

Syllabus

CHM 3120L ANALYTICAL CHEMISTRY LABORATORY I

SUMMER, 2014

Faculty Instructor: Dr. Ben Smith, Keene-Flint 264, 392-0256, bwsmith@ufl.edu, Office Hours: M, W, F period 3

Teaching Assistants: Ms Emily O'Neill, Lab Prep TA, emilyvoneill@ufl.edu
Mr. Tianyuan Xiao, tyxiao@ufl.edu
Mr. Jared Boock, jboock@ufl.edu
Mr. Hrishikesh Bhase, hrishibhase@ufl.edu
Mr. Imran Iftikhar, imif6145@ufl.edu
Undergraduate Teaching Assistants:
Mr. Christian Perez, cperez48@ufl.edu
Mr. David Bencomo, dbencomo10@ufl.edu

Course Website: Sakai; Please visit the website regularly for announcements and resources.

Videos available at: <http://www.chem.ufl.edu/ugrad/labanalytical.shtml>

Required Materials

Laboratory Manual: No lab manual is required. All materials will be posted on the e-learning site.
Laboratory Notebook: Any sensible laboratory notebook, to be used only for this lab, is suitable. You will turn in either carbon copies, or scans or Xerox copies of your notes, retaining the original notebook for your own use. Please be sure that what you submit is legible and clear.
Laboratory Attire: Long, loose-fitting pants, full shirt, shoes which cover the feet, departmentally-approved safety glasses, tie-back for long hair.

Course Objectives

CHM 3120L is an introductory laboratory course in Analytical Chemistry. By the end of the semester, students are expected to demonstrate:

- proper laboratory techniques for quantitative chemical measurements including accuracy on unknowns
- knowledge of a select group of analytical methods
- competence in data analysis and preparation of rudimentary reports

Grading

Your grade will be determined by the accuracy of your results, the quality of your reports, the instructor's subjective appraisal of your work, your competence in essential laboratory manipulations, and your performance on written quizzes.

Accuracy	2 (Exp II, Soda Ash; Exp III, Ascorbic Acid)	
	@ 90 pts	180 pts
	1 (Exp V, ISE) @ 50 pts	50 pts
	2 (Exp IV, Spec Fe; Exp VI, GC) @ 70 pts	140 pts
Reports	5 @ 50 pts	250 pts
Subjective	6 @ 10 pts	60 pts
Practical Exams	3 @ 40 pts	120 pts
Written Quizzes	4 @ 50 pts	<u>200 pts</u>
		1000 pts total

The following grading scale will be used:

A (88.0–100%), A- (86.0–87.9%), B+ (81.5–85.9%), B (78.5–81.4%), B- (74.5–78.4%), C+ (71.5–74.4%), C (67.0–71.4%), C- (64.5–66.9%), D+ (60.0–64.4%), D (57.0–59.9%), D- (53.0–56.9%), E (<53.0%).

Notes:

- 1) Prior to the first lab, visit the e-learning site and review handouts 1-5: laboratory safety, basic lab rules, laboratory notebook, laboratory reports and fundamental techniques. Also read the handout for Experiment #1.
- 2) A minimum of 40 out of 90 accuracy pts (30 out of 70, 20 out of 50) will be given, if the experiment is performed, the results are calculated correctly and deadlines are met.
- 3) For two of the experiments (Analytical Techniques and Ascorbic Acid) you will submit your laboratory results as a simple Data Report Card. Lab 1, Analytical Techniques, has no formal report.
- 4) For five of the experiments (Soda Ash, Ascorbic Acid, Spec Iron, Ion Selective Electrodes, and Gas Chromatography) you will write formal laboratory reports. Reports are due at the beginning of your laboratory period during the week specified. The laboratory experimental guidelines will contain questions for each experiment. These are designed to help you prepare for the written quizzes. Written answers are not required as part of the reports.
- 5) A 10 point penalty will be assessed each time a result or report is submitted late. The maximum permissible late time is one week.
- 6) Each student is expected to pass laboratory practical exams on three essential analytical skills (use of the analytical balance/weighing by difference, quantitative transfer/use of a volumetric flask and use of a pipets). The tests will be given by the TA during the regular laboratory period at times mutually acceptable to both the student and the TA. The tests may be arranged starting week 2 of the semester and must be successfully completed in order to receive a passing grade in CHM 3120L.
- 7) Four written quizzes will be given on the dates specified on the schedule. Study material will be posted one week in advance. You will be allowed to see your graded written quiz, but it must be returned to the TA before leaving lab.
- 8) Attendance is required at all scheduled laboratory periods, unless you are informed otherwise by your TA.
- 9) CHM 3120 is a co- or pre-requisite for CHM 3120L. If you drop CHM 3120 you must obtain permission from Dr. Smith to continue in the lab.
- 10) Once an unknown result has been submitted, no repeat work on that unknown is allowed.
- 11) Students are expected to obey the University of Florida Honor Code, detailed at www.chem.ufl.edu/~itl/honor.html. Violations will be reported to the Office of Student Judicial Affairs.
- 12) Make-ups will be granted only when justified. If you know ahead that you will have to miss lab, notify your TA and Dr. Smith in advance. If you are sick and cannot reach anyone before lab, you will have to present written evidence of the illness.
- 13) If you are involved in a laboratory accident, you must go to the infirmary for treatment.
- 14) Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.
- 15) Lab preparatory videos are available at: <http://www.chem.ufl.edu/ugrad/labanalytical.shtml>

Laboratory Schedule

Dates	Preparation	Lab Work	Quizzes	Results Due
May 12 and 13	Read Handouts 1-6 Read Experiment 1 Watch video: Lab Techniques	Check in Balance use Pipet use Experiment 1		
May 19 and 20	Read Handout 7 Read Experiment 2	HCl/NaOH titrations KHP/NaOH titrations		
May 26 and 27 (26 th is a holiday so we will declare 27 th a holiday to stay synchronized)	Prep for next week	No labs this week		
June 2 and 3	Watch ascorbic acid video Read Experiment 3	Soda Ash Prep KIO_3 and $\text{Na}_2\text{S}_2\text{O}_3$ Standardize $\text{Na}_2\text{S}_2\text{O}_3$	Quiz 1 and Deadline for Weighing Practical	Experiment 1 Data
June 9 and 10		Standardize $\text{Na}_2\text{S}_2\text{O}_3$ Ascorbic acid titrations	Deadline for Pipetting Practical	Soda Ash (report and lab notes)
June 16 and 17	Read Experiment 4 Watch Spec Fe video	Finish Ascorbic acid Spectrophotometric Fe	Quiz 2	
June 23 and 24 Summer Break		No labs		
June 30, July 1	Watch ISE video Read Experiment 5	Finish Fe Lab		Ascorbic Acid: data card, report and lab notes
July 7 and 8		Ion Selective Electrode		Spec Fe: report and lab notes
July 14 and 15	Watch Gas Chromatography video Read Experiment 6	Finish ISE Prepare GC caps	Quiz 3 and Deadline for volumetric flask practical	
July 21 and 22		Gas Chromatography		ISE: report and lab notes
July 28 and 29		Check out	Quiz 4	GC: report and lab notes