

# MODULE DESCRIPTION FORM

## نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	<b>Materials Technology</b>		Module Delivery
Module Type	Core		<input checked="" type="checkbox"/> Theory <input type="checkbox"/> Lecture <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	<b>CIER 121</b>		
ECTS Credits	4		
SWL (hr/sem)	<b>100</b>		
Module Level		Semester of Delivery	
Administering Department	Type Dept. Code	College	
Module Leader	AHMED SALM EDAN AL-TAIL	e-mail	ahmed.salim@muc.edu.iq
Module Leader's Acad. Title	Assist Lecture	Module Leader's Qualification	MS.C.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	12/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

<b>Module Aims, Learning Outcomes and Indicative Contents</b>	
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
<b>Module Objectives</b> أهداف المادة الدراسية	<ol style="list-style-type: none"> <li>1. This course deals with the basic concept of materials technology</li> <li>2. The ability to know the common properties of materials.</li> <li>3. The ability to know the types of bonding materials and the basic tests</li> <li>4. The ability to know the types of bricks, tests and used.</li> <li>5. The ability to know different types of metals .</li> </ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> <li>1- knowledge of the common properties of material</li> <li>2- Knowledge of the most important types of bounding materials and the advantages and uses of each type</li> <li>3- knowledge of the raw materials involved in the gypsum industry and haw manufacture.</li> <li>4- Knowledge of different types of bricks, raw materials and method of manufacture,</li> <li>5- Knowledge of the specifications, properties and advantages of each type of bricks.</li> <li>6- Knowledge of the types of metal, properties and their uses</li> <li>7- To be able to choose the appropriate type and to find solutions and alternatives in each case</li> </ol>
<b>Indicative Contents</b> المحتويات الإرشادية	<p style="text-align: center;"><b><u>Building Materials and Materials Properties</u></b></p> <p>Introduction, Properties of Materials, Mechanical properties, Thermal Strains and stresses, Tensile Stress –Strain curve, Elasticity and stiffness, Yield strength, Ductility and Brittleness, Toughness, Creep, Fatigue. [10hr]</p> <p style="text-align: center;"><b><u>Bricks</u></b></p> <p>Classification of brick according to constituent raw materials, Raw Materials, Composition of good clay brick Harmful Ingredients in clay brick, Manufacture of clay brick, Sand - Lime brick, Raw materials, mix proportion, Manufacture, Properties of sand- lime brick, Concrete brick, Uses, Properties of concrete brick. [18hr]</p> <p style="text-align: center;"><b><u>Bonding Materials</u></b></p> <p>Gypsum plaster, Manufacture of gypsum plaster, Raw materials (Gypsum rocks), Process of manufacture, Gypsum products, Plaster of Paris, Uses, Chemical requirements in according with Iraqi standard No. 28 1985, Physical requirements in according with Iraqi standard No. 28 -1985, Ordinary (mechanical) plaster, Uses, Chemical requirements, Physical requirements, Technical plaster, Uses, Chemical requirements, Physical requirements, Anhydrous plaster, used, Keen cement, Properties, Uses, Properties of Gypsum plasters, Lime, Definition and classification, Quick lime, Hydrate lime, Manufacturing of lime, Raw materials, Uses of quick lime, Properties of quick lime, Hydrate lime, Process of manufacture, Uses, Properties. [20hr]</p> <p style="text-align: center;"><b><u>Metals</u></b></p> <p>Classification of metals Classification of metals, Ferrous metals, Cast Iron, Properties: Uses, Wrought Iron, Composition, Properties, Uses, Steel, Composition, Low carbon steel (Mild steel), Properties, Uses, High carbon steel, Properties, Factors affecting physical properties of steel, Nonferrous metals, Properties, Refractory metals. [12hr]</p>

## Learning and Teaching Strategies

### استراتيجيات التعلم والتعليم

<b>Strategies</b>	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering types of simple experiments (lab.) involving some sampling activities that are interesting to the students.
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## Student Workload (SWL)

### الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	63	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	4
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	37	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	2.5
<b>Total SWL (h/sem)</b> الحمل الدراسي الكلي للطالب خلال الفصل	<b>100</b>		

