

## Module (Course Syllabus) Catalogue 2022-2023

College/ Institute	Erbil Technical Engineering College	
Department	Civil Engineering	
Module Name	Construction Materials	
Module Code	COM202	
Degree	Technical Diploma <input type="checkbox"/>	Bachler <input checked="" type="checkbox"/>
	High Diploma <input type="checkbox"/>	Master <input type="checkbox"/> PhD <input type="checkbox"/>
Semester	2 <sup>nd</sup>	
Qualification	B.Sc.	
Scientific Title	Engineer	
ECTS (Credits)	5	
Module type	Prerequisite <input type="checkbox"/>	Core <input checked="" type="checkbox"/> Assist. <input type="checkbox"/>
Weekly hours		(138) Total hrs Workload
Weekly hours (Theory)	(2) hr Class	
Weekly hours (Practical)	(2) hr Class	
Number of Weeks	15	
Lecturer (Theory)	Nazik Khalid Hasan	
E-Mail & Mobile NO.	Nazik.hasan@epu.edu.iq	
Lecturer (Practical)	Nazik Khalid Hasan	
E-Mail & Mobile NO.	Nazik.hasan@epu.edu.iq	
Websites		

# Course Book

<b>Course Description</b>	<p>All the building structures are composed of different types of materials. These materials are either called building materials or materials of construction. It is very essential for a builder, may be an architecture or engineer or contractor, to become conversant thoroughly with these building materials. The knowledge of different types of material, their properties and uses for different purposes provides an important tool in the hands of the builders in achieving economy in material cost. The material cost of a building ranges 30 to 50 per cent cost of total cost construction. In addition to material economy, the correct use of material results in better structural strength, functional efficiency and esthetical appearance.</p>
<b>Course objectives</b>	<p>Study characteristics of materials (building materials), study manufacture, general uses &amp; types of each building material. Many naturally occurring substances, such as clay, rocks, sand, and wood, even twigs and leaves, have been used to construct buildings. Apart from naturally occurring materials, many man-made products are in use, some more and some less synthetic. The manufacture of building materials is an established industry in many countries and the use of these materials is typically segmented into specific specialty trades, such as carpentry, insulation, plumbing, and roofing work. They provide the make-up of habitats and structures, including homes.</p>
<b>Student's obligation</b>	<ol style="list-style-type: none"><li>1-Attendance.</li><li>2- Completion of all tests.</li><li>3-Exams.</li><li>4- Reports.</li><li>5- Quizzes.</li><li>6- Seminar.</li><li>7- Project.</li></ol>
<b>Required Learning Materials</b>	<p>Lecture halls with data show equipment for lecture presentations, white board, overhead projector, laboratory and Construction Materials.</p>

<b>Evaluation</b>	<b>Task</b>		<b>Weight (Marks)</b>		<b>Due Week</b>	<b>Relevant Learning Outcome</b>
	Paper Review					
	Assignments	Homework	5%		3,6	1,2,3
		Class Activity	2%		2	1-12
		Report				
		Seminar	5%		9	1,2,3
		Essay				
		Project	5%		8	1,2,3
	Quiz		8%		2,4,6,8	1,2,3
	Lab.		10%		2,3,4,5,6,7	3
Midterm Exam	Theoretical Exam	Practical Exam		6-9	1,2,3	
	10%	15%				
Final Exam	Theoretical Exam	Practical Exam		13-15	1,2,3	
	20%	20%				
Total		100%				
<b>Specific learning outcome:</b>	<p>Upon completion of the course, students will demonstrate the ability to:</p> <ol style="list-style-type: none"> <li>1. Identify the general characteristics for materials.</li> <li>2. Recognize types of materials, its properties and evaluate the suitability of materials for construction projects.</li> <li>3. Demonstrate through laboratory performance, knowledge of physical and mechanical properties of materials.</li> </ol>					
<b>Course References:</b>	<ol style="list-style-type: none"> <li>1. Engineering materials by; Jakson.</li> <li>2. Civil Engineering materials by; N. Jackson.</li> <li>3. Barry's introduction of construction of building by; Stephen Emmitt &amp; Ch. Course.</li> </ol>					

