

Chemistry 300L

Spring 2017

ANALYTICAL CHEMISTRY LABORATORY SYLLABUS

Laboratory: SGM 118

Laboratory Instructor:

Professor Mark Thompson

Office: SGM 216; Phone (213) 740-6402; Email: met@usc.edu

Office Hours: Mondays and Wednesdays 11am-12pm

Teaching Assistants Office Hours (SGM 149) TBA

Course Web Site: <http://chemmac1.usc.edu/300/>

The CHEM 300 laboratory, which meets four hours a week, is essential to the course. The laboratory grade counts for 45% of your grade in the course. The grade is based on lab pre-write-ups, lab reports, lab quizzes and your lab notebook. More detail about lab grading policy will be provided by the TA's. **To receive a passing grade in the course, passing work must be done in BOTH the lab and lecture parts.**

REQUIRED MATERIALS:

The following items should be brought to the lab at **every** lab meeting:

- Laboratory Manual
- Laboratory Notebook
- Pencil and pen
- Locker combination
- Scientific Calculator
- Metric Ruler
- Safety Goggles (**OSHA approved (must be worn at all times in the lab)**)
- Laboratory Coat
- Permanent Marker (dark color)

LAB NOTEBOOKS:

You will need to keep a Lab Notebook. The Lab Notebook is an extremely important part of any laboratory since it is the permanent record of what was done and what was observed. Thus, you will be graded on the quality of maintenance of your Lab Notebook. Your notebook must be examined by the TA and signed by him/her at the end of every lab session. It must have carbon pages and you must turn in the copies *from every period* before you leave.

Lab Notebooks will periodically be checked. All primary data and observations (this includes all measured quantities such as masses, volumes, temperatures, times of observed changes in appearance,

etc.) are to be recorded directly in a laboratory notebook with a **carbon copy** at the time they are determined or measured. It is not acceptable to record the data on pieces of scratch paper or paper towels and copy them over later to the notebook. If a mistake is made in recording data, the erroneous data should be lined out using a *single* line (not erased, written over, scribbled out or whited-out) so that it may still be read, and the correct data written alongside or above it. Figures or writing that are illegible will not be graded. Any attached spectra or chromatograms must be neatly folded (if needed) and attached firmly with tape. *Please see guidelines for written laboratory reports for additional information.*

Safety is always the first priority in any laboratory. Your Teaching Assistants will fill you in on how to comply with the requirements for maintaining a safe environment and using safe laboratory techniques. Failure to comply with these procedures will result in a student's immediate expulsion from the laboratory.

SAFETY GOGGLES AND PROTECTIVE CLOTHING: Eye protection must be worn in all laboratories whenever any laboratory work is in progress. A lab coat, closed-toe shoes, and long pants must be worn when doing experimental work. Shorts and sandals are NOT allowed in the laboratory. You will not be allowed to participate in the experiment if you are not wearing the appropriate protective clothing.

GRADING:

Points for the lab will be distributed approximately as follows:

Preparation for lab

10 points for each pre-lab assignment.

5 points for lab technique, accuracy and lab clean up.

Lab reports

90 points for each one-three period report.

The final point total for the lab will be normalized to a 450 point total. Please keep all graded material to verify your point total at the end of the semester. You are encouraged to check your grades on the chem 300 website.

LAB REPORTS:

Lab reports are due on the dates listed in the syllabus at the beginning of the lab period. All written materials must be typed. See laboratory report guidelines for more information on lab reports. Late lab reports will be accepted up to 1 week late. 10 points per day will be deducted from late reports for the first 4 days, and 45 points total will be deducted from the total score for days 5-7. Late lab reports will not be accepted after 1 week past the due date. There are NO REGRADES for lab reports. If you have an issue with the grading of lab reports, please submit it in writing directly to Dr. Broyer within 3 days of the report being returned to you. No lab reports will be looked at after this time.

Policy on Dropping and Incompletes: 11th November 2016 is the last day to drop this course with a mark of W. University policy requires strict adherence to this deadline. The mark of “Incomplete” (IN) can be given *only* to a student who (1) is doing passing work as of 13th November 2016 and (2) is unable to complete the course because of serious illness or documented emergency occurring *after* that date.

Academic Integrity: It is always assumed that any work submitted for grading is an original and individual effort (except for group projects). Submission of any verbatim copied material (plagiarism) is a serious violation of academic integrity. Any incident of dishonesty in either the laboratory or lecture part of the course is required by the College to be reported to the office of Student Judicial Affairs and Community Standards (SJACS) and may result in a grade of F for the course. If previous reports of dishonesty exist, the student may be expelled from the University.

