Course Requirements:
Prerequisites for Chem 251.4: C or better in Chem 114.4 and 114.1
Pre or corequisite: Chem 251.1 (C or better if prerequisite)

Note: a C- in any pre or corequisite will not permit you to take 251.4/251.1!

You must earn a C or better in Chem 251.4 and 251.1 to take Chem 252.4 and 252.1

You will need access to Blackboard for handouts, including this syllabus and the textbook. It is your responsibility to provide a valid e-mail address that you monitor. Announcements will be made via Blackboard and e-mail.

Lecture: Mondays and Wednesdays 5:00 – 6:50 pm, Rm 101 (Remsen Hall)

Dr. Joshua Mukhlall, Rm 255
Office Hour: Thursday 10:00 PM – 11:00 am and by appointment
Telephone: 718-570-0413
E-mail: joshua.mukhlall@qc.cuny.edu

LECTURE TEXT: Organic Chemistry, Baker, Rizzo, and Engel. Download the zip file from Blackboard under Course Materials, unzip the file (it may unzip automatically upon downloading), and in the resultant TEXTBOOK folder, open the file “TEXT.doc.” If you order the files by size or date it will be first. You can print or just use it from your computer. All figures open in a new window when you press CTRL + click on a link, and problems and answers are accessed from the text as well. There is no charge, and the book is for your personal use only.

The text contains many problems similar to those that will be given on exams. You should do the problems that appear in the body of the text and at the end of each chapter. These problems will not be graded.

REQUIRED ON-LINE PROBLEMS: You are required to purchase access to the Sapling Learning online, at http://saplinglearning.com. The cost is $40. See the detailed instructions at the end of the syllabus in order to register. The course is listed under “CUNY Queens College - CHEM 2514 - Fall15 - MUKHLALL” Problems will be graded and deadlines are listed on the web site. There is a training module (with extra credit!) that you should complete before you start on the chapter problems.

While studying organic chemistry with other students is recommended, you will get the maximum benefit from these problems by doing them on your own.

Recommended: Molecular model kit (available on-line, about $20-57; the ~$30 kits on Amazon look good)


Grading:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>3 Midterm Exams</td>
<td>60%</td>
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<tr>
<td>On-line Homework</td>
<td>10%</td>
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<tr>
<td>Final Exam (Comprehensive*)</td>
<td>30%</td>
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<tr>
<td>Total</td>
<td>100%</td>
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*The final exam will be the American Chemical Society Organic exam, 1st semester. The study guide can be purchased for $21 online and it covers both semesters.
Exams will stress lecture material and recitation problems. Bring photo ID to exams.

You will be permitted to use molecular models during mid-term exams but not on the final exam. You will not be permitted to use books, notes, computers, or calculators during exams. Cell phones are strictly prohibited for class and exams. If you have any questions concerning the grading, see me within 4 days after receiving your exam. All re-grade requests must be made in writing and attached to the exam; do not under any circumstances write anything on the exam itself. Exams are copied prior to being returned. There are no make-up exams. Written verification of your reason for missing an exam is required; your grade will be based on the exams you have taken.

Cheating of any kind will not be tolerated. Your entire exam grade will be zero, and you will be brought up on charges of academic dishonesty to the College.

Approximate Lecture and Examination Schedule
HW due dates will be posted online at Sapling.

<table>
<thead>
<tr>
<th>Date</th>
<th>Chapter</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>Aug. 31, Oct. 2</td>
<td>1</td>
<td>Bonding in Organic Compounds</td>
</tr>
<tr>
<td>Sept. 9, 10</td>
<td>2</td>
<td>Functional Groups, Nomenclature, and Structure</td>
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<tr>
<td>Sept. 16, 21</td>
<td>3</td>
<td>Intermolecular and Acid-Base Interactions</td>
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<td>Sept. 28, 30</td>
<td>4</td>
<td>Alkanes and Cycloalkanes</td>
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<td>Oct. 5</td>
<td>5</td>
<td>Alcohols</td>
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<tr>
<td>Oct. 7</td>
<td>6</td>
<td>Alcohols</td>
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<tr>
<td>Oct. 19, 21</td>
<td>7</td>
<td>Carbocations and Radicals</td>
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<tr>
<td>Oct. 26, 28</td>
<td>8</td>
<td>Stereochemistry</td>
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<tr>
<td>Nov. 2, 4</td>
<td>9</td>
<td>Alkenes I</td>
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<tr>
<td>Nov. 9</td>
<td>10</td>
<td>Alkenes II</td>
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<tr>
<td>Nov. 16, 18</td>
<td>11</td>
<td>Halides and Organometallics</td>
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<tr>
<td>Nov. 23, 25</td>
<td>12</td>
<td>Substitution and Elimination Reactions</td>
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<tr>
<td>Nov. 30, Dec. 2</td>
<td>13</td>
<td>Alkanes and Cycloalkanes – Conformational Analysis</td>
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<tr>
<td>Dec. 7, 9</td>
<td>14</td>
<td>Ethers and Epoxides</td>
</tr>
</tbody>
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Oct. 7 Exam 1 Chapters 1-4

