

T6. Course Specification (CS)

Institution: Najran University	Date :3/6/2017
College/Department: Sciences and Arts/Chemistry.	

A. Course Identification and General Information:

1. Course title and code : Surface chemistry , Catalysis and Phase rule: 435CHEM-2			
2. Credit hours : 2 hours per week (2+0)(Theoretical + practical)			
3. Program(s) in which the course is offered. (If general elective available in many programs indicate this rather than list programs) Bachelor of Educational Chemistry			
4. Name of faculty member responsible for the course Dr. Fatima Al-Qadri			
5. Level/year at which this course is offered : 7 th level			
6. Pre-requisites for this course (if any) : 334 CHEM-3			
7. Co-requisites for this course (if any) :None			
8. Location if not on main campus: Faculty Campus			
9. Mode of Instruction (mark all that apply)			
a. Traditional classroom ¹	<input type="text"/>	What percentage	<input type="text"/>
b. Blended (traditional and online) ¹	<input checked="" type="text"/>	What percentage	100
c. e-learning	<input type="text"/>	What percentage	<input type="text"/>
d. Correspondence (<input type="text"/>	What percentage	<input type="text"/>
f. Other	<input type="text"/>	What percentage	<input type="text"/>
Comments			

B. Objectives

1. What is the main purpose for this course :

Student should learn the following :

- Understand the chemical mechanical properties of the surface.
- Study of thin films on the surface & their applications.
- How surfaces will be used as gas sensors.
- Colloidal solutions & their importance in our day life .
- Scientific explanation for some natural phenomena such as why
- water droplets spherical In shape ,why some heavy thing float
- on the surface of water despite that their density is higher .
- Study interface phenomena such as adsorption & catalysis
- • Explain theories of adsorption.
- • Distinguish between Freundlich, Langmuir and BET theory of adsorption.
- • Recognize the basic theories e.g. Eotvos , Kelvin & Gibbs Equations , Surface Films
- • Recognize the phenomenon spread and deposited of colloidal case.
- • Distinguish between two and three component systems
- • Recognize how to apply Langmuir equation.

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).

- Diversify the teaching methods of lectures and provide them using the regular board as well as the data show.
- Activation of more e- learning coerce with the decision by the university's website.
- Updating course content as a result of possible development in the field.

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

Course Description :

1. Topics to be Covered:

List of Topics:	No. of Weeks	Contact Hours
General introduction, properties of liquid surfaces. Surface interfaces, cohesive & adhesive work of liquid.	1	2
Surface tension & methods of its measurements	1	2
Factors affecting surface tension	1	2
Eotvos, Kelvin & Gibbs equations, surface films	1	2
Solid - gas interfaces (gas adsorption)	1	2
Physical & chemical adsorption	1	2
Theories of adsorption, Freundlich, Langmuir and BET theory of adsorption.1	1	2
Introduction to catalyst & properties of catalyzed reactions. homogeneous & heterogeneous catalyses	1	2
Enzyme catalyses & mechanism of catalyses	1	2
Acid - base catalyses	1	2
Theories of catalyses. role of catalyst in industry	1	2
Colloidal case - types and methods of preparation and properties	1	2
Colloidal case - the phenomenon spread and deposited	1	2
one-component systems - water system	1	2
Two and three component systems1	1	2
	15	30

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

	Lecture	Tutorial	Laboratory or studio	Practical	Other:	Total
Contact Hours	30	----	--	---		30
Credit	2	----	----	---		2

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

4h/ week

- **Home work.**
- Take home Exam.

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 # مسلسل	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
1.0	Knowledge		
1.1	Recognize the basic fundamental of surface chemistry, and colloidal case - types and methods of preparation and properties	Illustrative examples and Problems solving. Open discussion.	Homework. Quizzes, periodic, and final exams.
1.2	Outline the surfaces will be used as gas sensors.	Illustrative examples and Problems solving. Open discussion.	Homework. Quizzes, periodic, and final exams.
1.3	Describe the Langmuir equation.	Illustrative examples and Problems solving. Open discussion.	Homework. Quizzes, periodic, and final exams.
2.0	Cognitive Skills		
2.1	Differentiate between Freundlich , Langmuir and BET theory of adsorption two and three component systems	Problems solving. Class- and home-work.	Homework. Quizzes, periodic, and final exams.
2.2	Predict :the phenomenon spread and deposited of colloidal case and the mechanism of Catalysis	Problems solving. Class- and home-work.	Homework. Quizzes, periodic, and final exams.
2.3	Explain theories of catalysis, role of catalyst in industry	Problems solving. Class- and home-work.	Homework. Quizzes, periodic, and final exams.
3.0	Interpersonal Skills & Responsibility		
3.1	Contribute to the team and interaction	• Self-learning	. Evaluating assignments

