Prerequisites: CHEM 162 or 171 (General Chemistry II) or consent of instructor

Instructor: Mike Kurz, Bilger 247A, Cell phone: 210-296-6255; kurz@hawaii.edu
Office Hours: MWR 9:15-10, MWF 1:30-2:30, other times by appointment

Course Textbook: “Organic Chemistry,” by Smith, 5th ed; class interaction- bring cell phone or computer capable of connecting to the internet to be used for daily in-class quizzes. Take-home problem sets will be assigned about every 2nd or 3rd day to be turned in on specific dates and graded.

Optional Course Aids: “Study Guide and Solutions Manual” by Smith is highly recommended. For those buying a new version of Smith, “Connect” on line homework can be used. A Molecular Modeling kit, available at the Bookstore, is also recommended.

Evaluation Procedure - Chem 272

Three 75 min exams [6/01 (R), 6/13 (T), 6/23(F)] @ 100 each = 260^a
Homework assignments^b and in-class quizzes = 65

Final exam: Friday, 6/30 (includes 40 pt on last week of class + 135 cumulative) = 175

Total = 500^c

^aYour lowest exam score will be normalized to 60. For example, exam scores of 90, 80, and 60, the lowest exam would be multiplied by 0.6 = 36/60. This would result in an exam total of 206/260 or 79% rather than 230/300 or 76.7%. No exam makeups (you may try to arrange to take an exam early if you have a conflict). A missed exam will automatically count as your lowest score in the factoring above; a default grade based on a combination of your other exam averages (normalized by the 0.6 factor) may be given for excused exam misses with documentation.

^bHomework Assignments. You will be assigned take-home problem sets every 2nd or 3rd day with prescribed due dates (at start of class period). Though not all of these will be graded rigorously, homework problems will appear on each exam. Other problems from the text will be suggested, and you are strongly encouraged to work at least these & also others within the chapters. Answers will not be posted since answer books (study guides) are available.

^cApproximate grading scale: A/B/C/D = 88/75/61/45

Important dates:
  a) May 22 (Monday) - First day of class
  b) May 22-25 - Late registration
  c) May 25 - Last day to drop the course (with no W on transcript)
  d) June 12, Monday – Holiday, King Kamehameha Day
  e) June 14 – Last day to withdraw from the course; W on transcript
  f) June 30, Final Exam
### Topic Outline

For the most part the course will be organized in approximately the same order as the coverage of topics in the textbook, *Organic Chemistry, 5th Ed.*, by Smith.

