CHEMISTRY 162A (SLN 10697), SUMMER 2017

SYLLABUS

Lectures: M, Tu, Th 8:30 AM – 9:30 AM in BAG 131

Course Web Site: https://canvas.uw.edu/

Add or Drop: Go to Bagley 303 (Chemistry Department's undergraduate services).

Instructor: **Dr. Andrea Carroll**
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Office hours (in BAG 219): Mon 11:00 AM-12:00 PM & Tues 11:00 AM-12:30 PM

Teaching Assistants:

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MATERIALS

Except where indicated, all items are required and available from the University Bookstore:

- ***Chemical Principles***, *6th ed*., Atkins/Jones/Laverman (custom-split Chem 162 version contains Chapters 4, 6, 7, 10, 16, 17, 18, 19, and 20 as well as the introductory Fundamentals Section and the student solutions manual for these chapters)
- ***UW General Chemistry 162 Laboratory Manual, Spring/Summer 2016*** (Hayden McNeil)
- **UW Chemistry Laboratory Notebook** (Hayden McNeil) with numbered pages and carbonless duplicate pages. You may continue to use a notebook from a previous quarter if it meets the stated criteria and has at least 30 pages available.
- **Lab coat and safety goggles** (*NO* safety glasses or any other type of goggles).
- **Scientific calculator**. A simple calculator that handles scientific notation, logarithms, etc. is sufficient.
- **ALEKS access**. Purchase online: www.aleks.com (*see ALEKS info on the course website for more information).*
- **Standard (purple) Scantron forms for exams**. This may not apply to all exams – specific requirements for each exam will be announced in class and noted on the course website.

LEARNING OBJECTIVES

Students who successfully complete CHEM 162 will be able to

- Explain the properties of chemical molecules using bonding models, including hybridization and molecular orbital theory, with the understanding of their limitations.
- At a beginning level, analyze spectroscopic results to determine the structure of molecules.
- Use isomerism (structural, geometric, and stereo) to explain variation in chemical and physical properties.
- Explain macroscopic properties based on intermolecular forces within the chemical system.
- Describe the structure and properties of the liquid and solid states, as well as phase changes, at the particulate and macroscopic levels.
- Explain the chemical, physical, and thermodynamic properties of solutions at the particulate and macroscopic level.
- Apply bonding models to the structural study of organic molecules and transition metal coordination complexes.
- Illustrate the concepts of kinetics, thermodynamics, and equilibria through application to organic and transition metal chemistry.
- Develop skill in visualizing the particulate level as related to the concepts above.
- Relate empirical observations, particularly in the laboratory portion of the course, to concepts listed above.
- Develop laboratory, data analysis, and scientific writing skills.

COURSE COMPONENTS AND GRADING

The course consists of:

- 3 lectures per week
- 1 discussion section per week
- 1 three-hour laboratory session certain weeks of the quarter (6 labs total – see the 162 Laboratory Resources page of the course website for details.)
- Daily work in the ALEKS online learning environment
- Online prelab and paper-based post-lab assignments

GRADING

The point distribution for the evaluative components of the course is as follows:

2 Midterm exams	40%
Final exam	30%
Discussion section participation	5%
ALEKS Objectives & Last Assessment	10%
Laboratory	15%
TOTAL	**100%**

Grade Distribution. The final mean GPA in Chemistry 162 generally falls within the range 2.6 +/- 0.2. It is the Chemistry Department's policy not to make grade changes of 0.1 after final class grades are submitted to the UW Registrar. Your scores for the various assignments, reports, and exams will be recorded using the online Gradebook that is part of UW's Catalyst Web Tools. This can be accessed through your "MyUW" account or by logging in at https://catalyst.uw.edu.

ACADEMIC ETHICS

Original work performed in good faith is assumed on all assignments and course components.
The Student Conduct Code (see http://www.washington.edu/students/handbook/conduct.html) outlines the following forms of academic misconduct:

- Intentional misrepresentation of credentials
- Falsification of data
- Plagiarism

Failure to adhere to this code of ethics will result in referral for possible disciplinary action as described in the Student Conduct Code. In short, if you have not done something yourself, do not attempt to pass it off as original work. If you have questions about what might cross the line, please do not hesitate to ask your lab or class instructor. It is presumed that the data you record and report in laboratory is your work. In addition, all data analysis and writing you submit should be yours alone, even if you collected data with a laboratory partner. We often find examples of plagiarism in which lab reports are copied from someone else, or from an earlier quarter.

