The policies and regulations contained in this syllabus are subject to change at any point. Such changes will be announced in class and/or posted on the course website. The syllabus has been compiled to be as complete as possible but is by no means a binding document.

General Info
Instructor:  Prof. Jörg C. Woehl
Office:  Chemistry Building, Room 343 (CHM 343)
Office hours:  Wednesday 11:30 am-12:30 pm and by appointment
Email:  woehl@uwm.edu
Phone:  414-229-5223
Grader:  tbd
Office hours:  tbd

Class Meeting Times:  Monday, Wednesday, and Friday, 10:00-10:50 am
Class Location:  Kenwood IRC, Room 1140 (KEN 1140)
First Day of Class:  Monday, January 25
Last Day of Class:  Monday, May 9
Midterm 1 (take-home):  Monday, March 7; due Friday, March 11 at 10:00 am
Midterm 2 (in-class):  Monday, April 18, 10:00-10:50 am
Final Exam:  Thursday, May 19, 10:00 am-12:00 noon (KEN 1140)

Course Objectives
This lecture course covers most topics of classical thermodynamics and its applications in the chemical sciences. It also introduces basic concepts that will form the foundation for “Chemistry 562: Physical Chemistry II”, in which statistical thermodynamics, kinetics, and quantum chemical concepts will be discussed. At the end of this course, you will have gained a thorough understanding and practical knowledge of thermodynamics - a topic that is essential not only for all of chemistry but the natural and applied sciences in general.

Required Textbook
This textbook can be ordered directly from the publisher at www.uscibooks.com at a discounted price of $107.52. In addition, RedShelf offers it as an eBook for purchase ($80 to own) or rent ($65, 180 days): www.redshelf.com/book/346/. 
Caution: There is a copy of this textbook in circulation with an identical ISBN number **but two missing chapters**. Make sure you have the copy that contains Chapter 24 “Solutions I: Liquid-Liquid Solutions” and Chapter 25 “Solutions II: Solid-Liquid Solutions”; we will need these chapters for class. The publisher’s website and RedShelf list these chapters in the Table of Contents, but the textbook sold at UWM’s Virtual Bookstore uwm.ecampus.com does not!

You may want to take into consideration that this textbook is typically also the required text for “Chemistry 562: Physical Chemistry II”. The book is on Reserve at the UWM Libraries (QD453.2 .M394 1997).

**Supplemental Textbooks**


**Course Prerequisites**

“Chemistry 561: Physical Chemistry I” (Chem-561) requires junior standing and a grade of C or better in the following courses: Chem-104, both Physics-210 and Physics-215, and Math-233. It is also strongly recommended that ElecEng-234 or Math-234 are taken prior to Chem-561. If you do not have the proper prerequisites, you need to obtain my consent to take this course by signing a release form available at the Chemistry main office.

The prerequisite courses Chem-104, Physics-210, Physics-215, and Math-233 may not be taken for credit subsequent to the earning of credit in Chem-561!

In order for you to be successful in this course you will need to be at ease with elementary algebra and differential and integral calculus. If you are not sufficiently familiar with these topics, you should consider taking Chem-561 at a time when you have acquired these skills.

**Lectures**

You are expected to attend all lectures. There is generally a strong correlation between students who receive good grades and those who attend class on a regular basis. Please contact me (preferably by email) if you are unable to attend a class.

Before attending a lecture, you should prepare the material by reading the corresponding textbook sections and lecture notes so that you can follow the presentation more easily and ask questions about topics that you have not or not fully understood. Also, work through the example problems scattered throughout the text;
then, try to solve them on your own. Working problems is the best way to learn and check your comprehension of the material. I will sometimes suggest a number of simpler practice problems on the course website.

**Course Website**

Desire2Learn (D2L): [D2L.uwm.edu](http://D2L.uwm.edu). For information on how to use and access D2L, please consult [uwmltc.org/?p=870](http://uwmltc.org/?p=870).

Lecture notes, problem sets with solutions as well as other course material will be made available on D2L. It is expected that you visit the course website regularly as important information and announcements may be posted there as well.

**Problem Sets**

Homework problem sets will be assigned every Friday and collected the following Friday in class. They will be graded and returned to you, typically one week later. You may work on problem sets either on your own or in groups with other students, although you will need to turn in your own copy. I highly recommend working in groups as it allows you to discuss the topics with others and to formulate strategies for problem solving, which reinforces your understanding of the material. Solutions to the problem sets will be posted on D2L after the due date.

