

## CHEM 200 & 202 Syllabus

### Contact Information:

**Email (for all needs):** chem200@mail.sdsu.edu

#### Instructor:

Professor: Christopher Harrison, Ph.D.

Lecture (in ENS-280): 11:00am-11:50am MWF

Office: GMCS-213E

Phone: 619-594-1609

Office Hours (in GMCS-212): 9:00am-10:00am Tuesday and Thursday

Professor: Gregory Holland, Ph.D.

Lecture (in ENS-280): 2:00pm-2:50pm MWF

Office: GMCS-213C

Phone: 619-594-1596

Office Hours (in GMCS-212): 3:00pm-5:00pm Monday

#### Lab Coordinators:

Theresa Carlson, M.A.

Office: GMCS-213B

Phone: 619-594-5481

Kathleen McNamara

Office: CSL-313

Phone: 619-594-1614

**All Instructor and TA office hours will be held in the CHEM 200/202 HELP ROOM located in GMCS-212.**

Office hour schedules will be posted in GMCS-212 and online.

**The CHEM 200/202 Help Room** located in GMCS-212 is for all enrolled students seeking assistance with the course material. The Help Room will be staffed by the teaching assistants and the instructors (during their office hours) and will be open approximately 40 hours per week.

#### **Textbook:**

*Openstax Chemistry Book:* <https://openstaxcollege.org/details/chemistry>

Combined with: Sapling Online Homework: [www2.saplinglearning.com](http://www2.saplinglearning.com)

The **Lab Manual** with integrated **Notebook** is available in the bookstore. You will be using the Fall 2016 Manual.

**Lab Equipment** will be available for purchase in the bookstore. They will have lab aprons/coats, safety glasses, gloves, and other useful lab equipment.

### **Online Resources:**

- Blackboard will be used for obtaining the syllabus, course communications (e.g. exam locations), and grade dissemination.
- Sapling will be used extensively for online homework, quizzes, and practice problems.
- Dropbox will be used for distributing other course materials (e.g. lab handouts, lecture slides, sample practice exams...). The URL for the specific Dropbox page will be provided in lecture and through Blackboard.

### **Supplemental Instruction:**

Supplemental Instruction (SI) study sessions are offered for this course. SI Sessions occur every day, 16 times each week, throughout the entire semester. Supplemental Instruction Sessions are peer-led, voluntary, and faculty do not know who attends and who does not participate. SI is for everyone, and open to all students enrolled in this class; not just those students who are struggling. The sessions provide group study opportunities to assist students in traditionally difficult courses. To get the most out of SI, attend early and often during the semester.

Sessions are facilitated by an SI Leader who has already received an A or B+ in the class, and has been trained to lead group sessions where students can improve their understanding of course material, review and discuss important concepts, develop study strategies and prepare for exams. Students who begin attending SI sessions early in the semester typically earn higher final course and exam grades than students who do not participate in SI. Please bring your lecture notes, books, and questions with you to the SI sessions.

Click on the Supplemental Instruction link in the Blackboard course for the CHEM 200/202 SI Session schedule. For additional information about SI, please visit: <http://its.sdsu.edu/supplemental-instruction/>

### **General Student Learning Outcomes:**

Below is a summary of what students should be capable of upon the successful completion of this course.

- Perform calculations with the correct number of significant figures with a variety of SI units.
- Name and write a range of simple ionic and molecular formulas.
- Describe the structure of atoms and the various classes of compounds that they can form.
- Classify the different states of matter and describe each state at the molecular level.
- Use Avogadro's number and reaction stoichiometry to calculate the amounts of reactants and products involved in chemical reactions.
- Write and balance chemical reactions.
- Describe the major classes of chemical reactions at a molecular level and perform stoichiometric calculations related to these reactions.
- Describe, manipulate, and use the ideal gas law.
- Describe the kinetic-molecular theory of gasses and how it deviates from real gas behavior.
- Perform calculations on the exchange of heat in thermochemical processes.
- Calculate the enthalpy of chemical reactions.