LECTURES

Lecture Schedule. An approximate schedule for the chapters to be covered each week is at the end of this document. ***You are responsible for material covered in class AND in the textbook*** (whether or not it was covered in lecture). Lectures will cover only highlights of the textbook material and knowledge of Chem 142 and 152 content is assumed.

Lecture and Discussion Section Etiquette. Out of respect for your classmates, please observe the following rules:

- Arrive on time. If an emergency causes you to arrive late, please enter quietly through the **rear doors** of the lecture hall/classroom.
- Do not pack up your belongings before the end of class.
- Keep side conversations to a minimum.
- Keep your cell phone or pager on silent, and refrain from sending or reading text messages.
- Do not browse or read materials that are unrelated to the lecture. This includes – but is not limited to – newspapers, books, magazines, and the internet.

DISCUSSION SECTION

In the discussion section you will explore the concepts presented in the course. Specifically, you will collaborate with your colleagues on problems that will help you synthesize the material covered in the previous week's lectures. These problems will be graded on participation ***only***.

Punctuality. You must arrive to discussion section within the first five minutes of the class period to obtain participation points. If you arrive later than that, you will still be able to complete a worksheet with your group, but the worksheet will not be accepted for participation credit.

ONLINE LEARNING (ALEKS)

This course uses the internet-based learning program **ALEKS** (Assessment and LEarning in Knowledge Spaces)**.** In ALEKS, you will complete **learning objectives** rather than traditional homework assignments. An ALEKS **Objective** contains topics relevant to the lecture discussions. ALEKS will present you with a series of problems that explore a particular topic. The problems will have enough variability that you will only be able to get them consistently correct by understanding the core principle or skill defining the topic. Once you consistently answer the problems for a given topic correctly, ALEKS will conclude that you have learned the topic, and you will then be allowed to choose another topic to learn (refer to the ALEKS Orientation posted on the course website for more details). Your

daily/weekly work on ALEKS will be on your own schedule outside of class, although there are specific deadlines by which you must complete various Objectives. The registration code for your ALEKS course can be downloaded from Canvas. **Make sure that you register for the ALEKS course specific to your section of 162.**

Your first task in ALEKS will be to complete an **Initial Knowledge Check.** This is ALEKS's way of assessing your current knowledge of math and chemistry, so that it can guide you appropriately. The Knowledge Check will contain 25-30 questions and shouldn't take more than 40-60 minutes to complete. You will probably be asked a few questions that you don't know how to answer. Don't worry…the ALEKS system is only determining your knowledge baseline so that it can be tailored to address your specific needs. When you use ALEKS, you will complete the learning tasks ***you*** need and not those somebody else needs. After you complete the Initial Knowledge Check, ALEKS will provide one-on-one instruction intended specifically for ***you***. ALEKS will also give you a new Knowledge Check after you complete each Objective, so that it can track your evolving knowledge state as you move through the material, and continue to tailor its approach to your unique learning path.

You, alone, are responsible for monitoring the due date and time for all ALEKS Objectives. Note that it is not possible to open up an ALEKS Objective 3 or 4 hours before it's due and be able to complete it. ALEKS will not let you access the problems corresponding to the more advanced topics in an Objective until you have mastered the basics, so *you will need to spend time nearly every day on ALEKS to complete the Objectives.* The schedule of Objectives and their due dates is available on the Canvas course site.

EXAMS

There are two midterm exams and one final exam in this course. The dates for these exams are provided in the course schedule at the end of this document. Chemistry knowledge is *cumulative* so questions on exams will often depend on knowledge from earlier chapters.

Exam Protocol

- Bring a few # 2 pencils, a couple Scantron forms, your calculator, and a photo ID to all exams.
- Submitted Scantron forms must be filled out completely. **Any identifying information (name, student number, section letters, and test version) that is missing or incomplete will result in a 5-point deduction from your exam score. All answers must be reported on the Scantron form by the end of the exam in order to be graded.**
- You must sit according to the seating charts that will be posted on the course website.

