

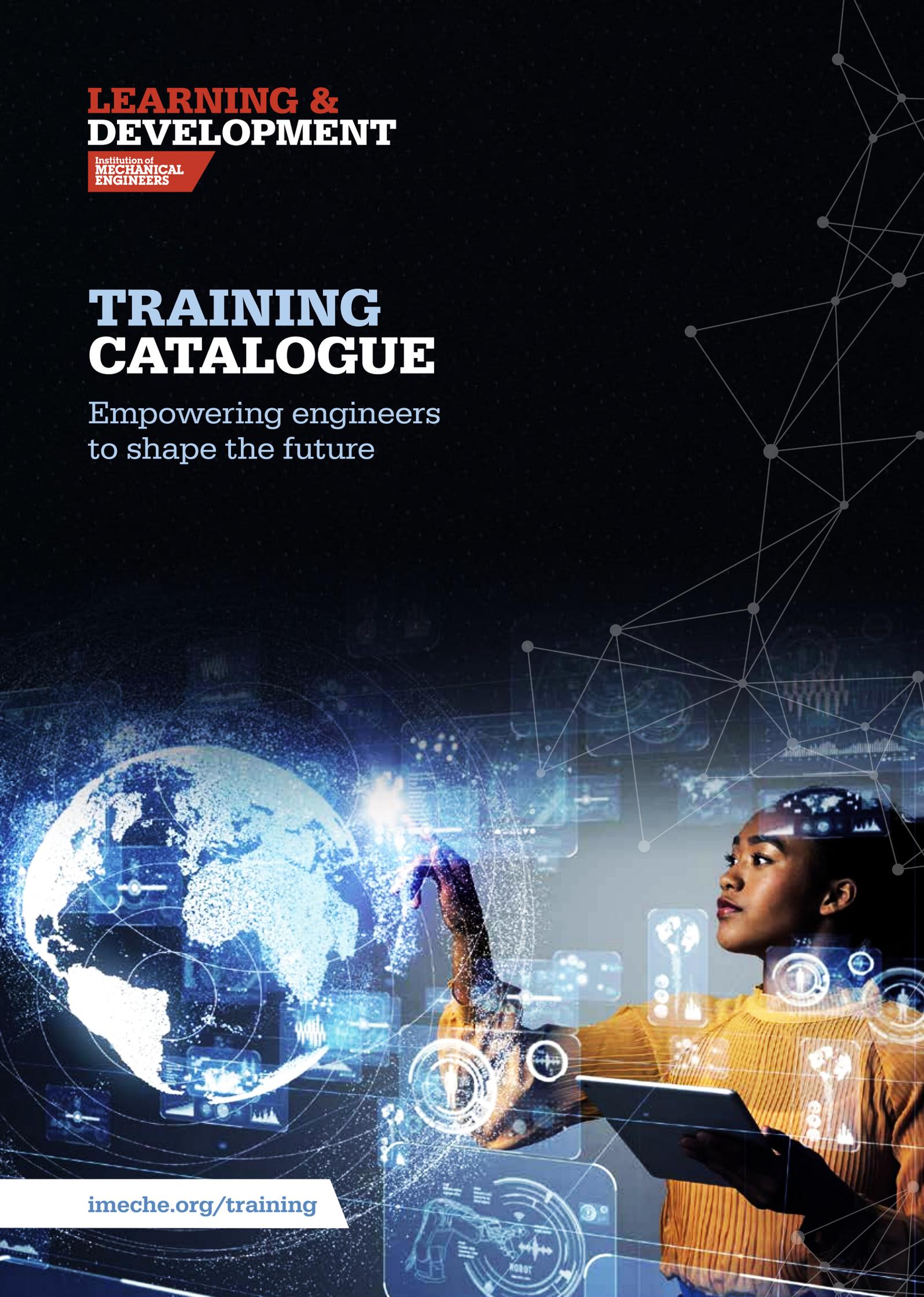
LEARNING & DEVELOPMENT

Institution of
**MECHANICAL
ENGINEERS**

TRAINING CATALOGUE

Empowering engineers
to shape the future

imeche.org/training





Thank you for choosing
IMechE Learning &
Development to support
your professional and
organisational development.

For over 30 years, we have worked with engineering and non-engineering organisations to develop the competence of their people. We take pride in having the broadest range of training to support technical professionals to become leaders, achieve their career goals and to shape the future of engineering.

As you browse through our portfolio, you will see a wide range of development opportunities to support individuals and businesses in striving for excellence. All training in this brochure is available on a single-seat basis but many organisations choose to tailor this content to the particular challenge they are facing.

Come and talk to us about how we can help you.

A handwritten signature in white ink, appearing to read 'Mark Pepperell'.

Mark Pepperell
General Manager



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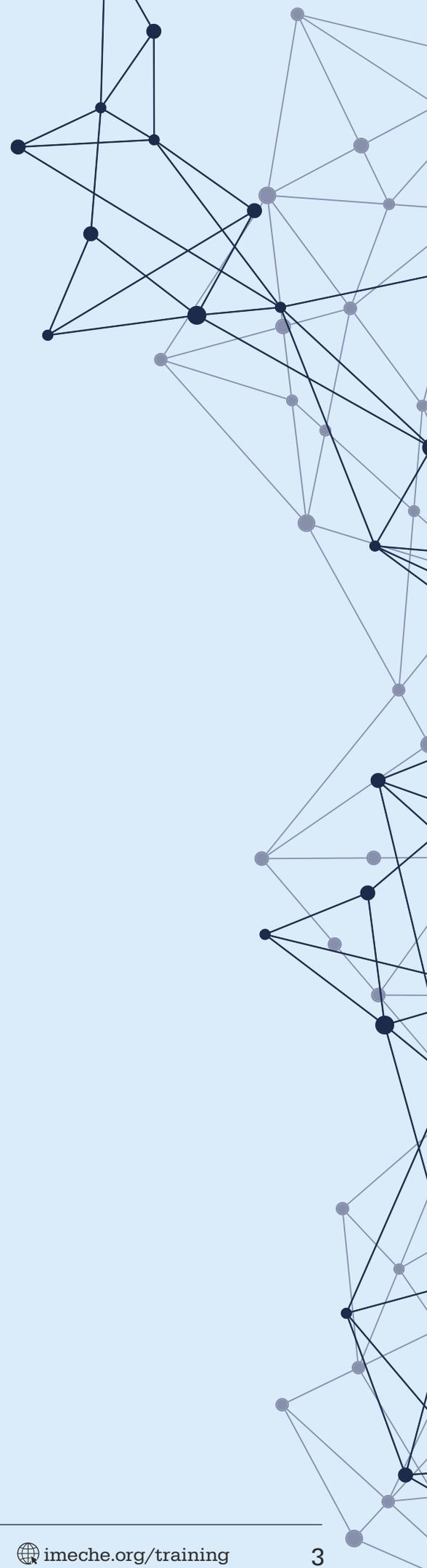
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LEARNING & DEVELOPMENT

Institution of
**MECHANICAL
ENGINEERS**

Industry leading training that is trusted by the global engineering community

With more than 175 years of heritage and access to some of the industry's greatest talents, we have established the most comprehensive portfolio of professional development services for the engineering industry.

We understand the challenges faced by the engineering community and collaborate with experts and leaders to provide innovative, authoritative, and unbiased information.

Our goal is to empower engineers to shape the future, and we strive to accomplish this by offering current, industry-relevant learning and development solutions. We enable engineers and engineering technicians, of all levels, to acquire the skills they need to advance in their careers, make an impact on their organisations, and, ultimately, improve the world through engineering.

Why train with us:

- Trusted by leading engineers and global engineering companies
- The widest range of training, designed and delivered by leading engineers
- Extensive experience working with engineers and technical professionals
- Professional development solutions for individuals and teams, worldwide
- ISO 9001 accredited quality system
- All courses mapped to the Engineering Council's UK-SPEC.

Approvals and accreditations



WHY TRAIN ANYWHERE ELSE?



OVER 10,000
engineers trained
each year



TRUSTED
by **over 800**
companies



OVER 30
YEARS
of experience in
delivering training

Average
customer rating:
4.5 out of 5



A growing
portfolio of over
200 COURSES



91%
SATISFACTION
on courses

Empowering engineers to shape the future



It has been a partnership from day one – the IMechE trainers feel like extensions of our business. And the buy-in from our employees has been very evident, very quickly.

Integration & Human Resources Manager, **Atlas Copco**





Company solutions

Every year, we partner with over 100 organisations to strengthen the capabilities and skills of their teams through training, qualifications, and consultancy.

Tell us about your team's professional development needs, and we will design a learning and development solution that is right for your company and sector.

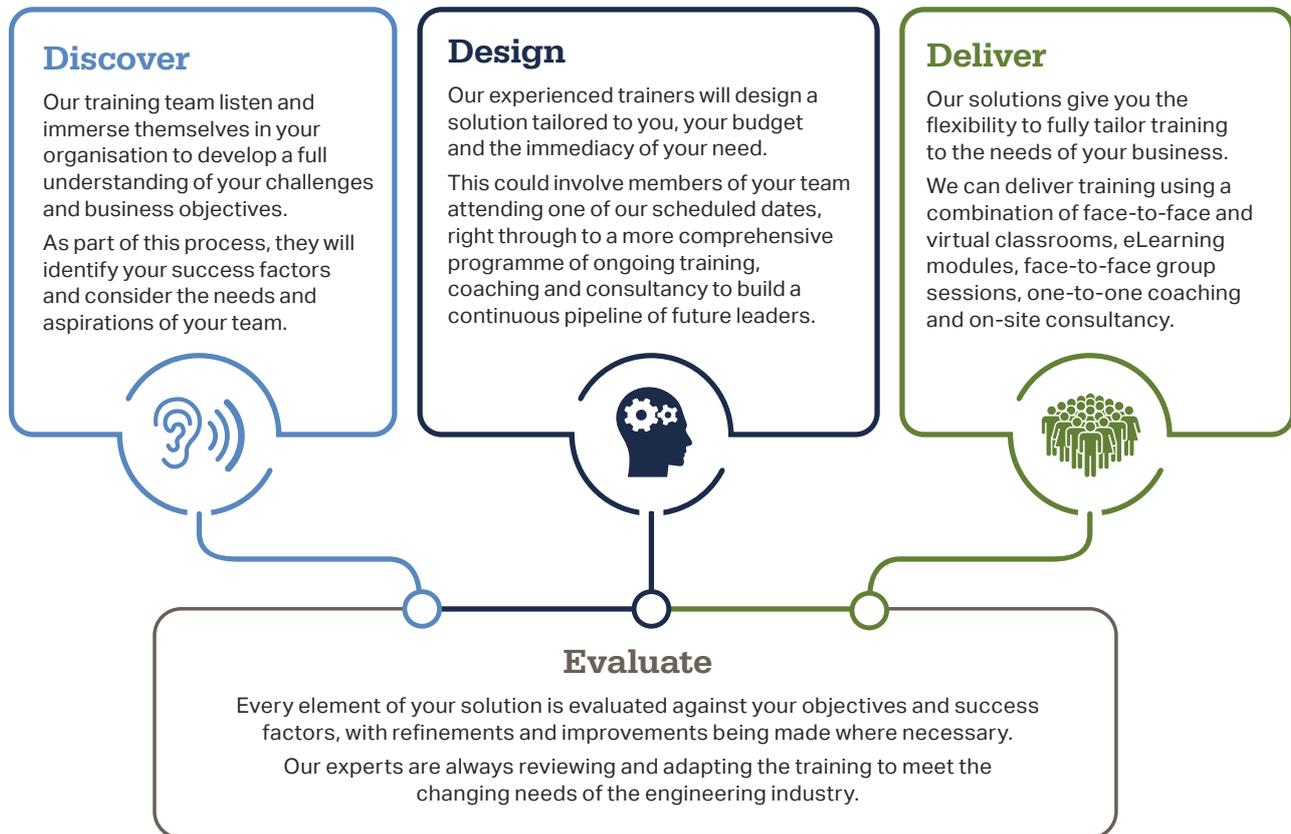
Why use our company solutions?

- Training can be fully customised to meet your requirements
- It is more cost-effective
- You can improve the skills of an entire team at once, which can expedite results
- Training dates are flexible, minimising workplace disruption
- We can deliver training in dozens of countries worldwide.

Options available

- Off-the-shelf training – we deliver our training courses “as-is” at the date and location of your choice, offering a more cost-effective and efficient learning solution
- Tailored training – we customise our existing portfolio to help you resolve issues unique to your team or industry and equip you with the tools you need to advance
- Bespoke programmes - we create a professional development programme that is specific to your company, using a variety of delivery methods, topics, systems and performance resources to ensure that your workforce has the knowledge and skills necessary to help your business thrive.

How we work



Some of the companies we've worked with



EARLY CAREER DEVELOPMENT PROGRAMME

Increase team efficiency and commitment
through accelerating professional development

Get in touch

Interested in enrolling your employees onto the programme?
training@imeche.org | +44 (0)20 7304 6907 | imeche.org/ecdp



A two-year programme that will enable you to support your early-career engineers to contribute towards business growth and develop the skills that they didn't learn at university.

Your benefits as an employer:

- Increased efficiency and effectiveness in day-to-day tasks due to more skilled workforce
- Commitment to make improvements during a work-based project
- Demonstrate commitment to employees, which is critical in reducing employee turnover

Benefits to your employees:

- Develop skills in a variety of areas to ensure success within the business
- Collaborate and learn with colleagues from other industries and roles
- A dedicated team to support the learning journey, including a one-on-one development coach

PERSONAL DEVELOPMENT

Designed to help optimise personal performance and improve the contributions professionals make at work, this portfolio covers areas such as innovation, communication, branding, resilience and presentation skills to accelerate careers and help achieve more in the workplace.

IN THIS SECTION

- 10** Applying ethical principles in engineering
Unconscious bias
- 11** Confident presenting
Communication and influencing
- 12** Innovation and problem solving
Managing time
Personal effectiveness masterclass
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Mental health first aid
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Performance and diagnostic tools
Team Performance Diagnostic

SYMBOLS

Look out for our symbols to find the course that suits you.



Face-to-face courses



Online courses



Bring a colleague for free

Scan the QR code to book courses online



Applying ethical principles in engineering

1 Day

UK-SPEC: B, C, D, E

Deal effectively with moral complexity to make sound ethical decisions.

Explore the fundamental principles that guide an engineer in achieving the high ideals of professional life – accuracy and rigour; honesty and integrity; respect for life; law & the public good and responsible leadership. Increase your ability to deal effectively with moral complexities and to reason carefully about moral questions, improving your ability to make sound ethical decisions.



Who should attend?

Engineers and non-engineers at all levels, but particularly useful for those attending their professional review interview in the next year.



Key outcomes:

- Appreciate the wider implications of your decisions and moral choices
- Use critical reasoning skills to make clear, informed decisions
- Develop a framework for decision making that is in line with the values of your company and clients
- Know your responsibilities to your employer, clients, customers, colleagues, society and the environment
- Know the content and significance of the Engineering Professional Codes of Conduct



 imeche.org/lsethi

Unconscious bias

1 Day

UK-SPEC: C, D

Understand how to recognise biased and logical decisions.

The unconscious processing system is vital to us but can also negatively affect our decisions.

This course looks at the way in which the human brain processes information and how, in some instances, affects our perspective on things at an unconscious level. It also covers the effects of the unconscious processing system and looks at how we can manage the effects to make better decisions.



Who should attend?

Anyone who wants to understand some of the ways in which our decisions are affected by how our brains work. In particular, anyone that wants to make better decisions and treat people more 'equally'.



Key outcomes:

- Understand the difference between your two thinking systems and how they interact
- Understand the ways that system one can affect the way we see things without us being consciously aware of it
- Recognise some of the key dangers in a decision-making context
- Explore techniques for compensating and managing the inevitable biases arising from system one
- Plan for some of the more common unconscious biases affecting the way we see people



 imeche.org/lmubtx

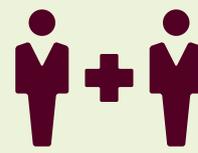
Group Learning Passes

Additional savings are available through our Group Learning Passes. imeche.org/trainingoffers



Bring a colleague for free

Dozens of two-for-ones on selected leadership, business and personal development courses. imeche.org/trainingoffers





Confident presenting

2 Days



UK-SPEC: C, D, E

Understand the principles of presenting and engaging an audience.

Public speaking, engaging audiences and speaking with confidence is not an activity that we are often faced with. The new business reality places demands on us to ensure that we are active in meetings, client pitches and team briefings which all require us to be able to speak confidently, assertively and ensure that our messages are understood.

This course will cover the platform techniques required to engage an audience and deliver a powerful message using both visual and nonvisual aids.

 imeche.org/lspres

Who should attend?

Engineers and non-engineers at all levels.



Key outcomes:



- Understand the purpose and value of powerful presentations
- Analyse audience needs and create presentations accordingly
- Set objectives and plan an appropriate structure
- Use your improved platform skills to answer audience questions with confidence



Communication and influencing

2 Days



UK-SPEC: D, E

Get your ideas across, build rapport, and positively influence your working relationships.

Develop a better understanding of how people communicate and how an individual's own style matches up to others.

Through clear, concise and targeted communication, learn how to increase your influence with colleagues and stakeholders and improve relationships. Both of which could positively impact your confidence, performance and career progression.



I do feel a lot more confident when having difficult discussions.

Kieran Collingwood,
EngTech MIMechE TMIE



VERIFIED

 imeche.org/lscomm

Who should attend?

Anyone who wants better stakeholder relationships, career progression, improved teamwork and project management.



Key outcomes:



- Understand your behaviour and how it is perceived by others
- Increase your influence on colleagues and become more effective at delegation and tasks
- Use the DiSC personality profile to build better rapport and team cohesion
- Learn influencing strategies, approaches and styles to fit your situation

Innovation and problem solving

2 Days



UK-SPEC: B, C, D

Use creativity and innovation to solve problems and enable breakthroughs.

Creative potential and problem-solving have been identified as essential characteristics for both novice undergraduate engineers and qualified professionals in benchmark statements from the UK Engineering Council. The solution is this in-depth, practical deep dive into the processes, systems, language, tools and strategy to become highly effective at innovating and problem solving across a range of engineering disciplines.

You can upgrade this course to a CMI Level 5 qualification. Find out how at imeche.org/CMItraining/Level5



imeche.org/lsinno

Who should attend?



Anyone engaged in a hands-on approach to design, innovation and problem solving, as well as those evaluating whether the problem has been solved.

Key outcomes:



- Understand your problem-solving style and adapt it to various situations to get the desired outcome
- Understand the blockers and enablers of creativity
- Learn how to go from generating ideas to applying them to solving complex problems
- Learn how to stimulate your team to deliver additional options by applying your learning to issues from your organisation

Managing time

1 Day



UK-SPEC: D, E

Prioritise, reduce overwhelm and focus your time and energy on high payoff activities.

Good time management is about getting more done, better – in less time. It leads individuals to make the right choices, thereby ensuring that they use their time effectively. By optimising efforts, individuals will experience less stress, absenteeism, overwhelm and procrastination. Mastering this skill helps gain the respect of colleagues, become more organised and productive and will support better project, task and team management.



Found the course helpful, and going forward in my daily work/routines will be utilising. The trainer delivered the course in a concise and well thought manner which for me was easy to follow/understand.

Paul Pierce Jones, Ericsson TM

imeche.org/lstime

Who should attend?



Anyone who wants to optimise their use of time to be more productive, focused and effective at work.

Key outcomes:



- Identify how you and your team currently allocate time
- Develop strategies for reducing time stealers
- Learn how to take control of your time in a more positive way
- Use a variety of reflection & prioritisation tools to increase productivity and effectiveness
- Understand how to delegate appropriately and effectively

Personal effectiveness masterclass

8 Hours



UK-SPEC: C, D

Improve self-awareness, communicate with impact and get the most from others.

You will learn to improve your effectiveness in the workplace through understanding patterns of behaviour in yourself and others (using the DiSC tool). You will learn strategies for adapting to those around you that will both improve results and improve the way that others see you.

Adopting a more confident and assertive communication style will positively impact working relationships and developing your organisational skills will increase your productivity.

imeche.org/lspemm

Who should attend?



Anyone interested in increasing productivity without working longer and improving their communication and relationships.

Key outcomes:



- Gain a set of tools to improve organisation skills
- Communicate more assertively
- Explore different behavioural styles and learn how to adapt your approach to improve your impact
- Understand the way our brains process information at an unconscious level and develop strategies for overcoming your natural biases to make fairer decisions



Mental health awareness

4 Hours



UK-SPEC: E

Recognise common mental health issues and how you can help someone who needs support.

Mental health is vitally important for individuals, organisations and society as our physical health. It has an impact on work productivity, educational achievement, relationships, social interactions and overall quality of life across the entire population.

Learn to define mental health, recognise some common issues, unravel some of the stigma and learn how to support yourself, family and colleagues who may be experiencing symptoms such as stress, overwhelm, anxiety or isolation.

 imeche.org/lsmhfh



Who should attend?



Anyone wishing to encourage positive mental health and understand how to support someone with mental health issues, and also those in L&D, HR, health and safety, and senior management.

