

**Course Syllabus
Chemistry 100Z
Fall 2007
Oxford College of Emory University**

Class Meets MWF, 8:30-10:20, Room 207 Pierce

Instructor: Jack F. Eichler, PhD

Office: 202 Pierce

Office Phone: (770) 784-8340

Email: jack.eichler@emory.edu

Office Hours: Tuesday/Thursday (9:30-11:00 am) or by appointment

What is a Liberal Arts Education?

A liberal arts education is an interdisciplinary education including courses in humanities, natural sciences, social sciences, and physical education.

Why Pursue a Liberal Arts Education?

This course aims to use chemistry as a springboard into a liberal arts education by helping YOU develop your human capacities, that is the “qualities, capacities, domains, and/or dispositions native to us as human beings that allow education to occur in the first place.”* Marshall Gregory, Ice Professor of English, Liberal Education, and Pedagogy at Butler University, breaks down these capacities into eight categories:

- 1) Language
- 2) Reason
- 3) Imagination
- 4) Introspection
- 5) Aesthetic Responsiveness
- 6) Moral and Ethical Deliberation
- 7) Sociability
- 8) Physicality

One may see the goal of a liberal arts education as the advanced development of all of these human capacities. By doing so, YOU will be better equipped to live an “autonomous, socially responsible, intellectually perspicuous, and morally defensible life.”¹

¹Marshall Gregory, “Forgetting, Learning, and Living: A Pedagogical Theory of How Education Makes a Difference Even Though We Forget Most of What We Learn” 2006.

Course Description

Chemistry 100Z is the first course in a two-semester sequence for General Chemistry. This class fulfills the introductory chemistry requirement for pre-nursing students. It can also be taken by non-science majors to complete their laboratory science general education requirement. The topics covered in CHEM 100Z include: 1) experimental design and measurement; 2) fundamental properties of matter; 3) states of matter and the properties of gases; 4) aqueous solutions; 5) chemical reactions; 6) energy; and 7) environmental sustainability.

*Note: If you have taken and passed CHEM 141, you cannot receive credit for CHEM 100Z.

Course Goals

The general goal of CHEM 100Z 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 begin to develop problem solving and critical thinking skills, become better acquainted with experimental design (including data collection and analysis), and practice effective communication. This experience will show you how a chemist can solve a real problem and reveal the interdisciplinarity of a social issue such as air quality.

Materials and Resources

- Textbook (optional): Introduction to General, Organic, and Biochemistry, 8th edition, Bettelheim/Brown/March
- Student study guide and solutions manual (accompaniment to textbook; optional)
- Carbon-copy lab notebook (required)
- Safety Glasses (required)
- Non-graphing scientific calculator (required)
- Blackboard Class Conference (<https://classes.emory.edu/webapps/portal/frameset.jsp>)
- Oxford College CHEM 100Z Ozone Study website (<http://www.emory.edu/OXFORD/CLASS/Eichler/Index.html>)

Attendance

Since laboratory experiments, case studies, and other in-class activities will be completed in each class session, attendance is required. You will be allowed to miss three class periods during the course of the semester, regardless of the reason for absence. However, every absence after the third will result in the loss of 3 points from your final grade. For example:

You end up with a 91/A- in the course. However, you missed 5 class periods during the semester. Since you had 2 absences over the limit, you will lose 6 points from your grade, resulting in an 85/B.

Grading

Your grade will be broken down into the following categories:

Readings/Case Studies /Tutorials	5%
Exam 1 (Unit 1 and 2)	15%
Exam 2 (Unit 3 and 4)	15%
Exam 3 (Unit 5 and 6)	15%
Laboratories	15%
Ozone Detection Project	20%
Final Exam (cumulative) ¹	15%
Extra Credit ²	

¹Your final exam can be used to replace your lowest exam grade. If you miss one exam due to absence, your final exam grade will replace that exam grade, so you will not be able to drop any of the other exam grades.

²If you complete all of the SALG assignments, you will receive 5 points on your lowest semester exam grade.

Readings/Case Studies/Tutorials

•readings/case studies: Grades for these assignments will be based on the evaluation of short written responses to assigned questions.

•online-tutorials: Grades will be based on completion of the assigned exercises.

*Note: Missed assignments cannot be made up. However, you will get to drop your lowest grade at the end of the semester.

Laboratories

Laboratory activities will be graded based on the evaluation of written reports. Generally, this will be done in the form of a report sheet or a formal written summary. Descriptions for the lab report sheets and formal summaries will be provided in separate documents.

*Note: If you complete the two course reflection writing assignments, your lowest lab grade will be dropped. If you miss one lab assignment due to absence, that grade will be dropped.

Additional missed labs due to absence CANNOT be made up and will result in a grade of 0 (if you miss class during a laboratory experiment, you cannot hand in a report sheet or formal summary for that lab).

Course Reflection Statements

If you complete both course reflection writing assignments, you will get to drop your lowest lab grade. Details about these writing assignments will be given when these are assigned.

Ground-level Ozone Project

Each student will complete a ground level ozone detection study by working in a collaborative group with two other students. The initial problem will be given to you in the form of a case study. Once the major learning goals have been identified in the case study, each group will research the necessary background information required to address the major learning objectives.

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 construct ground-level ozone detectors and design an experimental protocol for collecting ozone concentration data.

Subsequently, each group will write a report 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 evaluation of the written report and student self-evaluations.

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 100Z:

- 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 must be done as an individual unless otherwise stated by the lab instructor
- any idea or thought used in a laboratory assignment must be properly referenced
- even though you may collect data in groups, you are not to collaborate with other students when completing lab report sheets/formal summaries

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

Week 1: Course introduction / Read ozone case study

Week 2: Unit 1 (Experimental Design and Measurement – Ch1 Bettelheim)

Week 3: Unit 2 (Atomic Structure – Ch2 Bettelheim)

Week 4: Unit 2

Exam I

Week 5: Unit 3 (Chemical Bonding – Ch4 Bettelheim)

Week 6: Unit 3

Week 7: Unit 4 (States of Matter and Gas Laws – Ch 6 Bettelheim)

Week 8: Unit 4

Exam II

Week 9: Unit 5 (Chemical Reactions and Energy of Reactions – Ch 5 Bettelheim)

Week 10: Unit 5

Week 11: Unit 6 (Aqueous Solutions and Aqueous Reactions – Ch 5 & 7 Bettelheim)

Exam III

Week 12: Ground Level Ozone Detection Study

Week 13: Ground Level Ozone Detection Study

Week 14: Ground Level Ozone Detection Study

Week 15: Ground Level Ozone Detection Study

Final Written Report for Ground Level Ozone Detection Study due Dec. 10

Final Exam: Friday, Dec. 14, 9-12 am