

# Syllabus for CHM 3120

## Analytical Chemistry

### Spring 2014

**Instructor:** Dr. Benjamin W. Smith, 264 Keene-Flint Annex  
[bwsmith@ufl.edu](mailto:bwsmith@ufl.edu) Phone: 392-0256  
Office Hours: Tuesday and Thursday periods 1-2, or by appointment  
Students are welcome to stop by my office at any time

**Lectures:** Monday, Wednesday, Friday, 2<sup>nd</sup> period, CLB 130

**Required Textbook:** *Quantitative Chemical Analysis*, 8<sup>th</sup> Edition, Daniel C. Harris, Freeman, 2010  
**And:** i>clicker2, ISBN: 1429280476, available at the bookstore

#### Course Objectives

This course treats chemistry as a quantitative science and seeks to develop a keen observational and analytical insight. The emphasis is upon classical and modern instrumental methods of chemical analysis, chemical laboratory methodology and the sensible interpretation of quantitative measurements.

#### Tentative Course Schedule

Subject to minor revisions

Date	Lecture Topic	Book Chapters
Jan 6	Introduction and Overview of the Course	Chapter 0
Jan 8	Chemical Measurements, units	Chapter 1
Jan 10	Safety and Tools	Chapter 2
Jan 13	Tools	Chapter 2
Jan 15	Experimental Errors	Chapter 3
Jan 17	Experimental Errors	Chapter 3
Jan 20	MLK Holiday	
Jan 22	The Essential Statistics	Chapter 4
Jan 24	Statistics	Chapter 4
Jan 27	<b>Exam 1</b>	Chapters 0-4
Jan 29	Calibration and Figures of Merit	Chapter 5
Jan 31	Fundamentals of Electrochemistry	Chapter 13
Feb 3	Electrochemistry	Chapter 13
Feb 5	Electrochemistry	Chapter 13
Feb 7	Electrodes and Potentiometry	Chapter 14
Feb 10	Electrodes and Potentiometry	Chapter 14
Feb 12	Redox Titrations and Electroanalytical Techniques	Chapter 15
Feb 14	Electroanalytical Techniques	Chapter 16
Feb 12	Electroanalytical Techniques	Chapter 16
Feb 14	<b>Exam 2</b>	Chapters 5, 13-16
Feb 17	The Beholding of the Light: the background of spectrochemistry	
Feb 19	Spectroscopic Instrumentation: manipulation of photons	Chapter 19
Feb 21	Spectroscopic Instrumentation	Chapter 19
Feb 24	Spectroscopic Instrumentation	Chapter 19

Feb 26	Fundamentals of Spectrophotometry	Chapter 17
Feb 28	Fundamentals of Spectrophotometry	Chapter 17
Mar 3	Spring Break	
Mar 5	Spring Break	
Mar 7	Spring Break	
Mar 10	Applications of Spectrophotometry	Chapter 18
Mar 12	Applications of Spectrophotometry	Chapter 18
Mar 14	Atomic Spectrometry	Chapter 20
Mar 17	Atomic Spectrometry	Chapter 20
Mar 19	<b>Exam 3</b>	
Mar 21	Mass Spectrometry	Chapter 21
Mar 24	Mass Spectrometry	Chapter 21
Mar 26	Mass Spectrometry	Chapter 21
Mar 28	Introduction to Analytical Separations	Chapter 22
Mar 31	Analytical Separations	Chapter 22
April 2	Gas Chromatography	Chapter 23
April 4	Gas Chromatography	Chapter 23
April 7	Liquid Chromatography	Chapter 24
April 9	Liquid Chromatography	Chapter 24
April 11	Electrophoresis and Chromatography methods	Chapter 25
April 14	Electrophoresis and Methods	Chapter 25
April 16	<b>Exam 4</b>	
April 18	A survey of trends in modern analytical chemistry	
April 21	An overview of analytical chemistry in forensic sciences	
April 23		
April 26– May 2	<b>Final Exam Date to be announced</b>	

Students may use calculators on exams. Cell phones must be turned off and out of sight during exams. Please do not arrive late, leave early or make any use whatsoever of electronic communications devices during the lectures.

## Grading

Grades will be determined from a point distribution as follows:

Clicker Problems in lectures (20 @ 10 pts each)	200 points
Progress Exams (best 3 of 4 @ 200 pts each)	600 points
Final Exam:	<u>400 points</u>
Total:	1200 points

Grades are not curved. The following 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%).

**Note:** 17% of your grade will be determined by the in-class problems. To accommodate for anyone who might forget to bring their clicker to lecture, we will offer at least 30 problems and count your best 20 results towards your grade.

**Grading concerns:** We do our best to make all grading accurate and fair. If you believe there was an error in the grading of an exam, first see a TA about the issue. If you remain unsatisfied or have a question, then see me. This must be done within one week after the exam is returned to you. See: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx> for additional UF grades and grading policies.

**Teaching Assistants:** Ms. Carissa Li  
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### **Attendance Policy**

If you wish to learn the subject and earn credit for the in-class problems you should plan on attending all lectures. Make up exams will be given according to university regulations to accommodate religious obligations or illness. Please communicate requests in advance when possible or provide medical documentation for unanticipated illness.

### **Classroom accommodations**

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.

**e-learning:** We will use the UF Sakai e-learning system for course management. Here you will find an electronic syllabus, your grades, which only you may see, class announcements, special resources and other pertinent information for the course. Lecture powerpoint slides will be posted after each lecture. Access e-Learning through your myUFL portal.

## **Academic Honesty**

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Exams are given under the provisions of the University of Florida Honor System. *Any student caught cheating will receive a failing grade in the course.* I recommend you examine the UF policy on academic honesty at: <http://www.dso.ufl.edu/judicial/academic.php>.

If you are aware of a climate that promotes academic dishonesty, please notify the instructor or contact the Student Honor Court (392-1631) or the Cheating Hotline (392-6999).