



# Civil Engineering Site Management Degree Apprenticeship

Mapping of Knowledge, Skills & Behaviours against  
IEng MICE Attributes



# Contents

<b>Introduction.....</b>	<b>3</b>
<b>Knowledge .....</b>	<b>4</b>
<b>Skills.....</b>	<b>5</b>
<b>Behaviours.....</b>	<b>5</b>
<b>ICE Attributes for Incorporated Engineers.....</b>	<b>6</b>



## Introduction

This guide provides an explanation of the relationship between the KSB outlined in the Apprenticeship Standard for the Civil Engineering Non-integrated Degree Apprenticeship and the IEng MICE attributes and any differences.

As a Civil Engineer Site Management Degree Apprentice, you will need to demonstrate throughout your apprenticeship programme how your practical experience is providing you with evidence to show that you have gained the appropriate Knowledge, Skills and Behaviours (KSB) outlined in the apprenticeship standard and the associated assessment criteria.

Each Apprenticeship Standard has a unique set of KSB that must be achieved and ICE has ensured that these professional standards are comparable with our professional development requirements.

The Apprenticeship Standards reference the terms Knowledge, Skills and Behaviours that an apprentice must gain and be able to demonstrate achievement of, to allow an application for an End Point Assessment (EPA) which is to be made at the end of the apprenticeship programme.

ICE documentation uses different terms. Evidence of an apprentice's Initial Professional Development (IPD), the practical experience gained in parallel to an apprentice's academic studies, should be recorded against the seven Attributes.

Apprentices wishing to become a Member of ICE, and register as an Incorporated Engineer, can use this guide to assist in recording the work-based aspects of their apprenticeship against the seven Attributes.

Training Providers can use this guide to help them understand how the apprentice's work can be mapped against the KSB outlined in the apprenticeship standard and associated assessment criteria.

Each apprenticeship standard and assessment plan is unique and can be found on the Institute for Apprenticeships and Technical Education's [website](#).

Full details of the End Point Assessment can be found in the [Civil Engineer Site Management EPA guidance](#) which also includes the application form.

Our Membership Support Team (MST) can give you advice and guidance on all aspects of the End Point Assessment, please email [membershipsupport@ice.org.uk](mailto:membershipsupport@ice.org.uk) or call +44 (0)121 227 5948 for help.



# Civil Engineer Site Management Degree Apprenticeship Knowledge

Core knowledge to be assessed		ICE Attributes
<b>K1</b>	<b>Civil Engineering Knowledge</b> Understand engineering principles, codes and standards including but not limited to: transportation, buildings, infrastructure, utilities and structures.	<b>1a</b>
<b>K2</b>	<b>Civil Engineering Solutions</b> Understand the client's needs and the practicality of using certain engineering solutions to meet those needs, taking into account constraints and opportunities.	<b>1d</b>
<b>K3</b>	<b>Civil Engineering Techniques</b> Understand design principles, building surveys, costing, risk analysis, sustainability, Health and Safety, buildability, contract law.	<b>1c</b>
<b>K4</b>	<b>Project Management</b> Understands the project management cycle including the planning, budgeting, project funding and payment processes so as to lead to effective project delivery.	<b>2a, 3a</b>
<b>K5</b>	<b>People and Resources</b> Understand principles of team working, staff co-ordination, supply chain management, performance management and the development of people.	<b>2c, 2d</b>
<b>K6</b>	<b>Quality Management</b> Understand the importance of maintaining quality standards, using records, systems, tools and techniques for quality improvement.	<b>1b, 4d</b>
<b>K7</b>	<b>Commercial and Legal Awareness</b> Understand budgets, costs, various forms of contract, procurement and record keeping and their impact on project success, profitability and meeting the budget.	<b>3b</b>
<b>K8</b>	<b>Communication</b> Understand different forms of communication (written, verbal, electronic) and evaluate the best solution for different circumstances.	<b>6a, 6b</b>
<b>K9</b>	<b>Working with Others</b> Be aware of the importance of good working relationships, the needs of others and equality and diversity in the workplace.	<b>6c,6d</b>
<b>K10</b>	<b>Safe Systems of Work</b> Understand obligations for Health, Safety and Welfare issues on site, how to identify potential hazards and manage the risks.	<b>4a</b>
<b>K11</b>	<b>Sustainability</b> Understand the environmental impact of civil engineering activities and how to minimise negative impacts during all stages of the project.	<b>5a</b>

## Skills

Core skills to be assessed		ICE Attributes
<b>S1</b>	<b>Civil Engineering Knowledge and Understanding</b> To develop and apply practical engineering solutions using established and emerging technologies such as, but not limited to, new materials or off-site manufacture.	<b>1a, 1b</b>
<b>S2</b>	<b>Civil Engineering Application</b> Be able to identify, review and select techniques, procedures and methods to undertake engineering tasks. Be able to contribute to the design, development and implementation of engineering solutions and evaluate their effectiveness.	<b>1c, 1d</b>
<b>S3</b>	<b>Management and Leadership</b> Be able to plan for effective project management, plan and organise resources, tasks and people. Be able to manage teams and staff to meet project requirements and be able to manage quality processes.	<b>2a, 2b, 2c, 2d, 2e</b>
<b>S4</b>	<b>Commercial Ability</b> Be able to prepare and control budgets and apply statutory and commercial frameworks to ensure profitability and adherence to budget.	<b>3a, 3b</b>
<b>S5</b>	<b>Health, Safety and Welfare</b> Be able to identify and manage risks of health, safety and welfare in line with legislation, hazards and safe systems of work.	<b>4a, 4b, 4c</b>
<b>S6</b>	<b>Sustainable Development</b> Be able to manage engineering activities in a way that contributes to sustainable development and implements best practice.	<b>5a, 5b</b>
<b>S7</b>	<b>Interpersonal Skills and Communication</b> Be able to communicate well with others at all levels and discuss plans and issues. Demonstrate personal and social skills and an ability to deal with colleagues and stakeholders in a way that enhances equality and diversity. Be able to proactively transfer information to teams and staff.	<b>6a, 6b, 6c, 6d</b>

