Chemistry 4010/6010 Chromatography
Fall 2016
1:30-2:45 (Mon/Wed) Aderhold Learning Center 2
Office Hours (Mon/Wed 2:45 - 4:00 P.M.) in Room 308 PSC

Lecture Instructor: Ning Fang
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Reference Textbook and Resources

"Chromatographic Methods" written by A. Braithwaite and F. J. Smith (available in GSU Book Store); Lecture Notes (All notes will be provided via e-mail).

Appointment Time

You can see me right after the class or set an appointment time by e-mail.

Learning Objectives

- To learn basic principles governing separation techniques.
- To learn fundamentals of chromatographic techniques.
- To learn to apply basic principles, which may help develop chromatographic methods to achieve a particular separation and analysis of real world chemical compounds

*Please note that I am not in charge of the laboratory section. Therefore, for any laboratory schedules, experimental issues are generally handled by the laboratory personnel. If you have any questions related to experimental problems, instrument malfunctioning, lab write up and lab grades please contact them and cc to me accordingly. I will be happy to help the best way possible in any questions that you may have on lab and lecture teaching and learning as well as grading issues etc.

Tentative content and schedule: This is a tentative schedule and may be modified as needed.

Module I: Basic Theory of Chromatography

Date	Suggested Readings	Sub-Topic
Aug 22, 24, 29	Chapter 1, Lecture Notes	Introduction, History and Type of Chromatography, Plate Theory, Calculation of Zone Spreading, Theoretical Plates, Short Comings of Plate Theory
Aug 31, Sep 7	Chapter 1, Lecture Notes	Chromatographic Parameters (Retention, Capacity Factor, Resolution, Symmetry and Peak Capacity), Factors Affecting Resolution
Sep 12	Chapter 1, Lecture Notes	Rate Theory of Chromatography, van Deemter Equation, Factors Affecting the van Deemter Plot and Equation

***Sep 14 (Wednesday) Exam I (100 pts)**

Module II:	**Qualitative and Quantitative Analysis in Chromatography/Basic GC Instrumentation**	
Sep 14	Chapter 2, Lecture Notes	Qualitative Methods, Kovat Retention Index Quantitation Methods in Chromatography Temp Effects in Chromatography
Sep 19, 21	Chapter 5, Lecture Notes	Principles and Instrumentation in Chromatography Choice of Mobile Phases and Stationary Phases in Gas Chromatography, Carrier Gas and Injection Modes
Sep 26, 28	Chapter 5, Lecture Notes	Detector Properties, Types of GC detectors

***Oct 10 (Monday) Exam II (100 pts)**

Module III:	**Principles and Methodologies in Liquid Chromatography**	
Oct 3	Lecture Notes	Thin Layer Chromatography (TLC)
Oct 5, 12	Chapter 6, Lecture Notes	Instrumentation in HPLC Pump, Injector, Column
Oct 17-19	Chapter 6, Lecture Notes	HPLC Detectors

***Oct 24 (Monday) Exam III (100 pts)**

Oct 26	Chapter 6, Lecture Notes	Normal Phase HPLC
Oct 31	Chapter 6, Lecture Notes	Reversed Phase HPLC
Nov 2	Chapter 6, Lecture Notes	Size Exclusion/Gradient Elution in HPLC
Nov 7		Ion Exchange HPLC and Ion Chromatography
Nov 9		Chromatographic Analysis of Samples
Nov 14		Chromatographic Analysis of Samples

***Nov 16 (Wednesday) Exam IV (100 pts)**

Nov 28	Lecture Notes	Microfluidics I
Nov 30	**Review**	
Dec 5 (?)	Lecture Notes	Microfluidics II

***Dec 6 – 13 Final Exam Comprehensive (200 Pts)**

Grading Scale

Grading may be curved (depending on the class performance), but the most probable break down will be as follows:

95-100	A+	65-69	C+
90-95	A	60-64	C
85-89	A-	55-59	C-
80-84	B+	50-54	D+
75-79	B	45-49	D
70-74	B-	40-44	D-
		<40	F

Policy Statement Regarding Student Integrity

The Georgia State University Policy on Academic Honesty is in force in this course, including but not necessarily limited to infractions in the areas of Plagiarism, Cheating on Examinations, Unauthorized Collaboration, Falsification, and Multiple Submissions. The university's policy is published in the *On Campus: The Student Handbook*, available to all members of the university community. Therefore, all tests taken must represent your individual unaided efforts. To receive or offer information during an examination is cheating. The use of unauthorized supplementary materials during tests is also cheating. All laboratory work performed during the lab portion of a course must reflect your individual effort. Only original data obtained by your own in-lab experimentation are permitted to be used, except when specifically authorized by your laboratory professor. Data from supplementary sources (handbooks, reference literature, etc.) must be clearly referenced (title, author, volume, page(s), etc.). Falsification or destruction of data constitutes cheating. Conduct or actions that disrupt class or test periods or falsification of information related to chemistry courses by any student will be taken as violation of the policies of the Board of Regents of the University System of Georgia and the GSU Student Code of Conduct, Section 6.0. Any suspected offenses may be referred to the Department Chair or the Dean of Students for appropriate disciplinary action.

1. No make-up exam will be given unless the situation is such that the whole class did poorly in the exam.
2. If a student misses any exam **(without a legitimate excuse),** he/she will receive a grade zero for that exam.
3. If a student misses any exam (**with a legitimate excuse),** he/she can either choose to receive a grade zero for that exam or apply the grade to the following exam for the missed exam.
4. If a student misses **Exam IV (with a legitimate excuse),** he/she can either choose to receive a grade zero for that exam or choose to receive INC as a semester grade.

   * Legitimate reasons for excuse are the following:

Cause	**Required**
Due to illness	illness note from the doctor
Due to business	business note from the supervisor
Death in family	note of death from a family member
Other	On a case by case basis

   * I must be informed **before the exam** to count as an excused absence. If you cannot reach me, send me an email or leave a message on my answering machine at my office (Indicate the time and the day).

   Please note that notifying me after the exam will result in a grade of zero for that exam.

5. Although I do not expect cheating in my classroom, the penalty is an **F for the course.** Plagiarism is also considered cheating, therefore, copying large sections of another author's material without paraphrasing and referencing it will result in grade F.

6. Attendance will be taken regularly. I strongly urge to attend class. Otherwise you may miss the lecture part (that may not be there in your textbook).

7. Although I will try to maintain the class schedule and objectives, I may need to make adjustments.

Course Withdrawal

The last day to withdraw from the course and withdrawal policies should be checked by student from Registrar Office.

Professional Behavior Guidelines

1. **Tardiness:** Please arrive on time. If you are late, please enter the class without disturbing your classmates and my concentration.
2. **Side Conversation:** Side conversations make it difficult for your class mates to actively listen and learn. If you have trouble reading the board or any of my slide please ask me without any hesitation.
3. **Sleeping:** Falling asleep in class (unless the course focuses on dysfunctional sleep behaviors) is not considered professional attitude.
4. **Lack of Attention/Boredom:** Please do not read other books or newspapers or study for other courses during my class. It is not polite. If the material that you are taught is familiar to you please write down some specific questions in your notebook and discuss with me about the advances in this topic (only after the class).
5. If you cannot see me during my office hours please send me an e-mail for help any day.