

| DATES     | TOPICS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | READING                                                                                            |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
|           | <b>ALKENES: Recap and Reactions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                    |
| 3/31-4/4  | The alkene double bond: a focus of reactivity.<br>Polar and concerted addition reactions.<br>Hydrogenation, addition of HX (Markovnikov addition), halogenation.<br>Epoxidation, hydroboration (anti-Markovnikov addition), osmylation and ozonolysis<br>Alkene polymerization                                                                                                                                                                                                           | 7.1, 7.2, 7.4, 7.5, 7.7,<br>8.1, 8.2<br>8.3-8.5, 8.7, 8.8, 8.10, 8.11<br><br>8.12-8.15<br><br>8.16 |
|           | <b>ALKYNES: Structure and bonding</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                    |
| 4/7       | Introduction to the alkyne triple bond                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 9.1-9.5                                                                                            |
|           | <b>ALKYNES: Synthesis and Reactions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                    |
| 4/9-4/11  | Alkylation of acetylide anions (a carbon nucleophile)<br>Addition reactions to alkynes, hydrogenation, halogenation and HX. Hydration of alkynes, tautomerization.                                                                                                                                                                                                                                                                                                                       | 9.6, 9.7<br>9.9                                                                                    |
| 4/14      | <b>Exam # 3 (material from 3/12-4/11)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                    |
|           | <b>ALCOHOLS: Structure, synthesis and reactions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                    |
| 4/16-4/18 | Structure and bonding. Acidity (brief review)<br>Synthesis of alcohols (methods to date and new strategies)<br>Organometallic reagents, reactivity and basicity.<br>Reaction of carbonyl compounds with Grignard and organolithium reagents<br>REDOX relationships amongst alcohols, aldehydes and ketones and carboxylic acids.<br>Alcohols as nucleophiles (formation of alkoxides) and electrophiles (formation of tosylates). Esterification.<br>(April 21, no class - Patriots day) | 10.1-10.6<br>10.7<br>10.8<br>10.9-10.12<br>10.11,11.1-11.3<br>11.5-11.9, 11.12, 11.14              |
|           | <b>AROMATIC COMPOUNDS: Structure and Reactions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                    |
| 4/23-4/25 | 2, 3, and 4 pi electron systems<br>Benzene - the prototypic aromatic system. What is "aromaticity"? Huckel's rule. Identifying aromatic systems.<br>Charged and neutral species. Polycyclics and heterocyclic.<br>Reaction chemistry of aromatic compounds - electrophilic aromatic substitution: halogenation, nitration, sulfonylation and Friedel-Crafts alkylation and acylation.                                                                                                    | 15.1-15.4<br>16.1-16.10.<br>16.13<br>17.1-17.5, 17.10-17.11                                        |
| 4/28-4/30 | Directing effects in electrophilic aromatic substitution<br>Nucleophilic aromatic substitution<br>Strategies in the synthesis of multisubstituted benzene derivatives                                                                                                                                                                                                                                                                                                                    | 17.6-17.9,<br>17.12                                                                                |
|           | <b>CARBONYL COMPOUNDS:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                    |
| 5/2       | Summary of various types of carbonyl compounds - aldehydes and ketones, carboxylic acids and carboxylic acid derivatives (acid chlorides, acid anhydrides, esters and amides).                                                                                                                                                                                                                                                                                                           | 18.1-18.4                                                                                          |
| 5/5       | <b>EXAM #4 (material from 4/14-4/30)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                    |
| 5/7-5/9   | Synthesis of aldehydes and ketones.<br>Reactions of carbonyl compounds with the carbonyl group as an electrophile with H, C, N and O nucleophiles.                                                                                                                                                                                                                                                                                                                                       | 18.7, 18.9, 18.11<br>18.12-18.21                                                                   |
| 5/12      | Carbonyl reactivity at the alpha C-H (enols and enolates)                                                                                                                                                                                                                                                                                                                                                                                                                                | 22.1-22.5                                                                                          |
| 5/14      | <b>WRAP UP!!!!</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                    |