## Module Evaluation

### تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
<b>Formative assessment</b>	<b>Quizzes</b>	2	10% (10)	4 and 10	LO #1, #2 and #7
	<b>Assignments</b>	4	8% (8)	3,6, 12,14	LO #1- #7
	<b>Projects / Lab.</b>	3	12% (12)	Continuous	All
	<b>Report</b>	2	10% (10)	5, 10	LO 1- #7
<b>Summative assessment</b>	<b>Midterm Exam</b>	2 hr	10% (10)	4,8	LO #1 - #7
	<b>Final Exam</b>	3hr	50% (50)	16	All
<b>Total assessment</b>			100% (100 Marks)		

## Delivery Plan (Weekly Syllabus)

### المنهاج الاسبوعي النظري

	Material Covered
<b>Week 1</b>	Properties of Materials, Mechanical properties, Thermal Strains and stresses
<b>Week 2</b>	Tensile Stress –Strain curve, Elasticity and stiffness, Yield strength
<b>Week 3</b>	Ductility and Brittleness, Toughness, Creep, Fatigue.
<b>Week 4</b>	Bricks, Classification of brick according to constituent raw materials, Raw Materials, Composition of good clay brick
<b>Week 5</b>	Harmful Ingredients in clay brick Manufacture of clay brick,
<b>Week 6</b>	Sand - Lime brick, Raw materials, mix proportion, Manufacture
<b>Week 7</b>	Properties of sand- lime brick, Concrete brick, Uses, Properties of concrete brick
<b>Week 8</b>	Bonding Materials, Gypsum plaster, Manufacture of gypsum plaster, Raw materials (Gypsum rocks), Process of manufacture.
<b>Week 9</b>	Gypsum products Plaster of Paris, Uses, Chemical requirements in according with Iraqi standard No. 28 1985, Physical requirements in according with Iraqi standard No. 28 -1985, Ordinary (mechanical) plaster, Uses, Chemical requirements, Physical requirements,
<b>Week 10</b>	Gypsum products Technical plaster, Uses, Chemical requirements, Physical requirements, Anhydrous plaster, used, Anhydrous plaster, used, Keen cement, Properties, Uses.
<b>Week 11</b>	Lime, Definition and classification, Quick lime, Hydrate lime, Manufacturing of lime, Raw materials.
<b>Week 12</b>	Uses of quick lime, Properties of quick lime, Hydrate lime, Process of manufacture, Uses, Properties
<b>Week 13</b>	Metals, Classification of metals Classification of metals, Ferrous metals, Cast Iron, Properties: Uses, Wrought Iron, Composition, Properties, Uses.
<b>Week 14</b>	Steel, Composition, Low carbon steel (Mild steel), Properties, Uses, High carbon steel, Properties, Factors affecting physical properties of steel
<b>Week 15</b>	Nonferrous metals, Properties, Refractory metals.
<b>Week 16</b>	<b>Preparatory week before the final Exam</b>

## Delivery Plan (Weekly Lab. Syllabus)

### المنهاج الاسبوعي للمختبر

	Material Covered
<b>Week 1</b>	Lab 1: Brick test, tolerance and efflorescence
<b>Week 2</b>	Lab 2: Brick test, water absorption and compressive strength
<b>Week 3</b>	Lab 3: gypsum tests, finesse test
<b>Week 4</b>	Lab 4: gypsum tests, standard consistency
<b>Week 5</b>	Lab 5: gypsum tests, setting time and compressive strength
<b>Week 6</b>	Lab 6: mosaic tile test, shape and dimension
<b>Week 7</b>	Lab 7: mosaic tile test, face and total water absorption
<b>Week 8</b>	Lab 8: mosaic tile test, modulus of rupture

Learning and Teaching Resources		
مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	Building construction, ZoiharSako ,Baghdad university ,1984 Iraqi Standard Specifications British specifications المواد الإنشائية جلال بشير سرسم، سعيد عبد العالي	
Recommended Texts		
Websites	<a href="http://www.cement.org/for-concrete-books-learning/concrete-technology">http://www.cement.org/for-concrete-books-learning/concrete-technology</a>	

Grading Scheme				
مخطط الدرجات				
Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
<p><b>Note:</b> Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.</p>				