FUTURE UNIVERSITY IN EGYPT جامعة المستقبل

Faculty of Engineering & Technology

Strength and Technology of Materials 2

Information :

Course Code :	SCM 312	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Department of Structural Engineering & Construction Management

Instructor Information :

Title	Name	Office hours
Associate Professor	Ahmed Farouk Mohamed Hassan Deifalla	2
Assistant Lecturer	Youssef Ahmed Elsayed Kamaleldin Ahmed Awad	6
Teaching Assistant	Noura Khedr Abdul raheem Ahmed	4

Area Of Study :

- Understand the behavior of metallic materials subjected to repeated loading (Fatigue) and to dynamic loading (Impact).
- Know the main properties of fresh concrete (Consistency, Workability, Segregation, and Bleeding).
- Understand the concept of fresh concrete tests (Slump, VB time, Flowing table, Cpmpacting factor).
- Know the main properties of Hardened concrete (Compressive strength, Tensile strength, Flexural strength, Bond strength, Shear strength and modulus of elasticity).
- Understand the concept of Hardened concrete tests (Compression, Tension, Shear, Bond, Modulus of elasticity).
- Understand the behavior of hardened concrete subjected to aggressive environment (Durability).
- Understand the concept of Non Destructive Tests (NDT) of hardened concrete.

The student shall attain the above mentioned objectives efficiently under controlled guidance and supervision during tutorial and lab classes.

Description :

Concrete technology: mix design, properties of fresh and hardened concrete, dimensional changes, concrete manufacturing under severe weathering conditions, durability of concrete in aggressive environments, types and repair of cracks, fire resistance, repairing materials, special types.
Mechanics of engineering materials: stress/strain relations, Mohr's strain circle, experimental mechanics, mechanisms and theories of failure, strength and behavior of materials under dynamic and repeated loading, high temperature, and creep, Technical Inspection and quality control: technical reports, statistical methods, in-situ testing, non-destructive testing.

Course outcomes :

a.Knowledge and Understanding: :

1 -	- Fatigue and Impact .
2 -	Properties of fresh concrete
3 -	Testing of fresh concrete

4 -	Properties of hardened concrete
5 -	Testing of hardened concrete.
6 -	- Concrete Durability
b.Intellectual Skills: :	
1 -	- Identify properties of metals subjected to fatigue and impact.
2 -	- Recognizing different problems during construction and how to handle them
3 -	Identify the main properties of concrete and factors affecting them
c.Professional and Practical Skills: :	
1 -	- Assess the suitability of fresh and hardened concrete to a certain use
2 -	Calculate the required dimensions for an element subjected to Fatigue and impact loads.
3 -	- Perform necessary tests to check the required properties of concrete
d.General and Transferable Skills: :	
1 -	Identify proper test for certain use.
2 -	Conduct concrete tests
3 -	Present test results

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Behavior of metals subjected to Fatigue loading	6	4	
Behavior of metals subjected to Impact loading	6	4	
Concrete Manufacturing	6	4	
Properties of fresh concrete	6	4	
Tests of fresh concrete	6	-	
Properties of Hardened concrete	6	6	
Tests of Hardened concrete	6	-	
Durability of hardened concrete	6	6	
Non destructive testing of hardened concrete	6	4	

Teaching And Learning Methodologies :

Lectures
Tutorials
lab

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
11th week exam	15.00		
6th week exam	10.00		
Assignments	15.00		

Attendance	10.00		
Final-term examination	40.00		
Specification Report	10.00		

Course Notes :

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Recommended books :

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Periodicals :

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Web Sites :

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