

COURSE IDENTIFICATION FORM

Course Code and Name: IM5058 Composite Materials

Department of : Civil Engineering / Department / Civil Engineering Master's Degree Program With Thesis

Semester	Theoretic Hour	Practice Hour	Total Hour	Credits	ECTS	Education Language	Type: Compulsory Elective
Fall	3	0	3	3	5	Turkish	Elective

Prerequisite (s)

Instructor

Assoc. Prof. Dr.Selim CEMALGİL

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Course Assistant

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Groups / Classes

Course Aim

Giving the concept of composite, Learning the materials used in composite production, Obtaining the basic mechanical relationships in composite materials.

To examine the microstructural properties of concrete and composites, the similarities and differences between the loading behaviors, environmental effects, physical and mechanical properties of these materials, and to have information about new material technologies.

To gain advanced knowledge about building materials by expanding and detailing the basic knowledge of materials used in civil engineering.

Course Goals

1. To develop and deepen their knowledge at the level of expertise in a field of civil engineering, based on undergraduate competencies

2.To understand the interaction between disciplines related to the field

3. To be able to use theoretical and practical knowledge at the level of expertise gained in the field

4.To be able to create new knowledge by integrating knowledge in the field with knowledge from different disciplines; To be able to solve problems that require expertise using scientific research methods,

5. Being able to independently construct a problem in the field, develop a solution method, solve it, evaluate the results and apply it when necessary.

6. To be able to develop new strategic approaches and produce solutions by taking responsibility in unforeseen complex situations that will be encountered in the applications in the field.

7. To be able to critically evaluate information related to the field, to direct learning and to carry out advanced studies independently.

8. To be able to systematically convey current developments in the field

	<p>and one's own work to groups within and outside the field, in written, verbal and visual formats.</p> <p>9. To be able to examine social relations and the norms that guide these relations from a critical perspective, and to take action to improve them and change them when necessary.</p> <p>10. Being able to communicate verbally and in writing in at least one foreign language</p> <p>11. To be able to use information and communication technologies at an advanced level along with computer software at the level required in the field.</p> <p>12.To be able to develop strategies, policies and implementation plans on issues related to the field and to evaluate the results obtained within the framework of quality processes.</p> <p>13. To be able to teach and supervise social, scientific and ethical values in the stages of collecting, interpreting and announcing data related to the field.</p> <p>14.To be able to apply the knowledge and problem-solving skills they have absorbed in their field in interdisciplinary studies.</p>
Course Learning Outcomes and Proficiencies	<ul style="list-style-type: none">• Will be able to explain the relationships between the basic internal structure and properties in composite materials.• Will be able to model the behavior of composites under load.• Will be able to define concrete as a composite material.
Course Basic and Auxiliary Contexts	<p>Ersoy, H.,Y., “Composite Material”, 2001. (Textbook) Brandt, A.M., “Cement-Based Composites”, 2009. Şahin, Y., “Introduction to Composite Materials”, 2006. Related articles and procedures Arslan M., Concrete (Casting, Molds, Defects, Durability), Atlas bookstore, Istanbul, 2001. Neville, A. M. (2002). Properties of concrete., Final edition, Wiley, New York. Ramachandran, V.S., Beaudion, J., (1999), Handbook of Analytical Techniques in Concrete Science and Technology, Noyes Publications, New Jersey, U.S.A. Topçu., İ Bekir., Building materials and concrete”, 2006 Turanlı E. “Concrete” 2002,</p>
Methods of Give a Lecture	Face to Face Lecture, Question and answer, demonstration,

Assessment Criteria		If Available, to Sign (x)	General Average Percentage (%) Rate
	1. Quiz	X	50
	2. Quiz		
	3. Quiz		
	4. Quiz		
	5. Quiz		
	Oral Examination		
	Practice Examination (Laboratory, Project etc.)		
	Final Exam	X	50
Semester Course Plan			
Week	Subjects		
1	Defining the terminology within the subject		
2	Definition of composite material, expected properties, work site areas		
3	Internal structure properties of composites and connections		
4	Tensile state and load behavior of composites, Basic models and relations		
5	Rheological models and other known models		
6	Examination of physical and mechanical properties in composite materials		
7	General properties of fiber added composites		
8	Midterm exam		
9	Reinforced composites and parallel and non-parallel fiber connections		
10	Discontinuous Fiber Composites		
11	Cement based composites		
12	Examination of concrete as a composite material		
13	layered composites		
14	Presentations		