Syllabus for Organic Chemistry CHEMS221, Summer 2020

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, CHEMS 223L, for more information.

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

Instructor Session B: Jonathan Parr, Ph.D., jonathan.parr@yale.edu  
Office: 212 Sterling Chemistry Lab  
Teaching Assistant TBA

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>Topics</th>
<th>Textbook Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 29*, 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>
</tr>
<tr>
<td>June 30, Nuclear Magnetic Resonance What information can NMR give us?</td>
<td>13</td>
</tr>
<tr>
<td>July 1, Dienes, resonance and aromaticity</td>
<td>15</td>
</tr>
<tr>
<td>July 2, How double bonds interact to show new behaviors</td>
<td>15</td>
</tr>
<tr>
<td>July 3, Dienes, resonance and aromaticity Characteristic reactions of conjugated systems</td>
<td>15</td>
</tr>
<tr>
<td>July 6, The chemistry of benzene and its derivatives</td>
<td>16</td>
</tr>
<tr>
<td>July 7, The chemistry of benzene and its derivatives</td>
<td>16</td>
</tr>
<tr>
<td>July 8, Allylic and benzylic reactivity</td>
<td>17</td>
</tr>
<tr>
<td>July 9, Exam 1: CH 13, 15, 16</td>
<td></td>
</tr>
<tr>
<td>July 10, The chemistry of aryl and vinylic halides; transition metal catalysis</td>
<td>18</td>
</tr>
<tr>
<td>July 13, The chemistry of aldehydes and ketones</td>
<td>19</td>
</tr>
<tr>
<td>July 14, The chemistry of carboxylic acids</td>
<td>20</td>
</tr>
<tr>
<td>July 15, The chemistry of carboxylic acids</td>
<td>20</td>
</tr>
</tbody>
</table>
July 16  The chemistry of carboxylic acid derivatives  21
July 17  The chemistry of carboxylic acid derivatives  21

July 20  The chemistry of enolates, enols and \( \alpha,\beta \)-unsaturated 22 carbonyl compounds
July 21  Exam 2: CH 17-20
July 22  The chemistry of enolates, enols and \( \alpha,\beta \)-unsaturated 22 carbonyl compounds
July 23  The chemistry of enolates, enols and \( \alpha,\beta \)-unsaturated 22 carbonyl compounds
July 24  The chemistry of amines  23

July 27  The chemistry of amines  23
July 28  Carbohydrates  24  (Review session to follow)
July 29  Amino acids, peptides and proteins  27  (Review session to follow)
July 30  Review
July 31  Exam 3: CH 21-24, 27 and CH 13-20

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 am 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.organic-chemistry.org/
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/ (practice problems with answers for org. chem I)
https://legacyweb.chemistry.ohio-state.edu/flashcards/ (organic chemistry flash cards)
http://evans.harvard.edu/cgi-bin/problems/search2a_selectKeywords.cgi (challenging problems in organic chemistry)