Republic of Iraq
Ministry of Higher Education and Scientific Research
Supervision and Scientific Evaluation Apparatus

College: Sh
Departmen
Stage: 2nd s

College: Shatt Al-Arab University
College: Engineering
Department: Civil Engineering
Stage: 2nd stage

Course Weekly Outline

Week No.	Theoretical	Experimental
1	Concrete Definition and Historical Development, Concrete as a Structural Material, Characteristics of Concrete, Types of Concrete and Factors Influencing Concrete Properties.	• Specific Gravity Test for Cement and Aggregates
2	Cementitious Binders: Classification of binders, Portland cement, Manufacture of Portland cement, Chemical composition, Hydration of Portland cement	• Sieve Analysis of Fine and Coarse Aggregates
3	Cementitious Binders: Types of Portland cement, The role of water, Basic tests of Portland cement, Geopolymers	• Bulking Test of Fine Aggregate
4	Aggregates: Effects of aggregates, Classification of aggregates, Properties of aggregates, Moisture conditions, Moisture content (MC) calculations, Density and specific gravity, Unit weight,	• Moisture Content Test of Aggregates
5	Measurement of moisture content, Grading aggregates, Shape and texture of aggregates. Solved examples for Moisture content (MC) calculations.	• Slump Test for Fresh Concrete
6	Admixtures: Definition and classifications, Chemical admixtures, Air-entraining admixtures, Mineral admixtures.	• Compacting Factor Test
7	Water: Mixing water, Impurities in water, Water for curing and washing.	• Preparation and Mixing of Concrete Specimens
8	Midterm Exam	• Casting of Concrete Cubes and Cylinders
9	Workability of fresh concrete, Segregation and bleeding, slump loss.	• Compressive Strength Test
10	Introduction to Mix Design. Procedures For Concrete Mix Design using the American Institute of Concrete method	• Splitting Tensile Strength Test
11	Solved Examples for American method for concrete Mix design.	• Flexural Strength Test
12	Procedures For Concrete Mix Design using the British Standards Institute.	• Water Absorption Test
13	Solved Examples for British method for concrete Mix design.	• Non-Destructive Tests

		(Rebound Hammer and Ultrasonic Pulse Velocity)
14	Manufacture of Concrete. Delivery of Concrete.	• Effect of Water-Cement Ratio on Concrete Strength
15	Concrete Placing: Site preparation, conveying concrete, Depositing concrete in forms, Compacting and finishing, Curing. Early-Age Properties of Concrete	• Testing of Admixtures and Special Concretes