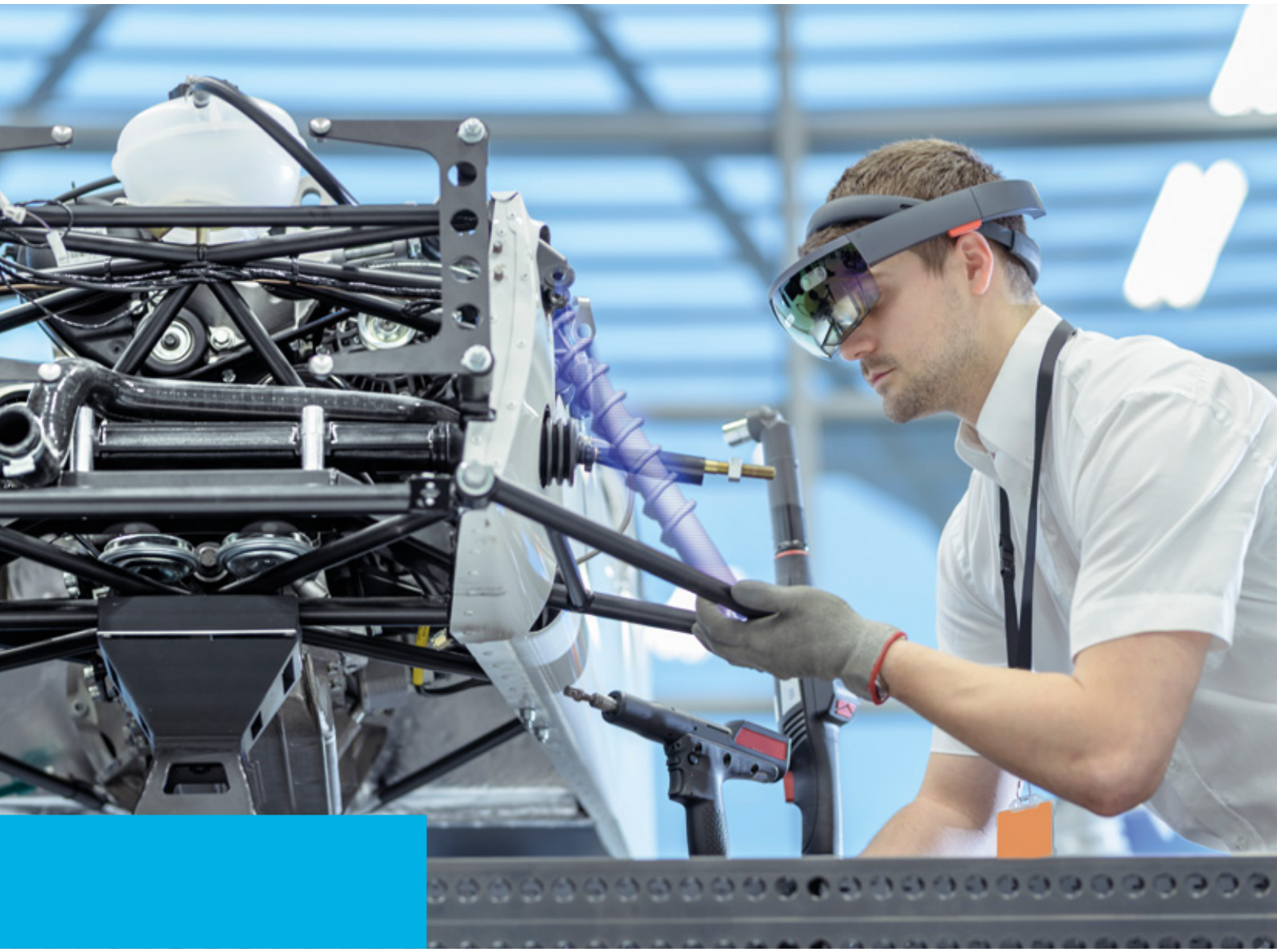
The Institution of Engineering and Technology



The Incorporated Engineer Standard (IEng)

theiet.org/ieng

Incorporated Engineers maintain and manage applications of current and developing technology, and may undertake engineering design, development, manufacture, construction and operation. Incorporated Engineers are able to demonstrate:

- The theoretical knowledge to solve problems in developed technologies using well proven analytical techniques
- Successful application of their knowledge to deliver engineering projects or services using established technologies and methods
- Responsibility for project and financial planning and management together with some responsibility for leading and developing other professional staff
- Effective interpersonal skills in communicating technical matters
- Commitment to professional engineering values.

