COURSE SYLLABUS: CH3520, PHYSICAL CHEMISTRY II  
SPRING, 2014

INSTRUCTOR:  Prof. Bahne C. Cornilsen  
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Office Hours: by Appointment (arrange via email)

TEXT:  David W. Ball, Physical Chemistry, 1st Edn.,  

Physical Chemistry II, CH3520, covers the fundamental theories and experiments underlying modern chemistry (at the atomic and molecular levels), in particular quantum chemistry, electronic structure, chemical bonding, modern spectroscopy, and structural analyses. An important part of this course is the development of problem solving skills. This chemistry and these problem solving skills underlie all science and engineering disciplines. Thus, a large component of this course is problem oriented, beginning in your pre-lecture reading of your text (with worked examples) and then the assigned end-of-chapter homework problems. We shall see how the interplay of experiment and theory evolve in a never ending cycle. Lecture will guide you through the important material, help with difficult concepts, and apply principles discussed in the problems solved. Finally, these skills are tested on the quizzes, the mid-term exams and the final exam.

TENTATIVE COURSE OUTLINE:

1. Pre-Quantum Mechanics (Chapters 9)
2. Introduction to Quantum Mechanics (Chapter 10)
3. Quantum Mechanics: Model Systems and the Hydrogen Atom (Chapter 11)
4. Atoms and Molecules (Chapter 12)
5. Introduction to Symmetry in Quantum Mechanics (Chapter 13)
6. Rotational and Vibrational Spectroscopy (Chapter 14)
7. Introduction to Electronic Spectroscopy and Structure (Chapter 15)
8. Statistical Thermodynamics: Introduction (Chapter 17) (if there is time)
CH3520 SYLLABUS: (continued)

**GRADING:**

<table>
<thead>
<tr>
<th>Exam Type</th>
<th>Points</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>Hour Exam I</td>
<td>125</td>
<td>(19 Feb., 2014*)</td>
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<tr>
<td>Hour Exam II</td>
<td>125</td>
<td>(2 April, 2014*)</td>
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<tr>
<td>Quizzes</td>
<td>~ 50</td>
<td>(estimated at 5-10 pts. each)</td>
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<tr>
<td>Final Exam</td>
<td>200</td>
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<tr>
<td><strong>Total</strong></td>
<td>500</td>
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* tentative exam dates.

**Evening Exams:** On exam weeks, there will be class the day of the exam, but no class on a designated day after the exam, sometimes a Friday. There is no predefined scale for the grades on exams. After each exam, the break-points for the grades will be given. Re-grades for any exam must be requested within one week after the return of the exam. All students will be required to take the final exam.

**Home Work Problems:** Practice homework problems (HWP) from the textbook will be assigned in class. Although these will not be collected or graded, it is recommended that you solve them as an integral part of the learning process, and to test your understanding of theory and how it is applied. You will also gain experience with the kind of problems that will be on the exams.

**EXAM POLICIES**

**Taking the Exam:**
- One 3x5 equation card (on Final: three 3x5 equation cards)
- Come on-time and seat yourself promptly in proper test seating arrangement.
- Bring only allowed items. Calculators are permitted. Calculators on other devices are strictly prohibited. Do NOT bring cell phones, Blackberries, CD players, iPads, iPhones, PDAs, earphones, or any other electronic devices.

**After Exam – Tracking Your Score**
- **Exam Scores** will be posted on Canvas.
- **Answer Keys** will be provided after each exam.

**Excused / Unexcused Absences:**
- Granted by the Office of Student Affairs. If you know that you will have an official university excused absence on exam day (university athletic event or religious holiday), you are required to make arrangements as early as possible in advance of the exam date.
- Examples of excused absences granted in the past include serious illness (medical excuse required) or a death in the family. Excuses may be documented through the Office of Student Affairs.
- Examples that are NOT excused: travel home or to attend a social event.
CH3520 SYLLABUS: (continued)

No make-ups for MISSED EXAMS: Plan on taking the exam at the assigned times. If you have a valid reason to be absent from an exam (for a field trip, job interview, athletic event, etc.), notify the instructor prior to the exam. If an unanticipated problem makes it impossible to attend an exam, notify the instructor as soon as possible. An extended delay will be considered to be an unexcused absence. An unexcused absence will be an automatic zero for that exam. Excused absences result in the average of your other midterm exams being awarded for the missed exam.

CANVAS INFORMATION
The Canvas site for CH3520 can be accessed at http://courses.mtu.edu/. Click on “MTU ISO Login.” Enter your MTU Login ID and your MTU ISO password. In the list of courses for which you are enrolled, click on CH3520.

Within Canvas there is a course Grade tool where you may track your grades. Periodically examine this grade book to confirm accuracy, and please report any discrepancies to me. This “Syllabus” is available in Canvas.

ACADEMIC DISHONESTY
Academic integrity is expected. Any violations will result in a 0 for the course and a recommendation of expulsion from MTU. Michigan Tech has standard policies on academic misconduct. Policies and procedures are in “Academic Integrity at MTU – A Guide for Students and Faculty.” Specific violations include: copying from another’s work or exam, allowing copying from your work or an exam, or facilitation of any academic dishonesty. Cell phones, Blackberries, iPads, iPhones, PDAs, or any other electronic devices are not to be used in the classroom. Information exchanges on these devices (or calculators) during class are also prohibited and violate the Academic Integrity Code of Michigan Tech. Refer to: http://www.studentaffairs.mtu.edu/dean/judicial/policies/academic_integrity.html

UNIVERSITY POLICIES
Assessment: Student work products (exams, essays, projects, etc.) may be used for purposes of university, program, or course assessment. All work used for assessment purposes will not include any individual student identification.

MTU ADA Statement and Affirmative Action: If you have a disability that could affect your performance in this class or that requires a reasonable accommodation for equal access to education or services at MTU, under the Americans with Disabilities Act (ADA), please see me as soon as possible so that we can make appropriate arrangements. The Affirmative Action Office (http://www.mtu.edu/dean/disability/policies) has asked that you be made aware of the following:

MTU complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disabilities Act of 1990. For more information about reasonable accommodation for or equal access to education or services at MTU, please call the Dean of Students Office, at (906) 487-2212. For other concerns about discrimination, you may contact your advisor, department head or the Affirmative Action Office, at 487-3310.