

CORE OBJECTIVES (STL)

1. The Structural Engineering Profession Role and Scope of Services	Code	ES Initials & Date of Assessment			
		G	K	E	C
<p><u>Role of Structural Engineer</u></p> <p>1.1 Have a general understanding that structural engineer is to develop the skeletal framework and the foundation and other soil/structural interfacing works for bridges, buildings and other structural forms, which are to withstand against the natural forces due to gravitational, wind, soil, water, earthquake and/or other environmental effects.</p>	K				
<p><u>Scope of Services to the Client</u></p> <p>1.2 Know that structural engineer is to deliver either on his/her own or in collaboration with other disciplines such as architect, building services engineer, quantity surveyor, etc. structures which meet the client brief requirements.</p>	K				
<p>1.3 Learn the procedures and involvement of structural engineer at the planning, design, tendering, construction and maintenance stages.</p>	K				

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2. Vital Structural Engineering Steps and Familiarization of Local, National and International Standards	Code	ES Initials & Date of Assessment			
		G	K	E	C
<u>Defining a Structural Engineering Problem</u>					
2.1 Have experience in defining a problem by identifying the purpose and functional requirements of the structure to be developed, the design parameters and constraints, the cost and time implications and other statutory and safety requirements.	E				
<u>Gathering Information</u>					
2.2 Learn the ways and means to obtain design information relevant to the site, including carrying out of site investigation, field tests and laboratory tests for soil, wind, earthquake and/or other environmental parameters.	K				
2.3 Know the application and limitations of local, national and international standards, codes of practice, Building Regulations, practice notes, etc.	K				
2.4 Have updated knowledge of the cost parameters for the various types of structural materials, their manufacture/ construction methods and the associated time implications.	K				
<u>Alternative Solutions</u>					
2.5 Gain practical experience in the identification and evaluation of alternative solutions to a problem.	E				
<u>Essentials of Documentation and Drawings</u>					
2.6 Learn to prepare clear and comprehensive calculations and specification of structural solutions.	C				
2.7 Learn the essentials of good structural engineering drawings.	C				

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3. Design Practice	Code	ES Initials & Date of Assessment			
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<u>Client's Brief</u>					
3.1 Establish the structural design requirements and constraints as set out in the client brief.	E				
3.2 Consider the design input from other disciplines and liaise where necessary to come up with an optimum solution for the client.	E				
<u>Design Process</u>					
3.3 Adopt soil parameters as established from site investigation and laboratory tests for foundation design and soil structural interactions.	E				
3.4 Apply loading parameters due to gravitational, wind, earthquake and/or other environmental effects for superstructure and foundation designs.	E				
3.5 Carry out manual and/or computer analysis for global and local load and stress distribution within a structural system.	C				
3.6 Apply design codes and standards to design structural members and foundation according to the types of structural materials used and the stresses derived from the analysis.	C				
3.7 Carry out site formation and slope stability designs associated with buildings, bridges and/or other structural forms.	E				
3.8 Present design output in form of calculations, drawings and specifications.	E				

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4. Site Experience	Code	ES initials and Date of Assessment			
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<u>The Contract & Its Operation</u>					
4.1 Know how all parties to a contract exercise their duties and responsibilities.	K				
4.2 Be familiar with the various parts of the contract document including the conditions of contract, specifications, bill of quantities and drawings.	K				
4.3 Know the procedures for the issue and/or receipt of work instructions and/or drawings and amendments.	K				
4.4 Be able to keep accurate daily records of events and instructions.	E				
4.5 Read and coordinate drawings and/or implement work instructions.	C				
<u>Site Investigation</u>					
4.6 Learn how to supervise the site investigation process and to witness the various insitu tests and the recovery of soil and rock samples.	E				
<u>Setting Out</u>					
4.7 Learn how to establish the critical coordinates and dimensions for setting out the construction and how to control the construction to be within acceptable tolerance limits.	E				
<u>Site Formation and Slope Works</u>					
4.8 Learn how to ensure proper execution of site formation and slope works constructed in association with different types of structures.	E				
4.9 Know the different methods of construction for a particular type of structure and their advantages and limitations.	K				
4.10 Know the performance and cost of plants and equipment and their applications in site investigation, site formation, foundation and superstructure construction.	K				

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<p><u>Planning and Programming</u></p> <p>4.11 Know how to plan and programme different construction activities and how to monitor and report the programme.</p>	E				
<p><u>Measurement</u></p> <p>4.12 Be able to measure, record and check work done for payment prepared.</p>	E				
<p><u>Safety at Work</u></p> <p>4.13 Have a critical approach to safety matters in the implementation process and to the observance of safe working practice.</p>	C				
<p><u>Quality Assurance and Control</u></p> <p>4.14 Know the principles of quality assurance and control to meet ISO standards.</p>	K				
<p><u>Inspection of Materials and Workmanship</u></p> <p>4.15 Gain practical experience in carrying out site inspection of materials and workmanship.</p>	C				

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5. Procurement, Tender & Contract Management	Code	ES Initials & Date of Assessment			
		G	K	E	C
<u>Procurement</u>					
5.1 Know various types and methods of procurement for structural engineering works, including consultant services, material supplies, fabrication in factories and construction on sites.	K				
5.2 Learn how the procured products or services are assessed based on track records, job references, past performance, financial capabilities, tender prices and/ or fee proposals.	E				
<u>Tender and Contract Management</u>					
5.3 Gain practical experience from tender invitation to contract award and the subsequent post contract management.	E				
5.4 Know the selection of eligible tenderers, the preparation of tender documentation, the invitation of tender and the assessment of tender returns.	K				
5.5 Know the process of contract management including the control of expenditure, monitoring of progress and quality of works.	K				

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6. Professional Ethics, Rules of Conduct and Duties of Structural Engineer	Code	ES Initials & Date of Assessment			
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<p><u>Professionalism</u></p> <p>6.1 Know the statutory, contract and professional duties of structural engineer in addition to those covered by the Common Core Objectives.</p>	K				