

**Analytical Chemistry**  
**Chemistry 3310K**  
**Fall 2019**

Lecture: 9:30 - 10:45 MW

Instructor of Lecture: Professor John E. Hansen

Instructor of Lab: Dr. Douglas Stuart

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Office Hrs: 8:45 - 9:30, 10:45 - 13:00, 15:00 - 17:00; MW

Text: Analytical Chemistry, 9<sup>th</sup> Edition, Skoog, West, and Holler, Saunders Publishing.

**All Students Please Note:**

For important policy information, i.e., the UWG honor code, e-mail, credit hours, as well as information on the campus carry policy please review the information found in the Common Language for Course Syllabi documentation at

<https://www.westga.edu/administration/vpaa/common-language-course-syllabi.php>

**Course Objectives:** This course emphasizes skills needed for a student to function as a professional analytical chemist. The student will be firmly grounded in the areas of gravimetric and volumetric analysis, equilibria, quantitative spectroscopy, electrochemistry and chromatography.

**Learning Outcomes:** Students will demonstrate knowledge of complex equilibria and its usefulness to volumetric and gravimetric analysis. Students will also demonstrate knowledge of the theory and applications of electrochemical techniques, chromatographic techniques, and quantitative spectroscopy.

**Expectations:** It is vitally important you keep up with the material. I have found, without exception, those that received a grade of A or B in this course are those that have consistently done the homework and took it seriously. Please see me if you are having difficulties.

*It is a requirement, and it will be assumed, that you are fluent and very comfortable with algebra.* Math 1634 (Calculus I) is also a prerequisite for this course. If you have difficulties with math you will have to put forth extra effort in doing your homework to get comfortable with the problem solving that will be expected of you in this course.

**Homework:** It is expected that each person will keep a log of their homework in a **bound** composition notebook. The homework will not be explicitly graded; however will directly impact the grade on your exam. During each exam I will do a cursory check of your notebook, and access the notebook with a  $\sqrt{+}$ ,  $\sqrt{}$ ,  $\sqrt{-}$ , or 0. A check plus indicates you know what you are doing and is worth 3 extra points on your exam, a check is worth two points, and a check minus 1 point. If I should decide to curve an exam, it will also affect the amount of curve applied to your exam. Not all assigned homework problems are to be worked out in your logbook, only those that I indicate when I assign them in

class. To obtain full credit, the worked out problems need to be laid out in the notebook in a neat, organized fashion that is easy to follow and correctly done.

**Examinations:** I will give four exams and a final that are scheduled throughout the semester. I will **not** give makeup exams. You will have one week from the time the exam is handed back to inquire about the grading. After that week the grade on the exam is **final**. The final exam will be a comprehensive examination (covering material throughout the course). Each exam will count 100 points, and the final exam 150 points.

**Laboratory:** The laboratory exercises will count for a total of 100 points toward your final grade.

**Grading:** The final grade will be determined from the four exams, the final exam, and the laboratory exercises. Grades will be calculated based on a maximum of 550 points. Grade Scale: > 90% = A; 80 - 90% = B; 70 - 80% = C; 60 - 70% = D; < 60% = F.

### Policies

1. You are responsible for all material covered and all announcements made in class. Absence from class does not excuse or relieve you of this responsibility. If you miss a class, I would suggest contacting a fellow classmate to find out what you have missed.
2. Cheating will not be tolerated. It will result in a grade of zero. All out of class assignments will be done in the **absence** of any collaboration. All questions, clarifications, or requests for assistance should be directed only to me.
3. No make-up exams will be given. Anyone not able to take an exam on the day scheduled must contact me before the exam.
4. Your attendance at all class times is critical to your success in this course. I reserve the right to withdraw you from class roles due to flagrant absences or tardiness.
5. NO CELL PHONES!! They need to be placed completely out of my sight and turned off during my class. I do mean put it away (not left on your belt). Place them in your packs or leave them in your vehicle. If you violate this rule you will be asked to leave my class, and you will be considered absent for that day. If you violate this rule during an exam it will be considered as an incident of cheating.
6. If you contact me by email you are expected to use your UWG account.
7. All assignments must be handed into me as hard copies. I will not accept assignment or reports via e-mail! If multiple pages are required they will be neatly stapled together. Pages dog-eared together will not be accepted.
9. Lectures and hand outs (including exams) are copy righted materials. Any audio or video recording of my lectures without prior permission is forbidden.

### TENTATIVE SCHEDULE

		<u>Chapters</u>
8/14	Gravimetric and Titration Analysis	1, 2, 4, 12, 13
8/19	Quantitative Analysis and Equilibria	12, 13, 9

8/21	Ionic Equilibria	10
8/26	Ionic Equilibria	10
8/28	Equilibria of Complex Systems	11
9/04	Equilibria of Complex Systems	11
9/09	Equilibria of Complex Systems	11
9/11	<b>Exam I</b>	
9/16	Acid-Base Chemistry	14
9/18	Acid-Base Chemistry	14
9/23	Complex Acid/Base Systems	15
9/25	Complex Acid/Base Systems	15
9/30	Complex Acid/Base Systems	15
10/02	<b>Exam II</b>	
10/07	Equilibria of Complex Formation	16
10/09	Equilibria of Complex Formation	16
10/14	Electrochemistry	17, 18
10/16	Oxidation/Reduction Equilibria	18, 19
10/21	Oxidation/Reduction Equilibria	18, 19
10/23	Oxidation/Reduction Equilibria	18, 19
10/28	Potentiometry	21
10/30	<b>Exam III</b>	
11/04	Potentiometry	21
11/06	Spectrophotometry	24
11/11	Spectrophotometry	24
11/13	Chromatography	31
11/18	Chromatography	31
11/20	Gas Chromatography	32
12/02	Gas Chromatography	32
12/04	<b>Exam IV</b>	
12/11	<b>Final Exam (8:00-10:00)</b>	