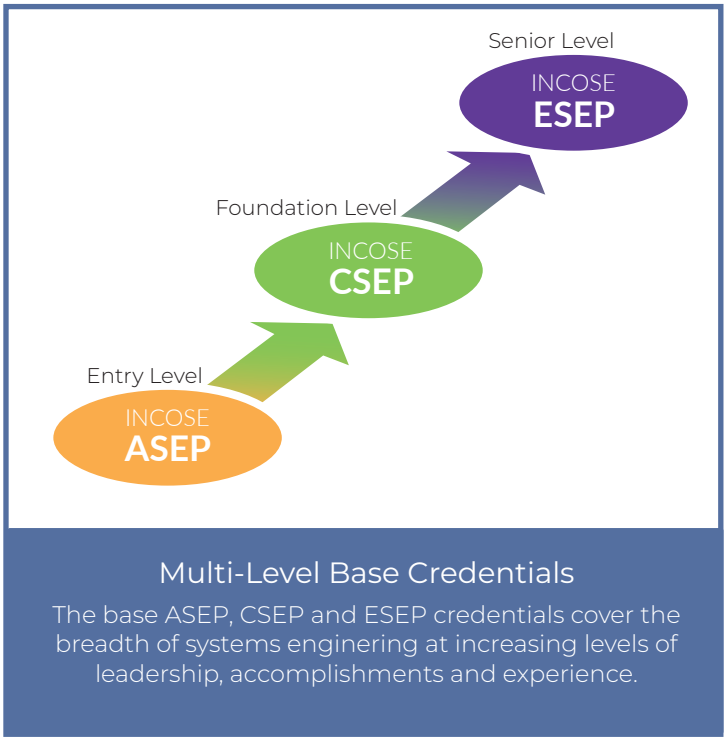
The International Council On Systems Engineering (INCOSE) has a certification scheme that extends from the Graduate's level, who often leaves university with lots of theory but little engineering experience, through to Expert, with significant levels of experience and input to systems engineering principles.

Associate Systems Engineering Professional (ASEP) and Certified Systems Engineering Professional (CSEP) both require study of the INCOSE Systems Engineering Handbook and passing of a challenging examination. The Expert Systems Engineering Professional (ESEP) is an interview-based assessment.

Benefits of Certification

So how do the advantages of CSEP accreditation benefit applicants?

Certification adds considerable value to you as a Systems Engineer because the accreditation formally recognises your systems engineering technical capability. The certification provides a portable Systems Engineering qualification which is recognised across industry. In addition, the certification adds value to your organisation in many different ways.



Multi-Level Base Credentials

The base ASEP, CSEP and ESEP credentials cover the breadth of systems enginering at increasing levels of leadership, accomplishments and experience.

Finally, the certification demonstrates your commitment to continuing professional development.

Certified Systems Engineers can be a big selling point and a discriminator for your company's proposals. It can be used as part of the hiring and promotion process and it encourages employee participation in continuing education.

It is also a useful tool for promoting professional competence and provides an independent internal and external assessment. Whilst working in competitive, growing markets it is not only imperative that individuals continually develop knowledge via certification, but crucial that organisations invest in employee development.

Certification programmes not only benefit individuals, but also organisations. Programmes such as the ones provided by INCOSE ensure that the overall Systems and Software Development environment remains innovative and progressive.

Systems Thinking for Systems of Systems Course

Learn the Principles and Practices of Systems of Systems engineering in this 3-day interactive course

Systems of Systems Engineering is widely recognised as a critical discipline focused on the planning, analysing, organising and integrating of capability mix so that systems can be engineered and designed to examine the whole system, whole life cycle and whole stakeholder community.

Our 3-day course is designed to introduce core Systems of Systems concepts to help instil a 'Systems Thinking' mindset.

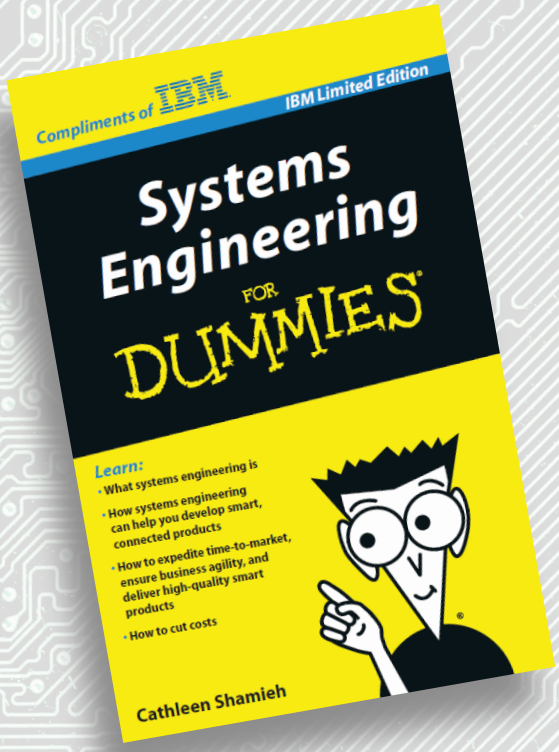
In addition to an introduction of principles, the course looks more closely at engineeering design, modelling and product management for a Systems Thinking approach.

