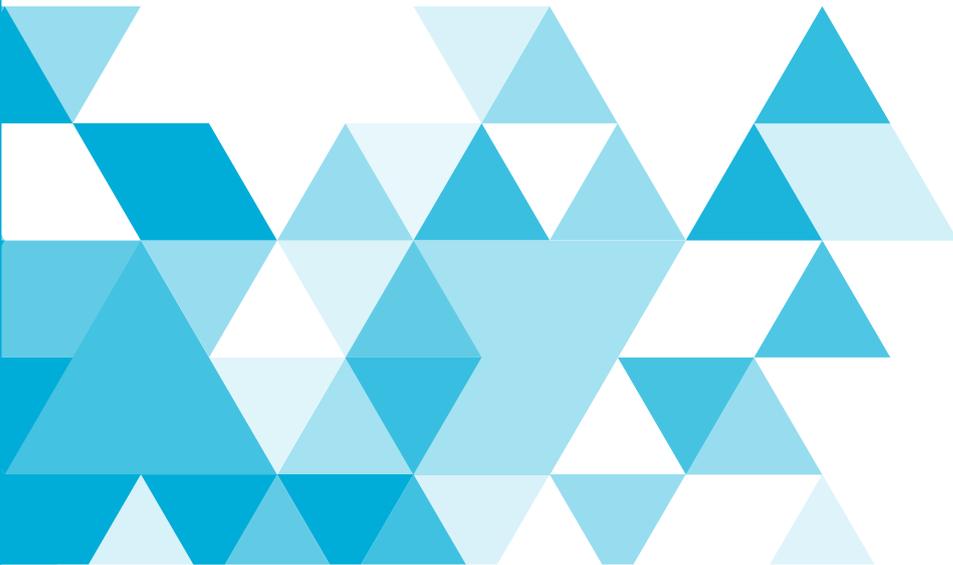




Civil Engineering Site Management Degree Apprenticeship

Mapping of Knowledge, Skills & Behaviours against
ICE Attributes



Contents

Introduction	3
Knowledge	4
Skills.....	5
Behaviours.....	6
ICE Attributes for Incorporated Engineers	7



Introduction

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.

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 ICE Attributes.

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 nine Attributes.

Apprentices wishing to become a Member of the Institution of Civil Engineers, and register as an Incorporated Engineer, can use this guide to assist in recording the work-based aspects of their apprenticeship against the nine 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 or call +44 (0)121 227 5948 for help.



Knowledge

Core knowledge to be assessed		Attribute
K1	Civil Engineering Knowledge Understand engineering principles, codes and standards including but not limited to: transportation, buildings, infrastructure, utilities and structures.	1, 2
K2	Civil Engineering Solutions Understand the client's needs and the practicality of using certain engineering solutions to meet those needs, taking into account constraints and opportunities.	2
K3	Civil Engineering Techniques Understand design principles, building surveys, costing, risk analysis, sustainability, Health and Safety, buildability, contract law.	2, 5, 6
K4	Project Management Understands the project management cycle including the planning, budgeting, project funding and payment processes so as to lead to effective project delivery.	3, 4, 5
K5	People and Resources Understand principles of team working, staff co-ordination, supply chain management, performance management and the development of people.	3
K6	Quality Management Understand the importance of maintaining quality standards, using records, systems, tools and techniques for quality improvement.	3, 9
K7	Commercial and Legal Awareness Understand budgets, costs, various forms of contract, procurement and record keeping and their impact on project success, profitability and meeting the budget.	5
K8	Communication Understand different forms of communication (written, verbal, electronic) and evaluate the best solution for different circumstances.	8
K9	Working with Others Be aware of the importance of good working relationships, the needs of others and equality and diversity in the workplace.	3, 8
K10	Safe Systems of Work Understand obligations for Health, Safety and Welfare issues on site, how to identify potential hazards and manage the risks.	3, 6
K11	Sustainability Understand the environmental impact of civil engineering activities and how to minimise negative impacts during all stages of the project.	2, 3, 7

