

School of Chemistry

Aims and Objectives: Session 2023-2024, Semester 1

Module CH3431: Chemistry Workshop

Course Title: Application of Spectroscopic Methods

Duration: 24 hours

Lecturers Professor S. E. M. Ashbrook* and Professor D. Philp

*Module Convenor

Tutors: Professor S. E. M. Ashbrook, Dr N. S. Keddie, Dr T. Lebl, Dr R. J. Pearson, Professor D. Philp, Dr I. A. Smellie and Dr C. M. Young.

Aims: To build on the student's knowledge of the use of a range of analytical techniques, including NMR, electronic and vibrational spectroscopy, and mass spectrometry to develop skills in the structure determination of molecules using spectroscopic data.

Objectives:

1. To understand the basic information that can be obtained from UV-VIS and IR spectra and from mass spectrometry.
2. To understand the physical background behind nuclear spin and NMR spectroscopy.
3. To have a general understanding of chemical shifts and coupling constants in ^1H and ^{13}C NMR.
4. To be able to interpret ^1H and ^{13}C NMR spectra.
5. To recognize and understand other significant phenomena in NMR spectroscopy such as heteronuclear spin-spin coupling, decoupling, relaxation, NOE and dynamic processes.
6. To understand basic principles of multi-dimensional NMR techniques and some of their applications.
7. To be able to deduce structures of organic molecules from a combination of IR, UV and NMR spectra and mass spectrometry data.