	Ministry of Higher Education and Scientific Research - Iraq University of Warith Al_Anbiyaa College of Engineering Civil Engineering Department	

MODULE DESCRIPTOR FORM

Module Information

Module Title	CONSTRUCTION MATERIALS	**Module Delivery**	
Module Type	CORE	**Theory** **Lecture** **Lab**	
Module Code	ENG016		
ECTS Credits	7		
SWL (hr/sem)	175		
Module Level	1	**Semester of Delivery**	1
Administering Department	Civil Engineering	**College**	Engineering
Module Leader	Hibatallah abd alameer	**e-mail**	Hiba.allah@uowa.edu.iq
Module Leader's Acad. Title	Assist lecturer	**Module Leader's Qualification**	Msc.
Module Tutor		**e-mail**	
Peer Reviewer Name		**e-mail**	
Review Committee Approval	2024/9/26	**Version Number**	1.0

Relation With Other Modules

Prerequisite module	None	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Aims	The course aims to: 1. Introduce students to the basic concepts of different building materials. 2. Identify the raw materials and manufacturing methods of building materials Identify the engineering properties of building materials. 3. Identify the requirements of standard specifications for the use of building materials. 4. Identify the laboratory tests that are conducted on building materials for quality control purposes. 5. Identify the different uses of materials in the construction industry.
Module Learning Outcomes	1. Learn about the classification of materials in general and their most important properties. 2. Learn about the mechanical properties of materials in general and solve examples related to them. 3. Learn about the definition of bricks, their classification, their most important types, raw materials and manufacturing methods. 4. Learn about the physical properties of bricks and the most important tests conducted on bricks and learn about the requirements of Iraqi specifications. 5. Learn about other types of building units such as bricks, concrete blocks, cellular concrete blocks, and the raw materials used in their manufacture, manufacturing methods and engineering properties. 6. Learn about the types of stones used in construction, their formation methods, methods of preparation and the most important engineering properties. 7. Learn about the most important binding materials such as cement, gypsum and lime, their manufacturing methods, the most important tests conducted on them and their most important physical and chemical properties. 8. Learn about the most important types of tiles used in floors, manufacturing methods, raw materials used in the industry, the most important tests and requirements of the Iraqi specification
Indicative Contents	Indicative content includes the following: 1. Overview of Materials and Building/Structural Types (Historic, Current) , Principal ,Properties of Building Materials, Physical Properties (Density, Bulk Density, Porosity, Water Permeability, etc) Mechanical Properties (Strength, Hardness, Elasticity, Plasticity) [10 hrs] 2. Structural Clay Products (Clay and its Classification, Physical Properties, Bricks, Classification and Characteristics of Good Bricks, etc) [8] 3. Other type of building units such as concrete blocks , sand lime bricks autoclaved aerated concrete blocks , etc… [8 hrs]

	4. Rocks and Stones (Classification of Rocks, Quarrying of Stones, Uses of Stones, Characteristics of good Building Stone, Deterioration of Stones, Durability of Stones, Preservation of Stones, Selection of Stones, Common Building Stones, Artificial Stones, Applications of Stones) [4 hrs] 5. Types of Trees for Timber Production, Structure of a Tree, Processing of Timber, Preservation of Timber, Wood Defects as They Affect Wood Strength, Mechanical 6. Properties of wood.[8 hrs] 7. Ferrous Metals and Alloys (Iron, Cast Iron, Wrought Iron, Steel, Rolled Steel, Reinforcing Steel Bars , stress stain diagram [8 hrs]

Learning and Teaching Strategies

Strategies	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 involving some sampling activities that are interesting to the students.

Student Workload (SWL)

Structured SWL (h/sem)	93	**Structured SWL (h/w)**	6.0
Unstructured SWL (h/sem)	82	**Unstructured SWL (h/w)**	5.5
Total SWL (h/sem)	175		

Module Evaluation

		Time/ Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10
	Assignments	2	5% (5)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	5% (5)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	20% (20)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Classified of Engineering Materials and its properties, Mechanical properties of materials, type of forces.
Week 2	Exercises on Mechanical properties of materials.
Week 3	Clay Brick, Definition, Classification of clay brick , Raw materials, Production methods of clay brick, Stages of clay brick industry and type of furnaces used ,
Week 4	Engineering properties of clay brick and tests of brick,
Week 5	Other types of brick (Concrete Blocks and sand-lime brick , autoclave aerated concrete blocks)
Week 6	Building Stone: Definition, Geological Classification of stone, Preparation of stone, Utilization, Engineering properties of stone
Week 7	Mid-term Exam
Week 8	Tiles: Definition, Types of tiles, Terrazzo tiles, Ordinary tiles , Raw materials and industry, Engineering properties of tiles, Utilization of tiles
Week 9	Bonding materials: Definition, Types of bonding materials, Utilization of bonding materials, Cement Mortar, Definition, Utilization, Properties, Lime: Definition, Classification, Raw material and industry
Week 10	Utilization of lime, Properties of lime mortar, and cement and lime mortar, Gypsum: Definition, Classification, Raw materials and industry, Utilization of Gypsum, Properties of gypsum of mortar, Tests of gypsum
Week 11	Cement: Definition, Raw materials and industry, Utilization, Chemical composition of cement and its physical properties, Types of Portland and non-Portland cement.
Week 12	Wood: Definition, Types if wood, Utilizations of wood in construction , Engineering properties of wood, methods of drying and chemical treatment of wood , Dimensional changes of wood, Defect of wood, Tests of wood.

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1&2	Introduction to The Construction Materials Lab , Student Responsibilities ,How to write report .
Week 3&4	Tests of Clay Bricks : Dimensions Test and Water Absorption Test on Bricks
Week 5&6	Tests of Clay Bricks: Determination of Efflorescence of bricks and Compressive Strength of Bricks
Week 7&8	Tests of Tiles : Dimension and Shape Test and Modulus of rupture test of tile

Week 9&10	Tests of Tiles: Water Absorption Test of Tiles (Total absorption Test and Face absorption of tiles)
Week 11&12	Gypsum test: Gypsum fineness and Standard Consistency of Gypsum
Week 13&14	Gypsum test: Setting time of gypsum and Compressive strength of gypsum

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	1.Building Materials,S. K. Duggal 3rd ed., 2008 ,New Delhi.	
Recommended Texts	2.Civil Engineering Materials, N. Jackson and V. K. Dhir , 5th ed. 1996.	No
Websites	1.Materials for civil and construction engineers, M. S.	

APPENDIX:

GRADING SCHEME				
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	مقبول بقرار	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note:

NB 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.