



TEMPLE UNIVERSITY

CHEMISTRY DEPARTMENT

SYLLABUS FOR GENERAL CHEMICAL SCIENCE LABORATORY (Chemistry C083)

Summer Session II 2006

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There has been a general dissatisfaction among some faculty at many institutions for some time in the more-or-less traditional "cookbook" type of General Chemistry course. A common thread suggests that "the opportunity to excite students and show them how real science is done [is] squander(ed)".¹

This Honors and Majors course is the first at [Temple University](http://www.temple.edu) to engage the problem at the Freshman level.

Additionally, there is now a great deal of evidence that the process of "Cooperative Learning" profits most students. It is hoped that this class will provide the [Chemistry Department](#) with some evidence for its value here. The text book chosen for the laboratory is [M. M. Cooper Cooperative Chemistry](#) 3rd edit. [McGraw-Hill 2006](#) which is available at the [T.U. Bookstore](#). You must also bring a **hard bound** laboratory notebook and safety glasses to class and a Safety Release Form found in the **Student Guide to CST Laboratory Safety**. The **Guide** can be obtained from the Copy Center in Conwell Hall, Room 601.

In addition to the textbook ([M. M. Cooper Cooperative Chemistry, McGraw-Hill](#)) library resources found in the [Chemistry Department Library](#) and on the World Wide Web may prove useful in this course. Use should be made of the site for [Honors and Majors Chemistry Students](#) (which will only work from on campus or using point-to-point protocol [ppp] access). Simulated experiments can be found there. Some web resources² which you might find useful include (but are not limited to):

- [Science learning network](http://www.sln.org/) ...<http://www.sln.org/>
- [Webercises \(Wiley\)](http://www.wiley.com/college/webercises/) ... <http://www.wiley.com/college/webercises/>
- [Education Index](http://www.educationindex.com/chem/) ...<http://www.educationindex.com/chem/>

- [General Chemistry Online](http://antoine.frostburg.edu/chem/senese/101/) ...http://antoine.frostburg.edu/chem/senese/101/
 - [NCSA ChemViz](http://www.ncsa.uiuc.edu/Edu/ChemViz/curr.html) ...http://www.ncsa.uiuc.edu/Edu/ChemViz/curr.html
 - [Online Data bases from the NIST](http://www.nist.gov/srd/online.htm) ...http://www.nist.gov/srd/online.htm
 - [Chem-help at Temple](http://www.temple.edu/chem-help) ...http://www.temple.edu/chem-help.
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Any student who has a need for accommodation based on the impact of a disability should contact me privately to discuss the specific situation as soon as possible. (S)he should also contact Disability Resources and Services at 215-204-1280 in 100 Ritter Annex so that we can attempt to coordinate reasonable accommodations for their documented disabilities.

COURSE ORGANIZATION

The laboratory work in this course is divided into a series of projects. As outlined below there will be four (4) projects to be completed in the first semester. The first laboratory period will be devoted to a discussion of the goals and objectives of the course, checking into the laboratory, investigating some of the equipment available in the laboratory, and organizing the class into teams. Team members will be introduced to each other and roles in the team assigned. (Although you will stay with the group throughout the semester, your role in the group will vary with each assignment.) Subsequent laboratory sessions will adhere to the schedule appended below.

THE TEAM APPROACH¹

As our society becomes more complex, it is becoming clear that most problems that beset us can no longer be solved in a reasonable amount of time by single individuals working alone. So, learning to work as part of a team is an important undertaking.

In our individualistic society, working as part of a team is often found to be difficult because members of the team are expected to rely upon each other to solve problems cooperatively. Today, widespread cooperation is particularly true in the sciences where an individual laboratory often cannot house all of the equipment necessary for the solution to every problem. Therefore, although this is a course in problem solving, it enjoys the added complexity of attempting to utilize a team approach to solve the problems. Thus, each team will be presented with a problem and the members of the team will need to devise their own experiments, test their own hypotheses and evaluate their own data. Although all of the teams will have the same problems, it is anticipated that different teams will find different solutions.