<b>Course topics (Theory)</b>	<b>Week</b>	<b>Learning Outcome</b>
Classification of Engineering Materials, Properties of engineering materials, Mechanical properties (Types of Stress and strain)	1	1
Mechanical properties of material, Broad classification of materials.	2	1
Bricks, Classification of bricks (Clay Brick)	3	2
Bricks, Classification of bricks (Sand-Lime Brick, Concrete Brick( Block))	4	2
Bonding Material (Mortar) (Gypsum plaster)	5	2
Bonding Material (Mortar) (Lime, Cement, Special Mortars)	6	2
Timber (Uses, Properties, Defects in wood, Advantage and Disadvantage of uses of wood...)	7	2
Metals (Classification, Uses, Requirements)	8	2
Damp proofing (Classification, Uses, Requirements)	9	2
Paints	10	2
Paints	11	2
Finishing Materials	12	2
<b>Practical Topics</b>	<b>Week</b>	<b>Learning Outcome</b>
Water Absorption for Brick.	1	3
Efflorescence test for Brick.	2	3
Compressive Strength Test for Brick	3	3
Fineness Test for Gypsum.	4	3
Time of Setting Test for Gypsum.	5	3
Compressive Strength Test for Gypsum.	6	3
Compressive Strength Test for Wood.	7	3
Modulus of Rupture Test for Wood.	8	3
Absorption Test for Tiles.	9	3
Modulus of Rupture Test for Tiles.	10	3
Tension Test on Mild Steel.	11	3
Compressive Strength Test for Block.	12	3

## Questions Example Design

Q1: Explain the Reasons of the Followings:

- 1- Why Varnish is applied?
- 2- Non-ferrous Metals are not magnetic and are usually more resistant to corrosion than ferrous metals.
- 3- Silica present in the combined form (Aluminium silicate) does not form good bricks.
- 4- Why Fat lime (Pure Lime) is popular with its name as fat lime?
- 5- The water-plaster ratio is greatly affecting the strength of plaster.
- 6- Alkalise (MgO, K<sub>2</sub>O, Na<sub>2</sub>O) are harmful ingredients in clay brick.
- 7- Why paint cannot be reused?
- 8- Why the membrane should be continued within DPC in the wall?
- 9- In lime-sand brick, the trouble of efflorescence does not arise.
- 10- Melamine is often used to paint laminate surfaces, such as cabinets or furniture.

Q2: Define the Followings:

- 1) Technical plaster.
- 2) Poor lime.
- 3) Tempering.
- 4) Resilience.
- 5) Plastic paint.

Q3: Read then correct the underlined Wrong sentences?

- 1- Plaster also used as framework & centering materials.
- 2- Synthetic Rubber Paint: It consists essentially of oil, a strong dyer, lead or zinc chrome and finely ground sand.
- 3- Brittleness: The ability of a material to be reshaped in all directions without cracking  
Breaks
- 4- Wrought iron: Materials like mastic, asphalt, or a combination of materials or layers.
- 5- Distemper paints: is an acrylic based clear coating, which offers excellent weather resistance, light-fastness and UV protection to exterior furniture.
- 6- Organic matter – The materials that are produced in the industries by chemical or mechanical processes are called artificial materials. Ex. Bricks, tiles, cement, precast concrete, plywood, glass, plastic etc.
- 7- Ordinary plaster binding property improves if its fine powder is mixed with sand and kept in the form of heap for a week, before using.
- 8- Timber (vertical) used to prevent water from penetrating through walls in below-ground structures.

Q4: State & Explain the Followings:

- 1- Purposes for using paint in building construction.
- 2- Uses of timbers as a construction material?
- 3- The chief uses of mild steel?
- 4- Mechanical properties of material?
- 5- Effects of dampness in buildings?

## Extra notes:

## External Evaluator

As a lecturer I have reviewed the Course Book related to the subject of Construction of Materials for first year, Department of Civil Engineering, College of Technology, I found that the course Book is very good describing the aim and objectives of the subject. Moreover, it is covering all the required syllabus and contents of the course and describes satisfactorily the aspects related to the course.



Dr. Bahman Omar Taha  
Lecture  
Ph.D. in Structural Engineering.