**Missed problem sets will be given 0 points; there will be no time extensions or make-up problem sets.**

**Grading**

The course will be graded based on problem sets and examinations as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Sets</td>
<td>20%</td>
</tr>
<tr>
<td>Midterm 1 (take-home)</td>
<td>25%</td>
</tr>
<tr>
<td>Midterm 2 (in-class)</td>
<td>25%</td>
</tr>
<tr>
<td>Final Exam (in-class)</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Midterm 1* is a take-home exam and will be handed out and posted to D2L after the lecture. The midterm will cover all topics discussed in class and problem sets in a format similar to the problem sets. No class will be held on Wednesday during midterm week. **No time extensions or make-up exam will be given for the take-home midterm.** If you are unable to turn it in during class, you may upload it to the D2L dropbox.

*Midterm 2* is an in-class exam and will be held during regular lecture time. Only a calculator (programmable or non-programmable) and a single sheet of paper with handwritten notes (recto-verso) are allowed. No books or other material are admitted. If you know that you will miss Midterm 2, please contact me as soon as possible (preferably by email). If you are missing Midterm 2 for a valid and justifiable reason, I will make arrangements so that you can take a make-up exam within one week after the scheduled date. **If you miss Midterm 2 without justified excuse, you are not eligible for taking a make-up exam.**
The Final Exam is comprehensive. Again, only a calculator (programmable or non-programmable) and a single sheet of paper with handwritten notes (recto-verso) are allowed. No books or other material are admitted. If you are unable to take or complete the final exam due to illness or other unusual and substantiated cause beyond your control, an incomplete (“I”) will be given if you can provide proof for such cause. According to UWM policy, a course marked incomplete must be completed (in this case by taking a make-up final exam) during the next succeeding semester, excluding summer sessions and UWinterim; otherwise, the grade of “I” will lapse to “F”.

**Tentative Schedule**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 25 - Jan 29</td>
<td>Introduction</td>
</tr>
<tr>
<td>2</td>
<td>Feb 1 - Feb 5</td>
<td>The Properties of Gases</td>
</tr>
<tr>
<td>3</td>
<td>Feb 8 - Feb 12</td>
<td>The Properties of Gases; The First Law</td>
</tr>
<tr>
<td>4</td>
<td>Feb 15 - Feb 19</td>
<td>The First Law</td>
</tr>
<tr>
<td>5</td>
<td>Feb 22 - Feb 26</td>
<td>The First Law</td>
</tr>
<tr>
<td>6</td>
<td>Feb 29 - Mar 4</td>
<td>Entropy and the Second Law</td>
</tr>
<tr>
<td>7</td>
<td>Mar 7 - Mar 11</td>
<td><strong>Midterm 1 (take-home)</strong> - no class on Wed, Mar 9</td>
</tr>
<tr>
<td></td>
<td>Entropy and the Second Law</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mar 14 - Mar 18</td>
<td>Spring Recess</td>
</tr>
</tbody>
</table>
Workload
Besides the required lecture time, you should expect to take at least 50 hours over the course of the semester reading the textbook and lecture notes and solving simple example problems to double-check your comprehension of the material. Weekly homework problem sets will be given, which will take you at least 5 hours each although the exact amount of time will vary by student and by week and will depend largely on your mathematical background. You should reserve at least 10 hours to study for and take the final exam. All told, this class is likely to take about 150 hours of your time. This workload is only an estimate and will vary from student to student. Also, it should be understood that you are assessed on your performance, not on the time put into the course.

Policies
If you will need accommodations in order to meet any of the requirements of this course, please contact me and the Student Accessibility Center (SAC) as soon as possible. Special accommodations for students with disabilities can be provided, but
their timely implementation can only be insured if the SAC is contacted ahead of time. For details see www4.uwm.edu/sac/SACltr.pdf. Department of Chemistry and Biochemistry policies are posted on bulletin boards in the department. UWM policies related to students with disabilities, religious observances, students called to active military duty, incompletes, discriminatory conduct, academic misconduct, complaint procedures, grade appeal procedures, and final examination requirements can be consulted at http://www4.uwm.edu/secu/news_events/upload/Syllabus-Links.pdf.

**Academic Misconduct**

Cheating on an exam or other graded material will automatically result in a grade of zero (as a minimum consequence); failure in the course and referral to the Dean may also occur. Academic dishonesty in any form will not be tolerated.

“Academic misconduct is an act in which a student seeks to claim credit for the work or efforts of another without authorization or citation, uses unauthorized materials or fabricated data in any academic exercise, forges or falsifies academic documents or records, intentionally impedes or damages the academic work of others, engages in conduct aimed at making false representation of a student's academic performance, or assists other students in any of these acts.”

“Prohibited conduct includes cheating on an examination; collaborating with others in work to be presented, contrary to the stated rules of the course; submitting a paper or assignment as one’s own work when a part or all of the paper or assignment is the work of another; submitting a paper or assignment that contains ideas or research of others without appropriately identifying the sources of those ideas; stealing examinations or course materials; submitting, if contrary to the rules of a course, work previously presented in another course; tampering with the laboratory experiment or computer program of another student; knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student under whose name the work is submitted or performed.”

(From: Office of the Provost and Vice Chancellor)