

Chemistry 120 – Course Syllabus
Spring 2007
Oxford College of Emory University

Class Meets MWF, 8:30-10:25, Room 207 Pierce

Instructor: Jack F. Eichler, PhD

Office: 202 Pierce

Office Phone: (770) 784-8340

Email: jack.eichler@emory.edu

Office Hours: Tuesday (12:00-1:00), Thursday (4:00-5:00), or by appointment

What is a Liberal Arts Education?

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 120 is the second 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 120 include acid/base chemistry, basic concepts of organic chemistry, biological molecules, and connections between chemistry and biology.

Course Goals

The general goal of CHEM 120 is to provide an introduction to the connection between chemistry and biology. More specifically, this course aims to provide pre-nursing students with a rudimentary background in biological chemistry that will aid them in their future studies and allow non-science majors the opportunity to further enrich their knowledge of chemistry by exploring the connection between the physical and life sciences. The successful completion of this course should help increase the success of nursing students in their professional studies and provide a deeper understanding of how chemistry is relevant to one's life. In addition, by completing this course, the various concepts of chemistry that are discussed will aid in developing the human capacities and contribute to general liberal arts education.

Materials and Resources

- Textbook (required): General, Organic, and Biochemistry, 5th edition, Denniston/Topping/Caret **or** Introduction to General, Organic, and Biochemistry, 8th edition, Bettelheim/Brown/March
- Student study guide and solutions manual (accompaniment to Denniston or Bettelheim text; optional)
- Carbon-copy lab notebook (required)
- Safety Glasses (required)
- Non-graphing scientific calculator (required)
- Learnlink Class Conference [required (Oxford College→Class Conferences→Oxford Chemistry→120 Eichler)]

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	10%
Exam 1 (chapters 1 and 2)	15%
Exam 2 (chapters 3 and 4)	15%
Exam 3 (chapters 5 and 6)	15%
Exam 4 (chapters 7 and 8)	15%
Laboratories	15%
Final Exam (cumulative)	15% ²

²Your final exam can be used to replace your lowest exam grade and will act as your makeup exam if you miss one of the semester exams (if you miss more than one semester exam due to absence, then you will receive a grade of zero on subsequent missed exams).

Readings/Case Studies

You will be given periodic reading assignments that will be done outside of class and case studies that will be done in class. Grades for these assignments will be based on short written responses to assigned questions.

Laboratories

Laboratory activities will be graded based on 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 are given below.

Report sheets should include:

- carbon copies of your notebook pages (these should list the title of the experiment, a concise summary of your protocol, all observations, and a summary of the data collected)
- a separate sheet showing all necessary calculations
- any necessary tables or graphs
- answers to any questions posed in the laboratory handout or given by the instructor after the lab

Formal summaries should include (in a word-processed document):

- a title page listing your name, course number, instructor, date, and title of experiment
- introduction (what did you do? why did you do it? why is it important?)
- experimental (briefly describe what was done to complete the laboratory study; use enough detail so that another skilled scientist could duplicate your work; if you designed the actual experiments based on an original hypothesis, be sure to explain why you decided on that hypothesis and how your experiments are be able to address that hypothesis)
- data/results (use tables and/or graphs to document your data and results)
- discussion (provide a brief discussion of what conclusions you can make based on your data; what kind of confidence do you have in your data? what questions did your work answer? did your experiments confirm or deny the hypothesis? did the experiment help

complete the objective stated in the introduction? what limitations/errors were present in the data collection and how could these be corrected in future experiments?)

- conclusion (succinctly re-state what you did, why you did it, and what type of questions you were able to answer using the experimental data; also briefly mention potential future work that may help to further answer the questions and achieve the objectives of the experiment and how you would adjust your hypothesis if necessary)

- be sure to seamlessly integrate answers to any assigned questions within the appropriate section of your written report

- appendix of calculations (show at least one example of each type of calculation required by the experiment)

Note: Your lowest lab/reading/case study grade will be dropped. If you miss one assignment due to absence, that grade will be dropped. Additional missed labs/readings/case studies 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).

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 120:

- 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, Begin Unit 1 (acids/bases)

Week 2: Unit 1

Week 3: Unit 2 (types of bonds/organic and biomolecules)

Week 4: Unit 2

Exam I

Week 5: Unit 3 (nucleotides and nucleic acids)

Week 6: Unit 3 and Unit 4 (gene expression and protein synthesis)

Week 7: Unit 4

Exam II

Week 8: Unit 5 (proteins)

Week 9: Unit 5

Week 10: Unit 6 (enzymes and metabolism)

Week 11: Unit 6

Exam III

Week 12: Unit 7 (nutrition)

Week 13: Unit 7

Week 14: Unit 8 (diseases)

Week 15: Unit 8

Exam IV

Week 16: Review

Final Exam: May 4 (9:00am-12:00noon)