King Fahd University of Petroleum and Minerals

CHEM 102 Lecture and Laboratory Schedule

(Term 162)

Course Description: General Chemistry II

Chemical equilibria (gases, acids and bases, and solubility equilibria), chemical kinetics, spontaneity of reactions, coordination chemistry, nuclear chemistry, electrochemistry, chemistry of selected representative elements, organic structure and reactions, chemistry of materials.

Laboratory: Qualitative and quantitative aspects of general chemistry.

Upon completion of the course, the students will be able to:

- recall the basic principles in reaction rates, chemical equilibrium, acids and bases, electrochemistry, nuclear chemistry, organic chemistry,
- correctly name simple organic compounds and inorganic coordination compounds using IUPAC nomenclature rules,
- solve numerical problems correctly on various types of chemical processes,
- demonstrate the ability to work effectively in teams,
- assemble apparatus correctly for performing precise experiments,
- know and practice safety regulations and procedures for the proper handling of chemicals.

Textbooks: 1- Chemistry (4^{th} Ed.) by J. Burdge

2- Laboratory Manual for Principles of General Chemistry (10^{th} Ed.) by J. Beran.

Grade Distribution

Component	Points	Percentage
First Major Exam	60	15%
Second Major Exam	60	15%
Final Exam	100	25%
Laboratory Work*	80	20%
Quizzes**	60	15%
Homework	15	3.75%
Presentation***	15	3.75%
Attendance#	10	2.5%
Total	**400**	**100%**

* T-scored to an average of 60 ± 3.2

** Quizzes will be normalized to an average and standard deviation of 39 and 10 out of 60, respectively (i.e., 65% and 16%, respectively).

*** Presentations will be normalized to an average and standard deviation of 9.75 and 2.4 out of 15, respectively (i.e., 65% and 16%, respectively).

One point will be deducted for each unexcused absence.

General Policy on attendance and make-ups:

(a) Students are expected to be present at the beginning of the class.

(b) Attendance in the lectures classes will be taken within five minutes of the beginning of the class.

(c) A DN grade will be given to any student exceeding:

- 9 unexcused absences or a total of 15 absences (whether excused or unexcused) in the lectures, or
- 3 unexcused or a total of 5 absences (whether excused or unexcused) in the laboratory sessions.

An officially authorized excuse of absence must be presented to the instructor no later than one week following the resumption of class and/or lab attendance.

(d) No make-ups will be given for quizzes, exams or labs.

Exams

A 55% of the course grade is assigned to exams which comprise of two major exams (each constitutes 15% of the course grade) and a comprehensive final exam which constitutes 25% of the course grade. Major and final exams are all in multiple-choices format.

Quizzes:

Around 6-8 Quizzes will be given in the recitation classes during the semester. Being absent in the quiz would make you receive zero score unless an official excuse is provided.

Homework:

Students are encouraged to solve as many problems as they can from the check-point questions, end-of-chapter problems and other sources during their self-study. Online homework will be assigned for each chapter. This requires that students use the Connect™ Registration Code which accompanies the textbook to register in the course website provided by the publisher (McGraw-Hill Education). In addition to the online HW, Connect™ provides access to very useful resources as well.

Presentation:

Some topics in the course will be covered in the form of presentations given by students. Each student should complete an individual assignment, submit a 5-minute video-taped presentation, and/or participate in the preparation of a team presentation. These presentation assignments aim to develop important skills for the students (interpersonal, responsibility, life-long learning, communication, information technology, numerical, etc.,). The Lecture instructor will provide more details about this component of the course at later time in the semester.

Laboratory:

A. The assigned experiments are arranged to correlate with the material in the lecture part of the course.

B. Absence is the most common cause of a low grade in the lab part of the course. A DN grade in the course is given if the number of unexcused absences exceeds three or the total number of absences (whether excused or unexcused) exceeds five.