The Trojan Integrity Guide can be found at
<http://www.usc.edu/student-affairs/SJACS/forms/tio.pdf>.

The Undergraduate Guide for Avoiding Plagiarism can be found at
<http://www.usc.edu/student-affairs/SJACS/forms/tig.pdf>.

Attendance: *This is a laboratory course and attendance at all lab periods is mandatory. No make-up labs can be given in this course.* Absences will be excused only for medical reasons or in the case of extreme necessity. Written excuses or student health center slips must be presented to Dr. Broyer for approval and should be secured in advance whenever possible. In the case of an excused absence, a grade will be assigned based on the average of the student’s class rank. Any unexcused absence will result in a grade of zero for that laboratory. The instructor reserves the right to drop any student for excessive absences from laboratory. Students who miss **two or more experiments** will automatically fail the course regardless of their lecture performance.

Students with Disabilities: Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. – 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

LABORATORY EXPERIMENTS

1. EDTA Titration of Ca^{2+} and Mg^{2+} in Natural Waters
2. Optimization of GC Analysis: the van Deemter Plot
3. Analysis of the Components in an Over-the-Counter Analgesic Drug using Ultraviolet Spectroscopy and HPLC
4. Probing Nanoparticle Interfacial Phenomena
5. Will be provided as a separate handout
6. Determination of the *d*-Limonene Content in Orange Rind Using Gas Chromatography
7. Determination of Iron in a Vitamin Tablet by Two Methods: Atomic Emission and Ultraviolet-Visible Spectroscopy

Due to space and equipment restrictions for many of the experiments the class will be broken into two groups, A and B.

LABORATORY SCHEDULE

1	Monday	1/9	Check-In/Safety Orientation
	Tuesday	1/10	Check-In/Safety Orientation
2	Monday	1/17	<i>MLK Holiday</i>
	Tuesday	1/19	<i>No Labs</i>
3	Monday	1/23	Lab 1
	Tuesday	1/24	Lab 1
4	Monday	1/30	A: Lab 2; B: Lab 3
	Tuesday	1/31	A: Lab 2; B: Lab 3
5	Monday	2/6	A: Lab 3; B: Lab 2
	Tuesday	2/7	A: Lab 3; B: Lab 2
6	Monday	2/13	Lab 4 – part 1
	Tuesday	2/14	Lab 4 – Part 1
7	Monday	2/20	<i>Presidents Day Holiday</i>
	Tuesday	2/21	<i>No Labs</i>
8	Monday	2/27	Lab 4 – part 2
	Tuesday	2/28	Lab 4 – Part 2

9	Monday	3/7	Lab 4 – part 3
	Tuesday	3/8	Lab 4 – part 3
10	Monday	3/13	<i>Spring Recess</i>
	Tuesday	3/14	<i>No Labs</i>
11	Monday	3/20	Lab 5
	Tuesday	3/21	Lab 5
12	Monday	3/27	A: Lab 6; B: Lab 7 – part 1
	Tuesday	3/28	A: Lab 6; B: Lab 7 – part 1
13	Monday	4/3	A: Lab 7 – part 1; B: Lab 7 – part 2
	Tuesday	4/4	A: Lab 7 – part 1; B: Lab 7 – part 2
14	Monday	4/10	A: Lab 7 – part 2; B: Lab 6
	Tuesday	4/11	A: Lab 7 – part 2; B: Lab 6
15	Monday*	4/18	Check-Out
	Tuesday*	4/12	Check-Out

*Laboratory checkout on any of the designated days is mandatory. If you do not check out, a hold will be placed on your course grade until you do so at the convenience of the TA.

Laboratory Report DUE DATES

4	Monday	1/30	Lab 1
	Tuesday	1/31	Lab 1
5	Monday	2/6	A: Lab 2; B: Lab 3
	Tuesday	2/7	A: Lab 2; B: Lab 3
6	Monday	2/13	A: Lab 3; B: Lab 2
	Tuesday	2/14	A: Lab 3; B: Lab 2
11	Monday	3/20	Lab 4
	Tuesday	3/21	Lab 4
12	Monday	3/27	Lab 5
	Tuesday	3/28	Lab 5
13	Monday	4/3	A: Lab 6
	Tuesday	4/4	A: Lab 6

14	Monday	4/10	B: Lab 7
	Tuesday	4/11	B: Lab 7
15	Monday	4/18	A: Lab 7; B: Lab 6
	Tuesday	4/19	A: Lab 7; B: Lab 6