

**Lecturer/Coordinator:** Dr. Susan Rutkowsky

Email: sar@drexel.edu

Office: Disque 412      Office Hours: W F 10:00 – 11:00 AM or by appointment

Lecture: Tues and Thurs 1:00 – 1:50 AM in Stratton 113

Labs: All lab sections in Disque Hall.

**Recitation/Lab Instructors:** See instructor contact information posted to course website

**Course Description:** This course covers physical and chemical properties of substances used in consumer products. It is an introduction to the fundamental structures, nomenclature and properties of hydrocarbons, organic functional groups, polymers, and biomolecules. These concepts are applied to the areas of food and nutrition, pharmacology, environmental science, and consumer chemistry. Course includes weekly lab experiments.

### Course Objectives

- ability to draw structures of organic compounds
- writing basic reactions of important functional groups
- ability to understand topics including
  - stereochemistry
  - synthetic and natural polymers
  - biomolecules, including carbohydrates, lipids, proteins, and nucleic acids
- ability to apply learned concepts to areas of consumer chemistry

### Required Textbook, Laboratory Manual, and Materials:

**1.** General Chemistry 103 Course pack: Chapters 12-24 of “Introduction to General, Organic, and Biochemistry” by Sally Solomon. The course pack also contains new material on current topics such as green cleaners, steroids, sweeteners, gamma fatty acids, etc as well as extra lab experiments.

**2.** Lab Manual: “Everyday Investigations for General Chemistry” by Sally Solomon, Susan Rutkowsky, Charles Boritz; Wiley; 2009, New York

**3.** Safety glasses or goggles and Lab Coat: These are available at the University Bookstore and must be worn in the laboratory at all times. Make sure you have safety glasses and a lab coat before you go to your first lab (Week 2 of classes).

You will not be allowed to attend lab without them.

### Course Website: Bb Learn, CHEM 103

You will always find here the most current syllabus course schedule and announcements about changes in the course, labs and exams. Check it regularly. You can get there through DrexelOne (“My Courses”) or directly (<http://learn.dcollege.net/>).

**Lectures:** Lectures will be given on topics as indicated on the course schedule, including chemical demonstrations. You are responsible for reading all material in these sections. Some material not discussed in the text will be covered. The course schedule is provided as a guide and will be revised if dictated by prevailing circumstances (e.g., weather). Regular attendance to lecture is highly recommended.

**Recitation Assigned Problems:** These problems appear at the end of each chapter and correspond to lecture material already covered. They will be solved in recitation. Any changes in the schedule will be announced in lecture.

**Note:** Monday recitations sections will **not** be held on Monday, October 14<sup>th</sup> (Monday of Week 4) because of the Columbus Day Holiday. Students are encouraged to attend another recitation that week. These recitation sections will instead meet on Monday, November 25<sup>th</sup> (Monday of Week 10)

**Exams:** Coverage on exams will be announced in lecture. Any material included on an hour exam will have been covered either in lecture or in assigned problems.

	Time	Date	Room	Grade Breakdown
Exam 1	8:00 AM	Friday, October 18	Randell 121	20%
Exam 2	8:00 AM	Friday, November 15	Randell 121	20%
Final	TBA	TBA	TBA	35%
Lab				25%

**Grading policy:** Students who meet all the requirements will earn an A- if they score at least 90% overall, B-  $\geq$  80%, C-  $\geq$  70%, D  $\geq$  60%. If a question arises about an exam grade, for instance, feel free to contact me with your concerns. Any questions about final course grades should be raised as soon as possible.

**Exams:** Two, fifty-minute exams will be given from 8:00 – 8:50 AM on the dates indicated on the schedule above.

There will be an opportunity to make up one missed exam. During the last week of classes, a make-up exam will be given. The exam will include material covered on both Exam 1 and Exam 2. *The make-up exam can only be used to replace one missed exam; it cannot be used to improve a grade on an exam that was taken.* There will be no opportunity to retake the make-up exam, regardless of the reason for missing it.

**Final Exam:** The final exam will be a 2-hour exam held during final exam week. The date, location and start time will be announced in class and posted on the course website. Be aware that active cell phones and the use of random-access devices (e.g., MP3 players, Palm Pilots, iPods) are NOT ALLOWED in exam rooms, and such may be confiscated if they are found. The final exam will cover material from the entire term. A student who does not score at least 45% on the final exam will not pass the course, regardless of his/her prior performance in the course.

