NATS 1211
Science of Contemporary Issues
Autumn 2002

Instructor: Dr. Lawrence J. Berliner
Olin, Room 202
Phone 303-871-2436

T.A.'S: Eydiejo Wandschneider, Nicole Bous, Richard Kristinsson
Mailboxes: Chemistry Department Office: 0lin202, x2435

Assignments:
Periodically, homework problems related to the lecture or lab material will be assigned. These problems may require some additional reading (Library) on your part. You are responsible for completing the assignments and turning in on time. No late assignments will be accepted and will be given a zero grade. Your comprehension will be tested via the exams.

Exams:
a) There will be two one-hour exams and a final exam. There will not be any make-up exams under any circumstances and your final grade for the course will be determined by your performance in all the three exams. If your score in the final exam is higher than any of the scores in the one-hour exams, the final exam score will replace the lowest score.
b) If anyone, for any reason, had to take the exam out side of the scheduled time, arrangements need to be made with the instructor at least one week advance. The instructor reserves the right to deny or accept the request and also to alter the exam. Often these non-scheduled exams will be much harder than the regularly scheduled exams.
c) All exams will be comprehensive, encompassing lecture materials, assignments, and laboratory material.

Grading: The break down of the course grades is as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>100pts</td>
</tr>
<tr>
<td>MQ Exam 1</td>
<td>200 pts</td>
</tr>
<tr>
<td>MQ Exam 2</td>
<td>200 pts</td>
</tr>
<tr>
<td>Final Exam</td>
<td>300 pts</td>
</tr>
<tr>
<td>Lab</td>
<td>200 pts</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1000 pts</td>
</tr>
</tbody>
</table>
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Lab Location/Times:
Section 1    Mon. Afternoon  2:00-5:00 PM  BE15
Section 2    Tues. Afternoon  2:00-5:00 PM  BE15
Section 3    Wed. Afternoon  2:00-5:00 PM  BE15
Section 4    Tues. Evening  7:00-10:00 PM  BE 15
Section 5    Wed. Evening  7:00-10:00 PM  BE 15

You are required to do EVERY lab. You must attend the lab section in which you are registered.

There are NO MAKE-UP LABS. If you miss your lab for any reason, you must make it up in the same week the lab is offered.
• If you cannot make your scheduled lab time you MUST get permission from both your and the alternate Teaching Assistant before changing.
• All lab assignments must be finished and handed in to the Teaching Assistant at the end of each laboratory period.
• Your comprehension of the material covered in the labs will be tested via the exams.
### NATS 1211 - Science of Contemporary Issues

**Autumn 2002**  
M,W,F 11-11:50AM Olin Hall 205

**Instructor:** Dr. Lawrence J. Berliner  
Olin, Room 202, Phone 303-871-2436

<table>
<thead>
<tr>
<th>WEEK OF</th>
<th>TOPICS TO BE DISCUSSED</th>
<th>READING (Chap:pgs)</th>
<th>LABORATORY</th>
</tr>
</thead>
</table>
*How you make sure you’re getting what you paid for Atoms, Molecules and Ions* | 1:10-22, 2:28  
Handouts  
2:24-29 | Introduction (*Boot Camp*) |
| 11      | Atoms, Molecules and Ions  
*Mendeleev and the Periodic Table*  
*Mendeleev and the Periodic Table* | 2:24-29  
Handouts | Measuring weight, mass, volume  
Pennies, raisins |
| 13      | Chemical Bonds (not the bond market)  
The *essence of chemistry and biochemistry*  
Shapes and sizes of molecules | 2:29-31  
Handouts | Statistics – averages, standard deviation (last week’s data) |
| Sept 23 | Neurobiochemistry *Moody, Sullen Girls, Angry Hostile Boys*  
Shapes and sizes of molecules  
*How to clean up a spill - what dissolves in what?* | *Contemp. Issues*-lecture  
2:32-38  
Handouts | Chemical bonds; molecular models |
| 25      | MONDAY - Midquarter Exam #1  
Intermolecular forces of attraction  
PH (acids and bases) | 2:32-38 | Materials Safety Data Sheet - MSDS |
| 27      | Organic Chemistry - *How to read the bottle* (IUPAC)  
nomenclature; Reactions  
Polymers | 3:39-41  
3:41-42 | Aspirin tablets- dissolving  
Aspirin tablets - purity |
| Oct 2   | Drugs, pharmaceutical, herbicides; *what are they?*  
*Biochemistry and Life – the Cell*  
Amino acids (proteins) | 1:5-6, 4:58-64  
3:47-53 | Soil moist – the principle of disposable diapers |
| 4       | Chemical/biological warfare defense  
The structure of wool and hair (*permanent wave*)  
Protein structure | *Contemp. Issues*-video  
Handouts |  
| Oct 7   | MONDAY - Midquarter Exam #1  
Intermolecular forces of attraction  
PH (acids and bases) | 2:32-38 | Materials Safety Data Sheet - MSDS |
| 9       | Organic Chemistry - *How to read the bottle* (IUPAC)  
nomenclature; Reactions  
Polymers | 3:39-41  
3:41-42 | Aspirin tablets- dissolving  
Aspirin tablets - purity |
| 10      | Chemical/biological warfare defense  
The structure of wool and hair (*permanent wave*)  
Protein structure | *Contemp. Issues*-video  
Handouts | Soil moist – the principle of disposable diapers |
| Nov 4   | More protein structure  
Enzymes – *the catalysts of life* | Handouts | Sugar analyses |
| 6       | FRIDAY - Midquarter Exam #2 |  
| 8       | Nucleic acids (DNA)- The Genetic Code  
Sugars (Carbohydrates)  
Fats (Lipids/membranes) | 3:53-58  
3:43-45  
3:45-47 |  
| Nov 11  | Nucleic acids (DNA)- The Genetic Code  
Sugars (Carbohydrates)  
Fats (Lipids/membranes) | 3:53-58  
3:43-45  
3:45-47 |  
| Nov 15  | Nucleic acids (DNA)- The Genetic Code  
Sugars (Carbohydrates)  
Fats (Lipids/membranes) | 3:53-58  
3:43-45  
3:45-47 |  
| Nov. 20 | WEDNESDAY - Final Exam 10:30 – 12:15 |  

QD42.S556 1980
Smith, R. Nelson (Robert Nelson), 1916-
Title Solving general chemistry problems / R. Nelson Smith, Conway Pierce.
Edition 5th ed.

QD42.D723
Author Drago, Russell S.
Title General chemistry problem solving I / Russell S. Drago.

QD31.2.B7 1982
Brady, James E., 1938-
Title General chemistry, principles and structure / James E. Brady, Gerard E. Humiston.

QD31.2.P48 1982
Petrucci, Ralph H.
Title General chemistry : principles and modern applications / Ralph H. Petrucci.

QD31.2.D39
Day, R. A. (Reuben Alexander), 1915-

QD257.M67
Moriarty, Robert M.
Publ info Menlo Park, Calif. : W. A. Benjamin, [1975]

QD251.B742
Brewster, Ray Q. (Ray Quincy), 1892-
Title Organic chemistry, a brief course, by Ray Q. Brewster and William E. McEwen.
Edition 2d ed.

QD253.N38 1992
Nentwig, J. (Joachim)
Title Organic chemistry made easy / Joachim Nentwig, Manfred Kreuder, Karl Morgenstern.

QD253.R73
Roberts, John D., 1918-
Title Organic chemistry : methane to macromolecules / John D. Roberts, Ross Stewart, Marjorie C. Caserio.