

# Syllabus – Honors Gen.Chemistry Lab, Chem19a, Fall 2015

## **Instructor:**

Milos Dolnik

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## **Office hours:**

Mo, Tue, Thu, Fr 2:00 – 3:00 pm and by appointment

## **Learning goals:**

Students in this course will utilize concepts learned in the Honors General Chemistry lecture course, Chem 15a. Throughout this course students will be introduced to important laboratory techniques and they should develop a good understanding of basic methods used in a chemical laboratory. This course will encourage development of analytical thinking and problem solving skills. Students will learn how to record observations and how to write a good laboratory report. Students will also learn and utilize basic statistical methods when evaluating measured results.

## **Lab lectures:**

A weekly 80-minute Chem19 lab lecture is scheduled on Fridays. There are two lab tests for the Chem 19a course. See calendar of experiments for the test dates.

## **Lab sessions:**

On the day when your first lab is scheduled arrive to the General chemistry laboratory, Shapiro Science Complex, room 00-10 before 1:30 pm. Check the list with names of students posted at the entry to the lab and find your bench assignment.

You will purchase a laboratory manual during the first week of classes. Bring with you cash or personal checks, credit cards are not accepted. The laboratory notebook is available at the University's bookstore and should be purchased before the first check-in session.

The lab sessions are from 1:30 to 5:20 pm. Be prompt because each lab period will begin with a prelab talk/discussion. Any student who will arrive to his/her bench in the lab after the official start 1:30 pm will be noted and will receive 5 points penalty for lateness. A student, who is 10 or more minutes late will not be allowed to stay due to a safety concern. He will receive 10 points penalty and will have to see the Instructor to reschedule lab for another day.

## **Grading:**

**Lab reports:** A report on the experiment is due at the beginning of the next lab period. Every lab report is worth of 100 points total. If a lab report is not turned in on time, the following "late" point deduction will be applied to each late part.

*The **late penalties** on any of the "prelab" part of the lab report (prelab assignment, purpose and lists of equipment and chemicals) are **5 points** – up to 6 hours late and **10 points** up to 24 hours late. No credit will be given for any part of the prelab assignment more than 24 hours late.*

*The **late penalties** on any of the "postlab" part are:*

- 2 points: up to 6 hours late,*
- 4 points - up to 24 hours late*
- 6 points – up to 72 hours (3 days) late*
- 10 points - up to one week late*
- 14 points – up to two weeks late*
- 18 points – up to three weeks late*

*No points will be awarded for a part of lab report more than 3 weeks late. The same penalties apply to absent students.*

*These penalties apply to each "late" part of any lab report. Only up to what is the part worth can be deducted for lateness.*

At the end of the semester, points for all your written work will be totaled and rescaled to the maximum of 50 "grade" points (50% of your grade weight).

**Tests:** Your score on the two tests (see syllabus) will contribute by 35% to your final grade.

**Performance, preparation and notebook.** 10% of your final score is derived from your performance throughout the course as assessed by your TA and UTA. Qualities to be considered include: laboratory skills, effectiveness and efficiency of the lab work, problem solving skills, independence, tidiness, overall improvement, safety precautions, etc. Students coming to the lab must be prepared, having thoroughly read the experiment, with purpose, list of equipment and chemicals and procedure in their notebook. During prelab talks your TA/UTA will ask questions to see if you are prepared for the lab. The TAs may also ask questions during the lab, especially when problems arise. You should know the purpose of each experiment, what data are going to be collected and how the final results and answers will be obtained. A portion of your performance score will also include your notebook score. There will be two reviews of your notebook that will focus on how you follow the guidelines for keeping your laboratory notebook (see the Laboratory notebook section in the Lab manual). A detailed table of contents must be presented at the time the notebook check is performed. The basic idea is, if you should come across your notebook few years from now, would it be clear what you did in the lab, what results you obtained, what was the precision and accuracy of your measurement and what conclusions did you arrive to.

**Quizzes & others:** Your lab lecture quizzes and your activity and participation during lab lectures contributes to the final grade by 5 %.

Table - Course Grading	Contribution to final grade (%)
Lab reports	50
Tests	35
Performance, preparation and notebook	10
Quizzes	5
<b>Total</b>	<b>100</b>

In the past, the medians were (all numbers approximate):

87% for the lab reports,  
70% for the tests,  
75% for the preparation and performance,  
75% for the quizzes.

