

Advanced NMR Spectroscopy I

Course Description: An overview of high resolution nuclear magnetic resonance (NMR) spectroscopy and applications in organic and inorganic chemistry. The course will begin with a review of the fundamentals of NMR spectroscopy followed by an overview of chemical shifts, coupling constants, and chemical and magnetic equivalence. Emphasis will be placed on the interpretation of one dimensional first and second order spectra. Following a general discussion of the basic pulsed Fourier Transform NMR experiment, including a discussion of the parameters used in data acquisition and processing, the course will finish with a discussion of spin-lattice and spin-spin relaxation, spectral editing techniques and polarization transfer.

Instructor: Prof. J.A. Wisner, jwisner@uwo.ca, Chem. Bldg. Room 215

Lectures/Tutorials: Tues. and Thurs. 2 – 3:30 pm ChB 9
from Nov. 3 – Dec. 17, 2026

Evaluation:	Problem Sets (3 x 15%)	45 %
	Approx. due dates Nov. 19 th , 26 th and Dec. 3 rd	
	Class participation	10 %
	Final exam (Week of Dec 14 likely)	45 %

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http://www.uwo.ca/univsec/handbook/appeals/scholastic_discipline_undergrad.pdf

Recommended Texts:

NMR and Chemistry, J.W. Akitt, and B.E. Mann, 4th Edition, Stanley Thornes.

Organic Structural Spectroscopy J.B. Lambert, S. Gronert, H.F. Shurvall, D. A. Lightner, 2nd Edition, Pearson.

NMR Spectroscopy Explained, N.E. Jacobsen, Wiley-Interscience

Approximate Schedule of Topics for Advanced NMR Spectroscopy I

Weeks 1&2: fundamentals of NMR spectroscopy; chemical shift and coupling constants; chemical and magnetic equivalence; first order spectra; heteronuclear spectra

Weeks 2&3: second order spectra; how the spectrometers work; data acquisition and processing

Weeks 5&6: spin-lattice and spin-spin relaxation; 1D spectral editing techniques; polarization transfer

Medical/Compassionate Excuses: Students missing work for valid medical or other reasons are governed by the regulations <https://studentservices.uwo.ca/secure/index.cfm>

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Mental or Emotional Health: Students who are in emotional/mental distress should refer to Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence (GBSV) and providing compassionate support to anyone who is going through or has gone through these traumatic events. If you are experiencing or have experienced GBSV (either recently or in the past), you will find information about support services for survivors, including emergency contacts at the following website: https://www.uwo.ca/health/student_support/survivor_support/get-help.html
To connect with a case manager or set up an appointment, please contact support@uwo.ca.