ATTACHMENT 2 (e)

Course Specifications

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

Chemistry of Cement and Construction Materials

40247840-2

Course Specifications

(CS)

Course Specifications

Institution: **Umm Al-qura University**	Date of Report: **2017**
College/Department : **Faculty of Applied Sciences / Chemistry Department**	

A. Course Identification and General Information

1. Course title and code: **Chemistry of Cement and Construction Materials/ 40247840-2**
2. Credit hours: **2 (theoretical)**
3. Program(s) in which the course is offered: **Industrial Chemistry**
4. Name of faculty member responsible for the course: **Prof. Dr. Abdalla Mohamed Khedr**
5. Level/year at which this course is offered: **8th level/4th year**
6. Pre-requisites for this course (if any): **-** Chemistry of Transition Elements
7. Co-requisites for this course (if any)---
8. Location if not on main campus: **El-Abdyah**
9. Mode of Instruction (mark all that apply)

a. Traditional classroom	■	What percentage?	**100%**
b**. Blended (traditional and online)**		What percentage?	
c. e-learning	☐	What percentage?	☐
d. Correspondence	☐	What percentage?	☐
f. Other	☐	What percentage?	☐

Comments:

B. Objectives

1. What is the main purpose for this course? The goal of this course is to familiarize students with: a. Cement industry and its importance. b. Cement manufacturing methods, raw materials used, purification of cement, special types of cement and their uses. c. Modern building materials.
2. Briefly describe any plans for developing and improving the course that are being implemented. (e.g. increased use of IT or web based reference material, changes in content as a result of new research in the field) • Using different learning sources of the course, so that the students make use of more than one reference. • Encourage students to carry out reports in the field of cement industry and modern building materials. • The use of smart teaching halls for lectures.

C. Course Description (Note: General description in the form to be used for the Bulletin or handbook should be attached):

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact Hours
• Introduction to the cement industry and its importance. • Portland cement: manufacturing methods - the raw materials used.	**1**	**2**
• Chemical transformations and energy requirements - wet and dry manufacturing methods.	**1**	**2**
• Compounds entering in the cement industry.	**1**	**2**

• Precipitation and purification of cement – special types of cement and their uses.	**2**	**4**
• Lime: raw materials - energy changes and chemical transformations - manufacturing outputs.	**2**	**4**
• Gypsum and other calcium compounds.	**1**	**2**
• Cement Oxy magnesium chloride – other magnesium compounds used in construction and chemical processing.	**1**	**2**
• Effort and tensile curves for cement and gypsum.	**1**	**2**
• Refractories industry and their different types, refractories have resistance to heat and acids.	**2**	**4**
• Modern building materials.	**2**	**4**

2. Course components (total contact hours and credits per semester):

	Lecture	Tutorial	Laboratory	Practical	Other:	Total
Contact Hours	14	-		-		28
Credit	2	-		-		2

3. Additional private study/learning hours expected for students per week.

• Two hours a week to prepare reports, discuss and resolve questions related to cement industry and modern building materials.

4. Course Learning Outcomes in NQF Domains of Learning and Alignment with Assessment Methods and Teaching Strategy

	NQF Learning Domains And Course Learning Outcomes	**Course Teaching Strategies**	**Course Assessment Methods**

1.0	**Knowledge**		
1.1	• Know manufacturing methods of Portland cement and the raw materials used in these processes.	• Lectures • Scientific discussion • Use the library to work duties and a small research on cement industry and modern building materials. • Use of the Internet to carry out some reports on course subjects.	• Written mid-term and final exams • Long and short essays.
1.2	Write on the cement industry and its importance.		
1.3	Recall the chemical transformations and energy requirements.		
1.4	Describe the special types of cement and their uses.		
1.5	List the compounds entering in the cement industry		
2.0	**Cognitive Skills**		
2.1	Compare between wet and dry manufacturing methods.	• Lectures • Scientific discussion • Library visits • Web-based study	• Periodic tests and assignments. • Measuring the response to the assignments.
2.2	Estimate the refractories have resistance to heat and acids.		
2.3	Summarize the modern building materials		
2.4	Analyze effort and tensile curves for cement and gypsum.		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Develop the student's ability in self-reliance and responsibility.	• Dividing students into groups to carry out	• Evaluate the results of collective works and duties as well as
3.2	• Choose the compounds used in		