Skills

Core skills to be assessed		ICE Attributes
S1	<p>Civil Engineering Knowledge and Understanding To develop and apply practical engineering solutions using established and emerging technologies such as, but not limited to, new materials or off-site manufacture.</p>	1, 2, 7
S2	<p>Civil Engineering Appreciation 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.</p>	2
S3	<p>Management and Leadership 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.</p>	3
S4	<p>Commercial Ability Be able to prepare and control budgets and apply statutory and commercial frameworks to ensure profitability and adherence to budget.</p>	5
S5	<p>Health, Safety and Welfare Be able to identify and manage risks of health, safety and welfare in line with legislation, hazards and safe systems of work.</p>	6
S6	<p>Sustainable Development Be able to manage engineering activities in a way that contributes to sustainable development and implements best practice.</p>	3, 7, 2
S7	<p>Interpersonal Skills and Communication 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.</p>	8, 3

Behaviours

Behaviours		ICE Attributes
B1	<p>Take Responsibility Be responsible for your own work and that of others.</p>	3, 4, 5, 9
B2	<p>Independent Judgement and Responsibility Exercise independent engineering judgement, take responsibility for actions and decisions and operate within the constraints of own skills and knowledge.</p>	3, 4, 5, 9
B3	<p>Complying with Codes of Conduct 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.</p>	9
B4	<p>Maintaining Continuing Professional Development Identify own development needs and take appropriate action to meet those needs. Use own knowledge and expertise for the benefit of others.</p>	9



ICE Attributes for Incorporated Engineers

Attribute	Sub attributes	Knowledge	Skill	Behaviour
1 Knowledge and Understanding of Engineering	<p>A. Maintain and extend a sound theoretical approach to the application of technology in engineering practice</p> <p>B. Use a sound evidence-based approach to problem solving and be able to contribute to continuous improvement</p>	1, 6	1	
2 Technical and Practical Application of Engineering	<p>A. Identify, review and select techniques, procedures and methods to undertake engineering tasks</p> <p>B. Contribute to the design and development of engineering solutions</p> <p>C. Implement or construct design solutions and contribute to their evaluation</p>	1, 2, 3, 11	1, 2, 6	
3 Management and Leadership	<p>A. Identify, review and select techniques, procedures and methods to undertake engineering tasks</p> <p>B. Contribute to the design and development of engineering solutions</p> <p>C. Implement or construct design solutions and contribute to their evaluation</p>	4, 5, 6, 9, 10, 11	3, 6, 7	1, 2
4 Independent Judgement and Responsibility	<p>A. Identify the limits of personal knowledge and skills</p> <p>B. Exercise sound independent engineering judgement and take responsibility</p>	4		1, 2
5 Commercial Ability	<p>A. Prepare and control budgets</p> <p>B. Use sound knowledge of statutory and commercial frameworks within own area of responsibility and have an appreciation of other commercial arrangements</p>	3, 4, 7	4	1, 2
6 Health, Safety and Welfare	<p>A. A sound knowledge of legislation, hazards and safe systems of work</p> <p>B. Manage risks</p>	3, 10	5	

	C. Manage health, safety and welfare within own area of responsibility			
7 Sustainable Development	A. A sound knowledge of sustainable development best practice B. Manage engineering activities that contribute to sustainable development	11	1,6	
8 Interpersonal Skills and Communication	A. Communicate well with others at all levels including effective use of English orally and in writing B. Discuss ideas and plans competently and with confidence C. Effective personal and social skills D. Manage diversity issues	8, 9	7	
9 Professional Commitment	A. Understanding and compliance with the ICE Code of Conduct B. Plan, carry out and record CPD and encourage others C. Engage with ICE activities D. Demonstration of appropriate professional standards, recognising obligations to society, the profession and the environment E. Exercise responsibilities in an ethical manner	6		1, 2, 3, 4



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Institution of Civil Engineers is a Registered
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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