



LABORATORY EXCELLENCE, SAFETY AND ACCREDITATION

Spectroscopy Techniques and Molecular Identification

5 day course

Classroom, online or in-house

Course overview

Identifying an unknown compound usually requires several spectroscopic techniques used together, because each answers a different question about the molecule. This course covers reading them as a set. Delegates work through ultraviolet and visible spectroscopy and what it says about conjugation, infrared and the functional groups it identifies, nuclear magnetic resonance for the carbon and hydrogen framework, and mass spectrometry for molecular mass and fragmentation. Sample preparation and the artefacts it introduces are covered throughout. The course is built around structured interpretation exercises, working from a set of spectra to a defensible structure rather than to a guess.

What you will learn

- Explain what each technique measures and the question it answers
- Interpret ultraviolet and visible spectra for conjugation
- Identify functional groups from an infrared spectrum
- Read proton and carbon nuclear magnetic resonance spectra
- Interpret molecular ion and fragmentation patterns in mass spectra
- Prepare samples without introducing misleading artefacts
- Combine several spectra into a defensible structural assignment

Who should attend

- Analytical chemists and laboratory analysts
- Quality control and research laboratory staff
- Method development scientists
- Graduate chemists entering laboratory roles
- Technical staff interpreting spectroscopic reports

Course outline

- 01 What each technique measures
- 02 Ultraviolet and visible spectroscopy
- 03 Infrared spectroscopy and functional groups
- 04 Proton nuclear magnetic resonance
- 05 Carbon nuclear magnetic resonance
- 06 Mass spectrometry and fragmentation
- 07 Sample preparation and artefacts
- 08 Combined interpretation exercises

Upcoming dates

Dates	Venue	Format	Fee per delegate
2 to 6 November 2026	Gaborone, Botswana	Classroom	R19,950
9 to 13 November 2026	Online	Online	R8,500
7 to 11 December 2026	Johannesburg, South Africa	Classroom	R19,950

Fees and how to register

This 5 day course is **R8,500** per delegate online, **R19,950** in the classroom in South Africa, Botswana, Namibia,



Lesotho and Eswatini, and **USD 1,325** in the classroom elsewhere in Africa. In-house training is quotation on request. Book 2 or more delegates on this course and save 10%.

To register or request an in-house proposal, visit www.afrisciencegroup.com, email info@afriscience.co.za, or WhatsApp us on **+27 63 479 1136**.

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