

MINIMUM CORE SUBJECT AREAS: STRUCTURAL ENGINEERING

AREA	SUBJECTS / DESCRIPTION	RECOMMENDED CONTACT HOURS
A recommendation of 150 hours total from Group 1 and 90 hours total from at least 3 of the 6 areas in Group 2.		
Group 1: 150 hours total from Group 1:		
1. Solid Mechanics	- selected topics on theory of elasticity; 3-D stress and strain; energy theorems; beam theory for bending and shear; torsion analysis; shear centre; plastic theory of bending; virtual work principle etc.	35
2. Structural Analysis	- selected topics on statically determinate and indeterminate structures; energy methods; frame and truss analysis; buckling analysis; dynamic analysis; numerical analysis etc.	35
3. Structural Design	- selected topics on limit states design; design of reinforced concrete structures; design of steel structures; foundation design; detailing; ductility etc.	35
4. Geotechnical Engineering	- selected topics on soil mechanics; slope engineering; foundation engineering; rock mechanics; engineering geology; soil improvement; waste geotechnics; soil dynamics etc.	35
Group 2: 90 hours total from at least 3 of the 6 areas		
1. Computational Methods	- selected topics on solution of linear equations; eigenvalue analysis; linear programming; optimization; numerical differentiation and integration; matrix method; finite element method etc.	30
2. Structural Dynamics	- selected topics on structural dynamics; vibration and resonance; effects of wind on built environment; wind loads on buildings; effects of earthquake on built environment, earthquake loads on buildings etc.	30
3. Fluid Mechanics	- selected topics on fluid dynamics; open channel and pipe flows; dimensional analysis; boundary layers; wave and tidal loads etc.	30
4. Project Management	- selected topics on construction management; financial management; construction laws; accounting; environment control policy; risk management; decision making etc.	30
5. Construction Materials	- selected topics on material science; properties of structural steel, concrete, masonry, bituminous materials; glass, aluminium; sustainability etc.	30
6. Interdisciplinary Design	- selected topics on management and communication skills, construction law, feasibility study, preliminary design and detailed design, etc. covered through an interdisciplinary design project	30
Topics on surveying and engineering drawing should also be included.		