CHEMISTRY 3431
PHYSICAL CHEMISTRY I
FALL, 2004
COURSE SYLLABUS

I. INSTRUCTOR: Dr. Pamela Veltkamp  
Office: S217 Phone: 793-3881  
e-mail: veltkamp@mcm.edu  
Office hours: MWF 9:00-10:00, TR 8:30-9:30, M 1:00-2:00, other times by appointment

II. COURSE DESCRIPTION: Physical Chemistry is a two-semester sequence of courses which explores the physical properties of chemical systems. It combines a study of the macroscopic properties, such as heat flow and reaction rates of large collections of atoms or molecules, with understanding these systems at the atomic or molecular level. The concepts and laws of physics are used to understand the behavior of chemical systems at both levels. Typical topics include the laws of thermodynamics, rates and mechanisms of reactions, and quantum mechanics. Thermodynamics will be the major focus of Chem 3431. Prerequisites for this course are Chemistry 2430, Physics 1420, and Mathematics 2322 and 3351 (or concurrent enrollment in Math 3351), or permission of instructor, and junior or senior standing.


IV. COURSE GOALS: The instructor has several goals for this course. The first is to gain a deeper understanding of how physical phenomena observed at the macroscopic level are explained by the collective behavior of individual atoms and/or molecules. Through this course, I hope you as a student will catch a glimpse of how God has ordered and structured the creation to behave as it does. A second goal is that you will gain the confidence that you can take on potentially difficult material, grapple with it, and find some measure of success in understanding it. This includes gaining a better ability to read and understand reasonably difficult scientific material, and to be able to state in your own words what you have studied.

V. METHODS OF INSTRUCTION/ATTENDANCE: Instruction will be carried out by means of lecture, videos, discussion, working of problems, and performing of experiments in the laboratory. However, no instructional method is effective if the student is not present in the class. Therefore, students are expected to attend every class period. Absences are excused for documented illness (supply a note from the campus nurse or a doctor) or approved (by the VPAA) university-sponsored activities. Students are expected to notify the instructor in advance of absences. Unexcused absences will result in a lowering of the final grade by 2% per absence, and more than 3 unexcused absences may result in the student being dropped from the class.
VI. COURSE SCHEDULE: The following schedule is a tentative listing of how long we will spend on each chapter. The instructor reserves the right to adjust the schedule as necessary.

Chapter 1: 8 class periods, Aug. 25 - Sept. 10
  Problems due Sept. 13
  Take-home test due Sept. 17

Chapter 2: 8 class periods, Sept. 13 - Sept. 29
  Problems due Oct. 4
  Required attendance at ACS Southwest Regional Meeting in Ft. Worth on Sept. 30 and Oct. 1

Chapter 3: 6 class periods, Oct. 4 - Oct. 15
  Problems due Oct. 18
  Take-home test due Oct. 21 (Thursday)

Chapter 4: 5 class periods, Oct. 18 - Oct. 29
  Problems due Nov. 1

Chapter 5: 5 class periods, Nov. 1 - 10
  Problems due Nov. 12
  Take-home test due Nov. 17

Chapter 6: 5 class periods, Nov. 12 - Nov. 22
  Problems due Nov. 29

Chapter 7: 5 class periods, Nov. 29 - Dec. 6
  Problems due Dec. 6
  Take-home test due 5:00 p.m., Dec. 10

Tutorial sessions will be scheduled as needed to assist with problem sets. Since the tests are of the take-home variety, with one week to complete them, there is no “make-up” opportunity. However, if a time extension is needed, due to documented illness or other excused absence, the student should consult with the instructor at least two days before the test is due.

VII. ASSIGNMENTS: Problem sets will be assigned at the beginning of each chapter, and will be due one class period after we have finished discussing the chapter, as outlined above. It will be advantageous to you to begin working the problems the day they are assigned. You will be able to make progress on the problems as we discuss the material in class. Doing so will enhance your comprehension of the material, and help you to avoid “cramming” to finish the assignments.

VIII. MEANS OF EVALUATION: The student’s comprehension of the material will be evaluated informally through discussion and through worked problems, and formally by means of tests and graded problem sets throughout the semester and through laboratory reports. The four tests will each count 15% of the final grade, for a total of 60%, problem sets will total 15%, and the laboratory work will constitute 25% of the final grade. Tests will be of the “take home” variety, and are tentatively scheduled to be handed out on Sept. 10, Oct. 15, Nov. 10, and Dec. 6. The last test will also be the final exam, and will be due as noted on the schedule above.

Letter grades will be assigned as shown on the next page:
<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>93-100%</td>
<td>A</td>
</tr>
<tr>
<td>89-92.9%</td>
<td>A-</td>
</tr>
<tr>
<td>85-88.9%</td>
<td>B+</td>
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<tr>
<td>81-84.9%</td>
<td>B</td>
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<tr>
<td>77-80.9%</td>
<td>B-</td>
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<tr>
<td>73-76.9%</td>
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<tr>
<td>65-68.9%</td>
<td>C-</td>
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<td>61-64.9%</td>
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<td>57-60.9%</td>
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<tr>
<td>53-56.9%</td>
<td>D-</td>
</tr>
<tr>
<td>Below 53%</td>
<td>F</td>
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</tbody>
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Students are expected to perform their work with honesty. The professor recognizes that with take-home tests, virtually all means of finding answers to the questions are open. However, students are expected to work on the tests individually. Should questions arise about items on a test, the student should seek help from the professor, not a classmate. If a student finds assistance on a question from an Internet or print resource, this resource should be noted. Finding assistance in this way is not wrong. After all, virtually all scientists consult resources to find answers to problems. However, plagiarism, defined as using someone else’s material and presenting it as one’s own, is wrong and will not be tolerated. If cheating or plagiarism is detected on a take-home test, the student(s) will receive a zero on that test, and a letter of complaint will be sent to the Dean of Students. If a second such incident occurs, the student will be dropped from the course. You are much better off acknowledging the source of any materials you use to help you on the take-home tests.