Even though you may feel that you compete against other students, you are guaranteed an A if you receive total 88 or more points. A total of 78 points gets you a B; a minimum of 65 points is needed for a C- and a total of 55 points is just enough to pass the course with a D-. **There is no “curving” for any individual component** of this grading system, the score is added “as is”. However, if the class median grade is lower than a B-, the grade vs. total points relationship will be “curved”, so the median student will not receive a grade lower than a B-.

### **Laboratory safety and rule violations:**

Laboratory safety rules will be strictly enforced – these safety rules will be reviewed during the first week of lab. A student may be asked to leave the laboratory at any time if he is not performing the experiment safely. A student will not be allowed to stay in the lab if (s)he is not wearing proper clothing or adequate eye protection. There will be point deductions for safety rule violations. In case of severe and/or repeated safety rule violations you may receive a failing grade.

### **Academic honesty:**

You may discuss an experiment with other students and share ideas about answers to questions, but you must write your own lab report in your own words. Calculations, graphs, sketches, drawings etc. should be done as individual tasks. A report that is not clearly the student's own work will lead to charges of academic dishonesty, which are referred to the University's judicial system and can carry serious penalties.

### **Excuses and make-ups:**

Your absence will be excused only if you notify the Instructor about your absence **well before the scheduled lab starts. Your lab report on previous experiment and prelab assignment for the experiment you want to make-up must be turned in at the beginning of the “regular” (not make-up) lab session, otherwise a late penalty will be applied.** Your first “unannounced”, i.e. unexcused absence will receive penalty of 10 points. These points will be deducted from your lab report score. The penalty doubles with each following unexcused absence. The make-up experiment should be scheduled while other students are doing the same experiment. Students will not be excused to study for a test. Only the instructor (and not the TA or UTA) can excuse absences and schedule make-ups.

### **Preparation for laboratory experiments:**

- 1) Attend lab lectures and read carefully the entire text on the experiment you are going to perform. Also read any assigned readings.
- 2) Complete the prelab assignment problems before you come to the lab. You must upload your solutions to the prelab problems, purpose, list of equipment and chemicals on LATTE before the start of the lab.
- 3) Write out in your notebook or glue a copy of your print out with: a) title, date, and purpose of the experiment; b) list of equipment and list of chemicals; c) an outline of the experimental procedure leaving about a half of the right hand side of the notebook page for observations.
- 4) Bring to your lab meetings the lab manual, notebook and a scientific calculator with your name on it.

### **Students with disabilities:**

Visit the Instructor (Prof. Dolnik) within the first two weeks of semester during his office hours to discuss your academic adjustments and provide him with a letter regarding your documented disability.

### **Academic coursework and religious observance:**

Brandeis is a university that embraces students of a wide diversity of religious traditions. Students should review their syllabus at the beginning of each term to determine if there are any conflicts between class time and religious observance. It is the student's responsibility to inform the instructor of these conflicts **within the first two weeks of the semester**. Missing a class due to travel plans associated with a particular holiday does not constitute an excused absence.

### **LATTE:**

LATTE (Learning And Teaching Technology Environment) offers tools for course management and allows to post course material online. The LATTE Chem19 course is limited only to students enrolled in the Chem 19 course, TAs and the instructor. To access LATTE go to <http://latte.brandeis.edu> and log in using your unet username and password.

## ***Unethome space:***

It is recommended that you use your *Unethome* space for storing your electronic files that you create in the lab. From your *Unethome* space you can retrieve files from any Internet-connected computer. To learn how to connect to your *Unethome* space check the website:

<http://lts.brandeis.edu/techhelp/connecting/unethome/index.html>.

## ***Checking in***

Arrive at Shapiro Science Complex 00-10 before 1:30 pm. At the entry to the general chemistry lab you will find a list of the students expected to attend lab that afternoon.

A lab drawer containing equipment will be assigned to you for the whole semester. In the drawer is a list of equipment. Make sure that all the items are in the drawer and that they are in good condition. Get replacements for missing or broken items from the stockroom. Be sure you have the correct number of each item. With a paper towel moistened with acetone from a wash bottle set out in a hood, wipe off old markings from glassware and from your wash bottle. Rinse your wash bottle with distilled water.

For safety reasons, you must always have goggles on (or safety glasses when permitted) during the lab period, but leave them in the drawer when you depart. When you have completed the checking, return the signed equipment list and Laboratory Safety Rules to your TA.

Your TA and UTA will provide you with his/her contact information (e-mail, office, preliminary office hours) and will review the section policies. You will get a safety tour in your lab section and you will locate safety devices (fire extinguishers, eye wash, shower, first aid kit, fire blanket, fire alarm and phone). Your TA will tell you how to use these safety devices.

