

**CHEM 305**  
**Chemical Hygiene and Safety**  
**Spring 2014**  
**Section 001**

**Instructor:** Dr. Snyder

**Lecture:** M 12:30-1:20, Sims 207

**Office:** 109B Sims

**E-mail:** [snyderk@winthrop.edu](mailto:snyderk@winthrop.edu)

**Office Hours:** W 11:00-12:00, R 2:00-3:00 or by appointment

**Course Credit Hours:** 1

**Optional Textbooks:**

- ❖ *Laboratory Safety for Chemistry Student*, Hill and Finster; ISBN 978-0-470-34428-6

**Student Learning Outcomes:**

- ❖ Students will learn the importance and necessity of proper laboratory safety procedures; become familiar with the potential hazards associated with various classes of hazardous chemicals and the proper way in which to store and handle such chemicals; learn how to obtain, read, and understand information about hazardous chemicals; become familiar with the various methods available to minimize exposures and reduce the risks associated with working with chemicals.
  
- ❖ Students will learn about the ethical and responsible conduct of research.

**University-Level Competencies:** CHEM 305 will contribute to Competency 2 of the University-Level Competencies.

**University Level Competency 2: Winthrop graduates are personally and socially responsible.**

This entire course focuses on the prudent practices in chemical hygiene and safety. Students will learn the proper methods of protecting themselves, others in the laboratory and the environment from toxic substances. Students will also learn the basic rules of ethical and responsible research.

**Course Outline:**

- ❖ What makes a chemical hazardous
- ❖ Routes of entry
- ❖ Precautionary Labels
- ❖ Material Safety Data Sheets
- ❖ Personal Protective Equipment
- ❖ Handling Laboratory Equipment Safely
- ❖ Exposure Limits
- ❖ Safe Handling, Storage, and Disposal of Chemicals
- ❖ Emergency Equipment
- ❖ Emergency and Medical Procedures
- ❖ Introduction and foundations of research ethics
- ❖ Planning Research: Health, safety, and environmental obligations
- ❖ Conducting Research: Collaborations and Data Management
- ❖ Reporting and Reviewing Research

**Exams and Grading**

- ❖ There will be 2 exams in this course, a mid-term and a final exam. Both exams will be worth 150 points. The final exam will cover the entire course.
  
- ❖ We will have 5 online homework assignments. Online homework assignments will be completed in Blackboard. The requirements of each assignment, including the due date and point value of each assignment, will be stated at the time the assignment is posted in Blackboard. You will have at least a week to complete each assignment. Online homework assignments will be set up as a Blackboard online exam. The point value of each assignment will vary, but each assignment will be worth between 30 and 60 points. The total number of points from online homework assignments will depend on the point value of each assignment, but will

constitute a maximum of 200 points of your final grade. Late assignments will be accepted with a 10% penalty per day it is late.

- ❖ You have one week from the time a graded assignment is returned to question the way it was graded. After a week, I will not change a grade.
- ❖ 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>
- ❖ Letter grades will be assigned as follows: A 90-100%, B 80-89%, C 70-79%, D 60-69%, F <59%
- ❖ Total Possible Points:

Midterm Exam	150 points
Final Exam	150 points
Online Assignments	200 points (max)
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Total Points*	500 points

\*The total number of points for the course may be lower than 450 depending on the number of online assignments.

**Blackboard:** We will be using Blackboard this semester. Online assignments will be posted in Blackboard and announcements may be made through Blackboard. Lectures will be PowerPoint presentations and the PowerPoint presentations will be posted in Blackboard. The web address to log into Blackboard is ***online.winthrop.edu***. **Login instructions and Blackboard tutorials can be found at [http://www2.winthrop.edu/webct/Blackboard\\_Training\\_Tutorials.html](http://www2.winthrop.edu/webct/Blackboard_Training_Tutorials.html)**

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

**Exams:** You may 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 and quizzes.

**Course Withdraw:** March 12<sup>th</sup> is the last day to withdraw from a full 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.

**Students with Disabilities:** Winthrop University is dedicated to providing access to education. If you have a disability and require specific accommodations to complete this course, contact the Office of Disability Services (ODS) at 323-3290. Once you have your official notice of accommodations from the Office of Disability Services, please inform me as early as possible in the semester.

**This syllabus will be changed as necessary.**

**This is a tentative schedule.**

Week	Date	Topic	Reading Assignment
1	1/13	Introduction/What makes a chemical hazardous Routes of entry Precautionary Labels	1.3.3 (1-37) 3.1.1 (3-3) 3.1.2 (3-11)
2	1/20	<b>No Class- Martin Luther King Day</b>	
3	1/27	Introduction and foundations of research ethics	
4	2/3	Protective Equipment	7.1.2-7.2.3 (pp 7-11 to 7-50)
5	2/10	Planning Research: Health, safety, and environmental obligations	
6	2/17	Sources of Information GHS	4.1.1-4.2.1 (pp. 4-1 to 4-30) 3.2.1, 6.2.1
7	2/24	Conducting Research: Collaborations and Data Management	
8	3/3	Handling Laboratory Equipment Safely	5.3.1 (5-49) (Compressed Gas Cylinders) 5.3.5 (5-87) (Electrical hazards) 5.3.4 (5-79)
9	3/10	<b>Midterm</b>	
10	3/17	<b>No Class- Spring Break</b>	
11	3/24	Biosafety	4.3.2-4.3.3 (4-47); 7.3.4 (7-73)
12	3/31	Reporting and Reviewing Research	
13	4/7	Corrosive and Flammable Chemicals	5.1.1-5.2.3 (pp. 5-3 to 5-47) 8.2.1 (8-9)
14	4/14	Peroxides, Reactives, and Carcinogens	5.3.2-5.3.3 (pp. 5-61 to 5-77) 4.3.1 (4-31)
15	4/21	Chemical Waste Chapter 2	8.1.1, Ch. 2 3.2.1
16	4/28	<b>No Class- Online Homework Assignment 5 Due</b>	
	<b>Final</b>	<b>Wednesday, April 30 at 11:30 in Sims 210</b>	

	Posted By	Due	Topic	Reading Assignment
<b>Online Homework Assignment 1</b>	Jan. 27	Feb. 3	Chapter 1 Protective Equipment	Chapter 1 7.1.2-7.2.3 (pp 7-11 to 7-50)
<b>Online Homework Assignment 2</b>	Feb. 10	Feb. 17	Toxicology Exposure Limits	4.1.1-4.2.1 (pp. 4-1 to 4-30) 6.2.2 (6-23)
<b>Online Homework Assignment 3</b>	Feb. 24	March 3	Sources of Information	3.1.3 -3.3.1 (pp. 3-19 to 3-50)
<b>Online Homework Assignment 4</b>	March 31	April 7	Biosafety and Radiation/Laser Safety	4.3.2-4.3.3 (4-47); 7.3.4 (7-73) 7.3.2 (7-59) 7.3.3 (7-67)
<b>Online Homework Assignment 5</b>	April 21	April 28	Chapter 2 Chemical Waste	8.1.1, Ch. 2