قسم الهندسة المدنية - مواد الامتحان التنافسي للعام الدراسي 2025-2026

الماجستير / إنشاءات

الماجستير : انشاءات		
ت	المادة الدراسية	الدرجة
.1	مقاومة مواد	15 %
.2	تكنولوجيا الخرسانة	15 %
.3	خرسانة مسلحة	15 %
.4	تحليل منشآت	15 %
.5	تصاميم خرسانية	15 %
.6	تصاميم حديد	15 %
.7	تحليلات هندسية	10 %

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
Strength of Materials- By Ferdinand L. Singer		
Chapter	**Subject**	**Remarks**
One	Simple Stress - Normal Stress - Shearing Stress - Bearing Stress - Thin-Walled Cylinders	
Two	Simple Strain - Hooke's Law: Axial Deformation - Poisson's Ratio: Biaxial And Triaxial Deformations	
Three	Ch.3 Torsion	
Four	Shear And Moment Diagram of Beams	
Five	Stress in Beams - Flexural Stress in Beams - Shear Stress in Beams - Design For Flexure And Shear	
Nine	Combined Stresses - Mohr's Circle	
Eleven	Columns - Critical Load - Long Columns By Euler's Formula	

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
مؤيد نوري الخلف – هناء عبد يوسف By -تكنلوجيا الخرسانة		
Chapter	**Subject**	**Remarks**
One	Title - Portland Cement - Physical and chemical properties of cement - Hydration of cement - Tests of cement - Types of cement	
Three	Concrete Aggregate - Classification of aggregate - Properties of aggregate - Deleterious Substances of aggregate - Sieve analysis and Maximum aggregate size - Aggregates testes	
Four	Fresh concrete - Components of Fresh Concrete - Consistency and workability - Segregation and bleeding - Mixing and compaction of concrete	
Five	Strength of concrete - Types of Concrete Strength - Factors Affecting of concrete strength - Tests of hardened concrete	
Six	Elasticity , shrinkage, and creep in concrete	
Eight	Concrete Mix Design	

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
Reinforced Concrete **Design of concrete structure by Arthur H. Nilson**		
Chapter	**Subject**	**Remarks**
One & Two	Introduction- - Mechanical Properties of concrete - Concrete materials and its properties	
Three	Reinforcement details - Loading using ACI-Code. - Flexural Analysis and Design of Beams - Ultimate strength method (Introduction) - Singly Reinforced Rectangular Beams (Analysis and design) - ACI- Design requirement - Doubly Reinforced Rectangular Beams (Analysis and Design) - T-Beams (Analysis and Design)	
Four	Shear and Diagonal Tension in Beams - ACI Code Provisions for Shear Design - Design of Web Reinforcement	
Seven	Analysis and Design for Torsion - ACI-Code Provisions for Torsion design	
Eight	Design of Short Columns - Short columns subject to Axial Load and Bending	
Nine	Slender Columns	
Eleven	Indeterminate Beams - Analysis of Indeterminate Beams (Continuous Beams) - Design of Indeterminate Beams (Continuous Beams)	
Twelve	Analysis and Design of One-Way Slabs	

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
Structures Analysis- By R. C. Hibbeler		
Chapter	**Subject**	**Remarks**
Two	**Analysis of Statically Determinate Structures** - Determinacy and Stability - Applications of the Equations of Equilibrium	
Three	**Analysis of Statically Determinate Trusses** - Classification of Coplanar Trusses - The Method of Joints - Zero-Force Members - The Method of Sections	
Four	**Internal Loadings Developed in Structural Members** - Internal Loadings at a Specified Point - Shear and Moment Functions - Shear and Moment Diagrams for a Beam - Shear and Moment Diagrams for a Frame	
Eight	**Deflections Using Energy Methods** - Principle of Virtual Work - Method of Virtual Work: Trusses - Method of Virtual Work: Beams - Method of Virtual Work: Frames	
Ten	**Displacement Method for Analysis: Slope-Deflection Equations** - Displacement Method of Analysis: General Procedures - Slope-Deflection Equations - Analysis of Beams - Analysis of Frames: No Sidesway - Analysis of Frames: Sidesway	
Eleven	**Displacement Method of Analysis: Moment Distribution** - General Principles and Definitions - Moment Distribution for Beams - Stiffness-Factor Modifications - Moment Distribution for Frames: No Sidesway - Moment Distribution for Frames: Sidesway	

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
Design of Concrete Structures- By Arthur H. Nilson 14th edition		
Chapter	**Subject**	**Remarks**
One	- Design and analysis of Beams. - Design and Analysis of Indeterminate Beams and Frames.	
Two	- Design of Two-Way Slab by ACI method 3. - Design of Flat Slab by Direct Design Method. - Design of One-Way Ribbed Slab. - Design of Circular Slab.	
Three	- Analysis of Concrete Beam by Plastic Method (Plastic Hinges in Beams). - Analysis of Concrete Slab by yield Lines Theory.	
Four	- Behaviour of Presresssed concrete beams. - Analysis of prestressed concrete beams.	

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
Steel Design- By William T. Segui **Structural Steel Design- By Jack C. McCormack & Stephen F. Csernak**		
Chapter	**Subject**	**Remarks**
Two	**Concepts in Structural Steel Design (William T. Segui)** - Design Philosophies - LRFD - Safety Factors and Load Combinations for ASD - Steel Construction Manual	
Three	**Tension Members (William T. Segui)** - Tensile Strength - Effective Area, Staggered Fasteners - Block Shear	
Four	**Compression Members (William T. Segui)** - Column Theory - AISC Requirements, Local Stability, - Design & More on Effective Length	
Nine	**Design of Beams for Moments (Jack C. McCormac)** - Introduction, - Yielding Behavior—Full Plastic Moment, Zone 1, Design of Beams, Zone 1, Lateral Support of Beams	
Eleven	**Members Subject to Bending and Axial Tension (Beam–Columns) (Jack C. McCormac)** - Occurrence, First-Order and Second-Order Moments for Members Subject to Axial Compression and Bending - Direct Analysis Method (DM) & Effective Length Method (ELM)	
Twelve	**Bolted Connections (Jack C. McCormac)** - Types of Bolts - Snug-Tight, Pretensioned, and Slip-Critical Bolts Connections - Sizes of Bolt Holes - Load Transfer and Types of Joints, Failure of Bolted Joints,	

Competitive Exam - Post-Graduate (MSc Program) – 2025-2026		
ADVANCED ENGINEERING MATHEMATICS By C. RAY WYLIE & LOUIS C. BARRETT		
Chapter	**Subject**	**Remarks**
One	**Ordinary Differential Equations of the First Order** - Classification of Differential Equations - Solutions of Differential Equations - Separable First-Order Equations - Homogeneous First-Order Equations - Exact First-Order Equations - Linear First-Order Equations - Special First-Order Equations - Orthogonal Trajectories	
Two	**Linear Differential Equations** - Homogeneous Second-Order Equations with Constant Coefficients - Solutions of Nonhomogeneous Equations - Nonhomogeneous Equations with Constant Coefficients - Homogeneous Equations of Higher Order - Variation of Parameters and Reduction of Order	
Four	**Simultaneous Linear Differential Equations** - Solutions, Consistency, and Equivalence of Linear Differential Systems - Fundamental Concepts and Theorems Concerning First-Order Systems - Complementary Functions and Particular Integrals of Linear Differential Systems	
Nine	**Partial Differential Equations** - Introduction - The Derivation of Equations - Characteristics and the Classification of Partial Differential Equations - Separation of Variables	