Syllabus for Organic Chemistry CHEMS221, Summer 2019

Important Notice Regarding O-Chem Lab:

At Yale, O-Chem Lab is a separate course, with its own unique course summer, syllabus and cost. Please see summer session course, CHEM 223L, for more information

Lectures: M, T, W, T, F: 9:30-10:45 a.m. ROOM: SCL160
Discussion Sections: M, W, F: 11:00 a.m. -noon * ROOM: SCL160
*Subject to change to accommodate exam review sessions

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Office: 212 Sterling Chemistry Lab
Teaching Assistant Jenny Martinez, Ph.D, jenny.martinez@yale.edu

Required Materials:

Suggested Materials:
A) Organic molecular modeling kit. Inexpensive options can be found through popular online suppliers (e.g. Mega Molecules)

Lecture Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topics</th>
<th>Textbook Chapter</th>
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<tbody>
<tr>
<td>July 1*</td>
<td>Nuclear Magnetic Resonance – What is it and how does it work?</td>
<td>13 (*Double lecture, no section. If at all possible bring a laptop with ChemDraw to class.)</td>
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<tr>
<td>July 2</td>
<td>Nuclear Magnetic Resonance – What information can NMR give us?</td>
<td>13</td>
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<tr>
<td>July 3</td>
<td>Dienes, resonance and aromaticity</td>
<td>15</td>
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<tr>
<td>July 4</td>
<td>How double bonds interact to show new behaviors</td>
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<tr>
<td>July 5</td>
<td>Dienes, resonance and aromaticity</td>
<td>15</td>
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<td></td>
<td>Characteristic reactions of conjugated systems</td>
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<tr>
<td>July 8</td>
<td>The chemistry of benzene and its derivatives</td>
<td>16</td>
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<tr>
<td>July 9</td>
<td>The chemistry of benzene and its derivatives</td>
<td>16</td>
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<tr>
<td>July 10</td>
<td>Allylic and benzylic reactivity</td>
<td>17</td>
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<tr>
<td>July 11</td>
<td>Exam 1: CH 13, 15, 16</td>
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<tr>
<td>July 12</td>
<td>The chemistry of aryl and vinylic halides; transition metal catalysis</td>
<td>18</td>
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<td>July 15</td>
<td>The chemistry of aldehydes and ketones</td>
<td>19</td>
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<td>July 16</td>
<td>The chemistry of carboxylic acids</td>
<td>20</td>
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<tr>
<td>July 17</td>
<td>The chemistry of carboxylic acids</td>
<td>20</td>
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<tr>
<td>July 18</td>
<td>The chemistry of carboxylic acid derivatives</td>
<td>21</td>
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<tr>
<td>July 19</td>
<td>The chemistry of carboxylic acid derivatives</td>
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<td>Date</td>
<td>Topic</td>
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<tr>
<td>July 22</td>
<td>The chemistry of enolates, enols and $\alpha,\beta$-unsaturated 22 carbonyl compounds</td>
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<td>July 23</td>
<td><strong>Exam 2: CH 17-20</strong></td>
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<td>July 24</td>
<td>The chemistry of enolates, enols and $\alpha,\beta$-unsaturated 22 carbonyl compounds</td>
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<tr>
<td>July 25</td>
<td>The chemistry of enolates, enols and $\alpha,\beta$-unsaturated 22 carbonyl compounds</td>
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<td>July 26</td>
<td>The chemistry of amines</td>
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<td>July 29</td>
<td>The chemistry of amines</td>
<td></td>
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<tr>
<td>July 30</td>
<td>Carbohydrates</td>
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<td>July 31</td>
<td>Amino acids, peptides and proteins</td>
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<td>August 1</td>
<td><strong>Exam 3: CH 21-24, 27 and CH 13-20</strong></td>
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<tr>
<td>August 2</td>
<td>Exams returned</td>
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Exam 1 (25%) and Exam 2 (25%) will each be 1 hour in length, beginning at 9:30 a.m. on their scheduled day.

Exam 3 (40%) will be 2 hours long beginning at 9:30 a.m. on its scheduled day.

**Participation (10%)** Students earn participation points based on attendance and entries into a problem-solving journal. If you are more than 15 minutes late, you do not get the participation points.

**Letter Grades**

**Scenario 1:** Exam 1 (25%) + Exam 2 (25%) + Exam 3 (40%) + Participation (10%)

**Scenario 2:** Students may drop their lower exam score from Exam 1 or Exam 2 if this improves their letter grade, in which case letter grades are calculated as Exam (35%) + Exam 3 (55%) + participation (10%)

**Policy regarding attendance:** Attendance is mandatory, per summer school policy.

Students earn participation points based on attendance and entries into a problem-solving journal. If you are more than 15 minutes late to a class meeting, you do not get the participation points.

**Policy regarding attendance:** Attendance is mandatory, per summer school policy.

**Useful websites:**

- [http://www.chem.wisc.edu/areas/organic/index-chem.htm](http://www.chem.wisc.edu/areas/organic/index-chem.htm)
- [http://www2.chemistry.msu.edu/faculty/reusch/VirtTxtJml/intro1.htm](http://www2.chemistry.msu.edu/faculty/reusch/VirtTxtJml/intro1.htm) (some practice problems with answers)
- [http://www.departments.bucknell.edu/chemistry/courses/chem211/problem_sets/](http://www.departments.bucknell.edu/chemistry/courses/chem211/problem_sets/) (practice problems with answers for org. chem I)
- [https://legacyweb.chemistry.ohio-state.edu/flashcards/](https://legacyweb.chemistry.ohio-state.edu/flashcards/) (organic chemistry flash cards)
- [http://evans.harvard.edu/cgi-bin/problems/search2a_selectKeywords.cgi](http://evans.harvard.edu/cgi-bin/problems/search2a_selectKeywords.cgi) (challenging problems in organic chemistry)