**Academic Dishonesty /Cheating:** Students are held to the highest expectations and standards regarding honesty in all aspects of the course, including taking exams and in the preparation of laboratory reports. Cheating, including misrepresentation of the work of others as your own, will not be tolerated. Please understand plagiarism and do NOT commit it. Cases of cheating will be reported to the College of Arts and Sciences and the University. Students caught cheating will receive a failing (F) grade for the assignment and/or course.

For more information, see material in “academic dishonesty” under the “academic policies” tab at the following link:

[http://drexel.edu/studentaffairs/community\\_standards/studentHandbook/](http://drexel.edu/studentaffairs/community_standards/studentHandbook/)

**Disability Services:** Students with disabilities who wish to request special accommodations at Drexel University need to present a current accommodation verification letter (“AVL”) to the lecturer before accommodations can be made. AVL's are issued by the Office of Disability Services (“ODS”).

Students with disabilities should see material under the “health and disability services” tab at the following link:

[http://drexel.edu/studentaffairs/community\\_standards/studentHandbook/](http://drexel.edu/studentaffairs/community_standards/studentHandbook/)

**Course Drop/Withdrawal:** Courses may only be “dropped” during the “drop period” lasting from the beginning of the enrollment period through the end of the second week of the quarter. Students who wish to withdraw from a course must do so by 5:00 pm on the Friday of the 7<sup>th</sup> week of the quarter.

For more information regarding dropping or withdrawing from this course, see the following link:

[http://www.drexel.edu/provost/policies/course\\_drop.asp](http://www.drexel.edu/provost/policies/course_drop.asp)

**Tutoring:** There will be a tutoring room (Stratton 106) for additional help that will be announced in class and posted on the course website, with the hours that it will be staffed.

## Course Schedule: Lecture Topics and Assigned Problems

Lecture topics and assigned problems labeled C (page #'s) are from the first section of the course pack.

Week	Day	Lecture Topics	Text Chapter	Assigned Problems
1	T (9/24) R (9/26)	Alkanes Alkanes/Alkenes	12, C(ii) 12,13	No lab or recitation the first week of classes.
2	T (10/1) R (10/3)	Alkenes/Alkynes Aromatics	13, 14, C(iv)	Ch 12: 23, 24, 27, 43, 44, 35, 37
3	T (10/8) R (10/10)	Petroleum Alcohols	C (iii) 15	Ch 13: 23, 27 a-h, 25, 32, 35ab Ch 14: 20(omit d)
4	T (10/15) R (10/17)	Alcohols/Ethers Aldehydes/Ketones	15 16	Ch 12: C51, C52 Ch 15: 10, 11, 16, 17
5	T (10/22) R (10/24)	<b>Convocation – No Lecture</b> Carboxylic Acids	17	Ch 15: 12, 24, 25, 28, 37, 18 Ch 16: 7, 8, 15, 17, 18, 29
6	T (10/29) R (10/31)	Amines Polymers	18 19	Ch 17: 10, 14, 18, 29, 30, 33, 37 a-d, 38 a-d
7	T (11/5) R (11/7)	Polymers Optical Isomerism	19(Civ) 20 (Cvi)	Ch 18: 6, 9, 12 Ch 19: 7, 8 abc, 9, 10, 14, 16
8	T (11/12) R (11/14)	Carbohydrates	21 (Cvii)	Ch 20: 9, 10, 13, 17, 20, C32
9	T (11/19) R (11/21)	Lipids/Detergents Proteins	22 (Cviii) 23	Ch 21: 8, 13a, 11, 15 Ch 22: 9, 14, 18, 20, C43, C44
10	T (11/26) R (11/28)	Holiday		<b>NO CHEM 103 CLASSES TUESDAY-FRIDAY</b>
11	T (12/3) R (12/5)	Proteins Nucleic Acids	23 24 (Cxi)	Ch 23: 7, 8, 10, 14, 15, 17, 26, 27, 36 Ch 24: 14, 15, 19, 21
	<i>Final Exam Week is Dec 9 – Dec 14</i>			<i>Date To Be Announced</i>

Laboratory attendance is mandatory. Roll will be taken each week and your attendance will be recorded. No one may enter lab more than 10 minutes late.

