

CORE OBJECTIVES (MAT)

1. Materials Engineering – Mandatory Topics	Code	ES Initials & Date of Assessment			
		G	K	E	C
<u>Project Management</u>					
1.1 Demonstrate experience in project management: <ul style="list-style-type: none"> (a) Understanding of management principles. (b) Should have a supervisory or managerial role in a team or project. (c) Experience of Multi-disciplinary team work. (d) Logical approach to engineering tasks. (e) Preparation of work programme. (f) Supervision of subordinates (g) Project progress monitoring (depends on size and scope of project). 	K E E C E E E				
<u>Specimen Preparation and Sampling</u>					
1.2 Have practical experience of sampling and specimen preparation schemes. <ul style="list-style-type: none"> (a) Development of sampling strategy. (b) Carrying out or supervision of sampling. (c) Data interpretation. 	C				
<u>Materials Testing and Standards</u>					
1.3 Understanding of testing to internationally recognised standards. <ul style="list-style-type: none"> (a) Knowledge of the application and limitations of National and International Standards, Codes of Practice, Technical Memoranda etc. (b) Experience of conducting physical, mechanical and chemical testing or supervising and preparing such test regimes. (c) Interpretation of test results to aid engineering design or solutions to engineering problems. 	E E E				
<u>Structural and Chemical Characterisation of Materials</u>					
1.4 Show familiarity with methods for characterising the structure and composition of materials.	K				

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<u>Quality Standards and Assurance</u>					
1.5 Understand the application of quality assurance and international standards, particularly ISO. (a) Be familiar with the Company Quality System. (b) Know the principles of quality control to meet a specification. (c) Understand or have experience of equipment calibration procedures.	 C K *K/E				
<u>Measurement and Control Systems</u>					
1.6 Experience of two items of laboratory equipment or industrial plant: (a) Have experience of measuring and controlling process variables (e.g. industrial process, concrete plant). (b) Have knowledge of the advantages and limitations of different measuring systems.	 E K				
<u>Engineering Practice</u>					
1.7 Understand engineering practice in terms of employer's activities; e.g. the manufacturing process, engineering control and sampling techniques, software packages.	 C				
<u>Engineering Drawing</u>					
1.8 Be familiar with international and local standards for hand and computer aided drafting procedures. (a) Be able to read and interpret engineering drawings. (b) Be able to communicate using drawings.	 K				
<u>Workshop Practice</u>					
1.9 To be aware of safe working practice and understand the benefits and limitations of machine tools and other workshop equipment. Knowledge of computers and appropriate software will suffice for non-industrial applications.	 E				
* As appropriate to the company					

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<u>Selection and Use of Materials</u>					
1.10 The selection and use of materials:					
(a) Be familiar with engineering materials and materials design relating to the field of employment.	K				
(b) Understand financial and environmental constraints relating to materials selection and usage.	K				
(c) Demonstrate personal experience of materials selection	E				
<u>Financial awareness</u>					
1.11 Financial awareness, specifically:					
(a) Be familiar with the financial constraints within which companies operate.	K				
(b) Have knowledge of costing solutions to problems, buildings up cost-estimates and control of a project budget.	K				
(c) Understand the basic forms of contract and show an appreciation of insurance, procurement procedures, tender document preparation and evaluation and commercial terms.	G				
<u>Plan and Execute Projects</u>					
1.12 Knowledge and experience of planning and execution of projects:					
(a) Knowledge to plan, programme and control work within a project to meet budget and time constraints.	K				
(b) Experience in progress monitoring and reporting.	E				
(c) Knowledge and awareness of project planning.	K				