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CHEM 312-01, Physical Chemistry II, Spring 2000

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Syllabus
Chemistry 312
Physical Chemistry II
Spring Semester, 1999-2000
Instructor: Robert G. Mortimer

General:

This course is a continuation of Chemistry 311. The two semesters form a single body of knowledge.

Objectives of the Course:

The objectives are the same as those of Chemistry 311:

1. Integration and Synthesis of Knowledge. The physical chemistry course contains topics related to chemistry, physics, and mathematics. In this course, you should continue to integrate these three subject areas into a unified body of knowledge.

2. Understanding of Underlying Theories. All chemical phenomena can be explained by physical theories (although many of the computational details cannot yet be handled). In this course, you should improve your understanding of these theories.

3. Problem-Solving. You should continue to develop proficiency in analyzing chemical problems and designing problem-solving strategies and become more proficient in applying calculus and other mathematical tools.

Textbook:

Robert G. Mortimer, *Physical Chemistry*, Benjamin/Cummings Publishing Company, 1993.

Conduct of the Course:

The course will be conducted as lectures with student participation. In order to participate effectively, you should read the material in the textbook prior to the class period at which the material is discussed, and should read it again afterwards.

Quizzes:

There will be a number of unannounced quizzes. Material which should have been read might be included, as well as material which has already been discussed in class.

Homework:

There will be at least one homework set assigned for each chapter. You will grade your own homework by comparison with the instructor's solutions. The instructor's solutions to the problems will be placed in the Chemistry

Reading Room on the due date for each set. You will turn in your graded papers so that the grade can be recorded. There will be a 10% penalty for late homework, and possibly a greater penalty for very late homework.

Examinations:

There will be four or five examinations during the semester and there will be a comprehensive final examination. The ACS standardized physical chemistry examination for the entire year might be a part of the final examination. The examinations will be given outside of class.

Grading:

Each examination during the semester will count 100 points, and the final examination will count 200 points. Graded homework will count 100 points. Each unannounced quiz will count 3 to 10 points. The final grade will be determined by the point totals, approximately as follows:

Letter grade	Percentage of total points
A-/A	80-100
B-/B/B+	65-79
C-/C/C+	55-64

Honor Code Policies:

Examination and quiz papers must be completely your own work. You must sign a pledge on every examination or quiz paper. The following policies apply for the homework: You must first attempt every homework problem individually. After this initial effort, pairs or *small* groups of students may work together on specific homework problems. However, group efforts in which a problem is done from the beginning by the group are not permitted. Copying from another student's paper or from the instructor's solutions is forbidden.

Getting Help:

The instructor will be available for individual consultations in Room 211K during the following office hours, and other times can be arranged:

Mondays:	2:30 p.m. - 3:30 p.m.
Mondays and Wednesdays:	8:30 a.m. - 9:30 a.m.
Tuesdays and Thursdays:	11:15 a.m. - 12:00 noon

Tentative Lecture Schedule:

Period	Date	Chapter	Topic
1	Jan. 12	Ch. 18	Reaction Kinetics
2	Jan. 14	Ch. 18	
	Jan. 17	-	M. L. King, Jr. observance
3	Jan. 19	Ch. 18	
4	Jan. 21	Ch. 19	Reaction Mechanisms

	5	Jan. 24	Ch. 19	
	6	Jan. 26	Ch. 19	
Exam 1				
	7	Jan. 28	Ch. 9	Quantum Mechanics
	8	Jan. 31	Ch. 9	
Tentative Lecture Schedule (continued):				
	Period	Date	Chapter	Topic
	9	Feb. 2	Ch. 9	Quantum Mechanics
	10	Feb. 4	Ch. 9	
	11	Feb. 7	Ch. 9	
	12	Feb. 9	Ch. 10	Postulates of Quantum Mechanics
	13	Feb. 11	Ch. 10	
	14	Feb. 14	Ch. 10	
	15	Feb. 16	Ch. 10	
Exam 2				
	16	Feb. 18	Ch. 11	Atomic Structure. I
	17	Feb. 21	Ch. 11	
	18	Feb. 23	Ch. 11	
	19	Feb. 25	Ch. 11	
	20	Feb. 28	Ch. 11/12	
	21	Mar. 1	Ch. 12	Atomic Structure. II
	22	Mar. 3	Ch. 12	
		Mar. 6	-	Spring recess
		Mar. 8	-	Spring recess
		Mar. 10	-	Spring recess
	23	Mar. 13	Ch. 12	
	24	Mar. 15	Ch. 12	
Exam 3				
	25	Mar. 17	Ch. 13	Molecular Electronic Structure
	26	Mar. 20	Ch. 13	
	27	Mar. 22	Ch. 13	
	28	Mar. 24	Ch. 13	
	29	Mar. 27	Ch. 13	
	30	Mar. 29	Ch. 14	Non-Electronic Molecular States
		Mar. 31	Ch. 14	
	31	Apr. 3	Ch. 14	
Exam 4				
	32	Apr. 5	Ch. 15	Spectroscopy and Photochemistry
	33	Apr. 7	Ch. 15	
	34	Apr. 10	Ch. 15	
	35	Apr. 12	Ch. 15	
		Apr. 14	no class	Inauguration of President Trout
	36	Apr. 17	Ch. 20	Statistical Mechanics

37	Apr. 19	Ch. 20	
38	Apr. 21	Ch. 20	
39	Apr. 24	Ch. 20	
40	Apr. 26	Ch. 20	
Exam 5			
41	Apr. 28	Ch. 21	Chemical Reaction Rate Theory
	May 1		Final Examination (1:00 p.m.)