

## THIRD YEAR REVISION COURSE

Prof Ben Davis

Trinity Term  
4 Lectures

This course provides revision for essential knowledge of the organic chemistry course, considered under two broad headings, molecular structure and molecular reactivity. Each of the reaction types will be illustrated with examples showing their application to synthetic organic chemistry.

### Generally Recommended Books:

- Functional Groups: Characteristics & Interconversions OCP 35 Meakins  
*A cracking summary of the 1<sup>st</sup> year basic reactions that are essential*
- Some modern methods of Organic Synthesis Carruthers (& Coldham)  
*An excellent text that is particularly good on redox and full of interesting examples – there is now an updated fourth edition which tackles some modern aspects well.*
- Advanced Organic Chemistry Parts A & B Carey & Sundberg  
*Great general text*
- Organic Synthesis Smith  
*Has some more modern aspects that most others do not but many typos & errors – so beware.*

I'll recommend additional individual texts on each topic for each lecture.

<b>Lecture</b>	<b>Topic</b>
1	Molecular Structure 1 - <i>Stereochemistry</i> <b>Stereochemical definitions/ representations R2</b> Stereocontrol in reactions. Stereoelectronics. Molecular Structure 2 - <i>Conformational Analysis</i> <b>Conformers &amp; Reactivity R2</b>
2	Molecular Structure 3 - <i>Spectroscopic Analysis</i> <b>Spectroscopy R2</b> MS, IR, UV/Vis NMR spectroscopy in examples of assignment. Molecular Reactivity 1 - <i>Basics of Reactivity:</i> Substitution - <b>nucleophilic substitution reactions R2</b> - radical reactions Organoelement chemistry Si, Se <b>R2 P, B.</b> Transition Metal Mediated Processes.
3	Molecular Reactivity 2 - <i>Useful Synthetic Techniques and Methods:</i> Protecting Group chemistry illustrated by Carbohydrate chemistry. Strategy. <b>Reduction and Oxidation chemistry R2.</b> Miscellaneous.
4	Molecular Reactivity 3 - <i>Aromatic Chemistry</i> <b>Carbocyclic Aromatic R2</b> Heterocyclic chemistry Orbital Symmetry and Pericyclic Reactions

**R2** subjects in **bold** will recap & expand on aspects from 2<sup>nd</sup> year Revision course. You will get the most out of these by checking that you are familiar with the background prior to the lecture.