Key outcomes:



- A balanced understanding of mental health and how to successfully challenge stigma
- Some basic knowledge around the most common mental health issues
- The tools to look after your own mental health and maintain resilience and wellbeing
- The confidence to support someone who may be experiencing a mental health issue or in distress

Mental health first aid

2 Days



UK-SPEC: E

Become a fully certified Mental Health First Aider.

Internationally recognised Mental Health First Aid (MHFA England) teaches individuals the skills necessary to have an open and non-judgemental conversation, recognise the signs and symptoms of common mental health issues and effectively guide a person towards the right support. Be that within the workplace, signposting professional help, with support from family or a combination. It won't teach you to be a counsellor or therapist, but it will teach you how to listen, reassure and respond.



Excellent course and trainer, highly recommended.

Mike Baker, M&J Engineering

 imeche.org/lsmhfa



Who should attend?



L&D and HR departments, health and safety, operations and customer service. Anyone who works 'front line' with customers, and is going through change in some form and would like to be better equipped to handle it.

Key outcomes:



- Understand mental health and the factors that can affect wellbeing
- Practical skills to spot the triggers and signs of mental health issues
- Confidence to step in, reassure and support a person in distress
- Enhanced interpersonal skills such as non-judgemental listening
- Knowledge to help someone recover their health by guiding them to further support

The eLearning collection

Develop your skills in a way that is more convenient to you.

The eLearning collection offers over 100 topics, including 300 bite-sized videos, set up in a way that you can learn about the exact topic you require, or gradually work through the whole content.

Key features

- Modules can be accessed online, at a time and place that suits you
- Completing the modules at your own pace
- Up to 22 different languages
- Availability within 48 hours of booking and accessible for six months

 imeche.org/elearning-collection

Our key categories include

- | | |
|--------------------------------|----------------------------------|
| • Communication | • Mental health |
| • Compliance | • Performance management |
| • Cross cultural communication | • Projects and change |
| • Customer service | • Remote working |
| • Employability | • Sales |
| • Health and safety | • Unconscious bias and diversity |
| • Influencing and negotiation | • Virtual mentoring |
| • Leadership | • Wellbeing |
| • Learning culture | • Workplace |
| • Management | |

Coaching

An opportunity for individuals to confidentially discuss issues with someone that can guide their thinking, strategy and actions to ensure they are performing at the highest level.

We offer bespoke one-to-one coaching sessions, led by qualified industry experts who uphold our values and provide coaching sessions for:

- Early career and graduates
- Career transitions
- Expatriations/relocations
- Engineering leaders
- Freelance consultants and business owners
- Project coaching

Benefits for individuals



- Establish and take action towards achieving goals
- Become self-reliant
- Gain job and life satisfaction
- Contribute effectively to the team and the organisation
- Take greater responsibility and accountability for actions
- Communicate more effectively

Benefits for organisations



- Empower individuals and encourage accountability
- Increase employee engagement
- Improve individual performance
- Identify and develop high potential employees
- Identify organisational and individual strengths and development opportunities
- Demonstrate organisational commitment to human resource development



Engineer360 diagnostic tool

Use 360 degree feedback to drive your personal development.

You and your selected colleagues will be given a questionnaire to complete. The results will outline what your respondents think of your performance in the five key competency areas and to what level your opinion matches to provide you with practical suggestions for your development. Engineer360 is included as a complimentary addition to new engineering manager and senior engineering manager courses.

£300 (plus VAT) or 10 reports for £1,800 including one-hour feedback session.

Engineer360 will evaluate you against the five competences defined by the Engineering Council:

- Technical understanding
- Problem solving
- Leadership skills
- Interpersonal skills
- Professionalism

Team Performance Diagnostic

Understand your team's underlying dynamics and identify areas to develop.

The Team Performance Diagnostic (TPD) covers everything from performance appraisal to helping you create a performance improvement plan.

In the questionnaire we deal with all critical aspects of group performance, looking at your team from a wide perspective. You will receive a report based on your responses, identifying strong areas and those where you can develop.

Team Performance Diagnostic – Standalone report £150

Team Performance Diagnostic with one hour telephone feedback session £300

Team Performance Diagnostic with facilitated team session £1,750



LEADERSHIP & MANAGEMENT

Effective leaders build strong relationships, develop high performing teams, meet objectives and deliver results. This portfolio will support individuals and businesses in adapting and responding to today's complex management challenges. With over 30 years' experience in delivering leadership and management training, we are well placed to help your organisation overcome leadership challenges using customised solutions.

IN THIS SECTION

- 16** Aspiring engineering manager
New engineering manager
- 17** Senior engineering manager
Aspiring engineering director **NEW**
- 18** Business strategy for engineering managers **NEW**
Leading without formal authority
- 19** Leadership practice
Managing across generations
- 20** International management
Leading change
Managing team and individual performance
- 21** Managing virtual teams
Mentoring skills
Mentoring for MPDS
- 22** Chartered Manager Bootcamp
- 23** CMI Level 3 in Principles of Management and Leadership
- 24** CMI Level 5 in Management and Leadership

SYMBOLS

Look out for our symbols to find the course that suits you.



Face-to-face courses



Online courses



Bring a colleague for free



Scan the QR code to book courses online

Aspiring engineering manager

1 Day

UK-SPEC: C, D, E



Gain the knowledge to start a successful transition into management.

Discover how to become a successful future manager through assessing your behavioural style and understanding how to flex your communication for maximum impact. You will learn the importance of personal and organisational values and how they can drive your leadership style, helping you to support the culture and team and align your efforts with the business.



A very worthwhile course, a great step to take in the transition into management. A lot of skills to carry into my job in particular; reading a person in terms of DiSC and how to react to them effectively, how to be more assertive in terms of submissive/aggressive behaviour.

Jacob Bonds, Multimatic Technical Centre Europe

 imeche.org/lmaema

Who should attend?

Anyone with ambitions to move into a management/leadership role in their career.



Key outcomes:



- Apply the key factors required to successfully transition into management
- Identify values to support the culture, align your efforts, and convey them internally and externally
- Apply assertive behaviour to improve communication, build more honest relationships and earn respect
- Create a personal brand which builds connection, trust and credibility
- Handle and resolve conflict to improve retention, motivation and reduce stress



New engineering manager

2 Days

UK-SPEC: C, D, E



A toolkit to help technical experts transition into their first line management role.

This intensive course will serve as the foundation for your future management career. It offers solutions to the most common problems faced by new managers, such as how to motivate employees, build a successful team, and maintain performance. It also describes how to define team goals and ensure team alignment to achieve those goals.

As part of the programme, you have the opportunity to undertake IMechE's Engineer360 to help you get personal feedback on your performance.



The course content and delivery were exceptional. It should be a must for any upcoming or new engineering manager.

Philip Downing, Dodman LTD

 imeche.org/lmnema

Who should attend?

New line managers or those who are soon to transition into their first line management role.



Key outcomes:



- Set, monitor and achieve SMART goals for yourself and your team
- Build an effective and high-performing team
- Delegate appropriately and effectively
- Use performance management to get the best out of everyone
- Take appropriate steps to deal with poor performance

Upgrade this course to a CMI Level 3 qualification. Find out more at imeche.org/CMItraining/Level3



Senior engineering manager

2 Days

UK-SPEC: B, C, D, E

Develop strategic leadership skills to start making a bigger impact in your organisation.

As you move into a senior engineering management role and the size of your department grows, your management skills will need to develop into different areas.

Setting a strategy for your department that is aligned with the company direction can mobilise your people to ensure that they are pulling in the same direction. Learn how conflict and change management, building pro-active and functional internal networks and making the most of resources can all increase productivity.



Who should attend?



Engineers or other technical professionals who have experience in a people-management role and now want to take their skills to the next level as a business leader.

Key outcomes:



- Set strategy and develop the tactics to deliver it
- Successfully manage departmental resources to drive results
- Communicate the company messages appropriately to motivate and mobilise the team
- Apply simple coaching techniques to empower and develop your people
- Effectively manage yourself, your peers and other senior stakeholders to work more productively



The course exceeded my expectations. Even the location of the IMechE building in central London is great. To be able to go into the Library at lunchtime just added to it. It was a really worthwhile, brilliant experience.

Richard Hudson, Special Vehicles



VERIFIED

 imeche.org/imsema



NEW Aspiring engineering director

4 Days

UK-SPEC: B, C, D, E

An intensive programme to enable leaders to become high-performing directors.

Participants will develop the key attributes of a director through a series of masterclasses, taught by subject specialists, in order to increase their leadership effectiveness and their contribution at senior management level.



Who should attend?



Senior managers or heads of department wanting to enhance their career and knowledge.

Key outcomes:



- Appreciate what it takes to develop an efficient and effective team
- Understand the key characteristics of different leadership situations and apply appropriate styles of leadership
- Develop better practices for management through change situations
- Apply techniques for managing sustainable workplace practices

 imeche.org/aed

BAYES
BUSINESS SCHOOL
CITY UNIVERSITY OF LONDON



NEW Business strategy for engineering managers



2 Days

UK-SPEC: C, D, E

Create and implement a strategy that boosts productivity, results and team engagement.

Developing a departmental strategy can facilitate buy-in, collaboration, and the creation of a shared sense of direction with key stakeholders. This course will explore the fundamental purpose of strategy and progress to defining a vision, goals, and communicating with stakeholders.

Who should attend?



Mid to senior level managers seeking to understand how a strategy can help them achieve their goals, but are having difficulty translating their vision into clear, actionable steps with built-in accountability.

 imeche.org/bustr

Key outcomes:



- Create a high-level overview of what your strategy could look like
- Develop a communication plan which shows what you are trying to achieve, why it's important, which key stakeholders are involved, and potential threats
- Understand why having a strategy is critical, and how to use it to inspire others to participate in its implementation
- Apply the tools that develop the strategic aims of your plan and achieve its primary aims
- Articulate a list of metrics to monitor and demonstrate the success of your strategy
- Create a strategy that can flex as change occurs so as not to lose momentum and employee engagement

Leading without formal authority

2 Days



UK-SPEC: C, D, E

Develop your ability to lead in situations where you have no line management power.

Effective leadership is important in many situations beyond those in which you are the 'manager'. The matrix structure is common in engineering organisations and as a result, many leaders find themselves responsible for leading others where they have no formal authority. Leading without this 'formal power' requires an approach that starts by understanding the nature of the business relationships involved and draws on fundamental communication skills like influencing and assertiveness.



I found the course really useful. Most of the contents presented can be immediately implemented and very practical. These are definitely valuable tools for success.

Jim Lluisma, Dyson Technology Ltd

 imeche.org/lmlwfa

Who should attend?



Engineers who work in a matrix organisation; particularly if you have responsibility for delivering projects in multi-disciplinary and/or cross functional teams.

Key outcomes:



- Discover what leadership is about and how to take the lead in situations where you don't have 'formal power'
- Understand the nature of business relationships and approaches that you might take to better manage expectations
- Explore the nature of assertiveness and identify specific actions that you can take to be more assertive
- Gain a set of tools that you can use to influence others in an ethical and effective way
- Understand the nature of conflict and how to manage these situations when you don't have formal authority



Leadership practice

1 Day

UK-SPEC: C, D, E



Communicate your organisation's vision clearly and motivate your team to stay on track.

Demonstrate trust and enable your team to clearly understand your organisation's vision. In this course, you will explore some of the leadership theories and experiences of others. You can consider real-life examples and apply the lessons learned to your current work environment.



This is the first IMechE training course I've been on, and I was very impressed. The trainer was excellent, keeping us engaged and thinking all day on a topic that can easily be discarded by engineers as it's not black and white. An excellent one day course, looking forward to the next ones in the series now.

Morven Harrison, Progress Rail Services UK

 imeche.org/lmlprv



Who should attend?



Managers working in engineering and non-engineering organisations.

Key outcomes:



- Understand the links and differences between management and leadership
- Understand how personal values and organisation values can affect each other
- Identify leadership styles that may be applicable when achieving organisational values
- Recognise the impact of empowerment, trust and ethical leadership
- Know how personal energy, beliefs and positive commitment can impact on your leadership style

Upgrade this course to a CMI Level 5 qualification. To find out more visit imeche.org/CMItraining/Level5

Managing across generations

1 Day

UK-SPEC: C, D, E



Explore the differing characters, philosophies and expectations of different generations in the workplace.

Traditional leadership and management practices need to either be abandoned or modified to ensure they continue to be effective when managing millennials.

You will leave with a greater appreciation of exactly what they need to adapt and how they can develop themselves to create the best possible environment to attract, retain and maximise the new workplace generation.

 imeche.org/lmmill

Who should attend?



Line managers, project managers, team leaders and anyone else who has responsibility for leading modern, diverse teams.

Key outcomes:



- Understand the perspective of millennials
- Devise approaches to lead millennials effectively
- Be clear on how mentoring can benefit millennials
- Adopt a flexible leadership approach

Group Learning Passes

Additional savings are available through our Group Learning Passes.

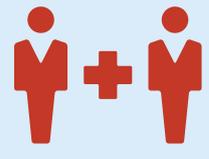
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Bring a colleague for free

Dozens of two-for-ones on selected leadership, business and personal development courses.

imeche.org/trainingoffers



International management

2 Days



UK-SPEC: C, D

Improve your interaction when working with or leading virtual and international teams.

With more virtual and cross-cultural working, it is important to understand how to get results, and influence individuals and teams while maintaining and developing relationships.

You will learn to improve your interaction when you are working with or leading virtual and international teams. The course will also introduce you to the barriers that you might face when working across cultures and how you can prepare yourself and your team.

 imeche.org/lmintm

Who should attend?



Line managers leading international teams and project managers working virtually.

Key outcomes:



- Recognise the role of culture
- Improve your impact when communicating with global audiences
- Understand your own influencing style, and how you can adapt this to improve your ability to influence others
- Use the principles of best-practice remote team working
- Leverage a number of tools to secure higher performance in remote teams

Leading change

1 Day



UK-SPEC: C, D, E

Understand the nature of change and gain tools to proactively manage it.

Leaders are constantly challenged to stay relevant and competitive in the face of day-to-day change and stay fit for the future when addressing transformational change. To meet these challenges, leaders must understand the barriers to change and have great relational skills to lead others effectively through the process. Failure to do this runs the risk of underperformance or even irrelevance. This course addresses these issues head on, helping you to stay ahead of the game.

 imeche.org/lmchma

Who should attend?



Engineers who manage teams and change projects that require relational and technical skills to fully deliver on planned outcomes.

Key outcomes:



- Recognise the levels of complexity and the need to effectively lead yourself and others through change
- Understand how people react to change and how to maximise engagement
- Recognise the need for active leadership to help people transition through change more quickly
- Appreciate the various leadership behaviours that will help organisations and teams swiftly transition through change

Managing team and individual performance

2 Days



UK-SPEC: C, D

Improve team performance through management and development of individual performance.

Examine the role of formal performance management processes and tasks (such as goal-setting, supporting development, and providing feedback) in maximising individual performance.

You will be presented with key characteristics of effective teams, exploring tools that can be used to identify the signs of poor performance, diagnose the causes and optimise team output whether that team is co-located or remote.



Very worthwhile course that will give real tools to improve people management and get to the depth of behaviour.

David Torbett-Bethune, Genea Biomedx

 imeche.org/lmmtip

Who should attend?



Leaders or managers responsible for the performance of individuals and/or teams, as well as anyone who is soon to take up responsibility for the performance of others.

Key outcomes:



- Recognise the importance of performance management and linking individual and team objectives with organisational strategy
- Understand the learning cycle and how to support individuals in the process of learning
- Spot the signs of poor performance and diagnose the causes
- Appreciate the benefits of feedback and know how to best deliver it

Upgrade this course to a CMI Level 5 qualification. To find out more visit imeche.org/CMItraining/Level5



Managing virtual teams

1 Day



UK-SPEC: C, D, E

Meet the challenges of remote working and get the best from your virtual teams.

Gain a deep understanding of the communication and collaboration tools that facilitate effective virtual working. Learn to effectively lead across distances, time zones and organisational separation. Increase your understanding of cultural differences and opportunities and gain an appreciation of the potential problems. Most importantly, learn to build trust and relationships and facilitate effective teamwork in order to deliver results.

imeche.org/lmlvir

Mentoring skills

1 Day



UK-SPEC: C, D, E

Increase your effectiveness at developing others through mentoring.

Providing opportunities for new engineers to learn from more experienced colleagues is vital in creating an environment that is both engaging and motivating. This environment can be enhanced by effective mentoring relationships that support engineers on their journey to becoming independent professionals.

This course will help develop your mentoring skills and recognise how to best use your experience and knowledge to support the development of others.



Allowed me to really understand the exact role of a mentor. Something which I think is often overlooked.

Christian Easley, Collins Aerospace

imeche.org/lmmens

Mentoring for MPDS

1 Day



UK-SPEC: C, D, E

Improve your mentoring skills and understanding of the Monitored Professional Development Scheme (MPDS).

MPDS is our approved, quality-controlled route for engineers pursuing CEng or IEng status.

This course is designed for new and experienced MPDS mentors who want to improve their skills and more effectively assist their colleagues. It's also an excellent opportunity for mentors, HR, and training professionals to network, share ideas, and develop best practices for use at work.

imeche.org/lmmpds

Who should attend?



Project managers, line managers supporting remote teams, and future virtual leaders.

Key outcomes:



- Understand the challenges of working remotely and leverage the available technology
- Have a strategy for recognising cultures and getting the best from the differences and similarities
- Identify the tools to get the most out of your remote and co-located teams
- Recognise people's natural responses to change in a multicultural, virtual world
- Have a set of strategies for successfully implementing change within virtual teams

Who should attend?



Managers or experienced engineers assisting in the professional development of others. Where the mentees are professional registration applicants, this workshop perfectly complements our Mentoring for MPDS course.

Key outcomes:



- Understand how adults learn, including your own learning preferences, and how this might impact on the mentoring relationship
- Recognise the benefits of and differences between mentoring and coaching
- Understand the importance of a structured approach in a mentoring relationship
- Have gained insights into how to build mutually beneficial mentoring relationship
- Explore key mentoring skills including listening, questioning and giving feedback

Who should attend?



Existing and prospective mentors, human resources and those working with the Monitored Professional Development Scheme (MPDS), in particular Scheme Administrators and Owners.

Key outcomes:



- Apply practical mentoring skills with confidence
- Learn what MPDS is, how it works and understand what is expected of you as an MPDS Mentor
- Become fully conversant with the requirements for professional registration
- Discover the roles and responsibilities and how to be successful as a mentor
- Explain the member application and the Professional Review Interview



Chartered Manager Bootcamp

4 Days



UK-SPEC: C, D, E

Understand the role of management and the importance of leadership to get the best from your teams and manage change.

A four-day residential course designed to help CEng and IEng managers to develop the skills to meet the learning requirements of the Chartered Management Institute (CMI) Level 5 Diploma in Management and Leadership.

You'll explore the role of a manager, the importance of leadership and the practical side of management. We'll also look at how to get the best from individuals and manage performance.



Feel it will have a very positive aspect on my career, coverage of subjects and theories that cannot be learned through experience in the workplace, so the training was very valuable to myself. Would recommend to anyone in an engineering leadership or management role.

Jamie Harrison, Sellafeld Ltd



The Bootcamp is enlightening. It brings out thoughts in you that you just wouldn't have had, otherwise. It has helped me become more appreciative of why people act the way they do and that has helped me as a manager.

Stuart Darney, Porterbrook



Who should attend?



Exclusive to CEng and IEng managers with at least three years of people, project, or resource management experience.

Not professionally registered or seeking a more flexible approach?

Level 5 Diploma in Management and Leadership can also be achieved through a modular course of study. More information at imeche.org/cmitraining/level5.

Key outcomes:



- Define the skills associated with leadership and management
- Improve the way you manage the performance of individuals
- Better set and review objectives
- Deliver feedback that gets results
- Implement team and individual performance review systems
- Identify areas of poor performance
- Use a model for coaching to support development
- Understand the key elements that make a team 'high performing'
- Diagnose the stage of a team's development and how to support the team's growth
- Identify the common barriers to change
- Understand an individual's response to change and how to manage them through the process

After the Bootcamp, you will be required to undertake self-guided study and successfully complete assignments to achieve the Level 5 Diploma.

imeche.org/CMITraining/Bootcamp





CMI Level 3 in Principles of Management and Leadership

This CMI Level 3 qualification is ideal for those entering the management sector, in roles such as team leaders, supervisors, first-time managers, project officers and shift managers.

Assessment is done via practical work-based assignments, which can be submitted as and when you have completed each unit. This ensures you minimise time away from work and that you undertake work study which is relevant to your own organisation's context. There are no exams to be taken.

Award

This qualification allows you to develop your knowledge of roles and responsibilities of a manager by focusing on specific skill areas.

Certificate

This qualification gives you a broader knowledge of management skills while focusing on the specific areas appropriate to you and your workplace.

Foundation Chartered Manager Status is awarded upon completion of the Certificate qualification, putting aspiring and early-career managers on a guided path to becoming Chartered Managers.

Credits can be gained from the following modules:

- New engineering manager
- Stakeholder management
- Project working for engineers
- Customer service excellence
- Confident presenting

Who should attend?