Nov. 9 Exam 2 Chapters 5-9

Dec. 14 Exam 3 Chapters 10 – 14

Final Exam TBA Chapters 1 - 14

No class Sept. 7 (Labor Day); Classes follow a Monday schedule on Thursday Sept. 10; No class Sept. 14 and 23; No class Oct. 12 (Columbus Day).

Course Preparation: Understanding the basic concepts from General Chemistry is critical to understanding reactions and mechanisms in organic chemistry. While these concepts are reviewed in Organic Chemistry, it will be assumed that this is the second time you are seeing this and that you understand the concepts. A brief list from the most recent Queens College textbook for Chem 113 and 114 is given below; if you are transferring in, try matching the topics with those in your textbook.

Review Chapters from Zumdahl & Zumdahl Chemistry:

Chem 113
Chapter 4: Types of Chemical Reactions and Solution Stoichiometry
Chapter 8: Bonding: General Concepts
Chapter 9: Covalent Bonding: Orbitals
Chem 114
Chapter 10: Liquids and Solids (Liquids only)
Chapter 14: Acids and Bases
Chapter 17: Spontaneity, Entropy, and Free Energy

Course Objectives: Students will learn structural organic chemistry, including bonding, functional groups, stereochemistry, and conformational analysis, as well as the nomenclature for labeling these compounds and structures. In the first semester of organic chemistry a limited number of functional groups, including alkanes, alcohols, alkenes, alkyl halides, ethers, and epoxides, will be introduced along with their reactions. The mechanisms of those reactions and their common mechanistic features will be stressed. Understanding these mechanisms, rather than their rote memorization, is a principal objective, as only understanding of mechanisms will allow new reactions to be understood. Applications of reactions to multistep synthesis will be introduced. At the conclusion of this semester students will be prepared to start doing organic research if they so choose.

Assessment: Problem-solving ability will be tested using exams and online graded problems; while memorization of naming and drawing conventions as well as reactions will be required, the emphasis will be on understanding structures of organic compounds and their mechanisms of reaction. While the online homework problems will be graded, the intent is to help student learning, rather than provide significant assessment. These and additional sample problems and answers both in the book and on the course web site will be representative of the material that will be found on exams.

Sapling Learning
Sapling's chemistry questions are delivered in a web browser to provide real-time grading, response-specific coaching, improvement of problem-solving skills, and detailed answer explanations. Dynamic answer modules enable one to interact with 3D models and figures, utilize drag-and-drop synthetic routes, and draw chemical structures - including stereochemistry and curved arrows. Altogether, Sapling is cheaper than a tutor, provides more value than a solutions manual, and goes beyond a mere assessment exercise to give a learning experience.

We will be using Sapling Learning for graded homework. To get started:
Student registration instructions:
1. Go to http://saplinglearning.com and click on "US Higher Ed" at the top right.
2. a. If you already have a Sapling Learning account, log in and skip to step 3. b. If you have Facebook account, you can use it to quickly create a Sapling Learning account. Click "Create an Account," and then "Create my account through Facebook." You will be prompted to log into Facebook if you are not already logged in. Choose a username and password, then click "Link Account." You can then skip to step 3. c. Otherwise, click "Create an Account." Supply the requested information and click "Create My Account." Check your email (and spam filter) for a message from Sapling Learning and click on the link provided in that email.
3. Find your course in the list (listed by subject, term, and instructor) and click the link.
4. Select a payment option and follow the remaining instructions.
   • Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments.
   • During sign up - and throughout the term - if you have any technical problems or grading issues, send an email to support@saplinglearning.com explaining the issue. The Sapling support team is almost always more able (and faster) to resolve issues than your instructor and TAs.
To optimize your Sapling Learning experience, please keep your internet browser and Flash player up to date and minimize the use of RAM-intensive programs/websites while using Sapling Learning.