Organic Chemistry

Dr. John W.Cody

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**Course Description:**

This course is designed to mimic a sophomore level organic chemistry experience on the undergraduate level. The course will center on fundamental organic chemistry with emphasis on molecular structure and reaction mechanisms. In addition, more advanced topics including stereochemistry and regiospecific organic transformations will be discussed as well as 1H, 13C, IR and mass spectroscopy for the identification and confirmation of molecular structure. A good understanding of introductory chemistry is necessary; therefore, successful completion of AP Chemistry is a prerequisite for this course.

**Course Requirements:**

1. You must do the homework assigned to be successful. Because organic chemistry must be practiced extensively in order to master the subject, there will be both graded and ungraded assignments. There will be a good deal of class time devoted to these assignments so as to provide instructor support.
2. **Lab safety is very important!!** We are fortunate to have research quality instrumentation for hands on use. Safety procedures for equipment use must be followed at all times. The equipment expense is quite large and therefore correct procedure must be followed at all times. In addition, personal lab safety is extremely important and mandatory!!!!!

**Course Materials:**

1. Textbook

 **--***Organic Chemistry*, 7th ed. by John McMurry

**Academic Integrity:**

Academic integrity within the school and within the Magnet program in particular is taken very seriously. Any case of academic misconduct will result in academic referral and possible expulsion from the Magnet program. This includes

all assignments given for academic credit (e.g. lab reports, tests, quizzes, homework/classwork assignments, etc.)

**Makeup Policy:**

If you are absent, the following policy is in place with regards to making up any missed assignments. You have two (2) days to meet with me upon returning to class to set a date to make up any work that you have missed during your absence. If you do not meet with me during this two day window your grade will be lowered 10 points per day (this includes all assignments: tests, labs, HW/CW, etc.). *It is your responsibility to meet with me, I will not seek you out in order to set a date to make up any missing assignments*.

**Grading Scale:**

|  |  |
| --- | --- |
| Homework & class work | 10% |
| Journal Club | 15% |
| Labs  | 20% |
| Tests | 40% |
| Final Exam | 15% |

**Cobb County Grading Scale:**

90-100 = A 80-89 = B 74-70 = C 70-73 = D 69 and below = F

# Tentative Course Outline

***\*\*\*Please note that this schedule is tentative and subject to change.\*\*\****

|  |  |  |
| --- | --- | --- |
|  | **Chapter** | **Topic** |
| Unit 1 | 1 | Structure and Bonding |
| 2 | Polar Covalent Bonds; Acids and Bases |
| 3 | Organic Compounds: Alkanes and Their Stereochemistry |
| 4 | Organic Compounds: Cycloalkanes and Their Stereochemistry |
| 5 | Stereochemistry at Tetrahedral Centers |
| 6 | An Overview of Organic Reactions |
| 1-6 | **Exam #1** |
| Unit 2 | 7 | Alkenes: Structure and Reactivity |
| 8 | Alkenes: Reactions and Synthesis |
| 9 | Alkynes: An Introduction to Organic Synthesis |
| 10 | Organohalides |
| 11 | Reactions of Alkyl Halides: Nucleophilic Substitutions and Eliminations |
| 7-11 | **Exam #2** |
| Unit 3 | 17 | Alcohols and Phenols |
| 18 | Ethers and Epoxides; Thiols and Sulfides |
| 24 | Amines and Heterocycles |
| 17-18,24 | **Exam #3** |
| Unit 4 | 12 | Structure Determination: Mass Spectrometry and Infrared Spectroscopy |
| 13 | Structure Determination: Nuclear Magnet Resonance Spectroscopy |
| 14 | Conjugated Compounds and Ultraviolet Spectroscopy |
| 12-14 | **Exam #4** |
| Unit 5 | 15 | Benzene and Aromaticity |
| 16 | Chemistry of Benzene: Electrophilic Aromatic Substitution |
| 15-16 | **Exam #5** |
| Unit 6 | 19 | Aldehydes and Ketones: Nucleophilic Addition Reactions |
| 20 | Carboxylic Acids and Nitriles |
| 21 | Carboxylic Acid Derivatives: Nucleophilic Acyl Substitution Reactions |
| 19-21 | **Exam #6** |
| Unit 7 | 22 | Carbonyl Alpha-Substitution Reactions |
| 23 | Carbonyl Condensation Reactions |
| 22-23 | **Exam #7** |