Team leaders, supervisors and first-time managers. CMI recognises the value of professional registration and therefore gives a 50% exemption for the necessary credits to be completed for each qualification.



CMI Level 5 in Management and Leadership

A comprehensive and flexible management programme, this CMI pathway has been designed for developing engineering managers. By offering a range of modules, you can choose the most suitable learning path around your workload and commitments.

This CMI programme has been developed to consider managers' varying experience and help you progress your level of professional registration. You can choose to attend the modules only, or work towards the full CMI qualification.

Award

Strengthen your knowledge of middle management by focusing on specific management areas that are applicable to your job.

Certificate

Gain a broader knowledge of middle management skills while focusing on the specific leadership areas appropriate to you and your workplace.

Diploma

This qualification is the benchmark qualification for full CMI membership, taking you another step towards Chartered Manager status.

Credits can be gained from the following modules:

- Leadership practice
- Managing team and individual performance
- Mentoring skills
- Stakeholder management
- Managing engineering projects
- Innovation and problem solving skills
- Financial management

Who should attend?

Middle managers and leaders at the level of operations, division, department, or specialist, who report to a senior manager or business owner.



BUSINESS & COMMERCIAL

With an increasing focus on consumers, success in the engineering field requires more than technical expertise. This portfolio helps with the development of key commercial skills to enhance the value individuals bring to any organisation, including support in strategy development, risk management, engaging stakeholders, and impacting the bottom line.

IN THIS SECTION

- 26** Business skills for graduate engineers
Commercial skills
- 27** Understanding intellectual property
Commercial risk
Contract law and contract drafting
- 28** Procurement for engineers
Managing supply chain risk **NEW**
- 29** Negotiation skills
Customer service excellence
Consultative selling
- 30** Cost estimating
Financial management
Writing effective business proposals

SYMBOLS

Look out for our symbols to find the course that suits you.



Face-to-face courses



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Business skills for graduate engineers

2 Days



UK-SPEC: C, D, E

Thrive in the modern engineering and commercial environment.

Technical knowledge is non-negotiable in succeeding as an engineer. But by itself, it's not enough. This course will expose you to topics that will improve your impact in your organisation and drive your career forwards, including project management, finance, time management, understanding customers and the professional responsibilities of an engineer.



I really appreciated the course instructor's ability to tailor the content to suit our business needs. I believe I will be more motivated in my work, since I understand more about what the company desires from me, and how I can serve them and myself better.

Lawrence Wang, FMB Oxford

 imeche.org/bubuss

Who should attend?



Engineers, heading for Chartered or Incorporated status, who have graduated in the last few years, either through a graduate programme or have gone directly into a post of technical responsibility.

Key outcomes:



- Articulate how engineering fits into the organisation structure along with the key deliverables
- Understand project management principles
- Focus on what your personal "customer" needs
- Manage your time more effectively by setting better priorities
- Understand the basics of finance such as budgeting and cost control

Commercial skills

2 Days



UK-SPEC: C, D, E

Contribute to business profitability by applying commercial principles.

Appreciate the commercial world and how to deal with real issues including handling suppliers, demanding customers, as well as exploring opportunities to increase value and gain competitive advantage.

Practical and jargon-free, this course delivers the essential skills to enable engineers to become more commercially aware, and at the same time improve their career prospects.



I am new to my role, so this course was brilliant for me, I also found the interactive sessions really useful, and I found it interesting when the trainer drew upon his own experience and gave real life examples.

Caitlin Gent, Transpennine Express

 imeche.org/bucosk

Who should attend?



Engineers at all levels and also relevant to those new to industry including commercial graduates.

Key outcomes:



- Understand customer needs, identify what comprises "value" for them, and deal with them more assertively
- Contribute to the profitability of your projects and contracts and better manage issues that affect business profitability
- "Hold your own" in meetings with commercial colleagues
- Understand your own and others' business strategy and align your actions accordingly

Group Learning Passes

Additional savings are available through our Group Learning Passes.

imeche.org/trainingoffers



Bring a colleague for free

Dozens of two-for-ones on selected leadership, business and personal development courses.

imeche.org/trainingoffers





Understanding intellectual property for engineers

1 Day



UK-SPEC: B, C

Essential rules for protecting your IP and the dangers of infringing on a third party's.

Intellectual property (IP) is the collective term for patents, design rights, copyrights, trademarks and confidential information. Learn the essential rules for protecting your IP, the dangers of infringing third party IP and be guided on what you should and shouldn't say in meetings, correspondence and negotiations.



The trainer is very knowledgeable and experienced in this field and his delivery is excellent, stopping regularly to ensure attendees understand key points.

James Hollender, EDF Renewables

 imeche.org/buunip

Who should attend?



Individuals at all levels at the forefront of design and technology, generally curious about IP or seeking work in this area in the future.

Key outcomes:



- Understand what IP can and can't do
- Recognise potentially dangerous situations and provide better guidance to colleagues
- Know when to refer a matter to an IP specialist
- Know the protective legends which must go on documents
- Be aware what must be included in confidentiality agreements

Commercial risk

2 Days



UK-SPEC: C, D, E

Develop solution-based contracts which protect the interests of both parties.

Commercial risk is aimed at risk management through practical remedies, avoiding any hostilities between contracting parties and a breach of contract resulting in court involvement.

You will learn the importance of collaboration between internal stakeholders and how to mitigate and manage risk, preserve relationships and reputation and achieve best outcomes.



Very useful course with a lot of information covered within the 2 days. The information gained will enable me to identify key risks within a project contract and has given me the tools to progress the discussions around them within my company.

Vincent Taitt, Captec LTD

 imeche.org/bucris

Who should attend?



Engineers working towards professional registration and for non-engineers working in engineering organisations.

Key outcomes:



- Think more strategically when preparing bid submissions or evaluating tenders
- Increase likelihood of successfully winning submitted bids and making the right supplier choice
- Identify the benefits of time spent at the front end, pre-award, on drafting and negotiating a solid contract
- Anticipate, identify and manage potential risks, both pre and post-contract award

Contract law and contract drafting

2 Days



UK-SPEC: B, D, E

Maximise your contribution to complex engineering contracts.

Engineering contracts can be among the most complex and demanding that are put in place and often require input from a range of specialists, including engineers, scientists and project managers.

This course is designed to dispel the mystique which surrounds the legally binding contract and to demonstrate that, provided some basic ground rules are followed, an engineer can make an important contribution in a contract negotiation.

 imeche.org/buclaw

Who should attend?



Engineers and non-engineers at all levels, especially those who negotiate on contracts or who want to up-skill to gain a competitive edge.

Key outcomes:



- Apply the fundamentals of contract law and intellectual property law to maximise your contribution to the process
- Understand model forms of contract and methods of drafting a contract
- Confidently agree, negotiate or dispute your own contracts

Procurement for engineers

1 Day



UK-SPEC: C, D, E

Become an effective member of the procurement team.

Develop the skills, knowledge and competencies required to be an effective member of (or to support) the procurement team.

This course will help you secure vital resources including equipment, materials and services – thereby delivering value for the organisation from both local and global supply markets.

Who should attend?



Engineers with direct or indirect responsibility for procurement, including those in supply chain management, contracting, transport and logistics groups, project managers or finance.

Key outcomes:



- Understand the basic concepts of procurement
- Apply techniques to ensure the engineering organisation secures value for money, quality and fit for purpose outcomes
- Appreciate the commercial importance of effective procurement and enhancing its contribution to effective cost management
- Appreciate the legalities involved in procurement and the forming of contract

 imeche.org/buenpr

NEW Managing supply chain risk

2 Days



UK-SPEC: C, D

Collaborate effectively with suppliers to create new opportunities for success.

Our suppliers are not exempt from risks. It is important to collaborate and form a strategic partnership to effectively mitigate, minimise or manage supply chain risks.

Learn what is required to manage a supplier effectively, and gain visibility of their performance to get early warnings of any risks occurring. You will also learn to adopt a risk awareness culture, including the development of disaster recovery plans and business continuity plans.

Who should attend?



Anyone who interfaces with suppliers, from procurement staff to engineers and project managers plus any interested stakeholders.

Key outcomes:



- Understand the importance of a thorough needs analysis, clear specification, scope of supply and contract writing
- Appreciate the importance of a comprehensive vendor selection process
- Identify potential risks, the root cause and how best to manage them to minimise the criticality to the project
- Adopt the 'Waterfall Process', taking time prior to signing a contract to ensure that all risks have been identified, and an approach for dealing with them has been included in the contract

 imeche.org/bumscr

Free webinars

Throughout the year, you can register for **free webinars** to get a taster of some of the subjects we cover during our training courses.



[View free webinars](#)

Negotiation skills

2 Days

UK-SPEC: C, D, E



Achieve win-win outcomes in various types of negotiations.

Negotiations can range from project timelines, salary increases, conflict, suppliers, contracts to cross-cultural collaboration. Learning to negotiate is important to engineers who want to achieve win-win outcomes and build better relationships with other parties.

Learn how to set SMART objectives to gain clarity on your goals and what you are trying to achieve at the outset. In addition to this, you will understand the vital steps of the negotiation process, tactics, and human factors at play.



The trainer had excellent knowledge of the art of negotiation and was very responsive and happy to engage with our questions. The session was dynamic and interactive.

Jamie Hathaway, The Faraday Institution

 imeche.org/bunego

Who should attend?



Engineers and anyone new to negotiating or those who would like to refresh and upgrade their existing skills.

Key outcomes:



- Define the goals of your negotiation
- Plan and prepare for the delivery of a successful negotiation
- Understand the need for developing Best Alternative To a Negotiated Agreement (BATNA)
- Understand the importance of a win-win approach for future business
- Recognise common negotiation tactics and how to deal with them

Customer service excellence

2 Days

UK-SPEC: D, E



Build stronger customer relationships using communication, trust and rapport.

Understanding how to handle customers professionally whilst managing expectations is just as important as the products and services you offer.

You will be able to practise your interpersonal skills in a variety of client/customer situations and learn to identify customer pain points, micro failures and what customers really value; this will include training on asking better questions, listening, managing conflict and the importance of language in customer service.

 imeche.org/bucust

Who should attend?



Individuals in a customer-facing role who need powerful client management and communication skills.

Key outcomes:



- Build better client relationships and provide higher levels of service
- Use listening and questioning techniques to better manage customer expectations and effectively troubleshoot problems
- Confidently handle challenging situations whilst maintaining a strong customer focus
- Use proven problem-solving techniques to create win-win scenarios

Consultative selling

2 Days

UK-SPEC: C, D



Understand client needs and solve their problems whilst adding value.

Consultative selling focuses on creating value and building relationships before discussing solutions, as opposed to the traditional "hard" sales process. It focuses on a partnership approach that benefits the client and provides long-term rewards for both parties.

A consultative approach requires good listening and questioning skills to respond flexibly to customer situations and successfully deliver on their outcomes.

 imeche.org/bucons

Who should attend?



Engineers involved in selling products or services to clients, both internal and external will gain value from this course.

Key outcomes:



- Understand your natural sales style, its strengths and limitations, and have an action list to improve your performance
- Create partnerships with clients that are profitable and long-term
- Examine the process of consultative selling to ensure a win-win approach
- Effectively use rapport, listening and questioning techniques
- Acquire a thorough grounding in the sales process from an initial needs analysis meeting through to final presentation

Cost estimating

1 Day



UK-SPEC: B, C

Generate accurate and reliable cost estimates.

The need for good estimating practice is fundamental to a business' commercial viability as well as being a source of sustainable competitive advantage.

Throughout the course, you will practise a number of estimating methods and upon completion will be able to make an informed decision regarding the most appropriate technique to adopt in a range of scenarios.

 imeche.org/bucost

Who should attend?



Engineers and non-engineers at all levels.

Key outcomes:



- Understand what an estimate is and why we estimate
- Understand the business impact of good and bad cost estimating
- Understand the different cost inputs
- Select the appropriate estimating method for a given task
- Estimate labour, materials and overheads
- Understand the impact of risk and uncertainty

Financial management

2 Days



UK-SPEC: C, E

Balance short-term profitability with long-term value creation.

Engineers are often required to be conversant with the terminology and statements that accountants use. Technical expertise in projects, service delivery, production or other areas can only be fully realised if engineers understand the accounting and reporting processes that drive businesses.

This course will enable you to upskill in financial, management and project accounting. Develop what-if models and gain a deeper appreciation of the impact of decisions on financial measures.



As a Project Manager, the proposal aspect was really useful to understand exactly what an IRR or discounted payback period meant and why it was used. This will help me to understand why certain decisions are made to hold or progress a project.

George Sadler, 3M (UK) Plc

 imeche.org/bufinm



Who should attend?



Engineers and non-engineers at all levels responsible for projects, service delivery or production.

Key outcomes:



- Understand the main financial statements; profit and loss, balance sheet and cash flow
- Recognise the critical importance of cash flow and working capital
- Know how to evaluate opportunities and when necessary cut the right cost
- Recognise the financial impact of 'soft' performance drivers - relationships, culture, skills, brand and knowledge
- Build robust business cases and justify investment decisions

Upgrade this course to a CMI Level 5 qualification. To find out how visit imeche.org/CMItraining/Level5

Writing effective business proposals

1 Day



UK-SPEC: C, D, E

Writing a good business proposal, such as winning a new client, is an important part of doing business.

Writing clearly and succinctly, with supporting facts that are expressed in ways your audience will understand, will help get the message across. You also need to tell a cohesive story in an appropriate style, without exaggeration or repetition.

The focus of this course will be on internal technical proposals, but you will learn the differences between those for internal and external use. We will look at some of the key financial terms, what they mean and how to calculate them.

 imeche.org/buwebp

Who should attend?



Anyone who has to write, approve or present business proposals, whether internally or externally to their company including project engineers, technical specialists, sales, management and supervisors.

Key outcomes:



- Identify the problem that you are trying to solve
- Use an efficient writing process where you will have a number of contributors
- Tell a cohesive story backed up by appropriate facts and figures
- Present the facts/data in ways that are understandable to non-engineers
- Give accurate financial analysis of your proposal

PROJECT MANAGEMENT

In today's competitive world, successful project delivery often determines whether a business will win the next job or a new product hits the market. This portfolio has been curated to support all levels, from those sponsoring complex improvement programmes to those working in project teams for the first time.

IN THIS SECTION

- 32** Project working for engineers
 - Project planning
 - Leading your project team
- 33** Research and development project management
 - Project risk management
- 34** Managing engineering projects
 - Stakeholder management
- 35** Agile project management
 - Project monitoring and control
- 36** APM Project Fundamentals Qualification (PFQ)
 - APM Project Management Qualification (PMQ)
- 37** Management of Risk (M_o_R)[®] Foundation
 - Managing Successful Programmes (MSP)[®] Foundation
 - Managing Successful Programmes (MSP)[®] Practitioner
- 38** Project Management Professional (PMP)[®]
 - PRINCE2[®] Foundation
 - PRINCE2[®] Practitioner

SYMBOLS

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Project working for engineers

1 Day



UK-SPEC: C, D, E

Improve your workload management and project contribution.

An introduction to project management for those who are yet to fulfil the role of project manager, yet provide vital support within projects, teams and the organisation.

The course is ideal for those who want to take better control of their workload, and contribute more effectively to the success of their projects. The emphasis is on practical, hands-on techniques to use immediately, and there will be lots of opportunity to practise during the course.

 imeche.org/lppwfe

Who should attend?



Engineers working as members of project teams, and those who want a short introduction to project management techniques.

Key outcomes:



- Estimate timescales realistically
- Be proactive in developing project plans, assessing risks and problem solving
- Make a valuable contribution to project success
- Understand the challenges of project management

Project planning

1 Day



UK-SPEC: C, E

A practical approach to planning your engineering projects.

Whether you are planning a whole project, or planning your own workload, it is essential to use the key steps for creating a realistic plan.

Learn to schedule and resource your next project using the latest software tools. It will ensure that you avoid the common pitfall of 'diving into the detail'. Delegates with previous knowledge of project management should be able to use the techniques in a live project after the course.

 imeche.org/lpprpl

Who should attend?



Project managers, team members, or personnel in a project assurance or project support role. No previous experience of project management is required.

Key outcomes:



- Structure project requirements
- Develop the project's scope and necessary work packages
- Establish cost and duration estimates
- Establish the critical path for the project
- Allocate the necessary resources balancing efficiency with risk

Leading your project team

1 Day



UK-SPEC: C, D, E

Develop the skills, tools and techniques to lead a project.

Project managers must invariably achieve results through others, usually without much formal authority. This course deals with using project management skills, tools and strategies in a leadership role.

You will learn about successful people management within projects to ensure that stakeholders, project sponsors and project team members are managed effectively to give your projects the maximum chance of success.



The trainer is very knowledgeable and tailored the discussions to our different industries. As the group was small it allowed for some very interesting and detailed topics of debate. He set a good pace to the day and was fully engaging from the beginning all the way to end of the day. The exercises were fun and made us really think about the material he was presenting and putting it into practice.

Craig Noble, Gestamp

 imeche.org/lpsprl

Who should attend?



Engineers and non-engineers at all levels, who are either in a formal project management role or who lead projects without formal authority.

Key outcomes:



- Understand why projects fail or go adrift
- Define success criteria and success factors
- Scope projects effectively
- Manage the planning process
- Adapt leadership style as required



Research and development project management

2 Days

UK-SPEC: A, B, C

Effectively manage research and development projects.

The formal disciplines of project management can provide a means of helping to plan, organise and control multi-disciplinary projects without stifling innovation.

This course specifically deals with the management of projects, which require some differences in approach to conventional project management. R&D must operate strategically in the organisation, becoming a key driver of business success.



I know where I'm going a bit more now, rather than feeling a little bit lost as you sometimes can when projects aren't going your way.

Laurence Newman,
Torus Measurement Systems



Who should attend?

Engineers, researchers and project leaders working in R&D.



Key outcomes:

- Build a sound process for setting up and managing R&D projects
- Establish project objectives and key success criteria
- Ensure project responsibilities and accountabilities are defined and allocated
- Plan and schedule the activities needed to carry out a project
- Track, manage and report project performance



imeche.org/lprdpm

Project risk management

1 Day

UK-SPEC: B, C, E

Deliver a successful project by learning how to manage risks.

Whatever the size or type of your project it will contain some risk. If this is not managed correctly, your project could be less successful than it should, or even fail completely.

Project risk management addresses the challenges and describes a range of tools and techniques to help you manage risk effectively and increase the chances of project success.



Who should attend?

Project managers, team members, or personnel in a project assurance or project support role.



Key outcomes:

- Deploy a structured framework for risk management
- Use practical tools and techniques to help identify, assess, plan and implement responses to risks
- Understand the roles and responsibilities associated with risk management
- Monitor and communicate risk status effectively
- Gain confidence in applying risk management techniques



imeche.org/lppris

Managing engineering projects

2 Days



UK-SPEC: C, D, E

Principles for leading engineering projects in a multi-project, multi-task environment.

Whilst project management skills are universally applicable and transferable, this course highlights the particular challenges of projects in an engineering context and offers the techniques that are available to overcome them. It also shows how to avoid the problems that some well-known projects have encountered.



Very insightful and great introduction to project management in engineering. I have learnt some very useful tools and techniques that I have full intention of implementing in the workplace. The trainer was extremely enthusiastic and clearly very knowledgeable and passionate about the course.

Jonathan Nelson, JCB



I now understand why things take time to get done. For me, the most important part was learning about the time to market and how planning is very important to get results. Without effective planning, your execution will take much longer.

Karim Khalil, Transport for London



Who should attend?



Existing or aspiring project managers who wish to improve their ability to achieve their project goals by acquiring best practice tools and techniques.

Key outcomes:



- Deploy a structured framework for your projects
- Apply practical tools and techniques to help scope, plan and deliver engineering projects well
- Generate effective project documentation
- Understand the roles and responsibilities in a project environment
- Manage project risks, issues and changes



Upgrade this course to a CMI Level 5 qualification. To find out how visit imeche.org/CMItraining/Level5

imeche.org/lpmepr

Stakeholder management

1 Day



UK-SPEC: C, D, E

Identify stakeholders and effectively communicate with them to ensure project success.

Learn about stakeholder management theory and the techniques to better identify stakeholders, understand their needs, communicate clearly at all stages of the project, and influence supporters and opponents. Risk and change management basics are also covered to leave you well equipped to run more effective projects in the future.



Really useful and I will definitely implement these topics and ideas.

Jeremy Silver, Weston Aerospace

Who should attend?



Project managers, team managers and those in a project assurance or support role. It is expected that delegates will have at least 12 months' experience of project management at team or project manager level.

Key outcomes:



- Understand the difference between stakeholder management and engagement
- Identify stakeholders and communicate effectively using the matrix key messages model
- Use a range of practical techniques to prioritise stakeholders and deal with them differently as a result
- Use a range of tools to effectively gauge success in meeting stakeholder expectations

imeche.org/lpsmgt



Agile project management

1 Day



UK-SPEC: C, E

An introduction to the techniques and practices for managing Agile software delivery.

Experience the tools used in Agile development along with having the opportunity to practice their application in a supportive environment.

