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  
Room 308 Petit Science Center (PSC)  
Email: nfang@gsu.edu; Phone: (404) 413-5513  

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.

<table>
<thead>
<tr>
<th>Module I:</th>
<th>Basic Theory of Chromatography</th>
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<tbody>
<tr>
<td>Date</td>
<td>Suggested Readings</td>
</tr>
<tr>
<td>Aug 22, 24, 29</td>
<td>Chapter 1, Lecture Notes</td>
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<tr>
<td>Aug 31, Sep 7</td>
<td>Chapter 1, Lecture Notes</td>
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<tr>
<td>Sep 12</td>
<td>Chapter 1, Lecture Notes</td>
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*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:

<table>
<thead>
<tr>
<th>Cause</th>
<th>Required</th>
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<tbody>
<tr>
<td>Due to illness</td>
<td>illness note from the doctor</td>
</tr>
<tr>
<td>Due to business</td>
<td>business note from the supervisor</td>
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<tr>
<td>Death in family</td>
<td>note of death from a family member</td>
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<tr>
<td>Other</td>
<td>On a case by case basis</td>
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   * 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 classmates 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.