## Behaviours

Behaviours		ICE Attributes
<b>B1</b>	<b>Take Responsibility</b> Be responsible for your own work and that of others.	
<b>B2</b>	<b>Independent Judgement and Responsibility</b> Exercise independent engineering judgement, take responsibility for actions and decisions and operate within the constraints of own skills and knowledge.	<b>1e, 7d</b>
<b>B3</b>	<b>Complying with Codes of Conduct</b> Be able to operate within the Institution of Civil Engineers Code of Conduct and implement work activities within the context of industry issues. Promote ethical behaviour in others and promote the construction industry.	<b>7a, 7b</b>
<b>B4</b>	<b>Maintaining Continuing Professional Development</b> Identify own development needs and take appropriate action to meet those needs. Use own knowledge and expertise for the benefit of others.	<b>7c</b>

## ICE Attributes for Incorporated Engineers

Attribute	Sub attributes	Knowledge	Skill	Behaviour
<b>1 Understanding and Practical Application of Engineering</b>	<ul style="list-style-type: none"> <li>a) Maintain and extend knowledge of engineering theory and practice, and how technology assists its application</li> <li>b) Solve engineering problems using a sound theoretical approach, based on evidence, and contribute to continuous improvement</li> <li>c) Identify, review, and select techniques, procedures and methods to undertake engineering tasks</li> <li>d) Contribute to the design and development of engineering solutions, implement those solutions, and evaluate their effectiveness in the context of the whole project life cycle</li> <li>e) Exercise sound independent engineering judgement</li> </ul>	<b>1, 2, 3, 6</b>	<b>1, 2</b>	<b>2</b>
<b>2 Management and Leadership</b>	<ul style="list-style-type: none"> <li>a) Plan the work and resources needed to enable effective implementation of engineering tasks and projects</li> <li>b) Manage the planning and organisation of tasks and resources</li> <li>c) Manage teams or technical specialisms</li> <li>d) Assist others to meet changing technical and managerial needs</li> <li>e) Manage quality processes and contribute to quality improvements</li> </ul>	<b>4, 5</b>	<b>3</b>	
<b>3 Commercial Ability</b>	<ul style="list-style-type: none"> <li>a) Manage, prepare and control costs/budgets of engineering tasks or projects</li> <li>b) Use sound knowledge of statutory and commercial frameworks within their own area of responsibility and have an appreciation of other commercial arrangements</li> </ul>	<b>4, 7</b>	<b>4</b>	

<b>4 Health, Safety and Welfare</b>	<ul style="list-style-type: none"> <li>a) Demonstrate a sound knowledge of legislation, hazards and safe systems of work</li> <li>b) Manage risks</li> <li>c) Manage health, safety and welfare within their own area of responsibility</li> <li>d) Contribute to improvements in health, safety and welfare</li> </ul>	<b>6, 10</b>	<b>5</b>	
<b>5 Sustainable Development</b>	<ul style="list-style-type: none"> <li>a) Understand the principles of sustainable development and apply them in work</li> <li>b) Manage engineering activities that contribute to sustainable development and the United Nations Sustainable Development Goals (UNSDGs)</li> </ul>	<b>11</b>	<b>6</b>	
<b>6 Interpersonal Skills and Communication</b>	<ul style="list-style-type: none"> <li>a) Communicate well with others at all levels including effective use of English<sup>1</sup> orally and in writing<sup>2</sup></li> <li>b) Discuss ideas and plans competently and with confidence</li> <li>c) Demonstrate effective personal and social skills</li> <li>d) Demonstrate awareness of diversity and inclusion</li> </ul>	<b>8, 9</b>	<b>7</b>	
<b>7 Professional Commitment</b>	<ul style="list-style-type: none"> <li>a) Understand and comply with the ICE Code of Conduct</li> <li>b) Understand the ethical issues that may arise in their role and exercise responsibilities in an ethical manner</li> <li>c) Plan, carry out and record Continuing Professional Development necessary to maintain and enhance competence in their own area of practice</li> <li>d) Identify the limits of their personal knowledge and skills</li> <li>e) Engage with ICE activities</li> </ul>			<b>2, 3, 4</b>

<sup>1</sup> All assessments and reviews for Engineering Council registration will be conducted in English, subject to the provisions of the Welsh Language Act 1993.

<sup>2</sup> This will be demonstrated by your submitted report and completion of a written communications test as part of the Professional Review.

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## Our vision

Civil engineers at the heart of society, delivering sustainable development through knowledge, skills and professional expertise.

## Core purpose

- To develop and qualify professionals engaged in civil engineering
- To exchange knowledge and best practice for the creation of a sustainable and built environment
- To promote our contribution to society worldwide

## Diversity statement

As a membership organisation and an employer, we value diversity and inclusion - a foundation for great engineering achievement