As noted above your role in the team will change. At some time you are expected to assume the role of:

- **A Team Leader** : responsible for overall supervision of the team and (s)he assures that all members contribute equally.
- **An Assistant Team Leader** : assumes the role of the Team Leader when (s)he is absent and is responsible for completion of all materials to be submitted by the group in a way that reflects the thinking of all team members
- **A Record Keeper**: keeps records of all materials discussed and is responsible for informing absent team members of progress made.
- **A Team Counselor**: assumes the role of the Record Keeper if (s)he is absent and is responsible for making sure all team members agree on a proposed course of action.

PROCEDURAL OUTLINE

During the first week of lab, you will be assigned to a group. You will then spend some time getting to know the members of your group and acquainting yourselves with the laboratory and various places in the building where facilities to support your enquiries are housed (library, computer room, *etc.*). You will also be given your first project and will spend whatever time remains of the rest of the laboratory period working on your project. At the beginning of the next laboratory period your group will hand in a brief (200 - 400 words) written preliminary proposal describing how your team anticipates carrying out the project. The proposal should explain what you intend to do, why you intend to it, and how you will deal with the results. It has been suggested¹ that you will almost certainly need to modify your preliminary proposal during the work. This preliminary plan will count for 10 points of the total grade of the first project and, along with an oral report and final summary, will be the only portion of your grade which will be assigned to the group as a whole.

During the next two weeks, your group will continue investigations into your project and at the beginning of week four, you will **each** hand in a separate report on the progress made to date. Each member of the group will write a separate report and will receive feedback the following week. The final report for the project will be due from each member of the group the week following the final lab period of each project.

Each project is evaluated separately. The total grade for the course is the average of the project grades.

GRADING:

Each project will be graded along the following outline:

ASSIGNMENT	VALUE
Pre-lab	
Post-lab	
Poster	50 (group grade)
Final Report	50 points (individual grade)
Technique and Notebook	
Lab Quiz	10 points (individual grade)
Peer evaluation	
TOTAL	110 points

NOTE:

- All grades except as noted are individual grades. **Please** keep in mind the University policies on academic honesty. The reports you write and submit, even though they are based on the experimental work of the group, must be your own work.
- Keeping a laboratory notebook is discussed in your laboratory text (**Cooperative Chemistry**). You must keep in mind that the notebook should be written in ink and alterations affected by drawing a single line through what you wish to have ignored and rewriting new observations, *etc.* below or next to that which was crossed out. Notes on scraps of paper are too easily lost or confused with other things to be of lasting value and your grade for technique will suffer if the laboratory instructor observes that bad habit forming.

- You will be given forms to evaluate your peers in the middle and at the end of the course. Anonymous evaluation of the course and the instructor can be made at any time by filling out the form to be found [here](#) and on a different form at the end of the term. Comments concerning course improvement are welcome at any time and in any format.
- Details on preparation of oral and written reports are given in the laboratory manual.
- The weekly report is a summary of your progress and will be typed up and handed in by noon of the day following the laboratory class.

ATTENDANCE

Attendance in the laboratory is required. If you must miss a laboratory for some reason, you should inform the members of your group and the instructor (john.scovill@temple.edu). Your group members will have the option of requesting that you do extra work (*e.g.*, looking things up in the library, *etc.*). If you have more than two unauthorized absences, the instructor may encourage you to withdraw from the course. In any event, each of you will have the opportunity to evaluate the members of your group at the end of each project.

INCOMPLETES/WITHDRAWAL

Withdrawal: Please note that a withdrawal (W) is an institutional procedure which is not complete until the withdrawal form has been signed and submitted to the Registrar's office. This course is governed by the Temple University Policy (#02.10.14) on Withdrawal. Please click [here](#) to view the policy.

Incomplete: Please note that an Incomplete (I) is only to be given in accord with institutional procedures and which is not complete until the specific requirements and forms have been met, signed and submitted. Additionally the grade "I" (Incomplete) will be given only to students who have finished three of the four assigned experiments. This course is governed by the Temple University Policy (#02.10.13) on Incompletes. Please click [here](#) to view the policy.