- Describe and apply the quantum theory rules of atomic structure.
- Describe the electron configurations of many electron atoms.
- Use trends in atomic properties to compare different elements.
- Differentiate and describe the various models of chemical bonding.
- Compare and calculate bond energies.
- Draw and identify molecular structures based on the Lewis and VESPR models.
- Describe covalent bonding in terms of the valance bond and molecular orbital theories.
- Define the various changes of physical states for a substance and quantify the related enthalpy changes.
- Describe and differentiate the various forms of intermolecular forces.
- Describe and predict solubility in terms of intermolecular forces.
- Quantify the influence of solutes on the colligative properties of solutions.
- Quantify the enthalpy changes associated with dissolution of solutes.

<b>CHEM 200 Grade Scheme</b>				
<b>Item</b>	<b>Quantity</b>	<b>Value (each)</b>	<b>Total</b>	<b>Percentage</b>
<b>Review Assignments*</b>	2	15	30	2.0%
<b>Homework**</b>	11	10	110	7.2%
<b>Mid-Semester Exams</b>	3	225	675	44.0%
<b>Final Exam</b>	1	225	225	14.7%
<b>Quizzes*</b>	4	20	80	5.2%
<b>Lab Reports</b>	Best 9 of 10	20	180	11.7%
<b>Lab Safety Quiz</b>	1	15	15	1.0%
<b>Glassware Quiz</b>	1	15	15	1.0%
<b>Participation***</b>	1	30	30	2.0%
<b>Lab Practical Exam</b>	1	80	80	5.2%
<b>Seminar Report</b>	1	30	30	2.0%
<b>Discussion</b>	Best 13 of 14	5	65	4.2%
<b>Total</b>			<b>1535</b>	<b>100.0%</b>

CHEM 202 Grade Scheme				
Item	Quantity	Value (each)	Total	Percentage
Review Assignments*	2	15	30	2.0%
Homework**	11	10	110	7.5%
Mid-Semester Exams	3	225	675	45.9%
Final Exam	1	225	225	15.3%
Quizzes*	4	20	80	5.4%
Lab Reports	Best 9 of 10	20	180	12.2%
Lab Safety Quiz	1	15	15	1.0%
Glassware Quiz	1	15	15	1.0%
Participation***	1	30	30	2.0%
Lab Practical Exam	1	80	80	5.4%
Seminar Report	1	30	30	2.0%
<b>Total</b>			<b>1470</b>	<b>100.0%</b>

\* Quizzes, homework, and the review assignments (Math Review and General Chemistry Review) will all be administered through the Sapling online homework system.

\*\*\* Homework policies:

- There will be homework from each of the 11 chapters covered in the text.
- Full points can be obtained for each chapter's homework by scoring above 85% on the homework problems for that chapter.
  - Homework score 74% =  $(74\% \div 85\%) \times 10 = 8.7$  points
- It is in your best interest to complete all the homework to ensure that you are fully prepared for the exams.

\*\*\* Participation points are allocated as follows:

- 2 notebook checks worth 10 points each
- 5 points for proper lab etiquette
- 5 points for coming to check-out

\*\*\* Exams points will be deducted if you do not properly fill out the scantron. You need to make sure you bubble in your RedID correctly as well as your form letter. Failure to do so will result in a lower grade. 10 points will be deducted for each violation.

❖ **Lab Reports** all lab reports will need to be submitted to **Turnitin** for you to receive a grade for your lab report. Failure to send your report before your lab report is due will be an automatic zero. Lab reports that are plagiarized will be an automatic zero and will be reported.

◆ **Lab Safety Quiz** The lab safety quiz must be completed with a grade of 60% or higher before you work in the laboratory. If you fail to achieve a 60% or higher on the online quiz, the lab coordinator will give you a paper quiz. Once you pass the paper lab safety quiz you will be allowed to attend lab. **Note: The paper quiz will not replace your original lab safety quiz grade.**

**Note:** Your individual grades for each course component will be posted on Blackboard. However, Blackboard is unable to carry out the complex calculations for grade allocation, do not rely on the total points in Blackboard as a measure of your grade. An excel spread sheet will be provided, through Dropbox, to allow you to better track your actual grades during the course of the semester.

### Grading

Your letter grade will be determined by your individual points total for the course. **There will be no curving of the course grades.** Below is a tentative grade range breakdown for each letter grade. The instructors reserve the right to universally modify this grade scale prior to assigning final letter grades.