The Competence and Commitment Standard for Incorporated Engineers. Incorporated Engineers must be competent throughout their working life, by virtue of their education, training and experience, to:	The examples given below are intended to help you identify activities you might quote to demonstrate the required competence and commitment for IEng registration. These are not exhaustive. Moreover, you are not required to give multiple examples to demonstrate competence and commitment.
A Use a combination of general and specialist engineering knowledge and understanding to apply existing and emerging technology.	
A1 Maintain and extend a sound theoretical approach to the application of technology in engineering practice. This could include an ability to: – Identify the limits of own personal knowledge and skills – Strive to extend own technological capability – Broaden and deepen own knowledge base through research and experimentation.	Engage in formal learning. Learn new engineering theories and techniques in the workplace, at seminars, etc. Broaden your knowledge of engineering codes, standards and specifications.

A2	Use a sound evidence-based approach to problem-solving and contribute to continuous improvement. This could include an ability to: – Use market intelligence and knowledge of technological developments to promote and improve the effectiveness of engineering products, systems and services – Contribute to the evaluation and development of continuous improvement systems – Apply knowledge and experience to investigate and solve problems arising during engineering tasks and implement corrective action.	Manage/contribute to market research, and product and process research and development. Involvement with cross-disciplinary working. Conduct statistically sound appraisal of data. Use evidence from best practice to improve effectiveness. Apply root cause analysis.
B	**Apply appropriate theoretical and practical methods to design, develop, manufacture, construct, commission, operate, maintain, decommission and re-cycle engineering processes, systems, services and products.**	
B1	Identify, review and select techniques, procedures and methods to undertake engineering tasks. This could include an ability to: – Establish users' requirements for improvement – Select a review methodology – Fully exploit and implement current technology – Review the potential for enhancing engineering practices, products, processes, systems and services, using evidence from best practice – Establish an action plan to implement the results of the review.	Contribute to the marketing of and tendering for new engineering products, processes and systems. Contribute to the specification and procurement of new engineering products, processes and systems. Develop decommissioning processes. Set targets, and draft programmes and action plans. Schedule activities.
B2	Contribute to the design and development of engineering solutions. This could include an ability to: – Contribute to the identification and specification of design and development requirements for engineering products, processes, systems and services – Identify operational risks and evaluate possible engineering solutions, taking account of cost, quality, safety, reliability, appearance, fitness for purpose, security, intellectual property (IP) constraints and opportunities, and environmental impact – Collect and analyse results – Carry out necessary tests.	Contribute to theoretical and applied research. Manage/contribute to value engineering and whole life costing. Work in design teams. Draft specifications. Find and evaluate information from a variety of sources, including online. Develop and test options. Identify resources and costs of options. Produce detailed designs. Be aware of IP constraints and opportunities.

B3	Implement design solutions and contribute to their evaluation. This could include an ability to: – Secure the resources required for implementation – Implement design solutions, taking account of critical constraints, including due concern for safety and sustainability – Identify problems during implementation and take corrective action – Contribute to recommendations for improvement and actively learn from feedback on results.	Follow the design process through into product manufacture. Operate and maintain processes, systems etc. Contribute to reports on the evaluation of the effectiveness of the designs, including risk, safety and life cycle considerations. Contribute to product improvement. Interpret and analyse performance. Contribute to determining critical success factors.
C	**Provide technical and commercial management.**	
C1	Plan for effective project implementation. This could include an ability to: – Identify factors affecting the project implementation – Carry out holistic and systematic risk identification, assessment and management – Prepare and agree implementation plans and method statements – Secure the necessary resources and confirm roles in project team – Apply the necessary contractual arrangements with other stakeholders (client, subcontractors, suppliers, etc).	Manage/contribute to project planning activities. Produce and implement procurement plans. Contribute to project risk assessments. Collaborate with key stakeholders. Plan programmes and delivery of tasks. Identify resources and costs. Prepare and agree contracts/work orders.
C2	Manage tasks, people and resources to plan and budget. This could include an ability to: – Operate appropriate management systems – Work to the agreed quality standards, programme and budget, within legal and statutory requirements – Manage work teams, coordinating project activities – Identify variations from quality standards, programme and budgets, and take corrective action – Evaluate performance and recommend improvements.	Manage/contribute to project operations. Manage the balance between quality, cost and time. Manage contingency processes. Contribute to the management of project funding, payments and recovery. Satisfy legal and statutory obligations. Manage tasks within identified financial, commercial and regulatory constraints.