You will understand the different Agile roles and how they differ from traditional project management roles along with avoiding potential pitfalls.

 imeche.org/lpagip

Who should attend?



Anyone considering or transitioning to become more proficient in delivering projects in an Agile way.

Key outcomes:



- Apply the Agile principles in a project setting
- Make use of user stories to support the development of requirements and organisation of backlogs
- Make use of story point estimating techniques and confidently apply them in laying out the work required to deliver useful product through both release and iteration planning

Project monitoring and control

1 Day



UK-SPEC: C, E

Ensure your project delivers the required scope within its time, cost and quality constraints.

Understand the monitoring actions that are available and the associated controlling actions which can be used to keep a project on track, or to cope with deviations.

This course incorporates practical sessions and case studies to ensure you have the opportunity to apply the tools and techniques being presented.

 imeche.org/lpprmc

Who should attend?



Project managers, team managers, or personnel in a project assurance or project support role. A basic knowledge of project scheduling is needed.

Key outcomes:



- Recommend appropriate success criteria and KPIs
- Develop the project cashflow and budget
- Use Earned Value Management calculations to forecast project end dates and costs
- Use Earned Value Management techniques to establish trends and forecast project outcomes
- Develop milestone charts for use in project reports to senior management

Free webinars

Throughout the year, you can register for **free webinars** to get a taster of some of the subjects we cover during our training courses.



[View free webinars](#)

APM Project Fundamentals Qualification (PFQ)



2 Days

UK-SPEC: A, B, C

An accredited foundation-level qualification in project management.

Project management is essential for engineers, enabling them to understand the project life cycle and critical success factors required to make a positive contribution within projects.

This qualification provides an understanding of project management terminology and principles. You will be registered to undertake a one hour exam. Upon successful completion participants will receive a certificate from the Association of Project Management (APM).



The training more than met my expectations. I have had previous training on projects but APM has brought up new ways of managing projects, especially in the engineering research sector.

Charles Kioko, AMRC Training Centre

imeche.org/lppfqd

Who should attend?



Project managers, aspiring project managers, anyone involved in projects, and anyone wishing to better their understanding of project management.

Key outcomes:



- Use a structured framework for managing projects
- Gain clarity at the outset of a project
- Identify and agree key success criteria
- Communicate with and manage the needs of different stakeholders
- Monitor and control project progress

APM Project Management Qualification (PMQ)



5 Days

UK-SPEC: C, E

An internationally-recognised professional qualification in project management.

Gain a competitive advantage and improved project delivery through developing highly skilled and qualified project managers. The qualification increases the likelihood of project success, enhanced recognition of project management capability and visible investment in staff.

This intensive course offers the opportunity to obtain the APM Project Management Qualification (PMQ), the flagship qualification of the Association for Project Management.



It was an excellent course - the trainer was exceptional. His industry experience was obvious and he created an atmosphere that promoted open discussion and exchange of ideas. 10/10."

Tristram Royce, Aecom

imeche.org/lppmqd

Who should attend?



Individuals involved in managing projects that have some pre-existing project management knowledge. We recommend a minimum of two years' experience of working in a project environment.

Key outcomes:



- Demonstrate your knowledge of all aspects of managing projects
- Apply a wide range of project management techniques
- Achieve recognition and credibility with clients, teams and senior managers
- Feel confident and equipped to manage and deliver significant projects

Member discounts

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Bundles

Discounts on courses that blend together to deliver an expert level of training.

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Management of Risk (M_o_R)[®] Foundation

12 Hours



Understand how to accurately assess risk within your organisation.

This flexible framework is taught over ten sessions which cover the principles, approach, processes, embedding, reviewing and perspectives of the Management of Risk guidance. It also explores risk health checks, risk management specialisms and the Management of Risk maturity model.

 imeche.org/lpmspm

Who should attend?



All levels of management, including corporate, programme, project and operational managers.

Key outcomes:



- Understand what risk management is and why it is important
- Changing organisational culture, measuring the value and how to overcome the common barriers associated with the implementation of risk management
- Understand risk specialisms, including the management of business continuity, incident and crisis, health and safety, security and financial risk

Managing Successful Programmes (MSP)[®] Foundation

20 Hours



Managing successful programmes represents proven best practice programme management.

MSP[®] is a framework for successfully delivering large scale transformational change through a dossier of related projects and related activities to make the change 'stick'.

This foundation level qualification is designed to be flexible to meet the needs of local circumstances and brings together the key elements of governance themes together with transformational flow processes, all underpinned by common sense principles to enable success.

 imeche.org/lpmspf

Who should attend?



Those involved in change projects, including programme managers, project managers, sponsors and operational staff.

Key outcomes:



- Understand how you can help contribute more effectively to the realisation of benefits
- Reduce the level of risk involved and project your investment in change
- Effectively manage transformational change, ensuring its governance themes and processes are applied appropriately to suit your organisation
- The MSP Foundation eLearning is accredited to fully prepare you for the Managing Successful Programmes (MSP) Foundation examination

Managing Successful Programmes (MSP)[®] Practitioner

20 Hours



MSP[®] provides an adaptable framework for delivering large scale transformational change.

MSP[®] is a methodology that comprises a set of principles and processes for use when managing a programme. This course is made up of a specific set of projects identified by an organisation that together will deliver some defined objective, or set of objectives, for the organisation. The objectives of the course are typically at a strategic level so that the organisation can achieve benefits and improvements in its business operation.

 imeche.org/lpmssp

Who should attend?



Those involved in change projects, including programme managers, senior managers, project managers, sponsors and operational staff.

Key outcomes:



- Become a more effective member of a programme team and understand how your role fits into the bigger picture
- Reduce the level of risk involved and project your investment in change
- Effectively manage transformational change, ensuring its governance themes and processes are applied appropriately
- The MSP Practitioner eLearning is accredited to fully prepare you for the Managing Successful Programmes (MSP) Practitioner examination

Project Management Professional (PMP)[®]

40 Hours



UK-SPEC: D, E

A globally recognised certification for experienced project managers.

The PMP[®] credential demonstrates that you have the knowledge, experience and competency to successfully lead projects. Experienced project managers should consider this qualification to consolidate their skills and allow them to be recognised as highly capable project managers.

 imeche.org/lppmpe

Who should attend?



Experienced project managers with strict prior learning requirements to sit the exam, please contact us for more information.

Key outcomes:



- Understand how to work as an informed member of a project team undertaking a variety of project management roles
- Analyse the inputs, tools and techniques of the processes and knowledge areas of the PMBOK[®] Guide
- Be prepared for the PMP[®] examination having completed the required 35 contact hours
- Describe each process group and knowledge area of the PMBOK[®] Guide

PRINCE2[®] Foundation

15 Hours



UK-SPEC: C, E

Gain knowledge of the PRINCE2[®] methodology.

PRINCE2[®] (an acronym for Projects IN Controlled Environments) is a process-based method for effective project management. This foundation level qualification teaches the principles and terminology of PRINCE2[®], enabling you to be an effective member of a project management team. As it is so widely recognised and understood, it provides a common language for all participants in a project.

 imeche.org/lppree

Who should attend?



All current or aspiring project managers, with no prior experience required.

Key outcomes:



- Understand key concepts relating to projects and PRINCE2[®]
- Recognise how the PRINCE2[®] principles underpin the PRINCE2[®] method
- Understand the PRINCE2[®] themes and how they are applied throughout the project
- Understand the PRINCE2[®] processes and how they are carried out throughout the project

PRINCE2[®] Practitioner

15 Hours



UK-SPEC: C, E

Apply PRINCE2[®] to the management of a project.

The PRINCE2[®] Practitioner qualification is the next step after achieving foundation level and will give you the skills to confidently and successfully manage projects. Your projects will benefit from a common and consistent approach, using a globally recognised methodology. The PRINCE2[®] framework is flexible, so you may adjust it to suit your industry and bring greater control and efficiency to your projects.

 imeche.org/lpppee

Who should attend?



Anyone wishing to gain the PRINCE2[®] Practitioner qualification, and who has already achieved the PRINCE2[®] Foundation level qualification.

Key outcomes:



- Apply the PRINCE2[®] principles in context
- Tailor relevant aspects of PRINCE2[®] themes in context
- Implement relevant aspects of PRINCE2[®] processes in context

ENERGY

As renewable energy sources grow in popularity, this portfolio provides a comprehensive and unbiased introduction to topics such as hydrogen supply chains, wind energy, energy storage, and carbon capture, as well as an overview of their opportunities and risks associated with them.

IN THIS SECTION

- 40** Green hydrogen
Clean hydrogen: Technologies, economics and growth pathways
Energy system in transition **NEW**
- 41** Energy storage
Solutions for flexible clean power **NEW**
Carbon capture, utilisation and storage (CCUS)
- 42** Hydrogen storage and transportation
Wind energy: Fundamentals

SYMBOLS

Look out for our symbols to find the course that suits you.



Face-to-face courses



Online courses



Bring a colleague for free

Scan the QR code to book courses online



Green hydrogen

2 Days



UK-SPEC: A, B, E

Discover new business opportunities in green hydrogen.

Combining fundamental technology principles with up-to-date market intelligence, you will gain a clear picture of how and why electrolysis technologies are developing and where the most promising market applications for green hydrogen are emerging.

You will learn how the key competing technologies differ, which variables drive the cost of hydrogen production, and how different policy approaches and market conditions will determine pathways to market growth.



It was really useful to understand the hydrogen economy and to have a reality check on what is possible and what is probable from a very knowledgeable tutor. I would recommend the course.

Keith Mead, Haltermann Carless (HCS) Group

 imeche.org/bugree

Clean hydrogen: Technologies, economics and growth pathways

2 Days



UK-SPEC: A, B, C, E

Introduction to hydrogen supply chains, from production to end-use.

Hydrogen is a topic where it can prove hard to find independent information, given the diversity of opinions and interests that it covers. Competition will be fierce within the hydrogen sector itself and between hydrogen and competing visions of the 'clean' economies of the future.

Gain a clear and hype-free perspective on the opportunities that hydrogen presents, with focus firmly on clean hydrogen, and on the real challenges and barriers that it faces.



Excellent knowledgeable trainer. Good balanced approach to hydrogen without bias. Good group interaction with interesting perspectives from all delegates.

Thomas Coode, Premtech Ltd

 imeche.org/buhydr

Who should attend?



Individuals in a commercial role such as business development and strategic planning who wants a wide-ranging understanding of the interconnected topics which determine the development of the green hydrogen sector.

Key outcomes:



- Compare and contrast the different green hydrogen (electrolysis) technologies
- Understand other key components of a green hydrogen project
- Identify the key trends in cost reduction and performance improvements
- Evaluate the importance of different input and output assumptions on the costs of green hydrogen production

Who should attend?



Those involved in analysing the market opportunities from clean hydrogen, or who are moving from another sector into a new, hydrogen-related role.

Key outcomes:



- Compare the different pathways to clean hydrogen production
- Identify the current markets for clean hydrogen and describe the barriers to adoption for further growth
- List the different ways to move and store hydrogen
- Perform basic conversions and calculations which illustrate essential aspects of hydrogen supply chain economics

NEW Energy system in transition

2 Days



UK-SPEC: A, B, E

Assess how the transition to a lower carbon energy system will create new opportunities and risks to your business.

While the various elements of the transition to a lower carbon energy system are often discussed individually, many of its most significant impacts derive from the integration and convergence of once-separate sectors.

This course will provide you with an essential, multi-sector view of 'net-zero' pathways, covering aspects such as electrification, distributed energy, digitised 'smart' systems, and clean fuels.

 imeche.org/eneitr

Who should attend?



Business and product strategists, developers and planners, and anyone else responsible for assessing the options, opportunities and risks that energy system decarbonisation brings to their company.

Key outcomes:



- Summarise up-to-date information on what impact the energy transition has had
- Discuss the variety of different routes towards a 'net-zero' system
- Describe the options for 'clean fuels' and how their usage is likely to develop alongside electrification
- Assess the extent to which carbon capture can preserve business models of the fossil fuel sector



Energy storage

2 Days

UK-SPEC: A, B, E

Understand the technology, market deployment and business case trends driving energy storage projects.

Extensive growth in energy storage is an essential feature of low carbon, renewable power systems. It helps provide the flexibility and resilience that systems supporting large quantities of capacity such as wind and solar will require.

This course will combine fundamental technology and power system principles with up-to-date market intelligence to provide a clear picture of how and why the energy storage market is developing.



Who should attend?



Engineers who are involved in analysing the market opportunities arising within the fast-growing energy storage market, or who are moving from another sector into a new, storage-related role.

Key outcomes:



- Describe the key energy storage market segments and opportunities
- Understand the differences between competing energy storage technologies
- Discuss the key, non-technological project delivery issues for battery storage projects
- Understand how the energy storage business interacts with other power system trends

imeche.org/buenst

NEW Solutions for flexible clean power

2 Days

UK-SPEC: A, B, E

Understand solutions which ensure that low-carbon electricity systems retain resilience of those based on conventional sources.

Identify the key trends and market opportunities which arise from the shift to flexible clean power system solutions.

While low-carbon generators such as solar or wind often offer the cheapest sources of electricity generation these days, the electricity system within which they sit needs solutions to balance their variable supply with that of end-use demands.



Who should attend?



Business and product strategists, developers and planners, and anyone responsible for assessing the opportunities and risks that the shift to a low carbon electricity system brings to their business.

Key outcomes:



- Describe what 'flexibility' really means in a power system context
- Critically assess the different solutions to flexibility in clean power systems
- Understand what a fully decarbonised power system might look like, and whether it can be achieved
- Describe the various barriers to clean power flexibility and identify opportunities for new solutions to overcome them

imeche.org/ensfcp

Carbon capture, utilisation and storage (CCUS)

2 Days

UK-SPEC: A, B, C, E

Gain an understanding of the CCUS supply chain from capture, transport to storage.

Many believe that CCUS is essential in driving 'net-zero' decarbonisation pathways, creating huge opportunities for players across a number of industry segments including oil and gas, industrial gas supply chains, industrial processes and low carbon technologies.

You will understand how, where and why CCUS is happening now and could grow in future – covering the range of technological solutions and business drivers, including policy.



Who should attend?



Business-focused non-experts who want an understanding of the interconnected topics which determine the development of the CCUS industry.

Key outcomes:



- Quantify the scale of the growth potential of CCUS
- List the industries and processes best suited to early adoption of CCUS
- Understand carbon capture technologies and their cost drivers
- Identify the different pathways of CCUS, including the relative emissions impacts of storage vs. utilisation

imeche.org/buccus

Hydrogen storage and transportation



2 Days

UK-SPEC: A, B, E

Learn about the challenges of storing and moving hydrogen.

While fossil fuel supply chains are established and extensive, growth in the usage of hydrogen will require overcoming key challenges in storing and moving it.

This course will describe the physical limitations and problems that hydrogen as a molecule presents. It will outline how hydrogen is currently stored and transported, along with current and emerging proposals to how those processes can be scaled up.

 imeche.org/enhsat

Who should attend?



Project and product developers, business analysts and planners, and anyone else responsible for assessing the options, opportunities and risks in setting up viable, commercial hydrogen supply chains.

Key outcomes:



- Know how hydrogen is currently stored and moved as an industrial gas
- List the options for extending and scaling up current hydrogen supply chains
- Understand the main barriers to scale
- Assess the key factors which will determine storage and transportation choices
- Understand the market relationships and conversions between hydrogen and derivative clean fuels and energy carriers

Wind energy: Fundamentals



6 Hours

UK-SPEC: B, C, E

Identify the requirements to start a career in the wind energy sector.

One of the greatest challenges facing the wind energy industry is sourcing the right expertise to design, build and maintain the necessary structures. Gain an overview of the requirements to work in the industry, skills required and how you can transfer your existing technical knowledge and soft skills when entering the wind energy industry.



The walk-through of the turbine was excellent for visualising a real off-shore platform without having to go through the time-consuming training required. It was a very interesting overview of wind power.

Kadi Berry, Pembrokeshire College

 imeche.org/eiwinf

Who should attend?



Graduates, oil and gas professionals wanting to make the transition to the offshore wind market, and engineers, supervisors and managers responsible for wind turbine operations and maintenance.

Key outcomes:



- Understand the design, operation and maintenance fundamentals of a wind turbine
- Identify the entry requirements and transferable skills needed to work in the sector
- Gain an insight into the future trends of the renewable industry

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ENGINEERING ESSENTIALS

This portfolio covers a range of principles and techniques that can help update skills and improve knowledge of modern mechanical engineering, whilst ensuring that engineering processes are safe, cost-effective and legal.

IN THIS SECTION

- 44** Preparing engineering specifications
Reviewing engineering documents
- 45** Technical report writing
Technical report writing: Extension
Presenting technical information
- 46** Geometric dimensioning and tolerancing (GD&T): ASME Y14.5
Geometric dimensioning and tolerancing (GD&T): BS 8888 and ISO
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Introduction to systems engineering
- 51** Tolerance analysis
Fault finding techniques: Introduction
Non-destructive testing: Introduction

SYMBOLS

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Technical writing courses

Strong technical writing skills enable engineers to clearly communicate technical information so they can provide instructions that are accurate and compliant with standards and regulations; this is essential for engineers to succeed and make a valuable contribution to their organisation.

Preparing engineering specifications

2 Days

UK-SPEC: B, D, E

Prepare better engineering specifications to reduce business risk.

A detailed and high quality specification is the key to project success. This course starts with the role of the specification in the project, its legal status and the needs of the various stakeholders. Using a range of tools and techniques, we will cover a systematic approach to structuring and writing the specification that builds in quality, detail, methods of verification and clear communication.



“ ”

I think it's fair to say that the learning transcends into many areas. The concepts of clear sentences and unambiguous terminology have been incredibly useful in many areas of my work.

Carl Baxendell, WH Davis

VERIFIED

imeche.org/eepes

Who should attend?

Engineers at all levels and those in other roles involved in working with specifications.



Key outcomes:

- Explain the role and purpose of specifications and the different types
- Define and prioritise the detailed requirements
- Structure a specification to clearly get the point across
- Prepare, edit and approve specifications more quickly
- Identify commercial and contractual issues and take steps to avoid them



Reviewing engineering documents

1 Day

UK-SPEC: D

Designed to support you in delivering reports more effectively.

Reviewing, approving and signing-off the writing of others is a skill in itself. Doing it efficiently whilst still allowing the author to retain their ownership and style, takes this skill to another level. The skills you will learn on this course will enable you to improve the final quality and consistency of the work produced within your department, whilst significantly reducing the time you need to spend on the reviewing task.



This was a fantastic course. It demonstrated that people centred design extends far beyond the product and that with a considered approach we can deliver technical reports at a higher quality with more efficiency.

Samuel Rawlinson, Aquila



imeche.org/eeredo

Who should attend?

Anyone who is responsible for reviewing, compiling, proof reading, editing, approving or publishing technical documents.



Key outcomes:

- Provide an accurate brief so that the author knows what is expected from their document
- Give constructive feedback to enable continuous improvement of the writing of your team
- Understand the role of the reviewer and ensure that documents for your attention are of a suitable standard
- Efficiently approve, review, check and sign-off reports
- Have a consistent document structure and writing style across your team/ department





Technical report writing

1 Day



UK-SPEC: D

Write better, shorter, clearer reports, faster.

Anyone involved in technical work will quickly discover the challenge of trying to communicate their ideas, information, proposals or recommendations to others. This course provides you the tools and techniques to improve the quality and reduce the time needed to produce effective technical documents.



I could get information down, but the structure was taking so much time and I needed to consider the objectives of the reader a lot more. My writing is more concise and the whole process is much slicker than before.

Jacob Holt, Cavendish Nuclear



VERIFIED

 imeche.org/eetrwr

Technical report writing: Extension

1 Day



UK-SPEC: D

Consider the words, style and tone of your writing to influence your reader.

Designed as a 'follow on' day for people who have taken the Technical report writing course and want to take their writing skills further. You will look at how to write about technical subjects, not just for reports, but for different uses such as journal papers, emails, and business cases.



I found the course highly engaging and very well structured. The content of the course was very useful, with good exercises and solid reference material.

Matthew Walker, Cobham Mission Systems Wimborne Ltd

 imeche.org/eetrw

Presenting technical information

2 Days



UK-SPEC: D, E

Communicate complex technical information effectively to any audience.

Focus on how you can communicate your findings clearly and concisely, and discover rapid preparation tips and mental models that allow you to produce effective presentations in minimal time. You will gain increased confidence through looking at the hierarchy of information, which can make you more influential and get you more support for your conclusions.

 imeche.org/eetpre

Who should attend?



Engineers and non-engineers at all levels but is particularly useful for those new to report writing in a business context.

Key outcomes:



- Define and agree the purpose of the report
- Have a clear understanding of the needs of your readers
- Design a document structure to effectively get your message across
- Identify the necessary content and have an appropriate layout
- Edit more competently and eliminate avoidable mistakes

Who should attend?



Anyone who has completed the Technical report writing course.

Key outcomes:



- Adapt the style and format of a range of technical documents
- Apply best practice email etiquette to communicate more effectively by email
- Produce diagrams and other graphics that support and enhance writing
- Write value-added conclusions, recommendations and summary
- Influence readers through improved written communication

Who should attend?