Letter	Percentage	Letter	Percentage
A	> 90%	C+	68-72%
A-	85-90%	C	63-68%
B+	81-85%	C-	59-63%
B	76-81%	D	53-59%
B-	72-76%	F	<53%

### Enrollment/Crashing Policy

**Enrolled students.** *It is absolutely crucial that you attend the first three laboratory periods.* Failure to do so may result in your spot in the laboratory section being given to another student. Notify the laboratory coordinator (chem200@mail.sdsu.edu before the first week of class) if you must miss a laboratory period in the first week of the semester for a legitimate reason. You must be able to attend the laboratory section of CHEM 200 for which you are enrolled; otherwise, you must drop the course and attempt to crash a different section that you can attend. If you decide to drop the course, inform the laboratory coordinator by email as soon as possible so your place can be given to a crasher.

**Waitlist.** If you are attempting to waitlist CHEM 200 or 202, you should attend every possible lab section and lecture that will fit into your schedule. And keep track of which discussion and lab you attended.

## Course Schedule

Lecture #	Date	Text Chapter	Topic
1	Aug 29, 2016	Welcome	Syllabus, Class and Lab Overview
2	Aug 31, 2016	Chapter 1	Essential Ideas
3	Sep 2, 2016	Chapter 1	Essential Ideas
4	Sep 5, 2016	<b>No Class</b>	<b>Labor Day</b>
5	Sep 7, 2016	Chapter 2	Atoms, Molecules, and Ions
6	Sep 9, 2016	Chapter 2	Atoms, Molecules, and Ions
7	Sep 12, 2016	Chapter 3	Composition of Substances and Solutions
8	Sep 14, 2016	Chapter 3	Composition of Substances and Solutions
9	Sep 14, 2016	Chapter 4	Stoichiometry of Chemical Reactions
10	Sep 16, 2016	Chapter 4	Stoichiometry of Chemical Reactions
11	Sep 19, 2016	Chapter 4	Stoichiometry of Chemical Reactions
12	Sep 21, 2016	Chapter 4	Stoichiometry of Chemical Reactions
13	Sep 23, 2016	<b>Chapter 1-4</b>	<b>Review for Exam 1</b>
14	Sep 26, 2016	Chapter 5	Thermochemistry
15	Sep 28, 2016	Chapter 5	Thermochemistry
16	Sep 30, 2016	Chapter 5	Thermochemistry
17	Oct 3, 2016	Chapter 5	Thermochemistry
18	Oct 5, 2016	Chapter 5	Thermochemistry
19	Oct 7, 2016	Chapter 5 & 6	Thermochemistry
20	Oct 10, 2016	Chapter 6	Electronic Structure and Periodic Properties of Elements
21	Oct 12, 2016	Chapter 6	Electronic Structure and Periodic Properties of Elements
22	Oct 14, 2016	Chapter 6	Electronic Structure and Periodic Properties of Elements
23	Oct 17, 2016	Chapter 6	Electronic Structure and Periodic Properties of Elements
24	Oct 19, 2016	Chapter 6	Electronic Structure and Periodic Properties of Elements

## Course Schedule

Lecture #	Date	Text Chapter	Topic
25	Oct 21, 2016	<b>Chapter 5-6</b>	<b>Review for Exam 2</b>
26	Oct 24, 2016	Chapter 7	Chemical Bonding and Molecular Geometry
27	Oct 26, 2016	Chapter 7	Chemical Bonding and Molecular Geometry
28	Oct 28, 2016	Chapter 7	Chemical Bonding and Molecular Geometry
29	Oct 31, 2016	Chapter 7	Chemical Bonding and Molecular Geometry
-	Nov 2, 2016	Chapter 8	Advanced Theories of Covalent Bonding
30	Nov 4, 2016	Chapter 8	Advanced Theories of Covalent Bonding
31	Nov 7, 2016	Chapter 8	Advanced Theories of Covalent Bonding
32	Nov 9, 2016	Chapter 8	Advanced Theories of Covalent Bonding
33	Nov 11, 2016	<b>No Class</b>	<b>Veterans Day</b>
34	Nov 14, 2016	Chapter 9.1-9.3	Gases
35	Nov 16, 2016	Chapter 9.1-9.3	Gases
36	Nov 18, 2016	<b>Chapter 7 - 9.3</b>	<b>Review for Exam 3</b>
37	Nov 21, 2016	Chapter 9.4-9.6	Gases
38	Nov 23, 2016	<b>No Class</b>	<b>Thanksgiving</b>
39	Nov 25, 2016	<b>No Class</b>	<b>Thanksgiving</b>
40	Nov 28, 2016	Chapter 9.4-9.6	Gases
41	Nov 30, 2016	Chapter 10	Liquids and Solids
42	Nov 28, 2016	Chapter 10	Liquids and Solids
43	Nov 30, 2016	Chapter 10	Liquids and Solids
44	Dec 2, 2016	Chapter 10	Liquids and Solids
45	Dec 5, 2016	Chapter 11	Solutions and Colloids
46	Dec 7, 2016	Chapter 11	Solutions and Colloids