If you fail the lab you fail the entire course even if you are passing the lecture. A 55% or higher lab average is required to pass the lab.

All lab sections meet in Disque Hall.

**Safety** Wearing safety glasses and a lab coat is the precondition of working or even staying in the lab. This is a university rule. Instructors may subtract a "point" (see below) for repeated warnings (2 times). Safety glasses and lab coats are sold in the Drexel Bookstore. Bare legs, shorts and open shoes are prohibited. In the first lab you will receive more safety information and a form that you will be asked to sign indicating that you have read and understood its contents.

### Lab Reports

Rules on the presenting of lab reports are below. Follow them carefully.

1. *Due date:* by your next lab

A late penalty of 15% off will be assessed for late lab reports. Failure to turn in lab reports will result in a 50% for that lab period. Each student is to turn in their own report with calculations and graphs.

2. *Data sheets:*

Make sure that your instructor has signed all your Data Sheets before you leave the lab. Your data sheet will *not* be signed unless your work area has been cleaned.

3. *Graphs:* Prepare graphs according to instructions in the Lab Manual (page 9).

4. *Data Manipulation:*

We are aware that the experiments, if performed with the simple instruments you will have to use, may not always be accurate. For this reason you are not expected to reproduce any values that you may find in your textbook. You are expected to give explanations for any very large deviations from expected values.

5. *Dry Lab*

If you miss a lab, you will be assigned to do a "dry lab" in the library. (The dry labs will be distributed by your instructor). You will only be permitted to do **one dry lab** per term.

**Note:** You are also responsible for the content of the lab you missed, since all experiments are covered in the lab final.

### Lab Grade (25% of your course grade)

Total Lab Grade:

75%: Lab experiments /write- ups

25%: Lab final which is scheduled for the last week. (covers *all* lab experiments)

Grades for all students start at 100 percentage points for all assigned labs. Errors in lab reports will be circled, but **no** points will be taken off. You lose points according to the system below.

Violation	points taken off
Attended lab/no report	50
Attended lab/late report	5-15
<sup>1</sup> Data sheets information missing	1 - 15
<sup>1</sup> Calculations/missing or very poor effort	1 - 15
<sup>1</sup> Graphs/missing or very poorly presented	1 - 15
<sup>1</sup> Questions/missing or very poor effort	1 - 10

<sup>1</sup> Depends on number required.

### Lab Schedule

Wk	Experiment	No.	Comments
1	No Lab Scheduled		
2	Alkanes & Alkenes	13	Page 445 of course pack
3	Extraction of Curcumin from Turmeric	9	Page 97 of green lab book
4	Aldehydes & Ketones (Wed & Thurs sections)	15	Page 457 of course pack <b>Note:</b> Mon is a holiday
5	Aldehydes & Ketones (cont'd) Synthesis of Ethyl Salicylate (Parts A & B)	15 25	Page 259 of green lab book
	Aldehydes & Ketones (Mon sections)		
6	Synthesis of Ethyl Salicylate (Parts C & D) Aldehydes & Ketones (cont'd) (Mon sections) Synthesis of Ethyl Salicylate (Parts A & B)	25	Page 259 of green lab book
7	Amino Acids Synthesis of Ethyl Salicylate (Parts C & D) (M)	14	Page 451 of course pack
8	Qualitative Analysis of 14 Household Compounds Amino Acids (Mon sections)	26	Page 271 of green lab book
9	Synthesis of Copper Pigments: Making Paints (Parts A & C) Qualitative Analysis of 14 Household Compounds (Mon sections)	24	Page 247 of green lab book
10	Synthesis of Copper Pigments: Making Paints (Parts A & C) (Mon sections only)		<b>Note:</b> No labs Tues-Fri
11	Lab Final (all sections)		

**Note:** Monday lab sections will **not** be held on Monday, October 14<sup>th</sup> (Monday of Week 4) because of the Columbus Day Holiday. These lab sections will instead be a week behind starting in Week 4. This means starting in Week 4, the experiment will run Tuesday to Monday. Monday sections will complete Copper Pigments lab on Monday, November 25<sup>th</sup> (Monday of Week 10).