Subject to the restrictions of the University as noted above, please keep in mind that there are other people relying upon you in this course. The members of your group will need to plan to make arrangements to accommodate your loss from the group. Please make every effort to show consideration for those who are staying with the course. Note that you **must check out of the laboratory before a drop authorization is signed** or you will be charged a fee and your grades will be withheld pending its payment.

NOTICE:

If you do not wear your safety glasses in the laboratory you will not be permitted to stay. (Persons wearing contact lenses must remove them and replace them with eye glasses for the laboratory period.) You must read and agree to abide by the Safety Rules provided for you in your laboratory text (pp 13 - 14) and you must bring to class a **signed Safety Release Form** found in the **Student Guide to CST Laboratory Safety** that is obtained from the Copy Center in Conwell Hall, Room 601.

The chemical laboratory is a hazardous environment that requires a proper mental orientation and appropriate clothing. **Eating and drinking in the laboratory are prohibited.** It should be your plan to wear clothing in the laboratory that will provide sufficient body coverage. **Shorts, mini-skirts, bare midriffs etc. are inappropriate.** **Wearing open-toed shoes and sandals is not permitted in the laboratory.** Long hair should be securely tied back. If you choose to dress inappropriately you will be asked to leave the laboratory. Students will wear the laboratory coats provided by the Department.

LABORATORY SCHEDULE Chemistry C083 (July - August 2006)

	Date and Day	Items Due	Graded Exercise	Laboratory
1	Jul 5 (W)			Orientation Form groups
2	Jul 6 (Th)			Check in
3	Jul 10 (M)	Pre-lab Post-lab 1		Identification, Properties, and Synthesis of an Unknown Ionic Compound (11)
4	Jul 11 (T)	Post-lab 2		Identification, Properties, and Synthesis of an Unknown Ionic Compound
5	Jul 12 (W)			
6	Jul 13 (Th)			
7	Jul 17 (M)	Post-lab 3		Identification, Properties, and Synthesis of an Unknown Ionic Compoun
8	Jul 18 (T)	Pre-lab		Properties of Matter and Separations (6)
9	Jul 19 (W)		Poster 1	
10	Jul 20 (Th)		Report 2	
11	Jul 24 (M)	Post-lab 1		Properties of Matter and Separations
12	Jul 25 (T)	Post-lab 2		Properties of Matter and Separations
13	Jul 26 (W)			
14	Jul 27 (Th)		Poster 2	
15	Jul 31 (M)	Pre-lab	Report 2	Identification Properties and Synthesis of an Unknown Organic Compound (14)
16	Aug 1 (T) (Last day to withdraw)	Post-lab 1		Identification Properties and Synthesis of an Unknown Organic Compound
17	Aug 2 (W)			
18	Aug 3 (Th)			
19	Aug 7 (M)	Post-lab 2		Identification Properties and Synthesis of an Unknown Organic Compound
20	Aug 8 (T)	Post-lab 3		Identification Properties, and Synthesis of an Unknown Organic Compound
21	Aug 9 (W)		Poster 3	
22	Aug 10 (Th)		Report 3	
23	Aug 14 (M)			Check out
24	Aug 15 (T)		Poster Gala Report 4	

¹ M. M. Cooper, **Cooperative Chemistry**, 3^d edition, [McGraw-Hill](#), 2006.

² At this writing (26 August 2005) all of the www sites quoted are "up-and-running". However, it is the current nature of the www to be somewhat ephemeral and therefore, of course, there are no guarantees that the sites now present will be there when you need them. Additional sites can be added should members of the class find them particularly useful.

Comments: [Dr. Scovill's Mail Box](#).

215-204-7341 (VOICE)

215-204-1532 (FACSIMILE)



<http://ameddregiment.amedd.army.mil/> US Army Medical Department Regiment

<http://www.rit.edu/~gtfsbi/Symp/hpsp.htm> US Army Health Professions Scholarship Program

<http://www.vnh.org/> Virtual Naval Hospital

<http://wrair-www.army.mil/default.asp> Walter Reed Army Institute of Research