<b>Course Schedule</b>			
<b>Lecture #</b>	<b>Date</b>	<b>Text Chapter</b>	<b>Topic</b>
47	Dec 9, 2016	Chapter 11	Solutions and Colloids
48	Dec 12, 2016	Chapter 11	Solutions and Colloids
49	Dec 14, 2016	<b>All Chapters</b>	<b>Review for Final</b>

<b>Lab Schedule</b>		
<b>Experiment/Activity</b>	<b>Monday Lab</b>	<b>Tuesday Lab</b>
<b>Introduction &amp; Lab Safety</b>	August 29, 2016	August 30, 2016
<b>HOLIDAY- NO LAB</b>	September 5, 2016	September 6, 2016
<b>Check-In &amp; Use of Volumetric Equipment Experiment</b>	September 12, 2016	September 13, 2016
<b>An Introduction to Qualitative Analysis Experiment</b>	September 19, 2016	September 20, 2016
<b>Limiting Reagent of Solutions Experiment</b>	September 26, 2016	September 27, 2016
<b>Standardization of an Aqueous NaOH Solution Experiment</b>	October 3, 2016	October 4, 2016
<b>Molar Mass of an Unknown Acid Experiment</b>	October 10, 2016	October 11, 2016
<b>Calorimetry Part 1: Specific Heat Capacity Experiment</b>	October 17, 2016	October 18, 2016
<b>Calorimetry Part 2: Enthalpy of Reaction Experiment</b>	October 24, 2016	October 25, 2016
<b>Atomic Emission Spectra</b>	October 31, 2016	November 1, 2016
<b>Analysis of an Aluminum-Zinc Alloy Experiment</b>	November 7, 2016	November 8, 2016
<b>Freezing Point Depression</b>	November 14, 2016	November 15, 2016
<b>NO LAB</b>	November 21, 2016	November 22, 2016
<b>TA Seminar &amp; Check-Out</b>	November 28, 2016	November 29, 2016
<b>Lab Practical</b>	December 5, 2016	December 6, 2016

***\*Please note: After the Molar Mass of an Unknown Acid we will be re-arranging the labs out of order from the lab manual.***



<b>Exam Schedule</b>		
	<b>Date</b>	<b>Alternative date for conflicts only</b>
<b>Exam 1</b>	Sat, Sep 24, 2016 2:00 PM	Mon, Sep 26, 2016 6 AM
<b>Exam 2</b>	Sat, Oct 22, 2016 2:00 PM	Mon, Oct 24, 2016 6 AM
<b>Exam 3</b>	Sat, Nov 19, 2016 2:00 PM	Mon, Nov 21, 2016 6 AM
<b>Final Exam</b>	Sat, Dec 17, 2016 6:00 PM	N/A

### **Pre-Lab Policy**

Pre-lab assignments must be turned in to your TA **no later than 5 minutes after** the official start of your lab period. Your TA has the right to refuse to grade any late pre-labs.