<table>
<thead>
<tr>
<th>Wk 1</th>
<th>Date</th>
<th>Topics</th>
<th>Smith Text</th>
<th>Chap</th>
<th>Sections</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5/22</td>
<td>Intro/overview; orbitals, valence, bonding, Lewis structures</td>
<td>1</td>
<td>1.1-5</td>
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<td></td>
<td>5/23</td>
<td>Formal charge, resonance, MO’s, hybridization, draw structures</td>
<td>1</td>
<td>1.6-11</td>
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<td></td>
<td>5/24</td>
<td>Electronegativity, bond polarity, Bronsted acids, acid-base equilibria</td>
<td>1,2</td>
<td>1.12-14; 2.1-4</td>
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<td></td>
<td>5/25</td>
<td>Effects of structure, Lewis system, Functional groups.</td>
<td>2, 3</td>
<td>2.5-8; 3.1-2</td>
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<tr>
<td>Wk 2</td>
<td>5/26</td>
<td>Properties (BP, MP, solub.), Soaps, Reactivity; Alkanes, R groups</td>
<td>3, 4</td>
<td>3.8-10, 4.1-2</td>
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<td>5/29</td>
<td>Memorial Day – no class</td>
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<td></td>
<td>5/30</td>
<td>IUPAC nomenclature, structural isomers conformations,</td>
<td>4</td>
<td>4.3-10</td>
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<td></td>
<td>5/31</td>
<td>Cycloalkanes: ring strain, cyclohexanes, petroleum, lipids</td>
<td>4,5</td>
<td>4.11-15</td>
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<tr>
<td>R, 6/1</td>
<td>EXAM I over Chapters 1-4</td>
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<td></td>
<td>6/2</td>
<td>Chiral molecules, stereoisomers, enantiomers, R, S, 2 chiral centers</td>
<td>5</td>
<td>5.1-6</td>
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<tr>
<td>Wk 3</td>
<td>6/5</td>
<td>Diastereomers, meso, racemates, optical activity, chiral drugs.</td>
<td>5</td>
<td>5.7-13</td>
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<td></td>
<td>6/6</td>
<td>Reaction types, bond breaking, energy diagrams, E&lt;sub&gt;act&lt;/sub&gt;.</td>
<td>6</td>
<td>6.1-8</td>
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<td></td>
<td>6/7</td>
<td>Kinetics; Alkyl halides, Nucleophilic substitution features</td>
<td>6,7</td>
<td>6.9-11, 7.1-8</td>
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<tr>
<td></td>
<td>6/8</td>
<td>S&lt;sub&gt;N&lt;/sub&gt;2 &amp; S&lt;sub&gt;N&lt;/sub&gt;1 mechanisms, carbocations, Hammond;</td>
<td>7</td>
<td>7.9-18</td>
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<td></td>
<td>6/9</td>
<td>Elimination (E1 &amp; E2), Zaitsev Rule E1, E2, vs S&lt;sub&gt;N&lt;/sub&gt;1, S&lt;sub&gt;N&lt;/sub&gt;2;</td>
<td>8</td>
<td>8.1-9,11</td>
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<td>Wk 4</td>
<td>6/12</td>
<td>King Kamahameha Holiday – no class</td>
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<td>6/14</td>
<td>Alcohols, properties &amp; preps, Dehydration to alkenes.</td>
<td>9</td>
<td>9.1-9.10</td>
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<td></td>
<td>6/15</td>
<td>Rx of ROH with HX; Ether &amp; epoxide preps &amp; rxns;</td>
<td>9</td>
<td>9.11-17</td>
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<td>6/16</td>
<td>Alkenes: (E,Z), stability, synthesis, addition reactions: HX &amp; X&lt;sub&gt;2&lt;/sub&gt;</td>
<td>10</td>
<td>10.1-11, 13,14</td>
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<td>6/19</td>
<td>Hydration, halohydrins; Alkynes, preps &amp; reactions with HX &amp; X&lt;sub&gt;2&lt;/sub&gt;</td>
<td>10,11</td>
<td>10.12, 15-18; 11.1-8, 8.10</td>
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<td>6/20</td>
<td>Alkyne hydration rx, terminal alkyne acidity &amp; reactions, synthesis</td>
<td>11</td>
<td>11.9-12</td>
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<td></td>
<td>6/21</td>
<td>Redox Rx, hydrogenation of alkenes &amp; alkynes</td>
<td>12</td>
<td>12.1-6</td>
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<td>6/22</td>
<td>Epoxidation, dihydroxylation, oxidative cleavage,</td>
<td>12</td>
<td>12.7-11</td>
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<tr>
<td>F,6/23</td>
<td>EXAM 3 on Chap. 9-12.6</td>
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<td>Wk 5</td>
<td>6/26</td>
<td>ROH oxidation; Sharpless rx; Combustion; NMR, process,</td>
<td>12,14</td>
<td>12.12,15; 14.1-2</td>
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<td>6/27</td>
<td>Shielding/deshielding, chemical shifts, integration, splitting</td>
<td>14</td>
<td>14.3-9</td>
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<td>6/28</td>
<td>&lt;sup&gt;13&lt;/sup&gt;C NMR; EM spectrum, IR (bond stretches);</td>
<td>14,13</td>
<td>4.11,12; 13.5-8</td>
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<td>6/29</td>
<td>Catchup. REVIEW for final</td>
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<td>F,6/30</td>
<td>Final exam (Comprehensive + Chap 12.7-15, 14, 13.5-8 (IR)</td>
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