COURSE PLAN

FIRST: BASIC INFORMATION

College

College	: Karak University College
Department	: Department of Basic and Informatics Sciences

Course

Course Title	: Building Construction Materials
Course Code	: 020112181
Credit Hours	: 3 (2 Theoretical, 1 Practical)
Prerequisite	:

Instructor

Name	: Rayah Nasr Salam Al-Dala'ien
Office No.	: -
Tel (Ext)	: -
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Office Hours	: -

Class Times

Text Book

- مواد البناء – أحمد ابوعودة، مكتبة المجتمع العربي للنشروالتوزيع 2014.

References

- خامات البناء – محمد الدرايسة، مكتبة المجتمع العربي للنشروالتوزيع 2012.
- A. M. Neville, Properties of Concrete, 5th Edition, Person, 2012.
- A. M. Neville , J.J. Brooks , Concrete Technology, 2nd Edition, Person, 2010.

SECOND: PROFESSIONAL INFORMATION

COURSE DESCRIPTION

This course cover working knowledge of characteristics, types, and applications of building materials and performs material testing for quality assurance.

COURSE OBJECTIVES

The objective of this course is to enable the student to do the following:

-Describe knowledge and properties of various building materials used in construction.
-Identify the building materials required for the assigned work.
-Perform procedural knowledge of the simple testing methods of cement, steel and concrete etc.

COURSE LEARNING OUTCOMES

On successful completion of this course, students are expected to be able to:

CLO1. Explain the basic theory about important building materials and environmental concer ns.
CLO2. Choose the materials for various purposes and apply laboratory exercises.
CLO3. Explain degradation and lifetime for different materials, and how these are affected by external influences such as climate (humidity, temperature) and chemicals, and apply laborat ory exercises.
CLO4. Describe the composition, preparation, structure, properties, function and applications of materials and apply laboratory exercises.
CLO5. Identify materials differences and physical properties.
CLO6. Explain thermal characteristics, strength, and fire resistance.
CLO7. Evaluate the environmental impacts of products and solutions within buildings.

COURSE SYLLABUS

Week	Topic	Topic Details	Related LO and Reference (Chapter)	Proposed assignments
1	Cement	• Historical note • Manufacture of Portland cement • Chemical composition of Portland cement • Hydration of cement • Setting • Fineness of cement • Structure of hydrated cement Volume of products of hydration • Mechanical strength of cement • gel Water held in hydrated cement paste • Heat of hydration of cement Influence of the compound composition on properties of cement • Effects of alkalis • Effects of glass in clinker • Tests on properties of cement	CLO1	Test experimentally the properties of cement such as: consistency, fineness, initial and final setting and fineness to insure the quality control of it. Write report about the result of target cement sample.
2	Brick	• Brick definition • Classification of bricks according to the materials used • Types of bricks and their uses	CLO1	Testing experimentally the compressive strength of bricks to

Week	Topic	Topic Details	Related LO and Reference (Chapter)	Proposed assignments
				insure the quality control of it. And write report about the result of target brick sample.
3	Cementitious materials of different types	• Categorization of cementitious materials • Different cements • Ordinary Portland cement • Rapid-hardening Portland cement • Special very rapid-hardening Portland cements • Low heat Portland cement • Sulfate-resisting cement • White cement and pigments • Portland blast furnace cement • Super sulfated cement • Pozzolanas • Silica fume • Fillers • Other cements • Which cement to use • High-alumina cement • Conversion of high-alumina cement • Refractory properties of high-alumina cement	CLO2	Test experimentally the compressive strength of cement mortar to insure the quality control of it. Write report about the result of target cement sample.
4	Aggregate	• General classification of aggregates • Classification of natural aggregates • Sampling • Particle shape and texture • Bond of aggregate • Strength of aggregate • Other mechanical properties of aggregate • Specific gravity • Bulk density • Porosity and absorption of aggregate • Moisture content of aggregate • Bulking of fine aggregate • Deleterious substances in aggregate • Soundness of aggregate • Alkali–silica reaction • Alkali–carbonater Thermal properties of aggregate	CLO3	Test experimentally the properties of aggregate such as: Density, absorption, impact strength, crushing resistance, abrasion resistance, soundness, sieve analysis, flakiness and elongation to insure the

Week	Topic	Topic Details	Related LO and Reference (Chapter)	Proposed assignments
		• Sieve analysis • Grading requirements • Practical gradings • Grading of fine and coarse aggregates • Gap-graded aggregate • Maximum aggregate size • Use of 'plums' • Handling of aggregate • Special aggregates • Recycled concrete		quality control of it. Write report about the result of target aggregate sample.
5	Fresh & Hardened Concrete	Fresh Concrete • Quality of mixing water • Density of fresh concrete • Definition of workability • The need for sufficient workability • Factors affecting workability • Measurement of workability • Segregation • Bleeding • The mixing of concrete • Concrete mixers • Vibration of concrete Hardened Concrete • Curing of concrete • Methods of curing • Variability of strength of cement • Changes in the properties of cement	CLO4	Test experimentally the properties of fresh and hardened concrete such as: air content test, slump test, compaction factor, compressive of hardened concrete to insure the quality control of it. And write report about the result of target concrete sample.
6	Building Stone	• Meaning of Building Stones • Properties of Building Stones • The importance of building stone as a building material • Preparing building stones • Types of building stone • The most important building stones • Names of the stone pieces and where they are used	CLO4	Test experimentally the properties of aggregate such as: Density, absorption, impact strength, crushing resistance, abrasion resistance,