C3	Manage teams and develop staff to meet changing technical and managerial needs. This could include an ability to: – Agree objectives and work plans with teams and individuals – Identify team and individual needs, and plan for their development – Reinforce team commitment to professional standards – Manage and support team and individual development – Assess team and individual performance, and provide feedback.	Carry out/contribute to staff appraisals. Plan/ contribute to the training and development of staff. Gather evidence from colleagues of the management, assessment and feedback that you have provided. Carry out/contribute to disciplinary procedures.
C4	Manage continuous quality improvement. This could include an ability to: – Ensure the application of quality management principles by team members and colleagues – Manage operations to maintain quality standards – Evaluate projects and make recommendations for improvement.	Promote quality. Manage/contribute to best practice methods of continuous improvement, eg ISO 9000, EFQM, balanced scorecard. Carry out/contribute to quality audits. Monitor, maintain and improve delivery. Identify, implement and evaluate changes to meet quality objectives.
D	**Demonstrate effective interpersonal skills.**	
D1	Communicate in English[1] with others at all levels. This could include an ability to: – Contribute to, chair and record meetings and discussions – Prepare communications, documents and reports on technical matters – Exchange information and provide advice to technical and non-technical colleagues.	Reports, letters, emails, drawings, specifications and working papers (eg meeting minutes, planning documents, correspondence) in a variety of formats. Engaging or interacting with professional networks.
D2	Present and discuss proposals. This could include an ability to: – Prepare and deliver appropriate presentations – Manage debates with audiences – Feed the results back to improve the proposals – Contribute to the awareness of risk.	Presentations, records of discussions and their outcomes.

[1]Any interviews will be conducted in English, subject only to the provisions of the Welsh Language Act 1993 and any Regulations which may be made in implementation of European Union directives on free movement of labour.

D3	Demonstrate personal and social skills. This could include an ability to: – Know and manage own emotions, strengths and weaknesses – Be aware of the needs and concerns of others, especially where related to diversity and equality – Be confident and flexible in dealing with new and changing interpersonal situations – Identify, agree and lead work towards collective goals – Create, maintain and enhance productive working relationships, and resolve conflicts.	Records of meetings. Evidence from colleagues of your personal and social skills. Contribute to productive working relationships. Apply diversity and anti-discrimination legislation.
E	**Demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.**	
E1	Comply with relevant codes of conduct. This includes an ability to: – Comply with the rules of professional conduct of own institution – Manage work within all relevant legislation and regulatory frameworks, including social and employment legislation.	Work with a variety of conditions of contract. Demonstrate initiative in and commitment to the affairs of your institution.
E2	Manage and apply safe systems of work. This could include an ability to: – Identify and take responsibility for own obligations for health, safety and welfare issues – Manage systems that satisfy health, safety and welfare requirements – Develop and implement appropriate hazard identification and risk management systems and culture – Manage, evaluate and improve these systems – Apply a sound knowledge of health and safety legislation.	Undertake formal health and safety training. Work with health and safety legislation and best practice. In the UK, examples include HASAW 1974, CDM regulations, OHSAS 18001:2007 and company safety policies. Carry out safety audits. Identify and minimise hazards. Assess and control risks. Deliver health and safety briefings and inductions.

E3	Undertake engineering activities in a way that contributes to sustainable development. This could include an ability to: – Operate and act responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously – Provide products and services which maintain and enhance the quality of the environment and community, and meet financial objectives – Understand and encourage stakeholder involvement in sustainable development – Use resources efficiently and effectively.	Carry out/contribute to environmental impact assessments. Carry out/contribute to environmental risk assessments. Manage best practice environmental management systems, eg ISO 14000. Manage best practice risk management systems eg ISO 31000. Work within environmental legislation. Adopt sustainable practices. Contribute to social, economic and environmental outcomes.
E4	Carry out and record CPD necessary to maintain and enhance competence in own area of practice including: – Undertake reviews of own development needs – Plan how to meet personal and organisational objectives – Carry out planned (and unplanned) CPD activities – Maintain evidence of competence development – Evaluate CPD outcomes against any plans made – Assist others with their own CPD.	Keep up to date with national and international engineering issues. Maintain CPD plans and records. Involvement with the affairs of your institution. Evidence of your development through on-the-job learning, private study, in-house courses, external courses and conferences.
E5	Exercise responsibilities in an ethical manner.	Give an example of where you have applied ethical principles as described in the Statement of Ethical Principles on page 33. Give an example of where you have applied/upheld ethical principles as defined by your organisation or company, which may be in its company or brand values.

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