Course Specifications

Course Title:	Physical Chemistry
Course Code:	467Chem-2
Program:	Bachelor of Science in Chemistry
Department:	Chemistry
College:	Science
Institution:	King Khalid University

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A. Course Identification

1. Credit hours:	0 + (2 practical)
2. Course type	
a.	University ☐ College ☐ Department ☑ Others ☐
b.	Required ☑ Elective ☐
3. Level/year at which this course is offered:	Level 8 / Year 4
4. Pre-requisites for this course (if any)**:**	335Chem-3
5. Co-requisites for this course (if any)**:**	No co-requisite

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	**Traditional classroom**	0	0
2	**Blended**	0	0%
3	**E-learning**	0	0%
4	**Correspondence**	0	0%
5	**Other (laboratory)**	2	100%

7. Actual Learning Hours (based on academic semester)

No	Activity	Learning Hours
Contact Hours		
1	**Lecture**	0
2	**Laboratory/Studio**	60
3	**Tutorial**	0
4	**Others** (specify)	0
	Total	60
Other Learning Hours*		
1	**Study**	15
2	**Assignments**	15
3	**Library**	0
4	**Projects/Research Essays/Theses**	0
5	**Others** (specify)	0
	Total	30

***** The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

B. Course Objectives and Learning Outcomes

1. Course Description

Studying of different experiments in physical chemistry.

2. Course Main Objective

- Identification of major physical concepts and physical measurements.
- Ability to make a scientific report which reflects the capacity of student for understanding the objectives of experiment.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge:**	
1.1	To be more familiar with new skills and experiments in physical chemistry.	K1,K3
1.2		
1.3		
1.4		
2	**Skills :**	
2.1	Scientific and practical skills to use the most recent instruments.	S1, S3
2.2	To obtain research ability and mathematical skills.	S1, S3
2.3		
2.4		
2.5		
3	**Competence:**	
3.1	Learning how to cooperate with his colleagues in the laboratory.	C1, C3
3.2	To use an internet technology to find out the suitable information to perform their theoretical parts of their reports.	C3, C4
3.3		

C. Course Content

No	List of Topics	Contact Hours
1	Introduction	4
2	Surface Tension	4
3	Conductivity of strong and weak electrolytes.	4
4	Two component systems	4
5	Three component systems	4
6	Distribution constant	4
7	Midterm theoretical and practical exams	4
8	Equilibrium and acidity constants	4
9	Surface chemistry	4
10	Colligative properties	4
11	Phase diagram	4
12	Heat of Solubility	4
13	Adsorption	4
14	Revision	4
14	Final theoretical and practical exams	4
Total		60

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	**Knowledge**		
1.1	To be more familiar with new skills and experiments in physical chemistry	Lectures , Interactive teaching sessions - - . *Lectures* , Interactive teaching sessions	- Written Report for each experiment. - Oral and written exams during the term.
1.2			
2.0	**Skills**		
2.1	Scientific and practical skills to use the most recent instruments	Lectures, problem solving sessions	- Oral questions during doing experiment. - Quizzes.
2.2	To obtain research ability and mathematical skills.	- Lectures, problem solving sessions	- Oral questions during doing experiment. - Quizzes.
…			
3.0	**Competence**		
3.1	Learning how to cooperate with his colleagues in the laboratory.	Discussion and dialogue.	Oral questions during doing experiment in the lab.
3.2	To use an internet technology and library to find out the suitable information to perform their theoretical parts of their reports.	opened essays on selected topics	Mandated the student to make reports by using the search in the library and the Internet.
…			

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Reports	Weekly	20%
2	Evaluation	Weekly	5%
3	Midterm practical exam	8th	15%
4	Midterm theoretical exam	8th	10%
5	Final theoretical exam	16th	15%
6	Final practical exam	16th	35%

***Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

Number of office hours: 10 hours weekly.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	الكيمياء الفيزيائية العملية، أ.د محمد مجدي واصل، دار النشر للجامعات، الطبعة الأولى، 2008 . (Practical Physical Chemistry, Mohammad Majdy wasel, 1st edition 2008)
Essential References Materials	1. تجارب عملية في الكيمياء الفيزيائية : حركية وديناميكا حرارية وسطوح وقاعدة الصنف، الطبعة الأولى، هنادي محمد عمر عرفة، السيد البدوي المسلمي، خوارزم العلمية للنشر والتوزيع،2011 (Practical Experiments in Physical Chemistry: Kinetics, Thermodynamics, Surfaces and Class Base, First Edition, Hanadi Muhammad Omar Arafa, Al-Sayed Al-Badawi Al-Muslimi, Khwarazm Al-Alamiya for Publication and Distribution, 2011) 2. تجارب عملية في الكيمياء الفيزيائية، الطبعة الثانية، ناظم راغب الناظر، منشورات جامعة الملك سعود قسم الكيمياء، 1996 (Practical Experiments in Physical Chemistry, Second Edition, Nazem Ragheb Al-Nazer, King Saud University Press, Department of Chemistry, 1996) 3. Experiments in physical chemistry *4 th ed.* Shoemaker, David P. ,1981 4. **Findlay's practical physical chemistry,** Findlay, Alexander, 9th ed. London Longman, 1973
Electronic Materials	Any website related to subjects listed in the experiments.
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Physical chemistry laboratory No. 19, Building C, Gregar Main Campus, King Khalid University, Abha
Technology Resources (AV, data show, Smart Board, software, etc.)	Computer rooms (labs) in the college.
Other Resources (Specify, e.g. if specific laboratory	- Provide the laboratory with hood for dangerous reactions.

Item	Resources
equipment is required, list requirements or attach a list)	- Provide the laboratory with the tools of civil defense of the gas leak detector and fire extinguishers and first aid kit. - especially bench resistance to chemicals, and a sufficient number of drainage ponds resistance to chemicals - Availability of chemicals, glassware and equipment relevant to the course material - Safety facilities

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Course delivery (teaching methods and assessment methods	Departmental Plan and curriculum committee; external reviewers	Reports and workshops
Course contents (update)	Students, Faculty, Program Leaders, Peer Reviewer	Direct and Indirect Reports Short Quizzes
Making of periodic meetings in the department to evaluate and follow up course quality and listening for the suggestions which could contribute in development of the course.	Students, Faculty, Program Leaders, Peer Reviewer	Reports

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)
Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)
Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Department counsel
Reference No.	1/22/142
Date	15-9-1442