Week	Topic	Topic Details	Related LO and Reference (Chapter)	Proposed assignments
				soundness, sieve analysis, flakiness and elongation to insure the quality control of it. Write report about the result of target aggregate sample.
7	Glass	• Molecular structure of glass • Glass Industry • Properties of glass • Glass used in construction and where it is used • Special uses of glass	CLO4	Visiting the wood factory.
8	**Midterm Exam**			
9	Aluminum	• Materials included in the composition of aluminum • Methods of preparing aluminum • Aluminum Alloys • Properties of aluminum • Preparation and use of aluminum alloys	CLO4	Test experimentally the properties of steel such as: tensile strength to insure the quality control of it. And write report about the result of target steel sample.
10	Lime	• Definition of lime • Types of lime • Properties of lime • Uses of lime	CLO4	
11	Gypsum	• Definition of gypsum • Gypsum preparation and manufacture • Types of gypsum • Use of gypsum • Setting time for gypsum • Advantages of using gypsum	CLO4	

Week	Topic	Topic Details	Related LO and Reference (Chapter)	Proposed assignments
12	Tiles	• Definition of tile • Cement tiles • Mosaic tiles • Ceramic tiles • Marble tiles • Flexible tiles • Linoleum tiles • Rubber tiles	CLO5	Visiting the tiles shop.
13	Wood	• An introduction • Processing and cutting wood • Wood drying process • Wood products • properties of wood • Factors that cause wood damage • The correct way to preserve wood	CLO5	Visiting the wood factory.
14	Steel	• An introduction • Steel Industry • Types of steel • Proportions of steel components • Steel uses • Types of steel in terms of field use: Hot Rolled Deformed Steel Bars, Cold Worked Steel Bars, Mild Steel Plain Bars, Prestressing Steel Bars • Advantages of Steel Reinforcement • Disadvantages of Steel Reinforcement • Testing of reinforcing bars / reinforcing steel	CLO6	Test experimentally the properties of steel such as: tensile strength to insure the quality control of it. And write report about the result of target steel sample.
15	Plastic	• An introduction • Classification of plastic • Uses of plastic • Problems facing the use of plastic in Jordan	CLO7	
16	**Final Exam**			

COURSE LEARNING RESOURCES

Teaching will be achieved using available resources including Lectures, data show and materials uploaded to the e-learning system and term projects

ONLINE RESOURCES

https://www.youtube.com/playlist?list=PLhGrHCz12tsHAd6Z7651DOvZYANXtXhKP
https://www.uoanbar.edu.iq/eStoreImages/Bank/3375.pdf
https://www.youtube.com/watch?v=5XpcpjsoGn8

https://www.youtube.com/watch?v=YiIgHbUU9QE

ASSESSMANT TOOLS

ASSESSMENT TOOLS	%
Projects and Quizzes	20
Mid Exam	30
Final Exam	50
TOTAL MARKS	100

THIRD: COURSE RULES

ATTENDANCE RULES

Attendance and participation are extremely important, and the usual University rules will apply. Attendance will be recorded for each class. Absence of 10% will result in a first written warning. Absence of 15% of the course will result in a second warning. Absence of 20% or more will result in forfeiting the course and the student will not be permitted to attend the final examination. Should a student encounter any special circumstances (i.e. medical or personal), he/she is encouraged to discuss this with the instructor and written proof will be required to delete any absences from his/her attendance records.

GRADING SYSTEM
Example:

Grade	Points

REMARKS

Use of Mobile Devices, Laptops, etc. During Class, unexpected noises and movement automatically divert and capture people's attention, which means you are affecting everyone's learning experience if your cell phone, laptop, etc. makes noise or is visually disturbing during class. For this reason, students are required to turn off their mobile devices and close their laptops during class.

Academic Integrity. Copying assignments, allowing assignments to be copied, will fail the assignment on the first offense. Cheat in tests or copying assignments for the second time.

Cite all sources consulted to any extent (including material from the internet), whether or not assigned and whether or not quoted directly.

Project: Students will undertake a term project to study in detail one of the course topics. The project may involve a critical literature review or a case study. The students should consult at least five (5) references or journal articles. A written project report of 10 pages maximum will be submitted in nominated dates. Ten-minute presentation will be given to the rest of the class during the last two weeks of the semester.
Formats, Rules, Topics, submission and presentation dates are illustrated in project form.

COURSE COORDINATOR	
Course Coordinator	**Department Head:**
Signature:	**Signature:**
Date:	**Date:**