Anyone who struggles to create engagement through their presentations or to respond to questions about their work.

Key outcomes:



- Get the message across to the audience effectively
- Increase your influence with management
- Ensure the document and the presentation have the same message
- Understand the triggers that lead to rambling to stay on track
- Appreciate the nuances of your own style and the areas you need to work on

Technical drawing courses

Technical drawings allow engineers to communicate their ideas and concepts with precision and clarity, which is essential for successful implementation. It also helps to identify potential errors before construction begins, saving time and money. Technical drawing is a universal language used by engineers, allowing for easy collaboration and understanding between different teams and cultures.

Geometric dimensioning and tolerancing (GD&T): ASME Y14.5



3 Days

UK-SPEC: A, B, C, E

Shorten time to market, reduce engineering changes and create a robust quality design.

A concurrent engineering team, equipped with the proper tools, has the ability to shorten time to market, reduce engineering changes and create a robust quality design.

Discover how to translate geometric feature control frames and understand the hierarchy of geometric tolerancing so that they can optimise design decisions that increase quality and reduce cost and delivery times.

 imeche.org/eegdto

Who should attend?



Anyone who uses GD&T to design, produce and inspect parts: mechanical engineers, designers, managers, production planners, inspectors, machinists and supplier quality personnel.

Key outcomes:



- Translate geometric feature control frames into plain English with one clear meaning
- Explain the major rules found in the ASME Y14.5-2009 standard
- Explain the tolerance zones for the 14 geometric characteristics
- Understand the hierarchy of geometric tolerancing
- Calculate geometric tolerances and boundaries

Geometric dimensioning and tolerancing (GD&T): BS 8888 and ISO



3 Days

UK-SPEC: A, B, C, D, E

Establish product quality, save money and reduce development time over the lifecycle of a product.

GD&T is recognised around the world as the only way of defining engineering drawings unambiguously. This course provides an essential understanding of the symbolic language of GD&T within the context of BS 8888 and ISO GPS standards. You will learn how GD&T is used to convey design intent, guarantee both assembly and function and maximise tolerances.



By the end of the course, I knew I understood the symbols and data, what the data was telling me, and how to make changes if something had failed. I am really satisfied with everything I've learned.

Lucy Weedon, Daften Die-Casting



VERIFIED

 imeche.org/eebes

Who should attend?



Design, development, manufacturing, assembly and quality engineers, CMM and CNC programmers, tool designers, toolmakers, technicians, inspectors, buyers and technical project managers.

Key outcomes:



- Recognise the symbology used in BS 8888 and ISO GD&T and how it's used to meet design intent and remove ambiguity
- Explain how the geometrical characteristics of features determine their functionality
- Explain how datums and theoretically exact dimensions work, what they are for and how to select them
- Understand the 14 types of geometric tolerances, how they are related and what each one will control
- Dimension and tolerance a feature to guarantee it will assemble with a mating part and provide additional tolerance in the process



Electrical courses

These electrical courses build on the foundation of many engineering disciplines. They enable engineers to design and develop safe and efficient electrical systems, troubleshoot and repair electrical problems, and ensure compliance with electrical codes and standards. Without a solid understanding of electrical principles, engineers may make costly mistakes, compromise safety, and fail to optimise performance.

Electrical principles

1 Day



UK-SPEC: B, E

Understand electrical engineering as required by industry.

Gain an appreciation of electrical engineering principles and the ability to interact effectively with colleagues regarding electrical issues.

This course provides opportunity to analyse basic electrical components and their features and benefits, and understand responsibilities under the Electricity at Work Regulations.



Really good engagement from tutor and class. Good use of anecdotes from tutor to develop understanding. Great breadth covered.

Jessica Prior – GSK

imeche.org/eeepri

Who should attend?

Engineers and non-engineers at all levels.



Key outcomes:

- Understand the basic concepts of electrical engineering
- Appreciate your responsibilities under current health and safety legislation
- Understand the terminology used in electrical engineering
- Appreciate the dangers and safety procedures associated with electrical engineering
- Effectively converse on electrical topics with electrical personnel



Electrical schematics

1 Day



UK-SPEC: C, E

Develop your knowledge and become more confident with electrical symbols and diagrams.

Using practical examples and techniques, this course helps to develop an understanding of electrical schematics.

Building on a strong foundation of knowledge from Electrical principles, this course focuses on increasing knowledge of electrical diagrams in your work environment and provides a full explanation of basic concepts of electrical engineering.



If you are a Mechanical Engineer like me, you'll be familiar with symbols for valves and so on. Maybe not so much with all the different electrical symbols! This course will bring you up to speed on that.

Ashvinder Kalsi, STL Power & Process Controls



imeche.org/eesch

Who should attend?

Engineers and non-engineers but prior attendance on the Electrical principles course is required.



Key outcomes:

- Interpret basic block diagrams, layout diagrams and electrical drawings
- Identify key symbols used in typical electrical engineering diagrams
- Identify selected components and understand how they function within that particular circuit
- Understand the techniques used in the layout of a typical set of electrical drawings
- Effectively converse on electrical schematics with electrical personnel



Special offer – Book Electrical principles and Electrical schematics together and receive **£100 off the total price**



Essential skills

Engineers need to develop the technical skills necessary to design, analyse, and improve complex systems. This knowledge enables them to identify problems, propose solutions, and make informed decisions based on scientific principles. Without this foundation, engineers may struggle to accurately interpret technical data, and make sound engineering judgements that prioritise safety, efficiency, and sustainability.

Introduction to mechanical engineering

2 Days



Improve your understanding of the principles of mechanical engineering.

Designed to provide non-engineers and scientists with an introduction to the main subject areas of professional mechanical engineering.

The focus of this course is predominantly on the topics not usually included in other engineering and physical science disciplines and aims to develop core mechanical knowledge.



Excellent course content and well executed by the trainer!
Would highly recommend.

Rob Norris, TVS Supply Chain Solutions Ltd

 imeche.org/eepmec

Who should attend?

Non-engineers wishing to gain a practical insight into the subject.



Key outcomes:



- Appreciate the fundamental mechanical sciences – solid mechanics; dynamics; fluid dynamics; thermodynamics and strength of materials
- Have a basic understanding of mechanical engineering design (processes and principles)
- Experience using a CAD system
- Understand the key elements of mechanical engineering
- Know the different levels of professional engineers and the different skills

CDM: Introduction

1 Day



UK-SPEC: C, E

Review the CDM regulations and their practical implementation.

Explore the ethos of the CDM regulations and how this fits in with other H&S legislation. It also touches on financial realities and the concept of So Far As Is Reasonably Practicable, linking in with business reasons for H&S and how to apply influence in the sales and bid process.



Very happy with the course, good number of people,
good trainer - can't complain.

Charlie Harris, Bio Product Laboratory

 imeche.org/eecdmr

Who should attend?

Engineers and technical professionals at all levels.



Key outcomes:



- Understand the whole ethos of the CDM regulations and how this fits in with other H&S legislation
- Review general health and safety responsibilities under HASAWA and how this fits with CDM
- Understand health and safety performance

Free webinars

Throughout the year, you can register for **free webinars** to get a taster of some of the subjects we cover during our training courses.



[View free webinars](#)



AI for engineers

1 Day

UK-SPEC: A, B, E

Understand AI principles and how you can apply AI to solve complex engineering problems.

Engineers face the challenge of understanding the AI landscape within engineering applications, ethical considerations, AI project scoping, and the identification of AI use cases in engineering workflows.

This course will introduce a big picture map of the field and provide an understanding of how AI works, and how AI tools can be used to increase productivity and decrease repetitive tasks.



Who should attend?

Design engineers, project managers and technical leads who has responsibility for innovation and implementing improvement processes in the organisation.



Key outcomes:

- Improve your understanding of the AI landscape within engineering applications
- Increase your awareness of the ethical considerations surrounding AI
- Better identify the use-cases for AI in your engineering workflows
- Obtain knowledge of the latest developments in AI and their potential impact on engineering
- Learn about how to build your own AI tools



imeche.org/eeaife

Foundation Python for mechanical engineers

1 Day

UK-SPEC: A, B, E

Gain a solid foundation in Python programming and learn how it can be used to develop and deploy machine learning and deep learning models.

As engineering increasingly incorporates AI technologies such as Machine Learning and Deep Learning, mechanical engineers must acquire the necessary programming skills to develop and deploy such technologies.

Python is a powerful programming language that is used extensively across many engineering disciplines.

This Python course for beginners has been designed to provide you with a solid foundation in Python programming and the ability to use Python for developing and deploying AI models.



Who should attend?

Mechanical engineers interested in developing the Python programming skills for integrating AI technologies into their workflows.



Key outcomes:

- Gain a solid foundation in Python programming tailored specifically for mechanical engineers
- Acquire the necessary skills needed to learn more advanced techniques such as Machine Learning and Deep Learning
- Network with like-minded professionals interested in applying AI to engineering



imeche.org/eepyth

Building AI models with engineering datasets

1 Day

UK-SPEC: A, B, E

Gain deep insights into building robust AI models, handling complex engineering datasets, and transforming traditional workflows into efficient, AI-driven processes.

The integration of AI into engineering is revolutionising how we analyse data, make predictions, and optimise processes. However, harnessing AI's power in engineering applications requires a comprehensive understanding of AI methodologies, and the ability to manage and interpret complex engineering datasets.

Gain a comprehensive understanding of how to construct robust AI models, handle complex engineering datasets, and integrate these models into your engineering workflows.

Proficiency in Python programming is recommended to benefit from this course.



Who should attend?

Design or maintenance engineers, senior and principal engineers and technical leads who has responsibility for innovation and implementing improvement processes in the organisation.



Key outcomes:

- Develop skills to manage and analyse complex engineering datasets
- Gain proficiency in building, training, and validating AI models
- Understand how to integrate AI solutions into existing engineering systems and workflows
- Understand the ethical implications of AI and learn to develop and use AI models responsibly
- Better identify the use-cases for AI in your engineering workflows



imeche.org/eebaed

Principles of commissioning

1 Day



UK-SPEC: B, C, D, E

Explore the fundamental principles of commissioning from a process and practical perspective.

Commissioning is an essential step in project delivery. Without it we cannot have assurance of a quality outcome. This course offers an overview and practical guide to the commissioning process.

Drawing on real-life experience and established good working practice, you will explore the fundamental principles of commissioning, including pre and post-commissioning documentation needs and their importance, practical commissioning strategies and applications.

 imeche.org/eecom

Who should attend?



All engineering disciplines, especially those involved in the commissioning of projects.

Key outcomes:



- Understand the need for commissioning
- Identify the distinctions of Inspections and Testing, and pre-commissioning activities
- Review a typical hierarchy diagram of typical commissioning documentation
- Apply practical questions when determining commissioning completeness
- Apply principles for assigning system acceptance criteria post commissioning

Gears and gearboxes: Introduction

6 Hours



UK-SPEC: A, B

Successfully engage with the design, manufacture and operation of gears and gearboxes.

Explore the fundamentals of gears and gearboxes, and identify the need for gearing and motion control methods in mechanical systems. You will learn about the development of power transmission systems; the "Law of Gearing"; the use of the involute gear form; the features of different gear types; and the requirements for lubrication, bearings, shafts, connectors and support structures.



The trainer's breadth of knowledge from 50 years in the industry is simply staggering. It was an absolute pleasure to sit through the 3 sessions and learn from him.

Daniel Jones, RAF Marham

 imeche.org/eegear

Who should attend?



Individuals involved with gears and gearboxes who needs to be competent with the technologies involved. No previous experience of gears is needed.

Key outcomes:



Be successfully involved with the design, selection, manufacture and operation of gears and gearboxes.

- Understand gears and gearbox fundamentals
- Appreciate aspects such as noise, load and operation of gears and gearboxes
- Understand gear manufacture, gearbox assembly and installation

Introduction to systems engineering

2 Days



UK-SPEC: A, B, C, E

A high-level foundation to the principles and practices of systems engineering.

Systems engineering is an interdisciplinary approach and means to enable the realisation of successful systems. You will gain an overview of the processes required for successful systems engineering delivery on projects.

The course content is aligned with the systems engineering – Standing ISO 15288 and the associated INCOSE Systems Engineering Handbook.



The trainer was very knowledgeable and great at helping make certain parts more relevant to my personal needs within my work. The course will greatly improve the way in which we work.

Ben Stewart, McCulloch Rail

 imeche.org/eisys

Who should attend?



Engineers and non-engineers at all levels.

Key outcomes:



- Define systems engineering in accordance with the Incose Systems Engineering Handbook
- Understand the systems engineering approach and scope
- Identify the key systems engineering models and have a basic understanding of them
- Assess the applicability of the methodology to an engineering programme
- Understand the cost element of systems engineering



Tolerance analysis

1 Day

UK-SPEC: B, E

Identify and prioritise critical tolerances.

The analysis of tolerance stack-ups is an essential component of good product design. Variation will always be present in any manufactured product, and the accumulation of these small variations can have a devastating effect on a company's profitability and reputation.

This course gives the means to identify and prioritise the critical tolerances that govern the fit, form and function, while striking an effective balance between the use of cost and time.



Great course, very informative for what could be quite a 'dry' topic.
Mark Stickland – Denso Marston Ltd

 imeche.org/eetola



Who should attend?



Design engineers and those involved in the detailed preparation of drawings and specifications.

Key outcomes:



- Understand the role and purpose of dimensioning and tolerancing
- Produce a detailed analysis of any tolerance chain and present clear options on how to optimise any tolerance chain
- Define upper and lower specification limits that satisfy the requirements of fit, form and function
- Identify potential risks created by out-of-spec components
- Show which dimensions have the most significant effect and hence need the most control

Fault finding techniques: Introduction

2 Days

UK-SPEC: B, C, E

Detect and rectify faults in any system effectively, efficiently and safely.

Organisations are often judged not only by the reliability of their systems but their ability to respond effectively when failure occurs. It is a source of sustainable competitive advantage both operationally and commercially.

This course introduces a range of skills and techniques to facilitate fault location and diagnosis. Effective fault-finding requires more than just an understanding of technology. It is a state of mind.

 imeche.org/eefte



Who should attend?



Engineers and technicians who have an understanding of their chosen technology but require support with developing a strategy to effect a diagnosis and repair.

Key outcomes:



- Effectively deal with the unknown when approaching a faulty system
- Have an appreciation of the different fault finding strategies available
- Be confident in your approach to completing a repair effectively, efficiently and economically
- Learn how to adopt a methodical approach and its importance in successful fault resolution

Non-destructive testing: Introduction

1 Day

UK-SPEC: A, B, E

Learn the basics of NDT techniques, certification and what NDT offers your business.

An ideal introduction to the concepts of non-destructive testing (NDT) for engineers, auditors, managers, quality personnel and newcomers.

This course includes an introduction to NDT history, certification and advantages and limitations of the main methods including visual testing, penetrant testing, magnetic particle testing, radiographic testing, ultrasonic testing, NDT reliability and the future.

The Institution's non-destructive testing (NDT) and coatings training is provided by IMechE Argyll Ruane and IMechE Fife NDT. See pages 87-89 for other courses.

 imeche.org/eendti



Who should attend?



Engineers, auditors, managers, quality personnel and newcomers to NDT.

Key outcomes:



- Explain the varying certification schemes for NDT personnel
- Explain the basic physics and mechanics behind basic NDT methods including visual testing, penetrant testing, magnetic particle inspection, ultrasonic testing and radiographic testing
- Explain the advantages and disadvantages of the above NDT techniques
- Understand the type of flaws that can be detected by the above NDT techniques

MAINTENANCE MANAGEMENT

The management of company assets throughout their life cycle is an important contributor to the short, medium and long term profitability and success of any business, particularly those that are asset intensive. This portfolio provides an understanding of asset management and maintenance best practices and the latest tools and techniques required to introduce, implement and sustain an effective asset management and maintenance programme within an organisation.

IN THIS SECTION

- 53** Asset management strategy
World class maintenance
- 54** Maintenance planning and scheduling
Reliability centred and risk based
maintenance (RCM & RBM)
Total productive maintenance (TPM)

SYMBOLS

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Asset management strategy

2 Days

UK-SPEC: B, C, D, E

Develop and maintain a strategic asset management plan.

Explore the definition of assets and asset management. You will learn to identify the necessary structures and processes that are required to manage assets throughout their life cycle, and also explore the techniques required to optimise the application and operation of physical assets to deliver the best return on capital.



Very good, really enjoyed it. Good interaction and group was willing to share thoughts and experiences. Useful to do the exercises as that got the brain working, and also liked the pause for reflection moments. Covered all the aspects of the syllabus and presented particularly well in an engaging manner.

Nick Gill, Network Rail (L&D)

imeche.org/mmassm



Who should attend?

Engineering, operations, asset, and maintenance managers and directors in the manufacturing, industrial, utility, and commercial sectors.



Key outcomes:

- Understand the meaning of assets and asset management
- Develop a policy, strategy and plan for asset management within your organisation
- Identify the asset life cycle and the structures needed to support assets at each stage within their life cycle
- Recognise the issues associated with the implementation and sustainment of asset management processes
- Prepare your organisation for the requirements of ISO 55001 and future accreditation against the standard



World class maintenance

2 Days

UK-SPEC: B, C, E

Apply the best tools and techniques to ensure assets are reliable and perform well.

Develop a thorough understanding of machinery and equipment reliability issues and learn how to sustain world class levels of reliability and performance whilst optimising maintenance expenditure through the application of best practice maintenance approaches.



It certainly deepened my knowledge in terms of things to consider when selecting a maintenance strategy.

Wayne Rowbotham, BMW Group



Who should attend?

Engineering, asset, maintenance and reliability managers and aspiring managers who apply and improve maintenance plans and procedures in manufacturing, industrial, utilities, or commercial sectors.



Key outcomes:

- Understand the main issues regarding asset reliability and how maintenance should address these
- Develop a robust maintenance strategy for your organisation which will incorporate all of the necessary requirements for best practice
- Identify the structures and processes necessary to implement world class levels of maintenance
- Recognise organisational and cultural issues associated with the introduction, implementation and sustainment of world class maintenance practices
- Develop and use performance management through the application of relevant metrics and KPIs for maintenance and reliability



imeche.org/mmwcma

Maintenance planning and scheduling

2 Days



UK-SPEC: B, C, E

Increase productivity using a proven framework to implement maintenance planning and scheduling.

Understand how maintenance planning and scheduling works in an industrial environment and how to implement it using the proven IPSECA work management framework.

You will define the work process and learn how to plan the work orders and schedule tasks in an efficient way to increase productivity and improve safety.



The course was excellent and will really help me in my new role.

Andrew Mcgrath, United Utilities.

 imeche.org/mmpas

Who should attend?



Anyone looking to boost productivity and efficiency and build a business case for planning and scheduling improvements.

Key outcomes:



- Understand the benefits of an optimised maintenance planning and scheduling process
- Understand how to prioritise work tasks and the roles and responsibilities of team members
- Reduce your maintenance costs
- Increase uptime and wrench time
- Improve process stability and efficiency

Reliability centred and risk based maintenance (RCM & RBM) 2 Days



UK-SPEC: B, C, E

Employ maintenance plans and resources adequately, cost-effectively and reduce business risk.

Focus on the development and application of maintenance plans and procedures that are optimised from the aspects of maintenance resources, costs and risk to the organisation.

You will understand reliability centred and risk based approaches to machinery, equipment and system maintenance to improve reliability, consistency and reduce maintenance and repair costs.



Excellent course, the trainer was very knowledgeable and made it very relatable to our specific needs. Now I just need to start putting it into practice but I now feel well equipped to do so.

John Davies, Unifrax

 imeche.org/mmrcmr

Who should attend?



Engineering, asset, maintenance and reliability managers working within manufacturing, industrial, utilities or commercial sectors.

Key outcomes:



- Understand risk based and reliability centred analysis approach, tools and techniques
- Develop a risk based maintenance strategy and recommend the most appropriate approach for your organisation
- Apply the most appropriate risk based tools and techniques to establish optimised maintenance plans
- Develop and use performance management through the application of relevant metrics and KPIs

Total productive maintenance (TPM) 2 Days



UK-SPEC: B, C, E

Engage operations with maintenance, ownership and continuous improvement.

A comprehensive and people-orientated approach to the achievement of world class levels of maintenance and operating performance.

This course explores the basic principles and values underpinning TPM, enabling you to identify all of the best practices, tools and techniques first introduced by TPM's founders and how they should be applied.

Who should attend?



Engineering, operations, maintenance and asset managers or aspiring managers.

Key outcomes:



- Understand what a TPM programme entails and the commitment required for successful implementation
- Apply the key TPM tools and techniques
- Address the cultural and organisational issues associated with the introduction and sustainment of a TPM programme
- Develop a TPM strategy and plan that is appropriate for the needs of your organisation
- Lead and inspire your staff along the best practice TPM route to effective and efficient operation

 imeche.org/mmtma

MATERIALS

Many production problems occur because materials are overlooked during design, manufacturing, supplier selection and quality control processes. This portfolio has been designed to provide the practical skills that high-value engineering organisations need to apply to real-world problems and decisions in order to succeed in competitive global markets.