KEYS TO SUCCESS

1. Attend ALL classes, pay close attention, and take notes.
2. Learning chemistry is a sequential process. You must understand today's material before you can understand tomorrow's. As with all courses at UW, your instructors and TAs will assume that you are studying at least two hours for each hour of lecture and one hour for every hour of lab. Find a place that allows for periods of uninterrupted study. Skim through chapter or sections to be covered in the next lecture.
3. Make daily, weekly, and quarterly learning plans and follow those plans.
4. Working in shorter, more frequent sessions in ALEKS will be more efficient than long, marathon sessions.
5. Practice! Work on suggested end-of-the-chapter problems as well as topics in ALEKS - focus on understanding the concepts and general processes, not just memorizing how to solve a specific problem.
6. Talk chemistry with fellow Chem. 162 students. You will not only learn more, but you will probably also enjoy the course more.

COURSE SCHEDULE

This schedule is tentative and subject to change. Any changes will be announced in class and on the course website.

Week (Mon)	Lecture Topics, Disc. Section Worksheets, Prelabs, ALEKS Objectives, and Exams
1 6/19	*Lectures*: Intro, Ch 4 Worksheet #1; *Lab Safety Orientations* *ALEKS* Initial Knowledge Check due Thurs 6/22
2 6/26	*Lectures*: Ch 4,6 Worksheet #2; *UG Stockroom Contract* and *Prelab #1* due Tues 6/26 @ 11:30am *ALEKS* Objective #1 due Thurs (6/29) @ 10:00pm
3 7/3	*Lectures*: Ch 6,10 ; ***Tuesday holiday*** Worksheet #3; No labs this week *ALEKS* Objective #2 due Thurs (7/6) @ 10:00pm
4 7/10	*Lectures*: Ch 6,7 Worksheet #4; *Prelab #2* due Tues 7/11 @ 11:30am *ALEKS* Objective #3 due Thurs (7/13) @ 10:00pm **Exam #1 is Thurs 7/13 (Ch 4,6,7,10)**
5 7/17	*Lectures*: Ch 10 Worksheet #5; *Prelab #3* due Tues 7/18 @ 11:30am *ALEKS* Objective #4 due Thurs (7/20) @ 10:00pm
6 7/24	*Lectures*: Ch 10,17 Worksheet #6; *Prelab #4* due Tues 7/25 @ 11:30am *ALEKS* Objective #5 AND Additional ALEKS HW assignment due Thurs (7/27) @ 10:00pm
7 7/31	*Lectures*: Ch 17,18 Worksheet #7; *Prelab #5* due Tues 8/1 @ 11:30am *ALEKS* Objective #6 due Thurs (8/3) @ 10:00pm **Exam #2 is Thurs 8/3 (Ch 10,17)**
8 8/7	*Lectures*: Ch 18,19,20 Worksheet #8; *Prelab* #6 due Tues 8/8 @ 11:30am *ALEKS* Objective #7 due Thurs (8/10) @ 10:00pm
9 8/14	*Lectures*: Ch 20; Worksheet #9; No labs this week *ALEKS* Objective #8 due **Wed** (8/16) @ 10:00pm **Final Exam (review and Ch 18,19,20): Part 1 (Tues 8/15) and Part 2 (Thurs 8/17)**

ACCESS AND ACCOMMODATIONS

Your experience in this class is important to us, and it is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law. Disability Resources for Students (DRS) offers resources and coordinates reasonable accommodations for students with disabilities. If you have not yet established services through DRS, but have a temporary or permanent disability that requires accommodations, you are welcome to contact DRS at 206-543-8924 or uwdrs@uw.edu or visit disability.uw.edu. If you have already established accommodations with DRS, the information for the Alternative Testing Contract will be submitted to DRS via their online system. Students with accommodations are solely responsible for scheduling the exams with DRS well in advance of the exam dates. If you require accommodations in the laboratory (including assistants and/or interpreters), please contact the Undergraduate Services Director (Bagley 303D) ***in person in*** the ***first week*** of the quarter to discuss your accommodations.