

ORGANIC CHEMISTRY I
(CRN 21454, 21455, 21456)

Time and Location:

classes:	MWF	all sections	11:30 - 12:20	Mendel 213
recitations:	Thursdays	section 004	11:30 –12:20	ChemEng 201
		section 005	1:00 – 1:50	ChemEng 201
		section 006	2:30 – 3:20	ChemEng 201

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Office Hours: TBA

Text: F. A. Carey/R. M. Giuliano, *Organic Chemistry*, 9th Edition, McGraw-Hill, New York, NY, 2014. **Student Solutions Manual:** Allison, Giuliano, Atkins, Carey, 9th Edition, McGraw-Hill, 2014

Course Coverage and Goals: Organic chemistry is the study of carbon compounds and is so named because of the role of organic compounds in natural and living systems. A fundamental concept in organic chemistry is the relationship of molecular structure to chemical properties such as reactivity. This first semester course will emphasize the structure and properties of organic compounds and many of the reactions they undergo. Although thousands of organic reactions are known, the *types* of general processes involved are probably limited to a dozen or so. One of your goals will be to learn enough about molecular structure common to organic compounds, so that you will be able to predict the properties and reactivity of a given material based upon its structure.

Week	Topics	Text Chapter(s)
1	Chemical Bonding and Structure, Lewis Structures, Resonance, Acids and Bases	1
2	Hydrocarbons, Hybridization, Nomenclature, Properties	2
3	Conformations, Free Energy and Equilibria, Introduction to Stereochemistry	3
4	Alcohols and Alkyl Halides, Reaction Diagrams, Mechanisms, Rates of Reaction, Carbocations, Free Radicals	4

5	Alkenes I, Elimination Reactions, E1 and E2, Zaitsev's Rule.	5
6-7	Alkenes II, Addition Reactions, Markovnikov's Rule.	6
7-8	Stereochemistry, Stereochemistry of Reactions, Chiral Drugs	7
9	Nucleophilic Substitution, S _N 1 and S _N 2	8
10	Alkynes, Structure and Acid-Base Properties, Reductions, Acetylide Anions in Synthesis	9
11	Conjugation in Dienes and Allylic Systems, 1,2 vs 1,4-Additions, Diels-Alder Reaction	10
12-13	Arenes and Aromaticity, Reactions of Ring and Side-Chains, Huckel's Rule	11
14	Electrophilic and Nucleophilic Aromatic Substitution	12

Quizzes and Exams: Eleven 25-minute quizzes will be given at the start of the class period on the following Fridays: 9/5, 9/12, 9/19, 9/26, 10/3, 10/10, 10/31, 11/7, and 11/14, 11/21, and 12/5. The mid-term exam will be given on Friday, October 24, and only on this day. Your grade will be assigned on the basis of the items listed below. No early or make-up quizzes or exams are given. Unexcused absences will count as a zero. You must let me know *in advance* if you will be absent.

10 of 11 quizzes - 25 points each:	250 points
mid-term exam:	75 points
final exam:	150 points
Homework/ConnectChemistry/SmartBook	15 points
total points:	490 points

Academic Integrity: All students in this course are expected to follow the *University Code of Academic Integrity*. Your instructor is also obligated to follow the policy. Violations are taken seriously and acted upon.

Grade Assignments: Your grade will be assigned based upon your record of performance on the quizzes, mid-term exam, and final exam. Grades will be consistent with the definitions given in the *Villanova Student Handbook* and attached,

Range of letter grades:

100-93%	A	72-69%	C
92-89%	A ⁻	68-65%	C ⁻
88-85%	B ⁺	64-61%	D ⁺
84-81%	B	60-57%	D
80-77%	B ⁻	56-50%	D ⁻
76-73%	C ⁺	<50%	F

Attendance: Attendance is not recorded; however, it is important that you attend all classes and recitations. You should not expect a good grade if you do not attend classes and recitations. As noted above, there are no early or make-up quizzes or exams.

Talking in class is disruptive and is not acceptable, however questions on the material are welcomed and encouraged. Electronics, including laptops, iPods, iPads, and cell phones are not permitted to be used in class. Use your class and recitation time to pay attention, take notes, and to ask questions.

Some comments regarding study time, homework problems, and recitation:

You will probably hear that learning organic chemistry involves a lot of memorization. In fact, although some memorization is necessary, the only way to really learn and retain what you learn in orgo is to learn to recognize trends in structure and reactivity of organic compounds. You will also need to learn some mechanisms. Pay careful attention in class! You don't have to be a chemistry major to find that this class can be rewarding. An art historian once told me that organic chemistry was one of his favorite subjects! The molecules that make life possible, carbohydrates, amino acids, proteins, vitamins, lipids and the nucleic acids DNA and RNA are organic molecules.

Prepare to study outside of class on a regular basis. It is suggested that you spend 2 - 3 hours of study time per hour of class, and that you spend as much of your study time as possible working problems. In general, you should attempt to solve all of the "drill" problems within each chapter, and the additional problems that your instructor recommends, from the back of each chapter and on the ConnectChemistry and SmartBook sites. Homework problems are not graded, but it is important that you do them. The main purpose of recitation is to discuss the problems, and these discussions will be meaningful to you only if you come prepared. Quiz and exam questions are often based upon the problems, so practice is valuable. Do not simply scan the problems, but work through them with a pencil and paper - as much paper as necessary! Your instructor will gladly discuss any questions with you, during class, recitation, or during office hours.

Grading System

A Is the highest academic grade possible; an honor grade that is not automatically given to a student who ranks highest in the course, but is reserved for accomplishment that is truly distinctive and demonstrably outstanding. It represents a superior mastery of course material and is a grade that demands a very high degree of understanding as well as originality or creativity as appropriate to the nature of the course. The grade indicates that the student works independently with unusual effectiveness and often takes the initiative in seeking new knowledge outside the formal confines of the course.

B Is a grade that denotes achievement considerably above acceptable standards. Good mastery of course material is evident and student performance demonstrates a high degree of originality, creativity, or both. The grade indicates that the student works well independently and often demonstrates initiative. Analysis, synthesis, and critical expression, oral or written, are considerably above average.

C Indicates a satisfactory degree of attainment and is the acceptable standard for graduation from college. It is the grade that may be expected of a student of average ability who gives to the work a reasonable amount of time and effort. This grade implies familiarity with the content of the course and acceptable mastery of course material; it implies that the student displays some evidence of originality and/or creativity, works independently at an acceptable level and completes all requirements in the course.

D Denotes a limited understanding of the subject matter, meeting only the minimum requirement for passing the course. It signifies work that in quality and/or quantity falls below the average acceptable standard for passing the course. Performance is deficient in analysis, synthesis, and critical expression; there is little evidence of originality, creativity, or both.

F Indicates inadequate or unsatisfactory attainment, serious deficiency in understanding of course material, and/or failure to complete requirements of the course.

N Incomplete: course work not completed.

S Satisfactory: Assigned in Satisfactory/Unsatisfactory courses (work must be equivalent to C or better).

SP Satisfactory Progress.

T Transfer grade.

WX Approved withdrawal without penalty.