IN THIS SECTION

- 56** Metallurgy for non-metallurgists
Fundamentals of metallurgy
Mechanical testing techniques
- 57** Carbon & alloy steel metallurgy
Stainless steel metallurgy
Principles of heat treatment
- 58** Combatting corrosion
Metallurgical failure analysis & prevention
Composite fundamentals
- 59** Composite design and analysis
Composite materials and manufacturing
Composite quality, certification and testing

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Metallurgy for non-metallurgists

2 Days



UK-SPEC: A, B, E

A technical overview of the scientific principles underlying metals technology.

Understand the scientific principles of metallurgy and how to apply them to specify and process metals in an industrial context.

Starting with the fundamental concepts of crystallography and phase diagrams for ferrous and non-ferrous alloys, the course considers metal casting and hot working, stainless steels and non-ferrous alloys, followed by mechanical testing.



Very informative course, happy with course content.

Kyle Hudson, Drax Power Limited

 imeche.org/memfnm

Who should attend?



Professionals who work in the production, processing, specification, design, fabrication or selling of metals and alloys. Also individuals responsible for manufacturing, technical support, quality control, product design, marketing and sales.

Key outcomes:



- Understand the metallurgical principles of phase diagrams, crystallography and manipulation of microstructures
- Understand selection and tailoring of alloys to suit a range of end applications
- Be familiar with all aspects of the production, processing and finishing of metal products
- Understand test methods, specifications and product standards

Fundamentals of metallurgy

1 Day



UK-SPEC: A, B, E

Understand the relationships between structures, properties and processing of the most important industrial metals.

Learn about material processes through the use of phase diagrams and heat treatments to control the microstructure. You will receive guidance on the selection of appropriate metal alloys for specific applications and typical applications of some alloys.

Knowledge gained will enhance staff efficiency through a greater appreciation of the technology underpinning metals applications.



A very useful course that could significantly improve my ability to carry out my job.

David Clarke, Angel Trains Ltd.

 imeche.org/mefmet

Who should attend?



Professionals who have a grounding in metals or materials science and wish to extend their technical understanding, from directors to junior staff in operations, technical, quality, procurement and sales.

Key outcomes:



- Explain the key properties of metals
- Understand the winning and processing of ores
- Be familiar with metal product manufacturing processes
- Explain basic metal tests and specifications
- Match metals/alloys to a variety of applications

Mechanical testing techniques

1 Day



UK-SPEC: A, B, E

Learn the different mechanical properties measured, and the descriptions of the methods used.

Understand the mechanical properties and testing procedures used for the design, quality and performance behaviour of metals, and why measurement of these properties is an important consideration in material selection.

 imeche.org/memtte

Who should attend?



Managers and technicians responsible for the QA testing of materials and products, and designers, engineers, procurement and business development personnel.

Key outcomes:



- Appreciate the procedures used to determine tensile, hardness, toughness, fatigue and creep properties of metals
- Understand how material properties are derived from the test results
- Recognise how material properties can be used to support product design, quality and performance
- Review a range of NDT techniques



Carbon & alloy steel metallurgy

1 Day



UK-SPEC: A, B, E

Fundamental principles and practices in carbon and alloy steel metallurgy and processing.

A focus on basic metallurgical principles, primary and secondary steel making processes, how steels are specified and evaluated and matching grades to applications. Some typical applications are also covered. It is ideally suited to industry professionals requiring a more technical insight into steel metallurgy.

imeche.org/mecasm

Who should attend?



Production or process engineers, quality and inspection personnel who would benefit from an understanding of steel processing, products & properties. Also suitable for those in supervisory or managerial roles.

Key outcomes:



- Appreciate the fundamental principles of steel metallurgy
- Understand how steel is made and processed
- How steel grades are specified and matched with a range of applications

Stainless steel metallurgy

1 Day



UK-SPEC: A, B

An insight into the metallurgy and types of stainless steels with typical uses.

Understand the production, processing and forming of a range of stainless steel grades. The properties specific to each family are shown together with some typical applications, and you will learn how steels corrode under aqueous and high temperature gaseous conditions.

The primary and secondary processes for blending stainless steel alloys and forming them into stock shapes will be reviewed with shape forming, cutting and welding processes suitable for stainless steels.

imeche.org/mestsm

Who should attend?



Professionals involved in the manufacture, supply and use of stainless steels products. The course is delivered at a moderate technical level and assumes only basic knowledge of steel metallurgy.

Key outcomes:



- Appreciate the fundamental principles of stainless steel metallurgy
- Understand how stainless steel is made
- Explain how corrosion is controlled and prevented
- Specify and match correct stainless steel grades with a range of applications

Principles of heat treatment

1 Day



UK-SPEC: A, B, E

Learn the benefits of heat treatment to a range of ferrous and light metal alloys.

An introduction to the metallurgical principles of heat treatment, why heat treatment is carried out and the underlying theory behind heat treatment processes.

You will learn about both ferrous and non-ferrous metals, problems that can occur during heat treatment and an introduction to surface hardening of steels by heat treatment processes.



Course was very helpful in gaining knowledge for my new role as an inspector. The trainer was very knowledgeable and was able to answer all the questions.

Andrew Thomas, GKN Aerospace

imeche.org/meheat

Who should attend?



Anyone requiring an overall understanding of the principles and practicalities of heat treatment, including purchasers and vendors of heat treatment services, design engineers and quality control technicians.

Key outcomes:



- Explain why heat treatment is required for steels, nickel, titanium and aluminium alloys
- Appreciate the influence of heat treatment on microstructure
- Compare the attributes and control characteristics of electrical resistance, induction, gas and fuel oil fired furnaces
- Specify physical test procedures

Combatting corrosion

1 Day



UK-SPEC: A, B, E

Understand metal and alloy corrosion, and the technologies available for prevention.

Gain knowledge to act as guidance in the selection of the correct materials and/or processes for applications in which corrosion is an issue and hence enhance the lifetime of components by correct material selection.



Excellent course content delivered by a fantastically knowledgeable and experienced lecturer. This will prove invaluable in practical application as part of my day to day role as well as enhancing my knowledge base as an engineer.

Nick Dunster, Rolls-Royce

 imeche.org/mecomc

Who should attend?



Engineers and designers involved in the supply of metals and alloys to industries in which corrosion is an issue. Also suitable for production and technical staff concerned with the specification, selection and application of corrosion-resistant materials.

Key outcomes:



- Explain the basic principles of corrosion
- Identify corrosion mechanisms that occur in aqueous and gaseous environments
- Describe the processes for prevention of corrosion
- Understand corrosion resisting metals and alloys
- Identify some techniques to reduce metallic corrosion

Metallurgical failure analysis & prevention

1 Day



UK-SPEC: A, B, E

An introduction to the investigation, mechanisms and prevention of material failures.

Providing professionals with an explanation of how and why materials fail, including failure investigation and prevention, as well as the mechanisms of fracture that can lead to component failure.

The knowledge gained will provide you with an insight of how to specify and design products that are less prone to failure and to prevent repetition of errors should occur.



Good course, very informative.

Andrew Hadden, SSE plc

 imeche.org/memfan

Who should attend?



Professionals who wish to gain an understanding of material failures and procedures for investigation and prevention.

Key outcomes:



- Understand how components fail, why they fail in a given mode and how to prevent failures
- Identify factors to consider in material selection, design and the service environment
- Recognise the features and characteristics of different failure mechanisms
- Recommend testing or analysis that can help determine the cause of the failures

Composite fundamentals

2 Days



UK-SPEC: A, B, E

Focus on the use in design, analysis and manufacture of composite components.

A deep dive into the journey of composites beginning with their constituent elements, where special considerations must be made before conceptual design. Analysis is carried out through multiple loops to ensure an efficient structure. Manufacturing is considered at every stage and is one of the most important aspects of the process. Finally quality assessments, testing and certification is covered.

 imeche.org/mecomf

Who should attend?



Engineers or engineering managers with any level of experience relating to engineering, and anyone with a general interest in composites.

Key outcomes:



- Appreciate the basics of composite materials, stacking and layup rules
- Understand the basics of assembly design requirements
- Understand the analytical process of assessing composites
- Recognise the certification process, specifically relating to the aerospace sector



Composite design and analysis

2 Days



UK-SPEC: A, B, E

Learn the fundamental aspects relating to design and analysis of composites.

A major issue companies find is not knowing the rules of thumb around composites and their use. This course covers those aspects and how to appropriately idealise composite structures based on the desired outcome.

You will understand how to define repair schemes, tailor properties to efficient designs, composite material behaviour, how composite materials can fatigue, and post processing finite element results.

 imeche.org/mecoda

Who should attend?



Engineers or engineering managers with basic knowledge of composite materials, processes and industrial applications. Also individuals involved in design, analysis or manufacturing.

Key outcomes:



- Understand and apply the basics of composite materials and manufacturing processes
- Understand the basics of assembly design requirements
- Have a strong understanding of the analytical process of assessing composites
- Comprehend the composites certification process, specifically relating to the aerospace sector

Composite materials and manufacturing

2 Days



UK-SPEC: A, B, E

Learn the fundamentals of design for manufacture of composites and their constituent parts.

Understand composites and their use, and how to appropriately idealise composite structures based on the desired outcome.

You will learn about the different types of composite materials, the different materials used in composite structures, as well as their application and use in order to develop an advanced understanding.



I really enjoyed the course. I thought that the trainer was extremely knowledgeable, friendly and helpful.

Robert Naylor, Lockheed Martin UK Ltd

 imeche.org/mecomm

Who should attend?



Engineers or engineering managers with little knowledge of composites, as well as individuals involved in composite concessions, non-destructive testing and the manufacturing.

Key outcomes:



- Understand the basics of different composite materials and their constituents
- Understand the basics of different composite applications
- Have a strong understanding of the composite manufacturing processes

Composite quality, certification and testing

2 Days



UK-SPEC: B, C, E

The fundamental aspects of certifying composite components.

Learn about the different types of testing, how to quantify in terms of quality and what requirements must be met for certification. You will also learn the design allowables of composites and how they can be determined through testing.

 imeche.org/mecoqc

Who should attend?



Engineers with basic knowledge of composite materials, quality and the certification/testing procedure.

Key outcomes:



- Understand the basics of composite materials and manufacturing processes
- Identify the key design requirements for composites
- Understand the quality considerations and testing procedure for composite components
- Know the certification process, specifically relating to the aerospace sector

OPERATIONAL EXCELLENCE

There is an increasing need across all industries to ensure that they are operating effectively. Particularly for engineering-focused companies, implementing a successful approach within a complex technical environment can be difficult to achieve. With the understanding that every organisation is different, this portfolio has been designed to equip individuals with the relevant tools and knowledge to overcome a range of organisational issues.

IN THIS SECTION

- 61** Failure modes and effects analysis (FMEA)
Root cause analysis
- 62** Six Sigma Yellow Belt
Six Sigma Green Belt
Introduction to structured problem solving using Lean Sigma
- 63** Improving productivity and value using Lean
Lean practitioner
Lean leader
- 64** 8D problem solving
21st Century TRIZ
Statistical process control

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Failure modes and effects analysis (FMEA)

1 Day

UK-SPEC: B, C, D, E

A dynamic planning methodology to avoid potential failures.

Failure Mode Effect Analysis (FMEA) is a dynamic planning methodology aimed at identifying and prioritising actions to avoid potential failure modes in a product, process or service.

Learn to develop products, services and processes that fully satisfy customer requirements. You will have the opportunity to complete an FMEA for a simple product/process.



This was a really useful introduction to FMEA. I now feel like I have the resources to conduct this within my day job.

Lacey-Jo Marsland, AWE Aldermaston

 imeche.org/oxfmea



Who should attend?

Anyone involved in the design of products, services and processes; and if you're involved in the completion or management of FMEAs.



Key outcomes:

- Recognise the difference between a product design FMEA and a process FMEA
- Set the scope for an FMEA project and complete a boundary diagram
- Describe the inputs into an FMEA and complete a parameter diagram
- Understand guidelines for rating severity, occurrence and detection
- State how to prioritise and manage risks



Root cause analysis

1 Day

UK-SPEC: C, D, E

Define a problem clearly before identifying the real issues behind the symptoms.

The root cause of the issue is something that can be clearly switched off and back on again; and unless this is identified any changes made will not fix the problem permanently.

This course has been designed to provide tools and an effective approach to identify key business issues and their real root causes. It also explores creative tools to develop options for improvements.



Very insightful and interesting course that has given me confidence to think about problems and issues in a different way to effectively find root cause.

Jonathan Nelson, JCB

 imeche.org/oxrcan



Who should attend?

Engineers, project champions and members of improvement teams, and anyone looking to make improvements and solve complex issues.



Key outcomes:

- Define problems accurately
- Identify the key issues with a more strategic outlook
- Separate issues and symptoms
- Use a variety of root cause analysis tools to support improvement activities
- Use creative ways of generating potential solutions



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Six Sigma Yellow Belt

2 Days



UK-SPEC: A, B, C

Understand and apply the Six Sigma principles and methods.

This Yellow Belt programme will give you a solid understanding of basic Six Sigma principles and methods, and will enable you to confidently apply simple best practice tools to improve existing products/ processes and design new ones.



So far, the impact has been huge. My directors were delighted! My team has noticed a change in me too. Particularly around the formulation of good problem statements.

Apeksha Patel MIET, SLE



 imeche.org/oxybwo

Who should attend?



Those involved in solving technical and challenging problems, especially as part of a team. This includes team members, operators and others.

Key outcomes:



- Understand the fundamentals of Six Sigma and design for Six Sigma
- Apply appropriate Six Sigma methodologies to deliver robust, defect-free products and processes
- Use the full suite of Yellow Belt tools
- Set-up and manage a Yellow Belt project in a team-based environment

Six Sigma Green Belt

9 Days + Coaching



UK-SPEC:

Lead the delivery of multiple Lean Sigma projects and drive sustainable improvement across your organisation.

Building on the Yellow Belt Certification programme, this course will dedicate time on looking at the statistical toolkit for measuring, analysing, and improving processes.

 imeche.org/oxgbwo

Who should attend?



Ideal for those who need to solve technical and challenging problems as part of their daily duties, such as team leaders, senior operators and managers.

Key outcomes:



- Understand the tools and techniques covered at Yellow Belt Level
- Explore statistical tools that will support the analysis and improvement phases of improvement projects
- Apply the concepts needed to make change stick
- Learn how to lead people through change

Introduction to structured problem solving using Lean Sigma

1 Day



UK-SPEC: C, D

Improve your business with a structured approach to problem solving.

An overview of problem solving methodologies and core concepts of Lean and Six Sigma. This course will cover key topics including sigma quality levels, unpicking DMAIC, the eight wastes, the key stages of an improvement project and common pitfalls and mistakes.

 imeche.org/oxisps

Who should attend?



Anyone looking to decide which path to take for business improvement.

Key outcomes:



- Understand the benefits of using a structured approach to problem solving
- Understand the origins and core concepts of Lean and Sigma
- Explore how to deploy the core tools on a simple improvement project



Improving productivity and value using Lean

1 Day

UK-SPEC: C, D

Identify opportunities and use appropriate tools to improve processes and key metrics.

This practical course introduces Lean concepts as a foundation for implementing Lean in an organisation or department. It focuses on two key Lean thinking components: value identification and value stream mapping.

You will have the foundation for further development in Lean at both the practitioner and leader levels, allowing you to design and improve products and processes to world-class standards.



Who should attend?



Ideal for those about to embark on their Lean journey and who need help in the first stages of their project.

Key outcomes:



- Understand the five key principles of Lean
- Identify opportunities for applying Lean and improving performance of key metrics in your and others' areas
- Apply key tools for understanding and improving processes to deliver maximum value for customers and shareholders
- Plan the next step of your Lean Six Sigma learning journey

 imeche.org/oxleov

Lean practitioner

3 Days

UK-SPEC: A, B, C

Gain a practical overview of Lean tools and techniques.

The principles of Lean are recognised around the world as the most powerful and effective way to build and sustain continuously improving organisations.

Lean is a philosophy and a proven long-term approach that will align everything in your organisation to the delivery of increased customer value; you will focus on orientating people and systems to deliver a continuous stream of value to the customer and eliminating waste and deficiencies in the process.



Who should attend?



Engineers, project champions and team members involved in Lean projects.

Key outcomes:



- Understand the principles of Lean thinking
- Use Lean tools in a low-risk environment
- Demonstrate the practical implementation of Lean tools
- Produce real results on real processes, where available

 imeche.org/oxlepr

Lean leader

2 Days

UK-SPEC: A, B, C

Lead a culture that will support improvement activity.

Designed to support individuals who will be guiding and leading the Lean activity within an organisation. This course focuses on the important role of the Lean leader in strategy deployment and the development of a culture that supports improvement activity.



Who should attend?



Individuals who will be guiding and leading the Lean activity within an organisation.

Key outcomes:



- Appreciate how strategic deployment of Lean activity can underpin the sustainable benefits that can be achieved
- Understand the role of the Lean leader
- Understand how to diagnose and meet multiple stakeholder needs
- Identify and manage resistance to change

 imeche.org/oxlele

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8D problem solving

1 Day



UK-SPEC: B, E

Identify, correct and eliminate recurring problems.

8D is a team-based problem-solving methodology that was originally used in the automotive industry but is now used in a wide range of industry applications. It is designed to put a short-term fix in place, find the real root cause of a problem and implement a permanent long-term solution.

You will learn how to implement the 8D methodology and problem-solving tools immediately and apply it in a variety of scenarios.



Very good course, really helped explain the 8D steps and how to pass through each stage to find real root cause. Useful to understand effective use of fish bone & fault tree analysis to get ideas down without limit. The amount of interaction/group tasks with mixed knowledge between members helped make the learning sink in.

Sian Adams, JCB

 imeche.org/oxddd

Who should attend?



Anyone who is required to use team-based problem solving tools, and also managers and supervisors who want to understand more about the overall methodology and integration of 8D into existing processes.

Key outcomes:



- Identify the principles of problem solving
- Understand the nine steps of 8D and the importance of working as a team
- Understand the importance of using data to support 8D problem solving
- Implement the 8D approach to problem solving to support your work activity

21st Century TRIZ

1 Day



UK-SPEC: A, B, C, E

Use an organised and systematic approach to problem-solving.

TRIZ is a proven capability for defining and solving engineering, IT and management problems, generating new ideas and evolving technical systems more quickly, cheaply and inventively.

This course has been built around the main TRIZ tools and a programme of supporting research that distils the findings from over 4 million case study analyses. The TRIZ toolkit will help you to define problems by bringing clarity to complex situations, and enabling the generation of solutions to such problems in a sustainable manner.



All round a very good training experience.

Kevin Hudson, Safran Nacelles Ltd

 imeche.org/oxtriz

Who should attend?



Engineers at all levels.

Key outcomes:



- Define better problems by bringing clarity to complex situations
- Generate solutions to problems in a reliable and repeatable manner
- Apply the right tools systematically to generate innovative solutions

Statistical process control

1 Day



UK-SPEC: C, D

Know when to respond to alerts regarding process key performance indicators.

Develop a solid understanding of statistical process control (SPC) principles and methods, and learn to apply the appropriate SPC chart to your processes in order to monitor performance.

You will learn when and how to respond to alerts regarding process key performance indicators and understand how SPC can give 'early warning' signals before issues arise.

Who should attend?



Engineers and engineering managers responsible for monitoring and managing key performance indicators and wish to use more accurate methods to determine when and how to react.

Key outcomes:



- Explain the difference between process capability and process stability
- Understand the fundamentals of SPC
- Recognise the different types of data and importance of Normality
- Select appropriate SPC charts for the situation
- Create and interpret SPC charts correctly

 imeche.org/oxspco

PRODUCT LIFECYCLE

A mismatch between product design and manufacturing is one of the main causes of delayed launches and increased costs. This portfolio has been designed to equip those involved in the product lifecycle to take a holistic view and consider requirements of every stage in the design and development of products, their supply chain and manufacture.

COURSES IN THIS SECTION

- 66** New product introduction
Additive manufacturing (3D printing):
Fundamentals
Additive manufacturing (3D printing):
Impacting business
- 67** Design for manufacturability
Design reviews
- 68** Value engineering
Re-engineering for a circular
economy **NEW**
Sustainable product lifecycle
design **NEW**
- 69** Commercial innovation
Design for servitisation
Engineering the supply chain

SYMBOLS

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New product introduction

2 Days



UK-SPEC: C, D, E

Improve your ability to bring new products to market.

Examine where the product development process can go wrong with implications on failing to meet customers' expectations, and how applying the principles of high performing organisations can transform the way products are conceived, designed, developed and launched into production.

Upon completion, delegates will be equipped to implement practical improvements that are relevant to their own organisation to bring new products to market on time, at cost and to the required quality standard.



This training was excellent as it encouraged us to reflect on our role in the NPI process and highlight areas in our teams that needed restructuring or improvements. The training was very interactive and made us think of our own examples to share with the trainers for advice and guidance.

Laura Drake, The MTC

 imeche.org/plnpin

Who should attend?



Engineers involved at any stage of the process of bringing new products to market.

