CHM 351 Introduction to Physical Chemistry Fall 2012

Instructor: Dr. Pentecost **email:** pentecot@gvsu.edu
Phone: 331-2238 **Office:** 330 PAD

Lecture M & W 4:30 - 5:45 p.m. 209 PAD

Office Hours Monday 11:00 – 11:50; Wednesday 9:00 – 10:30, and Friday 2:00 – 3:30. Other times are available by appointment.

Prerequisites - CHM 116, MTH 201, and PHY 220 (may be taken concurrently).

Course Materials (Required)
Elements of Physical Chemistry, 5th Ed., Atkins and de Paula

Calculators or devices with actual text keys or devices that can send messages are **NOT ALLOWED ON EXAMS. NO EXCEPTIONS.** Calculators cannot be shared on exams.

> *"Science learning is an active process, the teacher's task necessarily involves more than the mere dissemination of information. … the teacher's fundamental task is to get students to engage in learning activities that are likely to result in their achieving these outcomes, … it is helpful to remember that* ***what the student does is actually more important in determining what's learned than what the teacher does****."*
> -Shuell, T. (1986). *Review of Educational Research*, 56(4), 411-436.

Course Expectations

The quote above is a nice summary of my teaching philosophy. I will try to get establish an environment in the class that can maximize the potential for success – but remember the most important thing is what you do. You must decide what level of achievement you wish to achieve in the course. Once this decision has been made you will need plan to devote an appropriate amount time to the material out-of-class. Very few people can master the material without this out of class effort. We will cover most topics in class, but there will be times when you are expected to cover topics not discussed in lecture.

The following are what I expect of you. These expectations have been established to help you achieve the learning objectives of the course. They will also allow me, and you, to evaluate your achievement of the objectives.

- **Lecture:** This class meets for 75 minutes per meeting. I will NOT lecture the entire time. Neither you nor I would enjoy that. Some time will be spent taking notes and some time will be spent working in groups on in-class exercises. These exercises will be collected and will be evaluated. By collecting these I will be able to gauge how the class is doing and adjust my lectures as appropriate.

- **Homework:** The only way to succeed in chemistry is to work lots of problems and questions. I encourage you to work in study groups. Voluntary collaboration on homework is perfectly acceptable. You should be aware that you will be expected to display your individual understanding on tests, so make sure you participate in the study group.

  Homework will be assigned each week and is due at the beginning of class on Monday, unless otherwise announced. These problems will be a combination of problems from the

textbook and some I have written. Each problem will be graded on a coarse scale of (0, 1, or 2). The following guidelines are to be followed for the homework:

- Make sure each problem is numbered and the problems are in order.
- For numerical problems, make sure your final answer is circled.
- Neatness counts! Please don't make me work to find the answer or follow your work.
- Late homework is not accepted.

- **Quizzes:** Quizzes in my class serve two functions: First they give me a way to assess how things are going. For me to gather this data we will have three quizzes @ 20 points each. These will be announced ahead of time. The second function for a quiz is for you to check how you are doing!

- **Tests:** I should explain my philosophy for tests. I use exams to see what you can do. I will work very hard to make the exams challenging but fair. We will have two exams and a final. The final exam will be a combination of the material covered since the second exam and a comprehensive portion. The final exam for this course will be **Wednesday, December 12th from 4:00 pm until 5:50 pm**.

Grades

Exams	200 points (100 points per exam)
Final exam	150 points
Homework	50 points (Calculated based on your homework average)
Quizzes:	75 points (25 points each)
In-Class Activities	25 points (Calculated based on your average score)
Total	**500 points**

Final course grades will be based on your percentage of the possible points. The tentative scale is below. This may be adjusted slightly.

A	100 – 93 %	B+	89 – 87 %	C+	79 – 77 %	D+	69 – 67 %
A-	92 – 90 %	B	86 – 83 %	C	76 – 73 %	D	66 – 60 %
		B-	82 – 80 %	C-	72 – 70 %	F	below 60 %

Important Dates

Last day to register/drop/add	August 31st
Last day to drop with W grade	October 26th

Incomplete

A grade of "I" may be granted if a student is temporarily unable to complete course requirements because of unusual circumstances beyond the control of the student. This grade is NEVER given as a substitute for a failing grade or a withdrawal. An "I" will not be assigned for work that was due before the 8th week of the semester. Written requests for an "I" must be submitted PRIOR to the final exam.

Accommodations

If you need academic accommodations because of a learning, physical, or other disability, please contact Disability Support Resources (DSR) at 331-2490. Furthermore, if you have a physical disability and you think you will need assistance evacuating this classroom and/or building in an emergency situation, please make me aware so I can develop a plan to assist you.

TENTATIVE Lecture Schedule

Week	Dates	Topics and Sections from textbook
1	8/27 – 8/31	Kinetic Molecular Theory and Real Gases: 1.4 – 1.13 First Law of Thermo: 2.1 – 2.4 & Boltzmann Distribution
2	9/3 – 9/7	First Law (cont.); 2.6 – 2.9 & Adiabatic Changes
	No Class on 9/3 – Labor Day	
3	9/10 – 9/14	Applications of First Law: 3.1 – 3.7
	Quiz 1 on 9/12	Second Law: 4.1 – 4.4 & Carnot
4	9/17 – 9/21	Second Law (cont.): 4.7-4.8; 4.5-4.6; 4.10-4.12 Physical Equilibria of Pure Substances: 5.1-5.3
5	9/24 – 9/28	Physical Equilibria (cont.): 5.4-5.6; 5.8
	Exam 1 on 9/26 – Chapters 1-4	
6	10/1 – 10/5	Properties of Mixtures: 6.1-6.7 Chemical Equilibrium: 7.1 – 7.3
7	10/8 – 10/12	Chemical Equilibrium (cont.): 7.4-7.9
8	10/15 – 10/19	Rates of Reactions: 10.1-10.11
	Quiz 2 on 10/17	
9	10/22 – 10/26	Reaction Mechanisms: 11.1-11.8
10	10/29 – 11/2	Reaction Mechanisms (cont.): 11.9-11.15
11	11/5 – 11/9	Quantum: 12.1-12.6
	Exam 2 on 11/5 – Chapters 5, 6, 7, 10, 11	
12	11/12 – 11/16	Quantum (cont.): 12.7-12.9
13	11/19 – 11/23	Atomic Structure: 13.1-13.5
	No Class on 11/21 – Thanksgiving Holiday	
14	11/26 – 11/30	Atomic Structure (cont.): 13.6-13.16
	Quiz 3 on 11/28	
15	12/3 – 12/7	TBD

Cumulative final exam: Wednesday, December 12th from 4:00-5:50 pm in 209 PAD