

Instructor – Dr. Charles R. Martin, University Distinguished Professor of Chemistry

Call me **The Colonel** (Honorable Order of Kentucky Colonels), crmartin@ufl.edu

Canvas - We will use Canvas to aid in course management. Please review the Canvas page for this course. In particular, look over the files that I have uploaded and any “Announcements” I have made.

Scheduled Class Meeting Times – Tuesday, Period 3 (9:35-10:25), Thursday Periods 2 & 3 (8:30–10:25) in CLB 130

Real Class Meeting Times – Tuesdays 9:35-10:25 and **Thursdays 8:45–10:25**. However, on the Thursdays we have our exams (see below), the exams start at 8:30 AM.

Instructor’s Office Hours – Wednesdays 2:00 – 3:45, CLB 218

TAs – Kyle Morgan (kyle.morgan1@chem.ufl.edu) and Woo-Young Kang (Wooyoungkang38@chem.ufl.edu)

TA's office hours – TBA

Course Information and Objective – Analytical Chemistry is part of many disciplines and careers including medicine, agriculture, pharmacology, ecology, biology, and atmospheric and environmental sciences. Analytical Chemistry has two branches, qualitative and quantitative chemical analysis. This course is on quantitative analysis, which entails measuring the concentration of a substance (*e.g.*, a drug, DNA, pollutant, protein) in a solution (blood, water, saliva, air, *etc.*). Knowing the concentration is important because, for example, if the concentration of a pollutant in water is too high, the water is unsafe to drink. Alternatively, if the concentration of a drug in the blood is too low, it will not have the desired therapeutic effect.

I have been teaching and doing research in Analytical Chemistry for my entire career. I love this branch of science, and I hope this comes across in my teaching. For you to understand it, I must first give you background information on the concept of chemical measurements, how chemical measurements are made, and which tools and mathematics are used. With this foundation in place, we will move on to the methods of chemical analysis with emphasis on electrochemical, spectrophotometric, and fluorometric methods. My objective is to teach in a way that you will truly understand and appreciate this interesting and important branch of chemistry.

Text - “Quantitative Chemical Analysis”, either the 9th Edition (Daniel C. Harris, 2016) or the 10th Edition (Daniel C. Harris, Charles A. Lucy, 2020) may be used.

Chapters Covered – Chapters 6, 7, 9, 10, and 11 cover material that you were taught in freshman chemistry. I do not intend to teach this material to you again. However, material from these chapters will be discussed as needed and could appear on an exam. I advise you to read these review chapters. The bulk of my lectures will be on material from the chapters listed below. As noted, for some chapters, not all of the sections in the chapters will be covered.

Chap 0, “The Analytical Process” - Entire chapter is covered

Chap 1, “Chemical Measurements” - Entire chapter is covered

Chap 2, “Tools of the Trade” - Sections 2-9, 2-10 and 2-11 are not covered

Chap 3, "Experimental Error" - Entire chapter is covered
 Chap 4, "Statistics" - Entire chapter is covered
 Chap 5, "Quality Assurance and Calibration Methods" - Entire chapter is covered
 Chap 8, "Activity" - Sections 8-4 and 8-5 are not covered
 Chap 14, "Fundamentals of Electrochemistry" - Entire chapter is covered
 Chap 15, "Electrode and Potentiometry" - Sections 15-7 and 15-8 are not covered
 Chap 17, "Electroanalytical Techniques" - Sections 17-5 and 17-6 are not covered
 Chap 18, "Fundamentals of Spectrophotometry" - Entire chapter is covered
 Chap 19, "Applications of Spectrophotometry" – Only Sections 19-1 and 19-5 are covered
 Chap 20, "Spectrophotometers" - Sections 20-4, 20-5, and 20-6 are not covered

Important point – I often do not present the material in the same order as the book. **It is, therefore, essential that you attend the lectures.**

PowerPoint Files and Lecture Notes Outlines - At the Canvas page under "Files" you will find a folder called "Lecture Note Outlines." These are the notes I use when giving my lectures. But these notes are in outline form only. You must attend the lectures to get the details. The "PowerPoint Files" folder contains the PowerPoint files I use.

Exams - There will be three during-semester exams and a final exam.

Exam 1	Thursday, September 21, Periods 2 and 3 (8:30 AM - 10:25 AM)
Exam 2	Thursday, October 19, Periods 2 and 3 (8:30 AM - 10:25 AM)
Exam 3	Thursday, November 30, Periods 2 and 3 (8:30 AM - 10:25 AM)
Final Exam	Monday, December 11, 3:00 PM - 5:00 PM

Chapters Covered for Each Exam – See above for specific sections of each chapter covered. This schedule is tentative and may be revised as the semester progresses. Important point – The specific material to be covered in an exam will be announced before the exam.

Exam 1 – Chaps 0 through 4 (maybe some of Chap 5)

Exam 2 - Chaps 5, 8, 14, 15, and 17

Exam 3 – Chaps 15, 18, 19, and 20

Final Exam – Cumulative

Grading –All four exams are worth 200 points each. You have two options.

Option 1 - Drop one during-semester exam and take the final, in which case

Sum of 2 best during-semester exam scores	400 points max
Final exam score	<u>200 points max</u>
Total maximum earnable points 600	

Option 2 - Keep all during-semester exams and skip the final, in which case

Sum of 3 during-semester exam scores	600 points max
Total maximum earnable points 600	

End of Semester Letter Grade Cutoffs, Percent of maximum (600) points

A 100 to 89.5 %, A- 89.4 to 85.5 %, B+ 85.4 to 82.5 %, B 82.4 to 78.5 %, B- 78.4 to 75.5%,
 C+ 75.4 to 72.5%, C 72.4 to 68.5 %, C- 68.4 to 65.5 %, D+ 65.4 to 62.5%, D 62.4 to 56.5 %, D- 56.4 to 19.5 %, F 19.4 to 0%

Reporting Exam Scores to You – Our goal is to get the exam scores to you as soon as possible after the exam. But to be more concrete, we anticipate that the latest date we would get scores back to you would be the Tuesday following the Thursday exam.

Disputing a Score – To dispute a score, send an e-mail message to your TA and me. You have 48 hours after posting to dispute a score. After that, all scores are final.

Homework Problems and Solutions – At the Canvas page under “Files” you will find a folder called “Homework Problems.” It contains PDF files for the problems for each chapter of the text. The exams will contain problems similar to these. You will also see a folder called “Solutions to Homework Problems,” which contains PDF files from a solutions manual provided by the publisher of the text. There is also a file, “TA Homework Solutions,” which are handwritten solutions by the TAs and typically contain greater detail.

UF Grading Policies - See <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Academic Honesty - Exams are given under the provisions of the University of Florida Honor Code. Any student caught cheating on an exam will receive a score of zero for that exam, and Option 1, above, cannot be used to drop this zero score. Review the UF Honor Code here. <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>

Other Information

Students wanting disability accommodations, please contact the Disability Resource Center at www.dso.ufl.edu/drc/ or call 352-392-8565.

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations. Students will be notified when evaluations are required.