

CHEM 305
Chemical Hygiene and Safety
Fall 2016
Section 001

Instructor: Dr. Snyder
Lecture: T 9:30-10:45, Sims 113B
Office: 109B Sims
E-mail: snyderk@winthrop.edu
Office Hours: M 11:00-12:00, W 1:00-2:00 or by appointment
Course Credit Hours: 1

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 250 points. The final exam will cover the entire course. Make-up exams will not be given. Exams will be administered through Blackboard. We will use the computers in Sims 211 for the midterm and the final exams. We will meet in Sims 211 on exam days. You will need a calculator for the exams and you cannot use your cell phone as a calculator.
- ❖ 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. 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 250 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	250 points
Final Exam	250 points
Online Assignments	250 points (max)
Total Points*	750 points

*The total number of points for the course may be lower than 750 depending on the number of online assignments.

Course Evaluations: Course evaluations will be completed towards the end of the semester. At that time, you will be able to complete the course evaluation at https://winthrop.qualtrics.com/SE/?SID=SV_8uJt2pJOgArbpxX. You will need your Winthrop student number (for example W12345678) and the course section CRN which is 11072.

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**

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

Course Withdraw: October 21st, 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/Need of Accommodations for Access: 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 Accessibility (OA) at 803-323-3290, or, accessibility@winthrop.edu. Please inform me as early as possible, once you have your official notice of accommodations from the Office of Accessibility.

This is a tentative schedule. It will be changed as necessary. Changes will be announced in class or through email.

Week	Date	Topic	Reading Assignment
1	8/23	Introduction What makes a chemical hazardous, Routes of entry Precautionary Labels, Protective Equipment	1.3.3 (1-37) 3.1.1 (3-3) 3.1.2 (3-11) 7.1.2, 7.1.3 (11-21) 7.2.1, 7.2.2 (31-38)
2	8/30	Protective Equipment- Hoods Introduction and Foundations of Research Ethics, Misconduct	7.1.2-7.2.3 (pp 7-11 to 7-50)
3	9/6	NO CLASS-ONLINE ASSIGNMENT 1 Chapter 1 and Protective Equipment	7.1.2-7.2.3 (pp 7-11 to 7-50) Week 1 Lecture Notes
4	9/13	Sources of Information, GHS, Toxicology, Exposure Limits	4.1.1-4.2.1 (pp. 4-1 to 4-30) 3.2.1, 6.2.1
5	9/20	NO CLASS-ONLINE ASSIGNMENT 2 Toxicology, Exposure Limits Misconduct	4.1.1-4.2.1 (pp. 4-1 to 4-30) 6.2.2 (6-23), Week 4 Lecture Notes
6	9/27	Handling Laboratory Equipment Safely Planning Research-Human Subjects	5.3.1 (5-49) (Compressed Gas Cylinders) 5.3.5 (5-87) (Electrical hazards) 5.3.4 (5-79)
7	10/4	NO CLASS-ONLINE ASSIGNMENT 3 Sources of Information, Human Subjects	3.1.3 -3.3.1 (pp. 3-19 to 3-50) Week 5 Lecture Notes
8	10/11	Midterm- Sims 211	
9	10/18	Corrosive and Flammable Chemicals	5.1.1-5.2.3 (pp. 5-3 to 5-47) 8.2.1 (8-9) 4.3.2-4.3.3 (4-47); 7.3.4 (7-73)
10	10/25	Peroxides, Reactives, and Carcinogens Planning Research- Animal Subjects	5.3.2-5.3.3 (pp. 5-61 to 5-77) 4.3.1 (4-31)
11	11/1	NO CLASS-ONLINE ASSIGNMENT 4 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)
12	11/8	NO CLASS- Election Day	
13	11/15	Biosafety and Chemical Waste	
14	11/22	NO CLASS-ONLINE ASSIGNMENT 5 Chapter 2, Chemical Waste and Animal Subjects	Ch.2, 8.1.1, Week 12 Lecture Notes
15	11/29	Conducting Research: Collaborations and Data Management Reporting and Reviewing Research	
	12/9	Final: Friday, December 9 at 11:30 in Sims 211	

	Posted By	Due	Topic	Reading Assignment
Online Homework Assignment 1	9/6/16	9/13/16	Chapter 1 Protective Equipment	Chapter 1 7.1.2-7.2.3 (pp 7-11 to 7-50)
Online Homework Assignment 2	9/20/16	9/27/16	Toxicology Exposure Limits Misconduct	4.1.1-4.2.1 (pp. 4-1 to 4-30) 6.2.2 (6-23)
Online Homework Assignment 3	9/27/16	10/7/16	Sources of Information Human subjects	3.1.3 -3.3.1 (pp. 3-19 to 3-50)
Online Homework Assignment 4	11/1/16	11/15/16	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)
Online Homework Assignment 5	11/22/16	12/2/16	Chapter 2, Chemical Waste	8.1.1, Ch. 2