

School of Chemistry

Aims and Objectives: Session 2023-2024

Module CH2601: Organic Chemistry 2 (Laboratory)

Duration: 30 (10 × 3) hours laboratory work, 14 (7 × 2) hours workshops.

Staff: Dr N. S. Keddie*, Dr C. P. Johnston, Dr G. J. Florence, Dr T. Lebl, Professor D. Philp, Dr R. J. Pearson and Professor N. J. Westwood.

(*Co-ordinator)

Aims: The organic laboratory class consists of a series of experiments designed to be completed in either one or two sessions. A written report discussing notable features of each experiment and the significance of the data is to be carried out for five experiments. The final experiment is assessed by oral interview. The course is designed to illustrate and reinforce concepts covered in the lecture-based part of the course. The students will be introduced to key synthetic techniques and will regularly employ spectroscopic techniques to examine the outcome of experiments.

Objectives: To perform six experiments that include: Functional group interconversions, carbon-carbon bond formation / enolate chemistry, and electrophilic aromatic substitution. To learn new synthetic techniques: distillation under reduced pressure, reactions involving continuous removal of water and preparative chromatography. To gain experience in the identification and characterisation of unknown products using ^1H NMR spectroscopy, ^{13}C NMR spectroscopy, IR spectroscopy and mass spectrometry. To introduce the concept of multi-step organic synthesis. To take part in spectroscopy and retrosynthetic analysis workshops.

Functional group interconversions:

Oxidation of an aromatic aldehyde.

Ester formation to identify unknown alcohols.

Epoxidation of carvone using electrophilic and nucleophilic reagents.

Carbon-carbon bond formation / enolate chemistry:

Introduction to the aldol condensation.

Electrophilic aromatic substitution:

Friedel-Crafts alkylation.

Nitration of unknown aromatic compound.