Key outcomes:



- Review the current status of the New Product Introduction (NPI) process in your organisation
- Appreciate the reasons why projects go wrong and apply those to your company's situation
- Explain the main steps in any NPI process and the keys to success
- Create simple structures to track progress, manage risk, highlight issues and take action
- Identify and undertake some immediate improvement actions

Additive manufacturing (3D printing): Fundamentals

3 Hours



UK-SPEC: A, B

Understand the benefits and applications of Additive Manufacturing (AM).

Learn about the properties of materials, the manufacturing methods available and create your own 3D printable design. You will also learn about traditional manufacturing methods and recognise the various approaches to design for AM.

This course will outline the steps required to design your own 3D printed part using an easy to follow example and finally to watching the design 'come to life' on a 3D printer.

 imeche.org/plgadd

Who should attend?



Anyone interested in additive manufacturing and the 3D industry and how it can benefit their business including hobbyists, product designers, engineers and managers. No prior knowledge of additive manufacturing or CAD design is required.

Key outcomes:



- Recognise properties of materials and traditional manufacturing methods
- Understand the processes and technologies involved in additive manufacturing
- Know how to get started designing and printing your own parts

Additive manufacturing (3D printing): Impacting business

3 Hours



UK-SPEC: A, B

Improve business efficiencies by understanding additive manufacturing and optimising processes.

Learn about the seven key additive manufacturing processes such as stereolithography, material extrusion, materials jetting and powder bed fusion. You will explore how the design and manufacturing choices you make can have an effect on the business including supply chain and product design.

 imeche.org/plgadbb

Who should attend?



Anyone responsible for reducing supply chain costs, designing parts and assemblies, enhancing the efficiency of manufacturing processes, or building a business case for additive manufacturing in the workplace. No prior knowledge of additive manufacturing or CAD design required.

Key outcomes:



- Understand the key additive manufacturing processes
- Recognise how your choices impact the supply chain
- Identify key areas for part design optimisation
- Develop a business model and business case to use AM in your organisation

Design for manufacturability

1 Day

UK-SPEC: B, C, D, E

Appreciate the impact of design decisions on all aspects of manufacturing operations.

Learn how to make practical design improvements so that your products are more aligned to operational requirements.

This course combines traditional views on design for manufacture, service and test with broader principles of Lean, responsive supply chain design, together with the need to establish productive, collaborative relationships between all of the functions involved.



Brilliantly presented course that, again, was tailored on the fly to provide the most value for us. As a team of Manufacturing Engineers, rather than designers, this allowed us to brush over the sections that we already have knowledge in and spend more time going over the portions of the course that were new to us.

Elliot Brooks, The MTC

imeche.org/pldfma



Who should attend?

Engineers involved at any stage of the process of bringing new products to market.



Key outcomes:

- Appreciate the impact of design on the cost and quality of the end product, time to market as well as flexibility of the service to market
- Understand the principles of Design for Manufacture, Design for Assembly and related topics
- Understand how manufacturing philosophy and volume impacts on design approach and manufacturing methods
- Appreciate the value of engaging manufacturing, procurement and suppliers in the design process and its impact on speed and cost to market



Design reviews

2 Days

UK-SPEC: B, C, D, E

Improve the quality of design at the earliest possible stage.

Learn to develop an effective design review process. Using theory and principles, group discussion and practical exercises, this course will help delegates explore the technical and people aspects of preparing for and carrying out effective design reviews.



We've made some tangible changes since attending. The Design Review meetings have a completely different style with attendees from across Fulwood Packo, not just engineering, and there is a big emphasis on distributing material beforehand.

Charlie Horsefield, Fulwood Packo



imeche.org/pldrev



Who should attend?

Engineers and managers involved in design review – whether planning, facilitating, presenting or reviewing.



Key outcomes:

- Explain the purpose of design reviews and how they fit within an overall structured new product introduction process
- Analyse the impact of the way reviews are conducted on the effectiveness of their preparation and execution
- Evaluate your organisation's current design review process to identify areas for improvement
- Identify development actions for teams and individuals



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Value engineering

1 Day

UK-SPEC: B, E

Reduce the cost of a product or service while retaining quality, reliability and safety.

Value engineering techniques can be applied to a range of organisations including government, engineering and construction, and to an item such as a machine, product, service, system, process, or procedure.

This course allows delegates to develop the knowledge required to undertake the value engineering process with a focus on the engineering, product and service sectors.

 imeche.org/plvalu



Who should attend?

Anyone interested in product design, engineering, quality or reliability and working within or supporting the manufacturing, industrial, sales, marketing, product design or service sectors.



Key outcomes:

- Understand value engineering techniques
- Apply value engineering to optimise the performance versus cost of a product or service



NEW Re-engineering for a circular economy

1 Day

UK-SPEC: A, B, C, D, E

Assess sustainability in design to build a robust business case.

Circular systems which rethink how product resources are used and reused are offering new business opportunities e.g. product updates during customer use and end-of-life reuse schemes.

This course will help organisations to understand how to assess sustainability practices including influence on supply chains, product use, end of life (e.g. can it be recycled, disposed, reused etc) to produce a business case for incorporating sustainable practices in way that go far beyond just "going green".



The course has undoubtedly added knowledge to my thinking about the sustainability prospects of my organisation. It provides clear insights about carbon footprints and the circular lifecycle of a product through real-life examples. Overall, it was a fantastic experience.

Praveen Rajamani, University of Exeter

 imeche.org/plreen



Who should attend?

- Business and engineering leaders
- Business strategists
- New product development



Key outcomes:

- Make a sustainability assessment of your existing situation
- Measure a product's carbon footprint equivalent (journey to net-zero)
- Identify opportunities presented by sustainable thinking e.g. finding product reuse/recycle/repurpose use cases
- Understand the concept of "Life Cycle Analysis" (LCA)
- Adopt the concept of the 'triple bottom line' to enhance a business case



NEW Sustainable product lifecycle design

1 Day

UK-SPEC: A, B, C, D, E

Apply sustainable design considerations for projects, production and supply chains.

Learn about the sustainable NPI approaches necessary for product development, life extension and renewability - including benefits of flexible product platforms and module base engineering. This course includes practical considerations such as how design teams should work together, producing multiple products from one design, realisation of economies of scale, Lean manufacturing and reducing CO2.

Who should attend?

Engineering leaders, project managers, people working in supply chain, product design engineers and production engineers.



Key outcomes:

- Identify sustainability factors of the 'system' in which the product is manufactured and used
- Understand the hierarchy of waste for New Product Introduction and existing production/supply chain systems and identify, quantify and minimise waste
- Plan how and where to focus engineering resources during a "sustainable life-cycle"
- Apply Lean manufacturing principles and Design for "X" guidelines that relate to sustainable future designs
- Apply design considerations for end of life (reuse, recycle, repurpose, disposal... etc)



 imeche.org/plspld



Commercialising innovation

2 Days

UK-SPEC: A, B

Improve the processes and culture in your organisation for bringing innovative new products to market.

Examine the factors necessary for innovation to flourish and produce commercially successful products and services.

You will learn the concepts, structures and organisational culture necessary to generate ideas for innovative products, together with the processes necessary to bring ideas to reality in a commercially successful manner.



Who should attend?

Engineers at all levels.



Key outcomes:



- Understand what makes innovation in products, services and processes
- Understand the characteristics required for a business to be able to commercially exploit its innovations
- Learn the building blocks of a robust innovation process – ideas to implementation
- Assess the state of innovation within your own organisation
- Create an action plan to improve innovation in your organisation

imeche.org/plcoin

Design for servitisation

1 Day

UK-SPEC: B, C, D, E

Appreciate the impact of product engineering decisions to provide cost-effective services.

A product's design can no longer be carried out effectively without considering the impact of its design on the services and support offered through the product's lifetime and the product lifecycle.

Explore the factors that are driving these trends – "servitisation", as well as the design considerations that impact service, support, the after-sales value chain, product lifecycle management, and product retirement at the end of its life.



Who should attend?

Engineers and designers involved at any stage of the process of bringing new products to market.



Key outcomes:



- Appreciate the context and drivers to the "servitisation" of products
- Appreciate the needs and factors that drive the after-sales value chain
- Understand how the service philosophy impacts on product design
- Understand how end-of-life and environmental considerations impact on product design

imeche.org/pldfss

Engineering the supply chain

1 Day

UK-SPEC: B, C

Considering how supply chain requirements during new product development can optimise supply chain performance.

Learn the key principles involved in end-to-end supply chain management from sourcing through to product end of life.

You will understand the role of engineering in accommodating supply chain requirements, and influencing how supply chains are designed and operate.



Who should attend?

Engineers and designers involved in supply chain management or whose role has an impact on supply chain performance.



Key outcomes:



- Understand the basic concepts of supply chain management
- Identify opportunities to improve supply chain performance
- Collaborate with key stakeholders across the supply chain
- Appreciate the impact the new technologies including Industry 4.0 are starting to have on global supply chains

imeche.org/buscma

RAILWAY

As the UK's busy railway network relies heavily on the competency of its professionals, we believe that investing in people is one of the most effective ways of improving the railway's safety, reliability, and efficiency. This portfolio has been designed to develop key skills and knowledge needed in the railway industry.

IN THIS SECTION

- 71** Condition based maintenance
Modern traction and braking systems
Train control and safety systems
- 72** UK rail infrastructure
UK mainline railway framework
UK traction and rolling stock
- 73** European Rail Traffic Management System (ERTMS)
Rail vehicle structure and integrity
Vehicle dynamics and vehicle track interaction
- 74** Railway vehicle authorisation processes
Railway signalling technologies
Railway signalling overview
- 75** Railway fleet asset management **NEW**

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Condition based maintenance

2 Days



UK-SPEC: A, B, E

Learn the benefits of applying condition based maintenance.

Condition monitoring has the proven potential to save thousands of pounds in secondary damage, lost availability and unnecessary maintenance in all areas of railway operation. In this course, you will explore the benefits and opportunities of condition based maintenance within the railway environment.

This course is based on ISO 17359:2011 (Condition monitoring and diagnostics of machines).

 imeche.org/raconm

Who should attend?



No prior experience is required, but it is essential to those working in fleet maintenance or fleet engineering.

Key outcomes:



- Define effective methodologies for implementing condition monitoring techniques
- Define the strengths and weaknesses of condition monitoring techniques within a T&RS environment
- Demonstrate an awareness of ISO 17359:2011 and how this can be applied to T&RS
- Recognise the interaction between T&RS and infrastructure and techniques for monitoring the interfaces

Modern traction and braking systems

1 Day



UK-SPEC: A, B

An introduction to traction and braking systems on trains.

You will cover several topics ranging from diesel electric locomotives and diesel multiple units, to AC power control and electro-magnetic compatibility (EMC).



The presentation from the groups at the end was beneficial to solidify learning.

Sam Draper, Alstom

 imeche.org/ratrbr

Who should attend?



Engineers working within or moving into traction and rolling stock.

Key outcomes:



- Explain the principles of traction and braking
- Recognise types of traction and braking systems and controls and common variants
- State the main subcomponents for each type
- Explain the safe operating limits and testing standards
- State the maintenance requirements and inspection regimes for common types

Train control and safety systems

1 Day



UK-SPEC: C, E

An introduction to UK systems for safety and train operational control.

Train control and safety systems are crucial for ensuring the safe operation of trains. These systems help to prevent accidents, reduce the risk of collisions, and ensure that trains are operating within safe speed limits. Without proper train control and safety systems, the risk of accidents and injuries would be much higher.

In this course, you will learn the foundations of not just train control and safety systems, but also the common abbreviations and terminology that is often used, for example, DSD, AWS, DRA, ATC, ATP, TPWS and OTDR.

 imeche.org/ratcss

Who should attend?



Engineers working within traction and rolling stock, including recent graduates, infrastructure and asset managers, accident investigators, and design and maintenance engineers.

Key outcomes:



- Describe the requirements for cab design
- Describe how trains are controlled by the driver
- Explain the purpose and operation of key train safety systems, interfaces, the rules which apply in the event of failure and the permitted degraded modes of operation
- Describe on-board data recording and monitoring systems of modern fleets, how data is collected and used for maintenance and driver performance monitoring

UK rail infrastructure

1 Day



UK-SPEC: C, E

An overview of railway infrastructure; what the constituent parts are and how they interface to provide a coherent railway system.

Gain a complete overview of the physical infrastructure assets that constitute a typical railway system, with particular focus on the rail infrastructure in the UK. These assets are in the track/permanent way, signalling and power supply/distribution disciplines, giving an overview of system development, component parts, core design principles and potential changes into the future.

 imeche.org/rarinf

Who should attend?



Individuals who are either new to the industry or whose role requires a wider knowledge of the infrastructure network, such as graduates, engineers, operators and managers.

Key outcomes:



- Recognise the main power supply types operating on the UK network
- Appreciate the infrastructure required for power distribution from source to rolling stock and its return
- Describe the main types and operating principles of current signalling systems
- Understand the requirement for and function of fixed equipment for signalling schemes
- Restate the methods of signalling control for different signalling technologies that are in operation in the network

UK mainline railway framework

1 Day



UK-SPEC: C, E

Understand the various roles, relationships, legislation and regulations of the UK rail framework.

All rail companies and stakeholders are required to meet specific requirements and this course provides an understanding of the framework which they work under.

By explaining the various roles, relationships, legislation and regulations, the course will enable you to understand how and where your company fits within the framework, to recognise its obligations and what it needs to do to discharge those obligations.

 imeche.org/rarifr

Who should attend?



Individuals who are new to the industry or whose role requires a wider knowledge of the framework and structure of the UK rail industry, including graduates, engineers, operators and managers.

Key outcomes:



- Recognise the significance of the current industry structure from a historical context
- Understand the role, function and responsibilities of Network Rail, train and freight operating companies
- Appreciate how revenue is generated, distributed and invested
- Explain the role of Government through national, regulatory and independent organisations

UK traction and rolling stock

1 Day



UK-SPEC: A

Recognise the key design principles affecting the performance of railway systems.

Understand the role of traction and rolling stock within the context of railway systems as a whole. This course introduces you to vehicle subsystems and components and enables you to analyse how vehicle design impacts performance and safety requirements.



Really good course. The trainer was very knowledgeable about the subject and kept the attendees engaged.

Andrea Wheale, Office of Rail and Road (ORR)

 imeche.org/raitrs

Who should attend?



Recent graduates moving into traction and rolling stock; non-traction and rolling stock engineers moving into new roles within traction and rolling stock; production and engineering managers new to the industry; infrastructure and asset managers; and accident investigators.

Key outcomes:



- Recognise types of traction and rolling stock and common variants
- State the main subcomponents for each type
- Explain the functional, interface and safety requirements
- Recognise and identify common vehicle-related hazards

European Rail Traffic Management System (ERTMS)



1 Day

UK-SPEC: E

Understand ERTMS, its challenges and how its introduction might affect your role.

An overview of what ERTMS is, its constituent parts and the challenges associated with its roll out. This course will leave you better informed on how the introduction might affect your role and company, as well as how it works, its benefits and issues, and UK implementation plans.

It also provides a technical overview of the ERTMS system and architecture, the functionality of the system and the different levels and modes of operation.



This course has given me a good understanding of ERTMS and its cross industry challenge to implement.

Robert Cummins, Network Rail

 imeche.org/raertm

Who should attend?



Anyone in the rail industry, particularly fleet engineers, principle engineers, project managers and senior management.

Key outcomes:



- Appreciate what ERTMS is and its constituent parts
- Define the functionality of ERTMS at each level and modes of operation
- Identify current and potential benefits and limitations to the UK rail network
- Understand interoperability, the different baselines and migration strategies
- Appreciate the different challenges associated with ETCS Onboard retro fit vs. new build

Rail vehicle structure and integrity



1 Day

UK-SPEC: A, B, E

Examine principles of structural integrity found on today's rail fleets.

Understand structural integrity with a focus on design and maintenance of rail vehicles. Using practical examples and case studies from both modern and historical fleets, participants will compare performance, changes and improvements in standards.

Who should attend?



Engineers working within traction and rolling stock, including recent graduates, infrastructure and asset managers, accident investigators, and design and maintenance engineers.

 imeche.org/rastru

Key outcomes:



- Recognise structural failures and their common causes
- Understand the principles and design standards for mitigating against fatigue problems and proof load strength
- Describe the principles of structural crashworthiness, occupant protection, and relevant design features on a train
- Apply the methods used in design for structural integrity and the methods of verification
- Understand the requirements of fireworthiness standards for rolling stock

Vehicle dynamics and vehicle track interaction



2 Days

UK-SPEC: A

Understand railway vehicle dynamics, VTI and the effect on the railway system.

Learn about the concept of the railway coned or profiled wheel, aspects of vehicle suspension design and how these affect behaviour and forces on straight and curved track. An overview is also given of the range of testing and approval processes involved in checking that a vehicle design is fit for its intended purpose and suitable for the proposed route(s).

 imeche.org/ravdti

Who should attend?



Recent graduates, production and engineering managers new to the industry, infrastructure and asset managers; accident investigators, and design and maintenance traction and rolling stock engineers.

Key outcomes:



- Understand the principles of vehicle dynamic behaviour
- State the key functional and interface requirements for running gear and suspensions
- Recognise the factors affecting vehicle dynamic behaviour and safety
- Understand how vehicle track interaction leads to degradation of vehicle and track components

Railway vehicle authorisation processes

1 Day



UK-SPEC: C, E

Recognise the acceptance procedures that apply across the rail network.

Gain an understanding of relevant safety management systems and authorisation procedures, as well as the latest European Union directives. This course includes an overview of acceptance procedures, including authorisation processes and vehicle acceptance bodies.



Useful course on an aspect of the railway I have not been exposed to. Eye opener for the requirements of interoperability and gained knowledge I can take into future roles.

Sam Draper, Alstom

 imeche.org/ravaaa

Who should attend?



Engineers moving into traction and rolling stock, production and engineering managers new to the industry, infrastructure and asset managers; accident investigators, and design and maintenance traction and rolling stock engineers.

Key outcomes:



- Explain the current rolling stock acceptance processes for each type of railway system
- Explain the techniques and methodologies used to analyse vehicle system safety by the VAB/NOBO/ISA/NRAP and their counterparts in other railway systems
- Explain the types and function of the principal documents relating to rolling stock acceptance

Railway signalling technologies

5 Days



UK-SPEC: A

An overview of railway control systems, subsystems and technologies used on UK mainline and metro railways.

The range of railway signalling and control systems found on Britain's mainline and metro rail networks is diverse. Increasingly, today's engineers are expected to have broad knowledge of systems across this entire range. This course gives a detailed technical insight across the full system range in a positive learning environment.

 imeche.org/rairsi

Who should attend?



All engineers working within, or soon to move into a railway signalling position.

Key outcomes:



- Understand how subsystems contribute to system function in a manner which is safe and meets customer needs
- Understand the detailed characteristics of the various subsystems
- Specify requirements for signalling systems and subsystems
- Identify potential failure modes of subsystems and components, and common mitigations for these

Railway signalling overview

1 Day



UK-SPEC: A, B, E

Understand railway control systems, subsystems and technologies used on UK mainline and metro railways.

Develop an insight into the workings of common railway signalling subsystems such as train detection, signal mechanisms, switch mechanisms, interlocking and operator interface. You will be provided with an introduction to the systems used in order that you can contribute to signalling discussions within your organisation.

 imeche.org/rarsov

Who should attend?



All engineers working within, or soon to move into a railway signalling position.

Key outcomes:



- Identify and describe key control system subsystems
- Identify interfaces with other railway engineering systems
- Contribute to system specification discussion

NEW Railway fleet asset management

2 Days



UK-SPEC: A, B, C, E

Gain knowledge of how maintenance is executed to support train operations.

Explore the key drivers of fleet maintenance decision-making including costs, reliability and safety and how the whole process comes together efficiently. You will gain an understanding of the overall arrangements and responsibilities of the different commercial and practical approaches to maintaining fleets in the UK.

Who should attend?

Recent graduates moving into traction and rolling stock, production and engineering managers new to the industry, infrastructure and asset managers, operators, and accident investigators.



Key outcomes:



- Recognise the key stakeholders and relationships associated with rolling stock maintenance
- Understand the origins of asset management and the purpose of maintenance
- Identify the different forms of rolling stock maintenance
- Understand the wider aspect of railway fleet asset management
- Appreciate the typical maintenance depot processes and facilities

 imeche.org/rarsfa

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SAFETY & RISK

It is crucial to engineering organisations that safety and risk are evaluated in a structured and calculated manner and managed to the best standards. This portfolio covers practical applications of safety methodologies and the latest techniques to effectively assess safety, risk and reliability in relation to not only design but the day-to-day operations of products and services.

IN THIS SECTION

- 77** Bowtie risk management
Hazard identification
Principles of risk management
- 78** Risk reduction & ALARP
Risk analysis
- 79** Fault tree and event tree analysis
Human factors in design & operations
Incident investigation & analysis
- 80** Functional safety of safety-related systems
Rail industry hazards and risks
Rail safety analysis
- 81** Hydrogen safety assurance **NEW**
HAZOP Study **NEW**

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Bowtie risk management

2 Days

UK-SPEC: B, C, D

Bowtie methodology benefits, limitations and practical uses.

