Course Specification
(Bachelor)

Course Title:	Building Materials
Course Code:	CE2801
Program:	Bachelor of Science in Civil Engineering
Department:	Civil Engineering Department
College:	College of Engineering& Architecture
Institution:	Umm Al-Qura University
Version:	1
Last Revision Date:	31 January 2025

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A. General information about the course:

1. Course Identification

1. Credit hours: (2 hours)					
2. Course type					
A.	☐ University	☐ College	☒ Department	☐ Track	☐ Others
B.	☒ Required		☐ Elective		
3. Level/year at which this course is offered: (5th / 3rd Year.)					
4. Course General Description:					
The course covers the building materials utilized for civil engineering constructions. All constituent materials will be covered carefully including: Aggregate classification and properties; asphalt pavement materials properties and specification; cementing materials and admixtures properties and specification; iron and steel materials manufacturing and properties; wood properties and utilizations; bricks and tiles manufacturing and utilizations; mortar joint types, properties, and requirements; pain, glasses and plastics materials manufacturing and properties. Also, specifications and tests for all of these materials and other newly developed and generated materials will be included.					
5. Pre-requirements for this course (if any)**:**					
CE1102					
6. Co-requisites for this course (if any)**:**					
None					
7. Course Main Objective(s):					
• **To enable the students to understand the behavior and performance of different types of materials for civil and construction engineering.** • **To know the required tests on civil engineering materials.** • **Obtain knowledge of materials for selection process and applications**					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100%
2	E-learning		
3	Hybrid • Traditional classroom		

No	Mode of Instruction	Contact Hours	Percentage
	• E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	15
2.	**Laboratory/Studio**	45
3.	**Field**	
4.	**Tutorial**	
5.	**Others (specify)**	
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1	To identify the different types of engineering materials.	K.1	Lectures Coursework Lab	Coursework Tutorials Examinations .
1.2	To know the main properties of engineering materials.	K.1	Lectures Coursework Lab	Coursework Tutorials Examinations
1.3	To recognize the applications and how to select the engineering materials.	K.2	Lectures Coursework Lab	Coursework Tutorials Examinations
2.0	**Skills**			
2.1	To train on brainstorming of differences between engineering materials.	S.1	Lectures Module notes	Coursework Tutorials Examinations
2.2	To know the relationship between engineering	S.1	Lectures Module notes	Coursework Tutorials

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
	specializations.			Examinations
2.3	To know the production process for engineering materials..	S.3	Lectures Module notes	Coursework Tutorials Examinations
2.4	To know different applications of engineering materials.	S.4	Lectures Module notes	Coursework Tutorials Examinations
3.0	**Values, autonomy, and responsibility**			
3.1	To integrate professionally and ethically with multi-disciplinary teams in construction projects, operations and services.	V1	Lectures Group project work. Lab	Tutorials Coursework
3.2	To professionally and ethically select and choose the best properties of materials in civil and constructions projects.	V2	Lectures Group project work. Lab	Tutorials Coursework
3.2	Develop expertise required for advanced projects serving society and providing solutions	V3	Lectures Group project work. Lab	Tutorials Coursework

C. Course Content

No	List of Topics	Contact Hours
1.	Materials engineering concepts, Materials selection process, Production and construction, Environmental influences.	4
2.	Physical and engineering properties of building materials	4
3.	Sustainable design, availability, and cost of engineering materials	4
4.	Properties of aggregate; Shape & texture, Size Gradation, Moisture Content, Specific Gravity and Unit weight.	4
5.	Cementing Materials and Admixtures: properties and testing.	4
6.	Asphalt pavement materials properties and specification.	4
7.	Binder and mixtures specification and testing.	4
8.	Iron and steel manufacturing and properties.	4
9.	Carbon fibers, Steel fibers.	4
10.	Bricks and Tiles manufacturing, testing and properties.	4

11.	Mortar joint manufacturing testing and properties.	4
12.	Wood properties and requirements.	4
13.	Glass, polypropylene fiber, and Paints manufacturing and properties	4
14.	Inspection and supervision of building Materials	4
15.	Revision and Discussion	4
Total		60

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework and Quizzes	Biweekly	10
2.	**Mid-Term Exam**	**7**	**25**
3.	Practical group working, Lab reports, oral lab Exam	9	15
4.	Final Exam Lab	14	10
5.	Final Exam	16	40

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Marotta, Coffey, Brown, LaPlante (2011), "Basic Construction Materials" Eights Edition, Pearson Prentice Hall
Supportive References	
Electronic Materials	Journals @Sciencedirect.com, Building materials, ,Pollution,Health, Toxicology and Mutagenesis
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	1. Accommodation (Lecture rooms, laboratories, etc.) Standard university lecture room with chalkboard; and facilities for audio-visual presentations. Library: The University Library provides advanced support for student learning in a purpose-built building and electronically via the web. It is open for upwards of 80 hours per week during

Items	Resources
	semester and holds a stock of more than half a million volumes and an extensive serials collection. Numerous PC workstations (100+), networked printing facilities and self-service photocopiers are also available. The Library catalogue is available on-line, as are electronic versions of reading lists. Over 180 subject-specific electronic databases can be accessed by users both on campus and elsewhere. The Library organizes induction sessions for first year students and librarians can provide flexible training for students and researchers hroughout their time. User support is also available from the Library information desks, via printed and online guides and through a series of 'Lunchtime in the Library' and other training sessions. There are a variety of study environments in the Library, including individual and group study desks and group study rooms. Engineering Education Centre: The Engineering Education Centre supports the implementation of innovative Teaching and Learning Methods into the curriculum, within the Faculty of Engineering, via the use of appropriate technologies. The Centre provides a focus for computer based learning and teaching activities in the Engineering Faculty, unlimited advice on Computer aided learning/assessment and distance learning materials, a limited amount of free software development time, and help to secure funding and manage projects relevant to learning and teaching. Counselling Service and English Language Study Unit: The Counselling Service and English Language Study Unit are able to support individual students in resolving problems and in improving communication skills for international students
Technology equipment (projector, smart board, software)	Computing Services provides the University IT facilities and infrastructure. General purpose computer resources across campus are open 24 hours and more specialist computer laboratories are provided in partnership with departments. Students in halls of residence are supported in

Items	Resources
	connecting their computers to the high speed network. The University's virtual learning environment "LEARN" provides on and off campus access to web-based teaching materials provided by lecturing staff.
Other equipment (depending on the nature of the specialty)	A white board & Computer with internet and data show. Computing Services provides the University IT facilities and infrastructure. General purpose computer resources across campus are open 24 hoursand more specialist computer laboratories

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct
Effectiveness of Students assessment	Program Lead Students	Direct
Quality of learning resources	Peer Reviewer	Direct
The extent to which CLOs have been achieved	Faculty	Direct
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	CIVIL ENGINEERING COUNCIL
REFERENCE NO.	THE FIFTEENTH SESSION OF THE ACADEMIC YEAR 1446
DATE	30 APRIL 2025