Learning Outcomes

- Core Systems of Systems Principles
- Justification and Methodologies
- The Systems Thinking Mindset
- Systems of Systems Modelling
- Design for Systems of Systems
- Product Families

For more information and to book, contact:
cet@synthesys.co.uk

If you are looking for ways to expedite time-to-market, ensure business agility, and deliver high-quality smart products while cutting costs, this is the book for you!



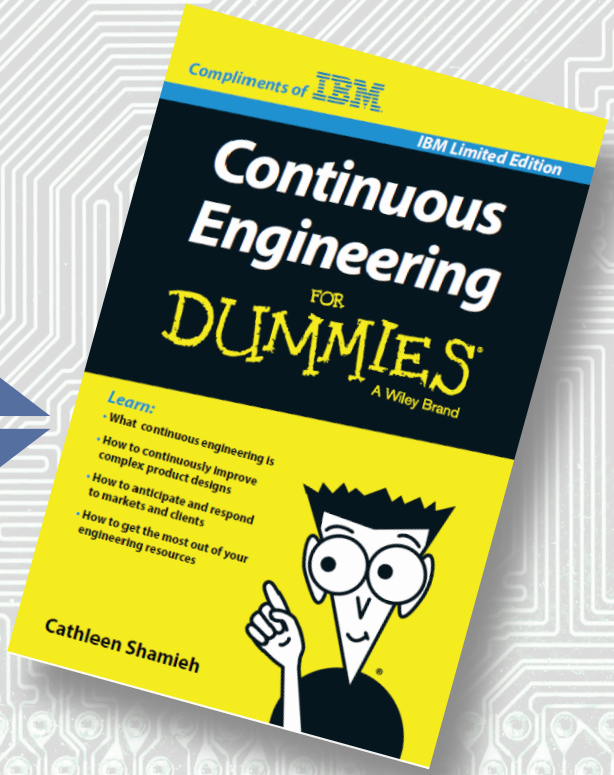
Courtesy of IBM® we are able to offer readers this clear and concise foundation level publication which is a key resource to add to any desktop or company library.

Systems Engineering For Dummies, is an IBM® Limited Edition E-BOOK explaining what systems engineering is and how it can help you harness the complexity inherent in developing smart, connected products.

To download the FREE E-BOOK visit:
http://resources.synthesys.co.uk/cloudbase/systems-engineering-for-dummies.pdf

Again, courtesy of IBM®, we are able to offer readers this foundation level publication which aims to explore what is meant by 'Continuous Engineering' and the merits of continuously improving complex product designs.

The useful E-BOOK shares methods for anticipating and responding to markets and clients and suggests ways of getting the most out of your engineering resources.



To download the FREE E-BOOK visit:
http://resources.synthesys.co.uk/cloudbase/continuous-engineering-for-dummies.pdf

Why Train with SyntheSys Technologies?

We aim to offer a value-added and differentiated training offering which upskills engineering teams and broader stakeholders

SyntheSys TECHNOLOGIES

CERTIFIED & ENDORSED TRAINING

Our courses have been independently assessed to meet the needs of the INCOSE Endorsed Training Provider scheme, and we are currently one of only a few UK providers to meet this requirement. We are also proud to hold the ISO9001 quality accreditation which forms a cornerstone of our products, services and processes.

EXPERT TRAINERS

Our trainers are some of the leading Systems Engineering professionals in the UK and boast dynamic experience from a range of different industry domains, which acts as the core foundation of our training portfolio.

FLEXIBLE APPROACH

We take a flexible approach to our training delivery whereby our courses can be delivered to your exact requirements. We offer options for on-site delivery, and also host a series of scheduled training courses. We offer discount for group bookings and can customise our courses to your exact organisational requirements.

BROADER VALUE

The value of training with us often ripples throughout your organisation. We see time and time again that organisations tap into the broader value of our training resources, trainer expertise and other services. We often see our training acting as a catalyst for further reform for engineering and programme teams.

For more information visit: https://bit.ly/3FISYcJ