Bowtie analysis is an increasingly popular approach to help manage risk. The course provides a critical review of the method's benefits, limitations and practical uses, with hands-on practice at applying the technique.



Despite carrying out risk management for 20+ years, I found I learned a great deal on this course. Having never used the Bowtie risk management technique, my eyes were opened, and I questioned myself why I had never used this technique before.

Elliott Cox, Babcock

imeche.org/srbowt



Who should attend?

Managers, engineers, operators, HSE advisors and risk management practitioners.



Key outcomes:

- Analyse hazard scenarios by applying the bowtie method and designing a bowtie diagram
- Understand how to develop integrity assurance for bowtie barriers, e.g. in terms of identifying HSE-critical tasks and HSE critical systems or equipment
- Devise risk acceptance criteria for hazards in bowtie



Hazard identification

1 Day

UK-SPEC: B, C, D, E

Tools, techniques, applications and limitations of hazard identification.

Hazard identification is the first step of the risk assessment process, and any hazard which is not identified cannot be effectively controlled.

This course provides an understanding of the tools and techniques available for hazard identification, where they can be applied, as well as discussing the strengths and limitations of the various techniques.



I was really impressed. I thought it was going to be really dry course material but it was lively, engaging and relevant.

Gary Daniels, Jacobs

imeche.org/srhazi



Who should attend?

Managers, engineers, operators, HSE advisors and risk management practitioners.



Key outcomes:

- Assess the role of hazard identification in the risk management process
- Critically review the tools and techniques available to carry out effective hazard identification at each life cycle stage
- Design a fit-for-purpose hazard identification study



Principles of risk management

2 Days

UK-SPEC: A, B, E

Understand the drivers for risk management and major risk management concepts.

An overview of risk management in the high hazard industries. Learn about the drivers for risk management, define some of the fundamental terminology and major risk management concepts, such as risk tolerability criteria and As Low As Reasonably Practicable (ALARP).

The course introduces some key risk assessment techniques and considers the purpose of an HSE/safety case and an HSE Management System (HSE MS).

imeche.org/srprim



Who should attend?

Managers, engineers, operators, HSE risk advisors and risk management practitioners, safety managers, process safety engineers, risk engineers, plant integrity co-ordinators.



Key outcomes:

- Deconstruct the risk management process into its constituent components
- Contrast key risk management terms such as "hazard", "consequence" and "risk"
- Evaluate the various drivers which cause organisations to manage risk



Risk reduction & ALARP

2 Days



UK-SPEC: B, C, D, E

Measures and options for risk reduction to ALARP levels.

As Low As Reasonably Practicable (ALARP) is a common but often misunderstood concept. This two-day course introduces the concept of ALARP and explains how to demonstrate that the risk has been reduced to ALARP levels.



The course was very good. Thoroughly enjoyed it. It was very interactive and useful.

Ahsan Yousuf, Rolls-Royce

 imeche.org/srral

Who should attend?

Project and operational managers, engineers and HSE professionals.



Key outcomes:

- Identify different options available for risk reduction (control hierarchy)
- Decide when risk reduction measures can best be used
- Describe the concepts of "tolerability of risk" and "As Low As Reasonably Practicable" (ALARP)
- Apply the ALARP concept and conduct an ALARP assessment to an appropriate level of detail



Risk analysis

2 Days



UK-SPEC: D, E

Choose correct risk analysis techniques at various stages of the project lifecycle.

The identification and evaluation of the likely consequences and expected frequency of hazardous events is a major input to the risk management decision-making process.

You will learn a number of risk analysis techniques and their strengths and weaknesses, and understand how to choose the correct technique in different situations and stages in the project lifecycle. Key techniques include SIL assessment, QRA and LOPA.

 imeche.org/srrana

Who should attend?

Managers, engineers, operators, HSE advisors and risk management practitioners.



Key outcomes:

- Logically deduce the most appropriate risk assessment tool or technique to be used, depending on circumstances
- Apply certain risk assessment techniques
- Critically review example risk assessments, illustrating strengths and weaknesses



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Fault tree and event tree analysis

2 Days



UK-SPEC: B, C, E

Learn the principles of fault and event tree analysis and how to perform your own assessments.

Develop fault tree and event tree models and populate them with suitable reliability data, human errors and dependent failures. Quantification of the models and how they can be used to evaluate potential improvements are also considered.

The approach to this course is defined by the fact that we learn by 'doing'; there are numerous activities and worked examples which complement and embed the learning.

 imeche.org/srftan

Who should attend?



Managers, engineers, operators, HSE advisors and risk management practitioners.

Key outcomes:



- Consider when it is appropriate to apply fault tree analysis and event tree analysis
- Design and analyse fault tree models incorporating appropriate reliability data for components, human error and dependent failures
- Generate and analyse event tree models

Human factors in design & operations

2 Days



UK-SPEC: B, D, E

Reduce human error, improve safety and increase efficiency.

Develop an understanding of how human abilities, limitations and needs can be applied to the design and assessment of tasks, equipment, systems and processes.

You will learn about how and why errors occur and the tools and techniques that can be used to identify, analyse and reduce them; these are demonstrated using real-world examples from high hazard industries.

 imeche.org/srhfdo

Who should attend?



Managers, supervisors and HSE professionals.

Key outcomes:



- Analyse the role of HF in systems engineering in order to achieve safe and effective designs, systems and processes
- Evaluate the human characteristics which influence a user's experience of the workplace environment to ensure it is comfortable, healthy, safe and effective
- Evaluate human error types and their potential causes
- Appraise human reliability and performance using appropriate methods in order to develop measures to reduce the likelihood of human error

Incident investigation & analysis

2 Days



UK-SPEC: B, C, E

Identify hazards, enforce the safety culture and reduce the frequency of incidents.

Explore the different stages of incident investigation: immediate actions in the event of an incident; initiating the investigation; collecting, organising and analysing data; identifying corrective and preventive actions; reporting the incident and learning valuable lessons from it, at the personal and organisational level, to improve safety performance.

 imeche.org/sriiaa

Who should attend?



Managers, supervisors and HSE professionals who may be called on to participate in incident investigations.

Key outcomes:



- Demonstrate a thorough grounding in the underlying theories behind accident cause analysis
- Apply the investigation and analysis process to determine the sequence of events and the causes of an incident
- Critically analyse published incident and accident reports including the recommendations

Functional safety of safety-related systems

2 Days

UK-SPEC: B, E

Apply the principles of functional safety to the development of safety systems.

Learn about the primary elements of the safety lifecycle and how these are applied to the development of safety systems. You will also learn the assessment of safety systems to confirm that functional requirements and risk reduction targets have been achieved.

This course introduces functional safety and IEC 61508, then goes on to explore the lifecycle of functional safety from the IEC 61508 perspective. The use of SIL (safety integrity levels) and how targets and requirements for SIL are met are covered.



Who should attend?



Electrical and mechanical engineers, operators, HSE advisors and risk management practitioners, and those with experience or training in hazard identification.

Key outcomes:



- Define safety functions and target Safety Integrity Level (SIL) requirements which will reduce the associated risks to a tolerable level
- Apply the analysis methodologies to ensure that, when implemented, the safety systems achieve specified risk reduction targets
- Logically deduce how the level of risk reduction achieved by a safety system could be improved and when risk has been reduced to As Low As Reasonably Practicable (ALARP)

 imeche.org/srfsaf

Rail industry hazards and risks

2 Days

UK-SPEC: A

An overview of the hazards associated with railway infrastructure, rolling stock, operations and maintenance.

Learn about the concepts of risk management and gain an understanding of the role of risk management through the rail project lifecycle. You will study the different sources of risk in the rail industry, the regulatory regimes of the industry, the typical phases of a project and opportunities for risk reduction within each of the phases, and the final acceptance into service.



Who should attend?



Recent graduates, engineers moving into new roles within the rail industry, production and engineering managers, infrastructure and asset managers and, design, maintenance and safety engineers.

Key outcomes:



- Describe the various drivers which cause railway organisations to manage safety risk
- Explain the principle sources of hazards and the associated risks which typically arise within railway projects and operations
- Apply knowledge of these hazards and the available mitigations to the management of risk within the rail industry

 imeche.org/rarahz

Rail safety analysis

2 Days

UK-SPEC: A

Qualitative and quantitative safety analysis techniques used within the rail industry.

Guidance on which analysis method may be most suitable depending on the system or lifecycle phase.



Who should attend?



Recent graduates, engineers moving into new roles within the rail industry, production and engineering managers, infrastructure and asset managers, and design maintenance and safety engineers.

Key outcomes:



- Demonstrate knowledge of the principles of risk management and its relevance to the rail industry
- Apply techniques to evaluate risk in the rail environment from both design and operation aspects

 imeche.org/rarasa



NEW Hydrogen safety assurance

2 Days



UK-SPEC: A, B, E

An introduction to the practical tools and techniques needed to build a robust yet pragmatic safety assurance framework.

As we move towards wider adoption of hydrogen technologies, it is important to understand its challenges, highlighting both commonalities and differences between hydrogen and well-understood hydrocarbons.

The course covers how we can produce, store and use hydrogen safely, utilising risk assessment and management tools and techniques from other industries.

Who should attend?

Managers, engineers, operators, HSE advisors and risk management practitioners involved in hydrogen energy projects.



Key outcomes:

- Have an understanding of the hydrogen hazard, its specific characteristics and challenges
- Understand how established risk assessment tools and techniques can be applied to hydrogen schemes, with appreciation of the limitation of these techniques
- Define the purpose and benefits of the formal demonstration and communication that risks are managed ALARP and how this can be best achieved



 imeche.org/srhysa

NEW HAZOP study

2 Days



UK-SPEC: A, B, E

Understand the HAZOP methodology and gain the skills required to be an effective member of a HAZOP team.

A HAZOP study is a systematic method for identifying hazards in a process, conducted in a workshop environment attended by a multi-disciplinary team.

The whole technique is covered during this course, from planning and recording, how the workshop is structured, through to reporting the outputs, including the work that the facilitator must do as part of the HAZOP study. Delegates will have the opportunity to practise the technique.

Who should attend?

Project managers, operations managers, process engineers, operators, HSE advisors and risk management practitioners.



Key outcomes:

- Analyse how the HAZOP technique can be applied at the different stages of a project's lifecycle such as FEED, detailed design, revalidation and decommissioning
- Prepare for a HAZOP workshop, determine the skills and actions necessary to lead a HAZOP and how to generate a HAZOP report
- Critically review the HAZOP technique and the inputs and outputs of a HAZOP study



 imeche.org/srhzop

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Compressors and fans: Introduction
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Design of piping systems
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Pump selection
Pump repair & maintenance
- 86** Pump systems
Pressure testing

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Hydraulics and pneumatics: Introduction



2 Days

UK-SPEC: B, E

Learn to apply the properties of pneumatic and hydraulic systems.

Pneumatics involves converting the energy of a compressed air or gas to make something work. Hydraulics involves the study of liquids at rest and in motion, particularly under pressure, and applies that knowledge to the design and control of machines.

Develop the knowledge of the operational and maintenance requirements of pneumatic and hydraulic systems and recognise circuit components and interpret drawings for applications.



Great trainer, engaging and informative.

Marius Bell, Environment Agency

 imeche.org/eehypn

Heating, ventilation and air conditioning (HVAC) design



2 Days

UK-SPEC: B, E

Explore the fundamentals of HVAC design.

Learn the main system components, calculations, regulatory requirements and design considerations of HVAC design. You will understand the various functions that HVAC serves and explore practical solutions to optimise system design for installation, operation and maintenance.

Examples of industrial HVAC applications from manufacturing, process, offshore and nuclear sectors will be reviewed, considering several factors such as fire safety, contamination and corrosion.



An excellent trainer who had a deep understanding of HVAC and could relate to each individual's industrial experience. All three of my team left feeling satisfied and more knowledgeable and we all agreed it was an excellent course.

Callan Walsh, BAE Systems

 imeche.org/thhvac

Compressors and fans: Introduction



1 Day

UK-SPEC: A, B, E

Understand the application of compressors and fans.

Explore the key features and limitations of fluid dynamic machines, looking at the impact of the fundamentals of fluid flow and thermodynamics. Machine output characteristics and their importance for control will also be explained.

The differences between compressor and fan design will be used to introduce vibration monitoring and the importance of machine integrity.

 imeche.org/thcomf

Who should attend?



Training or qualified as mechanical technicians, engineers, or asset, maintenance and reliability personnel working within or supporting the manufacturing, industrial, oil and gas sectors.

Key outcomes:



- Understand the concept of air and fluid power and explain how this relates to mechanical and fluid systems
- Describe the operational and maintenance requirements of pneumatic and hydraulic systems
- Interpret pneumatic and hydraulic circuit diagrams and relate these to everyday applications

Who should attend?



Engineers, designers and project managers responsible for the design, specification, operation and maintenance of HVAC systems.

Key outcomes:



- Appreciate the design lifecycle of HVAC system
- Understand the regulations and standards applicable to HVAC
- Calculate cooling and heating loads
- Understand maintenance requirements of ventilation systems
- Optimise system design for installation, operation and maintenance

Who should attend?



Engineers and operators of compressor plant and their managers. Experience is not required, but can provide technical background in lieu of a degree.

Key outcomes:



- Carry out a preliminary selection for a compressor application and discuss the pros and cons of different choices
- Understand compressor technology and its limitations
- Gain awareness of the importance of machinery safety and its legal basis

Pipe stress analysis

2 Days



UK-SPEC: D

Learn the methods underlying pipe stress analysis and how to solve design issues.

Develop an understanding of the necessary background to comply to the piping codes, carry out the stress analysis and problem solve; including the requirements for pipe stress analysis and an efficient process workflow.

The course covers the use of pipe stress analysis software to carry out code compliance checks, evaluate pipe stresses and loads on supports and attached equipment.



Enjoyed the course immensely. I have definitely taken some points away which will benefit me in my day job.

Graeme Fearnside, BAE Systems

 imeche.org/thpsan

Who should attend?



Engineers responsible for the design of piping systems, designers or project engineers that want to gain a better understanding of piping code requirements and best practice for analysis.

Key outcomes:



- Understand the requirements for stress analysis in piping design
- Carry out hand calculations to code for pressure design
- Build models in pipe stress analysis software
- Model expansion joints, rigids, bends, supports and anchors
- Define load cases

Design of piping systems

2 Days



UK-SPEC: B, E

Design and operate safe and efficient systems.

To design systems that will be cost effective and safe during the construction and operation, engineers need to have good understanding of the piping practices, the physical components and the parts of the design lifecycle.

You will understand why good engineering judgement is critical for the design of safe and efficient piping; leaving the course with a holistic understanding of the system design process and safety assessments required to ensure the end design is safe and efficient.



This course will certainly help with my career. Having recently taken over a team specifically focusing on piping design and substantiation this has certainly helped to develop my knowledge in this area. Topics covered in the course will be useful and the knowledge I have gained will be implemented straight away.

David Ricketts, Rolls-Royce Submarines

 imeche.org/thdpip

Who should attend?



Engineers, designers and project managers responsible for the delivery of piping systems.

Key outcomes:



- Understand the pipe system project lifecycle and language
- Understand the regulations and standards applicable to system design, construction and exploitation
- Use best technique for setting out the design
- Carry out calculations for sizing of the system and safety assessments of systems
- Optimise design of piping systems for economy, safety, constructability and operability

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Pump fundamentals

1 Day



UK-SPEC: B, E

Gain the knowledge that will underpin your work with pumps.

The initial part of the course is aimed at establishing an understanding of the fundamentals of pumps, including how they work, their performance characteristics and the influence of key design parameters and liquid properties on pump behaviour. You will then build upon the basic fundamentals of pumps and pump performance and establish an understanding of pump operating conditions.



Great course. Covered a wide range of information on different pumps.

Josh Dennis, Concentric Pumps Ltd

 imeche.org/thpfun

Who should attend?



Anyone with a general engineering or commercial background, or anyone who works within the industry and is looking to understand the principles of pump technology.

Key outcomes:



- Contribute to the pump selection process through improved knowledge of the hydraulic performance and behaviour of pumps and their operating limitations
- Understand pumping system characteristics and the interaction of pumps and systems for single and multiple pump installations
- Recognise operating conditions which cause pump and system operating problems

Pump selection

1 Day



UK-SPEC: B, C, D, E

Select the right pump for the intended use.

This course provides a foundation for understanding the factors that must be considered when selecting a pump.

You will learn through a series of presentations and exercises designed to demonstrate the selection principles for pumping equipment in a practical way.

This course is typically taken after Pump fundamentals.

 imeche.org/thpsel

Who should attend?



Anyone whose role includes the planning and specification of pumping operations and who have a need to be conversant with the principles of pump selection.

Key outcomes:



- Classify and summarise differing types and classes of pumping equipment
- Ensure an efficient exchange of information between the pump vendor and the pump purchaser
- Know what to consider when selecting auxiliary pump equipment
- Undertake selection procedures based on hydraulic and other parameters
- Confidently state the purposes of a quotation and a contract

Pump repair & maintenance

2 Days



UK-SPEC: B, C, E

Understand key failure modes for pump and motor components and identify remedial solutions.

A hands-on training course designed to provide an overview of pump repairs and maintenance. You will learn about the different types of pumps, how to read a typical manufacturer pump nameplate as well the different types of mechanical seals and packing.

Health and safety and best practices are an integral part of this training.

 imeche.org/thprma

Who should attend?



Technicians involved in repairing or maintaining pumps and pump systems or whose role involves ensuring the smooth flow of an operation where pumps or pump systems are an integral part of the function.

Key outcomes:



- Identification of roto dynamic machinery
- Identification of failure points of key components
- Identification of maintenance strategies to reduce unplanned failure

Pump systems

1 Day



UK-SPEC: B, E

Examine factors to consider when designing a complete pump system.

This course has been designed to enable individuals working with pumping systems to enhance their knowledge regarding the interaction of all of the components within a successfully designed system. It provides an opportunity to examine fluid flow principles, flow regimes and evaluate good and bad practices.



The trainer contacted us beforehand and tailored the course to our needs. That was incredibly useful. He was so knowledgeable and he could answer any question.

Edward Cook, Jersey Water



VERIFIED

 imeche.org/thpsys

Who should attend?



Anyone looking to gain a better understanding of the factors that need to be considered in the design of pump systems. It is recommended that you take the Pump fundamentals course (page 85) before attending this course.

Key outcomes:



- Understand what is meant by system, static, velocity and friction heads
- Understand the special considerations of unsteady flow conditions relating to positive displacement pumps
- Describe a "System Curve" and how it is derived
- The difference and relationship between NPSH, (NPSH)_R and (NPSH)_A
- Recognise the problems that can be associated with poor design

Pressure testing

1 Day



UK-SPEC: B, E

Plan and safely execute pressure testing of piping systems.

Pressure testing ensures that the fabrication and installation has been carried out correctly and is safe for operation, however, the pressure test itself can be a major risk if not properly planned and executed.

You will learn why testing is important, the types of testing, equipment and documentation that are used for tests. The whole process is covered, from planning and preparing to carrying out the test and post-test activities.



The course was very informative on some of the pipe work design criteria and other methods of testing. It also highlighted typical benefits and limitations of different types of pressure testing.

Richard McGinley, Severn Trent Water Ltd

 imeche.org/thpres

Who should attend?



Anyone responsible for pressure testing who want to learn about the process to plan and carry out testing in a safe manner.

Key outcomes:



- Identify pressure test requirements
- Know which regulations relate to pressure testing and where to find them
- Understand the difference between hydrotest and pneumatic test
- Recognise risks and hazards associated with pressure testing and identify suitable mitigation
- Plan and execute a safe pressure test



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Training portfolio

	Level	Format
Non-Destructive Testing	Basic Radiation Safety and Advanced Radiation Safety	
	Eddy Current Testing Welds Pulsed Eddy Current (PEC)	
	Magnetic Testing Welds, Castings, Forgings	
	Penetrant Testing Welds, Castings, Forgings	
	Radiographic Testing Welds and Castings Computed Radiography	
	Ultrasonic Testing Welds, Castings, Forgings	
	3.7 Nozzle, 3.8 Nodes and 3.9 Tee	
	Thickness and Lamination	
	Critical Defect Sizing	
	Corrosion Mapping	
	Advanced Ultrasonic Testing: Phased Array	
	Time of Flight Diffraction	
	FMC, TFM, TFMi and related technologies	



Face-to-face course



Online course



Blended course



Accelerated work experience available

		Level	Format
	Visual Testing Welds, Castings, Forgings	1 2 3	
		1 2 3	
		1 2 3	
		1 2 3	
		1 2 3	
Corrosion and Coatings	Hot Dip Galvanizing Inspector	1 2 3	
	Industrial Coatings Applicator Training Scheme (ICATS)	1 2 3	
	Insulation Inspector	1 2 3	
	Passive Fire Protection (PFP) Epoxy Coating Inspector	1 2 3	
		1 2 3	
	Pipeline Coatings Inspector	1 2 3	
	Protective Coatings Inspector	1 2 3	
	ICorr Recertification	1 2 3	
	1 2 3		
	1 2 3		

Get in touch

To discuss any NDT and coatings training or qualification for you or your team, contact:

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