### **Lab Attire**

If a student is not wearing any of the following they will not be permitted into the lab:

- Lab apron or lab coat
- Lab glasses
- Closed toed and closed heeled shoes
- Gloves
- Pants, skirts, and dresses must extend below the calf.
- No tank tops or open backs

### **Online Assignment Policy**

The deadlines for the online assignments, including pre-labs, homework, and quizzes are hard deadlines and extensions will not be granted. All assignments will be scheduled with sufficient time to allow you to complete the assignment in advance of the "last minute". *Consequently, you are solely responsible for any failures to complete the assignment by the scheduled time.* Problems such as lack of internet service, Sapling site problems, or dogs eating WiFi antennas will not be acceptable reasons for not completing the assignments. *You are encouraged to complete the assignments well before the deadlines to avoid potential technological obstacles.*

In the case of an extended system-wide failure the instructors will be notified by the site operator and steps will be taken to accommodate any problems that arise.

For all technical difficulties or errors that arise with the Sapling systems **please contact the Sapling technical support staff directly and by phone**, the instructors, lab coordinator, and TAs will be unable to help you resolve anything but the most basic (is it plugged in?) technical problems.

## Attendance Policy

### Excused absences:

Excused absences will only be awarded in the case of a legitimate reasons (illness, scheduled academic/athletic events, court appearances, etc.) as determined by the instructor. **Proper documentation of the reason for the absence is required to avoid receiving a grade of zero on a missed course component two weeks into the semester (by 9/12/2016).** If at all possible, it is best to contact your instructor prior to the absence to ensure that the absence will be excused.

### For lectures:

Regular attendance in the lectures is strongly recommended. If you do have to miss class, you should obtain class notes from another student.

### For labs:

Attendance in **all** laboratory meetings is **REQUIRED**, and all lab work during the semester must be done in the scheduled laboratory periods. Under no circumstances will students be allowed to make up lab experiments. **Note that CHEM 202 students are required to attend only the laboratory and not the discussion section lab each week.**

### For exams:

**Attendance for all exams is required, including the lab practical exam.** For excused absences only there will be makeup exam days the Monday following the exam. Students requesting to take the exam on the makeup day will need to sign-up through an online form that will be made available in the weeks prior to the exam. Students must sign-up in order to have permission to take the makeup exam. No other makeup times will be offered. It is your responsibility to ensure that you will be available for the makeup exam times.

***Only under exceptional circumstances, as determined by the instructor, will a makeup exam be granted for the final exam.***

### Test accommodations:

If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that accommodations based upon disability cannot be provided until you have presented your instructor with an accommodation letter from Student Disability Services. Your cooperation is appreciated.

Students who have made arrangements with SDS for test accommodations and require a signature from an instructor must make arrangements to meet the instructor outside of the class time to obtain a signature. Absolutely no forms will be signed immediately prior to, during, or after a lecture.

## **Policy on Cheating/Plagiarism**

There is a zero tolerance policy regarding plagiarism in this course. Any instances of cheating or plagiarism identified by the TA, lab coordinator, or the instructors, will result in a meeting between the instructor and student(s) following which the instance and documentation of plagiarism will be reported to the Academic Senate. It is your responsibility to know what constitutes cheating and plagiarism.

It should be noted that turning in a lab report for a lab that you have not performed, or the results of a lab that you had completed in a prior semester, both constitute cheating and plagiarism and will be reported - *all students must perform their own analyses in the labs.*

## **Am I Ready For CHEM 200**

**ASSUME THIS CLASS WILL REQUIRE A MINIMUM OF 15 HOURS OF YOUR TIME PER WEEK TO COMPLETE!**

The prerequisites for CHEM 200 are one year of high school chemistry, two years of algebra, and a passing score on the Placement Test, or a passing grade (a C or higher) in Chem 100. Chemistry 200 is a demanding, 5-unit course which requires an enormous amount of time and your commitment to work hard! (Please do NOT take this course unless you are prepared to commit the necessary time and hard work.) It is advisable that you make Chemistry 200 the focus of your semester and that you do NOT overburden yourself with an unmanageable course load while taking this course. YOUR success is our success. and we want you to succeed in this course. YOUR success requires a large time commitment and hard work - please do NOT take this course unless you are willing to allow sufficient time to study, attend ALL lectures, and attend ALL labs with preparation in advance. Writing good laboratory reports also requires a lot of time and preparation prior to lab. You will enjoy your semester in Chemistry 200 - and you will benefit in the sciences so much more from all that you learn - if you allow yourself the time necessary to work hard and succeed! PLEASE ALLOW ADEQUATE TIME IF YOU TAKE THIS COURSE!