ATTACHMENT 5.

Kingdom of Saudi Arabia

The National Commission for Academic Accreditation & Assessment

T6. Course Specifications

(CS)

Nanochemistry

(402742-2)

Course Specifications

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

A. Course Identification and General Information

1. Course title and code: **Nanochemistry / 402742-2**
2. Credit hours: **2 hrs (theoretical)**
3. Program(s) in which the course is offered. **Ph. D. in Chemistry** (If general elective available in many programs indicate this rather than list programs)
4. Name of faculty member responsible for the course: **Prof. Abd El Rahman Salah Khder**
5. Level/year at which this course is offered: **2nd / 1st**
6. Pre-requisites for this course (if any): **not applicable**
7. Co-requisites for this course (if any): **not applicable**
8. Location if not on main campus: **El-Abedyah, El-Azizya, and El-Zaher**
9. Mode of Instruction (mark all that apply)

a. traditional classroom		What percentage?	
b. blended (traditional and online)	■	What percentage?	**100 %**
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? Make the students acquainted to the concept of nanochemistry. The students will study the methods of nanoparticle preparation in the solid and liquid state, also will study the most recent tools of nanomaterials characterization, Optoelectronic properties of molecular solids and the electronic structure of surfaces. Metallic and semi-conducting nanocrystals. Thin film devices: organic solar cells and organic light-emitting diodes. Discussion of some recent published papers related to nanomaterials.
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) The students will be mentioned to prepare an essay or a report from literature using the library, data base services, and/or websites to follow up and update the new topics of the subject of the course. And got the most recent published papers related to nanomaterials.

C. Course Description (Note: General description in the form used in Bulletin or handbook)

Course Description:

1. Topics to be Covered		
List of Topics	No. of Weeks	Contact hours
General introduction and history of nanotechnology.	**1**	**2**
Synthesis of nanomaterials in liquid state and solid stale.	**2**	**4**
Spectroscopic and Microscopic characterization techniques for nanomaterials in liquid or solid state such as, Uv-Vis, FTIR, TEM, SEM,	**2**	**4**
Some Examples of nanomaterials and nanostructures, their applications.	**2**	**4**

Metallic and semi-conducting nanocrystals	**2**	**4**
Thin film devices	**2**	**4**
Discussion of some recent published papers related to nanomaterials	**2**	**4**

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

	Lecture	Tutorial	Laboratory or Studio	Practical	Other:	Total
Contact Hours	**26**					**26**
Credit	**2**					**2**

3. Additional private study/learning hours expected for students per week.
2

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

On the table below are the five NQF Learning Domains, numbered in the left column.

First, insert the suitable and measurable course learning outcomes required in the appropriate learning domains (see suggestions below the table). **Second**, insert supporting teaching strategies that fit and align with the assessment methods and intended learning outcomes. **Third**, insert appropriate assessment methods that accurately measure and evaluate the learning outcome. Each course learning outcomes, assessment method, and teaching strategy ought to reasonably fit and flow together as an integrated learning and teaching process. (Courses are not required to include learning outcomes from each domain.)

Code #	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	**Knowledge**		
1.1	Recognize the methods of nanoparticles preparation	• Lectures • Scientific discussion • Library visits	• Exams • Oral discussion • Quiz
1.2	Name different types of nanomaterials and		

	their applications	• Web-based study	
2.0	**Cognitive Skills**		
2.1	Compare between properties of nanomaterials	• Encourage the solving problems in groups • Making open discussion	• •Exams • Homework • Group reports
2.2	Compare between thin film devices		
3.0	**Interpersonal Skills & Responsibility**		
3.1	Choose suitable preparation method	• Encourage the solving problems in groups • Making open discussion	• Exams • Homework • and group reports
3.2	Use suitable characterization tool		
4.0	**Communication, Information Technology, Numerical**		
4.1	Interpret the results of characterization tools	Encourage the solving problems in groups •Making open discussion	•Exams Homework and group reports
4.2			
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	Assignments and activities.	--	10 %

2	Midterm Exam.	8	30 %
3	Final Exam.	15-16	60 %
4	**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):

- 2 hours per week as office hours are available for discussion with the students.
- We have faculty members to provide consulting and academic advice.

E Learning Resources

1. List Required Textbooks

"Nanomaterials: Synthesis, Properties and Applications"; Edelstein, A. S., Cammarata, R. C., Eds.; Institute of Physics Publishing: Bristol and Philadelphia, 1996.2.

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

Any journals in the field of the course will be considered.

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

"NanoChemistry: A Chemical Approach to Nanomaterials"; Ozin, G. A.; Arsenault, A. C.; RSC Publishing, Cambridge, UK, 2005.

4. List Electronic Materials, Web Sites, Facebook, Twitter, etc.

http://en.wikipedia.phys/wiki/

http://www.chemhelper.com/

http://www.chemweb.com

5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.

Microsoft PowerPoint, Microsoft Word

Videos on the chemistry of nanomaterials

Educational CD

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.) Classrooms with enough student's capacity.
2. Computing resources (AV, data show, Smart Board, software, etc.) Hall equipped with a computer and the Data Show and Television is urgently required
3. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list): Non

G Course Evaluation and Improvement Processes

1 Strategies for Obtaining Student Feedback on Effectiveness of Teaching Scheduled to complete the questionnaire calendar in particular. Focus group discussions with small groups of students.
2 Other Strategies for Evaluation of Teaching by the Instructor or by the Department - Independent evaluation of the extent to which students of the standards. - Independent advice to the duties and tasks.
3 Processes for Improvement of Teaching - Workshops for the teaching methods. - Continuous training for the faculty member. - Revision of the proposed strategies. - The provision of modern tools necessary for learning. - Application of the means of e-learning. - Exchange of internal and external experiences

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) - Checking the samples of test papers, or student work, which has been corrected by a faculty member. - Exchange professors from different educational institutions on regular basis to correct samples of test papers
5 Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. - Consult with other professors teaches the same subject. - Hosting a visiting professor to evaluate the subject. - Workshops for teachers whom teach the same subject. - Periodic review for teachers to modify the negatives contents in the subject.

Name of Instructor: _Prof. Abdel Rahman Salah Khder_____

Signature:_____Date Report Completed: 25/1/2017__

Name of Field Experience Teaching Staff _____

Program Coordinator:_____

Signature: _____ Date Received:_____