

# CHEM 108 – General Chemistry Online Lab Recitation

## Sections 001

Spring 2020

**Instructor:** Sam Johnson

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**Office:** 109F Sims

**Office Hours:** M, T 4:00 pm - 6:30 PM, or by appointment

**Lecture:** Mondays 6:30-7:20 pm in Sims 112

**Course Credit Hours:** 2 credit hour for lab and recitation

### Required Textbook:

- Textbook: *Chemistry: An Atoms-Focused Approach* by Gilbert, Kirss and Foster, 2nd edition
- Lab Manual: *Cooperative Chemistry Laboratory Manual*, Cooper, M., 5<sup>th</sup> edition

### Course Goals:

- In this lab recitation course, we will review the necessary information needed to successfully complete each of the experiments scheduled in CHEM 108. Many of the laboratory skills learned in CHEM 108 will be used in upper level chemistry labs.
- Develop problem-solving and critical thinking skills.
- Demonstrate an understanding of the fundamental principles presented in each of the laboratory experiments conducted in CHEM 108.

### Course Outline:

- Physical properties, analytical balances, typical glassware, volumetric glassware, data analysis, graphing using Excel
- Qualitative solubility, stoichiometry, volumetric glassware, burets, pH meters, writing chemical equations
- Calorimetry, heats of reactions, endothermic/exothermic reactions, writing chemical equations, Excel
- Introduction to organic chemistry, identifying an unknown, functional group testing, infrared spectroscopy, NMR
- Visible spectroscopy, Beer's Law, calibration curves, graphing with Excel

### Exams and Grading:

1. There will be two exams each worth 60 points. **No make-up exams will be given.** Tentative exam dates are noted below.
2. Your final grade in lab recitation will be factored into your final CHEM 108 grade. Recitation will account for about 20% of your final lab grade. See the CHEM 108 GRADING webpage for letter grade assignments.
3. There will not be a final exam during final exam time in recitation. There will be a cumulative exam (Exam 2) for recitation during the last week of classes.
4. You have one week from the time a graded assignment is returned to question its grading. After a week, I will not change any grade.

5. You should carefully read the Winthrop University Student Conduct Code printed in the Winthrop University Student Handbook. As noted in the Student Conduct Code: "Responsibility for good conduct rests with students as adult individuals." This policy on student academic misconduct is outlined in the "Student Conduct Code Academic Misconduct Policy" in the online Student Handbook (<http://www2.winthrop.edu/studentaffairs/handbook/StudentHandbook.pdf>)<http://www2.winthrop.edu/studentaffairs/handbook/StudentHandbook.pdf>

Total Possible Points

Recitation Exams	120 pts (20%)
<u>Laboratory grade</u>	<u>480 pts (80%)</u>
Total points Chem 108	600 pts

**Grades:** I will not discuss grades through e-mail. If you have a question about your grade, please stop by my office.

**Exams:** You will need a calculator for exams. Cell phones and pagers are strictly prohibited during exams. You cannot use a cell phone as a calculator during exams.

**Course Withdraw:** Wednesday, March 11<sup>th</sup>, is the last day to withdraw from a full fall semester course with an automatic N grade issued. Students may not withdraw from a course after this date without documented extenuating circumstances as determined by the University.

**Communication:** If you have any questions, please stop by and see me during office hours. If these hours are not convenient, see me in class or e-mail me to set up an appointment.

**Attendance:** You are expected to attend all class meetings. You are responsible for all announcements made in class. Absence or lateness does not excuse you from this responsibility.

**Homework:** You are expected to complete each reading assignment and all assigned homework problems. End of chapter homework problems from the textbook will not be collected or graded, but will be good practice for preparing for exams.

**E-mail:** It is important to check your e-mail regularly. If you registered for the course late, you will need to manually subscribe to the listserv. If you drop the course, you will need to unsubscribe to the list or you will continue to receive all e-mails I send. You can find directions at <http://www.winthrop.edu/acc/classlist.htm>

**Students with Disabilities:** Winthrop University is committed to providing access to education. If you have a condition which may adversely impact your ability to access academics and/or campus life, and you require specific accommodations to complete this course, contact the Office of Disability Services (ODS) at 803-323-3290, or, [accessibility@winthrop.edu](mailto:accessibility@winthrop.edu). Please inform me as early as possible, once you have your official notice of accommodations from the Office of Disability Services.