At the end of the check-in period you will be asked to complete a questionnaire on a PC. Login into the machine using your unet username and password (Log on to: USERS). To access the electronic data table on the PC first double click on the **mapshare** icon on the desktop. Then open the **GC lab experiments** folder and go to the **Chem19** and the **Tables** folder. Open the file "**Table00\_CheckIn**". Enter required information and numbers in correct format (some cells are set intentionally preformatted with wrong format so you will learn how to modify appearance of numbers in MS Excel). Use the "**Save As ...**" command to save your file on the desktop with your name. Upload the file on LATTE.

### **Instructions for uploading a file from a local computer to LATTE:**

Start Internet Explorer or Mozilla Firefox and click on the LATTE link (top right). You may also type: <http://latte/> (typing "latte" is enough). **Login** with your brandeis unet username and password and click on **153chem-19a-day**(e.g. 1 for Monday) course -> click on **Check-in questionnaire** and upload your file (**Browse** for your file saved on the desktop, select it and click on the **Upload this file** button).

*If you don't succeed in uploading the file, e-mail the file to yourself and you will upload it next week.*

Your drawer will be locked between lab periods. Your TA will open your drawer when you arrive and lock it as you leave the lab. At the end of the course, you are to replace any missing or broken equipment and pay for the replacements. You are advised to keep your equipment in your locked drawer between lab periods, because items left out in the laboratory are easily lost.

**If you decide to drop the course after you have checked in, you must check out of the course.** The instructions for checking out are on next page.

## *Checking out*

1) Obtain your kit list and check all items in your drawer. Empty all containers including your wash bottle and rinse the containers with distilled water. Clean all items that are dirty. With a paper towel moistened with ethanol or acetone from a wash bottle set out in a hood, wipe off old markings from glassware and from your wash bottle. Markings by pencils should be removed by a rubber eraser. Get replacements for missing or broken items from the stockroom. Leave all extra pieces of equipment out on the bench top.

2) Arrange the equipment in your drawer according to the picture posted in the lab. If the liner in your drawer is dirty, request a new liner from your TA and reline your drawer. When you are done turn in to your TA the signed equipment list and ask him to check your equipment and lock the drawer.

## Chem 19a - Fall 2015

	Mon	Tue	Wed	Thu	Fri	Lab
Aug-15	24	25	26	27 First day	28	
				Lecture		
Sep-15	31 Lab 1	1 Lab 1	2	3 Lab 1	4 Lecture Lab 1	Lab 1 Exp1: Measurements: Density of water
	7 Labor Day	8 Lab 2	9	10 Br. Monday Lab 2 "Add" end	11 Lab 2	Lab 2 Exp 2: Measurements: Wt.% of sugar in a beverage
	14 Rosh Hashanah	15	16	17 Lab 2	18 Lecture	
	21 Lab 3	22 Lab 3	23 Yom Kippur	24 Lab 3	25 Lecture Lab 3	Lab 3 Exp 3: Periodic trends
	28 Sukkot	29 Br. Monday Lab 4	30	1 Lab 4	2 Lecture Lab 4	Lab 4 Exp 4b: Stoichiometry: Synthesis of oxalates
	5 Shmini Atzeret	6 Lab 4	7	8 Lab 5	9 Lecture Lab 5	Lab 5 Exp 5: Redox titration: Analysis of oxalates
Oct-15	12 Lab 5	13 Lab 5	14	15 drop deadline	16 Test 1	
	19 Lab 6	20 Lab 6	21	22 Lab 6	23 Lecture Lab 6	Lab 6 Exp 7: States of matter: Boiling pt.& density, IR
	26 Lab 7	27 Lab 7	28	29 Lab 7	30 Lecture Lab 7	Lab 7 Exp 8b: Evaporation, vapor pressure, GC
	2 Lab 8	3 Lab 8	4	5 Lab 8	6 Lecture Lab 8	Lab 8 Exp 9: Solutions: conductivity, freez. pt. depression
Nov-15	9 Lab 9	10 Lab 9	11	12 "W" deadline Lab 9	13 Lecture Lab 9	Lab 9 Exp 10b: Atomic absorption and emission spectroscopy
	16 Lab 10	17 Lab 10	18	19 Lab 10	20 Test 2 Lab 10	Lab 10 Exp.6 Thermochemistry: Heat of MgO formation
	23	24	25	26	27	
			Thanksgiving			
Dec-15	30	1	2	3	4	
	7	8	9 Last day	10	11	