

**Course Syllabus
Chemistry 141Z
Fall 2009
Oxford College of Emory University**

Class Meets MWF, 12:50-2:50pm Room 223 Pierce

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Office Hours: Tuesday/Thursday (10:00-11:00am) or by appointment

Course Description

Chemistry 141/141Z is the first course in a two-semester sequence for General Chemistry. This class fulfills one half of the introductory chemistry requirement for science majors at Emory University. It can also be taken by non-science majors to complete their laboratory science general education requirement. CHEM 141Z in particular covers the traditional content of CHEM 141 while focusing on environmental issues. The topics covered in CHEM 141Z include: 1) experimental design and measurement; 2) fundamental properties of matter; 3) states of matter and the properties of gases; 4) theories of chemical bonding; 5) aqueous solutions; 6) aqueous chemical reactions; and 7) energy and thermochemistry.

Course Goals

The general goal of CHEM 141Z is to provide an introduction to the study of matter and the various changes it can undergo and to demonstrate how/why the study of chemistry is relevant to YOUR life. In the course of completing this goal, the various concepts of chemistry that are discussed will aid in developing your human capacities and contribute to your liberal arts education. More specifically, by completing the ground-level ozone study, you will: 1) begin to develop problem solving and critical thinking skills; 2) become better acquainted with experimental design (including data collection and analysis); 3) practice effective communication; and 4) show you how a chemist can solve a real problem and reveal the interdisciplinary nature of a social issue such as air quality.

Materials and Resources

- Textbook: Chemistry: A Molecular Approach, by Nivaldo Tro (required)
- Student study guide and solutions manual (accompaniment to textbook; optional)
- Carbon-copy lab notebook (required)
- Safety Glasses (required)
- Non-graphing scientific calculator (required)
- PRS Interwrite Remote (required)
- Blackboard Class Conference – General Chemistry with Lab (<https://classes.emory.edu>)
- Emory email (ex: jeichle@emory.edu)

Grading

Your grade will be broken down into the following categories:

Exam 1 (CH1-3)	20%
Exam 2 (CH4-6)	20%
Exam 3 (CH7-10)	20%
Final Exam (CH1-12) ¹	20%
Laboratories ²	15%
Ground level ozone report	5%

¹Your final exam can be used to replace your lowest exam grade (can only replace *one* of your semester exams). If you miss an exam due to absence, your final exam will act as your make-up exam.

²If you complete all of the Blackboard HW exercises and tutorials prior to the due dates, you will receive 5 points on your lowest lab grade. If you miss class on a day when a lab is conducted, you will receive a grade of 0 for that lab; if the lab is done over a two day period, you will lose 50 points for each day you are absent. There are no makeup labs unless approval is given from the Office of Academic Affairs (death in the immediate family, hospitalization, etc.).

Laboratories

You will do 7 labs in the course of the semester:

- 1) Experimental Design Lab (formal report; 3% of overall grade)
- 2) Stoichiometry Lab (formal report; 3% of overall grade)
- 3) Imploding Can Lab (formal report; 3% of overall grade)
- 4) Redox Titration (problem sheets; 1% of overall grade)
- 5) Calorimetry Lab (formal report; 3% of overall grade)
- 6) Atomic Spectra Lab (problem sheet; 1% of overall grade)
- 7) Lewis Structure Dry Lab (problem sheet; 1% of overall grade)

Guidelines for the lab formal reports will be provided in separate documents.

Ground-level Ozone Project

Each student will complete a ground level ozone detection study by working in a collaborative group with two other students. Included in this will be why ground-level ozone in Newton County needs to be measured and how one could actually go about measuring it. Each group will then use ground-level ozone detectors and design an experimental protocol for collecting ozone concentration data. Subsequently, each group will create a final presentation that summarizes all of the pertinent background information, as well as the ozone concentration data and analysis. This report will be given to the local environmental agency Keep Covington/Newton Beautiful. The ground-level ozone project will be graded based on the course instructor's evaluation of the presentation.

Final letter grades will be assigned as shown below:

A	(93-100%)
A-	(90-92%)
B+	(87-89%)
B	(83-86%)

B-	(80-82%)
C+	(77-79%)
C	(73-76%)
C-	(70-72%)
D+	(67-69%)
D	(60-66%)

Honor Code

It is assumed that all Oxford College students will adhere to the highest standards of academic honesty and will uphold the Oxford College Honor Code.

Specific things to keep in mind for CHEM 141Z:

- you are expected to do your own work when taking an exam.
- only a non-programmable calculator, pencil, and other pre-approved documents are permitted in the exam.
- no cell phones are allowed in class during an exam period.
- all work handed in for lab is done as a group, however there is to be NO collaboration between lab groups for any formal report or problem sheet.
- any unoriginal idea or thought used in a laboratory assignment must be properly referenced.

It is my duty, according to the Honor Code, to report any incidences of misconduct to the Honor Council. Anyone who is found guilty of violating the Honor Code may receive a grade of F for the course. It is strongly recommended that each student carefully read through the Oxford College Student Honor Code.

Tentative Schedule (chapters from Tro Text in parentheses)

Week 1: units, dimensional analysis, experimental design (CH1)
 Week 2: atomic structure, basic chemical bonding (CH2)
 Week 3: finish CH2; begin molecules, compounds, basic reactions (CH3)
 Week 4: finish CH3

Exam I

Week 5: stoichiometry and aqueous reactions (CH4)
 Week 6: gases (CH5)
 Week 7: thermochemistry/enthalpy (CH6)
 Week 8: finish CH6

Exam II

Week 9: quantum model of the atom (CH7)
 Week 10: periodic trends and covalent bonding (CH8 and 9)
 Week 11: VSEPR, hybridization, MO theory (CH10)
 Week 12: finish CH10

Exam III

Week 13: intermolecular forces and solutions (CH11 and 12)
 Week 14: ground level ozone project
 Week 15: ground level ozone project
 Week 16: review

Final Ground Level Ozone Project due December 9

Final Exam: Tuesday, December 15, 2-5 pm

Note: There will be no class on Oct. 21 or 23; these classes will be made up on Oct. 6 and Oct. 20 from 8am-9:45am.