C. The laboratory is assigned 80 points (20 % of the course) as follows:

i. Reports on Experiments: 60 points (performance throughout the semester)

ii. Final Lab Exam: 20 points (8 for a written test & 12 for an experiment)

Plagiarism and Cheating: (Please read carefully)

In this course, there will be individual assignments and group assignments. It is important that your individual assignments be completed with your own efforts alone. The instructor cannot and will not tolerate any sort of academic dishonesty. It is also the responsibility of the student to be on guard against cheating at any time when writing a paper to be turned in and while taking exams and quizzes.

During tests (quizzes or exams), cheating or attempting to cheat by any means or using any unauthorized tools (such as mobiles) will result in a grade of **F** in the course and raising the issue to the higher university administration.

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Week	Lec.	Day	Date	Chapter	Sec.	Lab.
1	1	Sun	Feb. 5	14: Chemical Kinetics	1,2	
	2	Tue	7	14	3,4	No Lab
	3	Thu	9	14	5	
2	4	Sun	12	14	6	Lab # 1
	5	Tue	14	15: Chemical Equilibrium	1,2	Check in, Safety Rules, Network
	6	Thu	16	15	3	system introduction
3	7	Sun	19	15	4,5	Lab # 2
	8	Tue	21	16: Acids and Bases	1-3	Exp 23: Factors Affecting Reaction
	9	Thu	23	16	4,5	Rates (p. 271)
4	10	Sun	26	16	6-8	Lab # 3
	11	Tue	28	16	9,10	Exp 24 A Rate Law & Activation Energy
	12	Thu	Mar. 2	16	11,12	(p.281)*
5	13	Sun	5	17: Acid-Base and Solubility Equilibria	1,2	Lab # 4
	14	Tue	7	17	3	Exp 34: An Equilibrium Constant (p.
	15	Thu	9	17	4	377)
6	16	Sun	12	Review of Chapters 14-17		
	First Major Exam -- March 13 (Monday) -- 6:15 PM - Building (To be assigned)					
	17	Tue	14	17	5,6	Lab # 5 Exp 6: Acids, Bases and Salts;
	18	Thu	16	18: Entropy, Free Energy, and Equilibrium	1,2	pH (p. 103)
7	19	Sun	19	18	3,4	Lab # 6
	20	Tue	21	18	5,6	Exp 29: Bleach Analysis (p. 331)*
	21	Thu	23	19: Electrochemistry	1,2	
8	22	Sun	26	19	3,4	Lab #7
	23	Tue	28	19	5,6	Exp 17: Antacid Analysis (p. 219)
	24	Thu	30	19	7,8	
	Midterm vacation: April 2-6 , 2017					
9	25	Sun	Apr. 9	25: Organic Chemistry	1,2	Lab # 8
	26	Tue	11	25	3,4	Exp 32: Galvanic Cells; Nernst
	27	Thu	13	25	5	Equation (p. 357)
10	28	Sun	16	25	6	Lab # 9
	29	Tue	18	22: Coordination Chemistry	1	Exp 30: Vitamin C Analysis (p. 341)*
	30	Thu	20	Review of Chapters 18, 19 and 25		
	Second Major Exam -- April 20 (Thursday) -- 6:30 PM - Building (To be assigned)					
11	31	Sun	23	22	2,3	Lab # 10
	32	Tue	25	22	4,5	Exp 19: Aspirin Synth. & Analysis
	33	Thu	27	20: Nuclear Chemistry	1,2	(p.237)*
12	34	Sun	30	20	3-5	Lab # 11
	35	Tue	May-2	20	6-8	Exp 36: Transition Metal (p. 397)
	36	Thu	4	Review of Chapters 20 and 22		
13	37	Sun	7	21: Environmental Chemistry	1-3	**Final Lab**
	38	Tue	9	21	4-6	Covers only experiments labeled with *
	39	Thu	11	21	7,8	sign
14	40	Sun	14	12: Modern Materials	1	
	41	Tue	16	12	2,3	**No Lab**
	42	Thu	18	12	4,5	
15	43	Sun	21	12	6,7	
	44	Tue	23	Review of Chapters 12 and 21		**No Lab**
	45	Thu	25	Prefinal Review		
	Final Exam June 4, 2017 (Sunday) -- 12:30 PM (NOON) -- Comprehensive					