	construction and their chemical treatment.	collective scientific reports.	knowing the contribution of each individual through dialogue and discussion.
3.3	Operate in team work and accept his college's opinions.	• Periodic individual duties to develop the skill of taking responsibility and self-reliance	• Assessment of individual tasks and duties to determine the student's ability to self-reliance.
4.0	**Communication, Information Technology, Numerical**		
4.1	Perform mathematical calculations and data analysis.	• The use of computers in the training room for the department.	• Web-based student performance systems
4.2	Use computers and the international information network (the Internet) to perform calculations and to identify recent research relevant to decision sources.	• Using the internet for collecting data.	• Individual and group presentations. • Evaluation of the duties associated with the proper use of numerical and communication skills
5.0	**Psychomotor**		
5.1	• Not applicable.		
5.2			

5. Schedule of Assessment Tasks for Students During the Semester			
	Assessment task (e.g. essay, test, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Homework or activities.	--	10 %
2	First Periodic Exam.	6	20 %

3	Second Periodic Exam.	12	20 %
4	Final Exam. (2hours exam)	16	50 %
5	**Total**	**100 %**	

D. Student Academic Counseling and Support

1. Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice. (include amount of time teaching staff are expected to be available each week)

- Academic Advising for students.
- Availability of Staff members to provide counseling and advice.
- Office hours: During the working hours weekly.

E. Learning Resources

1. List Required Textbooks

- Cement Chemistry, I. Richardson, H. F. W. Taylor, ICE Publishing, 3rd edition, 2015.

2. List Essential References Materials (Journals, Reports, etc.)

- Lea's Chemistry of Cement and Concrete, P. Hewlett, Butterworth-Heinemann, 4th edition, 2004.

3. List Recommended Textbooks and Reference Material (Journals, Reports, etc)

- Chemistry For The Engineering and Applied Sciences, W. Steedmann, R. B. Snadden, I. H. Anderson, Pergamon Press, Oxford, 2nd edition, 1986.

4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)

- http://www.chemweb.com
- http://www.sciencedirect.com
- http://www.rsc.org

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software. : - Not required**.**

F. Facilities Required

Indicate requirements for the course including size of classrooms and laboratories (i.e. number of seats in classrooms and laboratories, extent of computer access etc.)
1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) • Equipped lecture halls.

2. Computing resources (AV, data show, Smart Board, software, etc.) • Room equipped with computer, data show and TV.
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) • No other requirements.

G. Course Evaluation and Improvement Processes

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching • Questionnaire evaluation of the course.
2. Other Strategies for Evaluation of Teaching by the Program/Department Instructor • Preparation of a course report and study of the results of the students to give us indication about the planned outputs and the extent to which student's benefits.
3. Processes for Improvement of Teaching • Providing new tools for learning. • Exchange of experiences internal and external. • Application of e-learning. • Review of the proposed strategies.
4. Processes for Verifying Standards of Student Achievement (e.g. check marking by an independent member teaching staff of a sample of student work, periodic exchange and remarking of tests or a sample of assignments with staff at another institution) • Check marking of a sample of exam papers, or student work. • Exchange corrected sample of assignments or exam basis with another staff member for the same course in other faculty.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. • Consult other staff of the course. • Hosting a visiting staff to evaluate of the course. • Workshops for teachers of the course. • Periodic review of the contents of the syllabus and modify the negatives.

Faculty or Teaching Staff: Prof. Abdalla Mohamed Khedr

Signature: **Date Report Completed: 12/1/2019**

Received by: Dr. Ismail Althagafi Department Head

Signature: **Date: 20/1/2019**