Code # مسلسل	NQF Learning Domains And Course Learning Outcomes	Course Teaching Strategies	Course Assessment Methods
	with others.	project <ul style="list-style-type: none"> • Interactive classes • Teamwork, competitions 	Group assignments. <ul style="list-style-type: none"> • Oral discussion
4.0	Communication, Information Technology, Numerical		
4.1	Criticize the ability to use communication technology and research, and evaluate basic computer knowledge using the self-learning website	Problem solving sessions • Oral discussions	• Presentations for self-learning projects give the instructor the chance to evaluate the • communication skills the student improved through the course and the alignments homework to evaluate the numerical skills
5.0	Psychomotor :		
5.1	None	None	None

5. Schedule of Assessment Tasks for Students During the Semester

No	Assessment task (e.g. essay, test, Quizzes, group project, examination, speech, oral presentation, etc.)	Week Due	Proportion of Total Assessment
1	Quizzes(s)	Week 4-14	15%
2	First periodic exam	Week 9	20%
3	Home works	Week- 2-14	15%
4	Final exam	Week 16	50%
	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)

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Office hours	
Hours	Day
9-10 ,10-11,11-12	Sunday
11-12	Monday
11-12, 1-2	Tuesday
1-2	Wednesday

E. Learning Resources :

<p>1. List Required Textbooks</p> <ul style="list-style-type: none"> Abdelrazig . Hamed Elniel - Advanced Physical Chemistry – International - First Edition (2008) Elsayed Ali asson & Others - Introduction to Advanced Physical Chemistry - First Edition (1993) .
<p>2. List Essential References Materials (Journals, Reports, etc.)</p> <ul style="list-style-type: none"> Mohammed Magdi Aballa - Chemistry of Surfaces & Catalysis (2004) ..
<p>3. List Recommended Textbooks and Reference Material (Journals, Reports, etc</p> <p>The phase rule and its application, A. Findlay. • principles of phase diagrams in material system, P. Gordon. Heterogeneous catalysis, principles and applications, G.C. Bon. Introduction to colloid and surface chemistry ,D. J. Shaw</p>
<p>4. List Electronic Materials (eg. Web Sites, Social Media, Blackboard, etc.)</p> <p>http://ees.elsevier.com</p>
<p>5. Other learning material such as computer-based programs/CD, professional standards or regulations and software.</p> <p>PowerPoint presentation.</p> <p>Interactive and multimedia soft-books.</p>

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.)
<p>1. Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)</p> <ul style="list-style-type: none"> Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.) Lecture Hall . Computer access with data show and internet

2. Computing resources (AV, data show, Smart Board, software, etc.)
<ul style="list-style-type: none"> • HSC software. • Computer Lab containing 15 terminals
<p>1. Other resources (specify, e.g. if specific laboratory equipment is required, list requirements or attach list) :</p> <ul style="list-style-type: none"> ▪ Devices and tools that meet the requirements of the study of the practical part: ▪ Equipment: distillation apparatus, sensitive balance, drying furnace, filter cones, vacuum pump, electric heater with magnetic mold, water bath, uv-visible spectrometer, spectral spectrometer, atomic emission, flame absorption, Infrared spectrometers, Chromatographic columns. Thin layer chromatography, gas chromatography, voltmeter, various electrodes, voltmeter, conductivity meter, ▪ Glassware: Screws - minute pipettes - cups of various sizes - cones used to fill the blacksmith - graduated tester - glass leg - standard sized flasks - bottle weight, washing flasks. ▪ Chemical substances: distilled water - high purity chemicals according to the requirements of the experiments

G. Course Evaluation and Improvement Processes :

1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching
<ul style="list-style-type: none"> • Course evaluation by students through surveys. • Student-faculty meeting. • Evaluation of teachers by students(through feedback form used by academic advisors for any complain)
2. Other Strategies for Evaluation of Teaching by the Instructor or by the department.
<ul style="list-style-type: none"> • Peer consultation on teaching. • Discussion with the group of faculty teaching the same course . • Departmental meeting discussions. • Evaluation of teachers by both academic manager and assistant.
3. Processes for Improvement of Teaching:
<ul style="list-style-type: none"> • •Conducting Departmental workshops given by experts • •Periodical departmental revisions of each method of teaching • • Monitoring of teaching activities by senior faculty members
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)
<ul style="list-style-type: none"> • Assigning group of faculty members teaching the same course to grade some question for various students • Using Pearson website is very useful for teachers and students in direct communication,

exchange of ideas and discussion through chat rooms between the instructor and all sections.

5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement

- The course specifications are review periodically including recent developments or achievements.
- Feedback by external evaluator from other universities.
- Feedback by postgraduate students working in the appropriate field.
- Considering results of examination.

Name of instructor: Dr. Fatima Al-Qadri

Signature:



Date Report Completed: Date: 3/6/2017

Name of field experience teaching staff:

Program coordinator: Dr.Nabil AL- hymere

Signature:

Date received :