Syllabus **CHM3120, Introduction to Analytical Chemistry** **Spring 2024**

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.

Class Time/Place – Monday, Wednesday, Friday, Period 8 (3:00 PM - 3:50 PM) in FLI0050

Instructor's Office Hours – Thursdays 4:00 – 6:00 in CLB 218

TA – Tyler Volta, tgaliber@gmail.com

TA's office hours – Fridays 2:00-4:00 pm on in CLB 212

Course Information and Objective – Analytical Chemistry is part of many disciplines and careers including medicine, biochemistry, 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 researching 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 such 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 general 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 all 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 four exams, each worth 100 points. All four exams take place during class time in FLI0050. None are cumulative, and there will be no final exam.

Exam 1	Friday, February 2
Exam 2	Wednesday, February 28
Exam 3	Friday March 29
Exam 4	Wednesday, April 24

Reporting Exam Scores to You – Exam scores will be posted on the Canvas page.

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.

End of Semester Letter Grade Cutoffs, (percent of 400-point maximum)
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%

Chapters Covered for Each Exam – This schedule is tentative and will likely be revised as the semester progresses. The specific material to be covered in an exam will be announced before the exam.

Exam 1 – Chaps 0 through 4
Exam 2 - Chaps 5, 14
Exam 3 – Chaps 8, 15, 17
Exam 4 – 18, 19, and 20

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.

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.