**Syllabus:** Mistakes to this syllabus will be corrected as necessary.

This is a tentative schedule and will be modified as needed.

Date	Exams	Prelab Topics	Reading Assignments and Homework Problems (End of Chapter Exercises)
1/13, 1/27		Quantitative and Qualitative Analysis, Density, Units of Measurement, Making Measurements: Precision, Accuracy, Experimental Error, Standard Deviation, Significant Figures	<p><b>Laboratory Manual:</b>            ~Recording and Reporting Results, p. 17-19            ~Reporting Numerical Results, Significant Figures, Graphs, p. 35-40            ~Measuring Devices, p. 47-49            ~Reading a Meniscus, p. 67-68  <b>Chemistry: An Atoms-Focused Approach:</b>            ~Read Section 1-4, Density; Sections 1-8 and 1-9            ~Complete the following problems:</p> <ul style="list-style-type: none"> <li>• End of Chapter Problems 40, 44, 48, 54, 60, 69, 71</li> <li>• End of Chapter Problems 16, 30, 32, 59 (instead of calculating percent error, calculate the standard deviation), 61, 64</li> </ul> <p>A sample of an unknown metal was placed in a graduated cylinder containing water. The mass of the sample was 23.5 g and the water level rose from 47.5 ml to 52.2 ml. Calculate the density of this unknown metal.</p>
1/20	No Recitation	Labor Day Holiday	
2/3		Ions, Ionic compounds, Precipitation reactions, Solubility rules, Qualitative analysis	<p><b>Laboratory Manual:</b>            ~Read pages 57-63  <b>Chemistry: An Atoms-Focused Approach:</b>            ~ Ions, Ionic Compounds: Read pages 43, 50-53, 139-142            ~Reactions: Read Section 8.5 including Sample Exercise 8.6. Complete Practice Exercise on page 328 and End of Chapter Problems 8.65, 8.66</p>

2/10, 2/17		Writing chemical equations for precipitation reactions (complete balanced equations, complete ionic equations, and net ionic equations), Acid/Base reactions, Molarity, Dilutions, Using burets, Using pH meters Stoichiometry	<b>Laboratory Manual:</b> ~Read pages 64-69 <b>Chemistry: An Atoms-Focused Approach:</b> ~ Molarity: Read Section 8.1 (312-315); Complete End of Chapter Problems 8.11a; 8.14a,b;15a,b ~Acids and Bases: Read Section 8.4 (320-326) including Sample Exercise on page 324; Complete End of Chapter Problems 8.51b, 8.53b ~Reaction Stoichiometry: Read Section 8.5, (326-330); Read Section 8.5 including Sample Exercise 8.7 and 8.8, complete Practice Exercises on page 330 and 331 and End of Chapter Problems 8.68, 8.69, 9.72
2/24, 3/2		Calorimetry, Heats of Reactions  Precipitation Reactions, Acid/Base Reactions, Oxidation-Reduction Reactions	<b>Chemistry: An Atoms-Focused Approach:</b> ~ Calorimetry: Read Section 9.5, (382-384) including sample Exercise (384); Complete Practice Exercise on page 384 and End of Chapter Problems 9.65, 9.66 ~Precipitation Reactions: Read Section 8.5 ~ Acids and Bases: Read Section 8.4 ~Oxidation-Reduction Reactions: Read Section 8.6, (332-338); Complete End of Chapter Problems 8.83, 8.89
3/9	<b>Exam 1</b>		
3/23, 3/30		Organic Nomenclature and Functional Groups NMR and IR	<b>Laboratory Manual:</b> ~Read pages 83-86
4/6, 4/13		Analysis of Cola	<b>Laboratory Manual:</b> ~Read pages 64-66; 87-88
4/20		Review	
4/27	<b>EXAM 2</b>		