

Faculty of Engineering & Technology

Advanced technology of Construction Materials

Information :

Course Code : SCM 414 **Level :** Undergraduate **Course Hours :** 3.00- Hours

Department : Department of Structural Engineering & Construction Management

Instructor Information :

Title	Name	Office hours
Lecturer	Youssef Ahmed Elsayed Kamaleldin Ahmed Awad	5
Teaching Assistant	Ahmed Taher Abdelhamed Mohamed Yousef	

Area Of Study :

1. Outline the different types of Advanced Construction Materials
2. Identify the Basic Properties of Advanced Construction Materials (Stiffness characteristics & Strength characteristics)
3. Illustrate the Applications & Fabrication Techniques of Advanced Construction Materials
4. Analyze the results of Advanced Construction Materials tests according to Standard Specifications and codes of practices.
5. Evaluate the behavior of concrete elements strengthened by Advanced Construction Materials

Description :

The main concern and focus of this course will be about the Advanced concrete technology, Advanced technology of finishing and insulating materials, Adapted technology of alternative building materials for low-cost construction, New developments and innovative uses of construction materials, Miscellaneous non-conventional construction materials and products : refractories, polymers and plastics, injection materials and joint sealants, composite, optical fibers, carbon fibers, Material-related failures of structures, Maintenance and repair techniques of materials in structures.

Course outcomes :

a.Knowledge and Understanding: :

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| 1 - | Define the basic types and properties of Advanced Construction Materials |
| 2 - | Explain the behavior of concrete elements strengthened by Advanced Construction Materials under different types of loadings. |

b.Intellectual Skills: :

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| 1 - | Identify Physical, Chemical & Mechanical properties of Advanced Construction Materials |
| 2 - | Distinguish the different construction materials and their way of use. |
| 3 - | Analyze behavior of fibers and polymers under different types of stresses |

c.Professional and Practical Skills: :

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| 1 - | Analyze the Fabricate Techniques of Advanced Construction Materials |
| 2 - | Estimate the most appropriate Construction Materials for repair or strengthening of concrete element |

d.General and Transferable Skills: :

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| 1 - | Share ideas and communicate with others |
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2 - Prepare technical reports related to course topics.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to Advanced Construction Materials (ACM)	10	6	4
Properties of Fibers Materials	5	3	2
Properties of Polymer Materials	5	3	2
Applications & Fabrication Techniques	5	3	2
Stiffness Characteristics of ACM	10	6	4
Strength Characteristics of ACM	10	6	4
Flexural strengthening of concrete elements using ACM	10	6	4
Shear strengthening of concrete elements using ACM	10	6	4
Axial strengthening of concrete elements using ACM	10	6	4

Teaching And Learning Methodologies :

Lectures

Tutorials

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
assignments	10.00		
final exams	40.00		
mid term exams	25.00		
participation	10.00		
reports	15.00		

Course Notes :

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Recommended books :

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Periodicals :

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Web Sites :

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