Spectroscopy

CHEM 322

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Learning Outcomes:

At the end of CHEM 322, students will be able to

Understand the Born-Oppenheimer approximation

Understand and be able to analyse the ro-vibrational spectra of diatomic molecules

Understand and be able to analyse the ro-vibrational spectra of polyatomic molecules

Recognise patterns in electronic spectra of polyatomic molecules

Understand the basics of NMR spectroscopy

Course outline

Why is it advantageous to separate electronic and nuclear motions?

How accurate is the Born-Oppenheimer approximation?

Vibrational spectra of diatomic molecules.

Ro-vibrational spectra of diatomics

What does intensity depend on?

Vibrational spectra of polyatomic molecules.

Rotational spectra of polyatomic molecules.

Electronic spectroscopy of diatomic molecules

Electronic spectroscopy of polyatomic molecules

NMR spectroscopy.

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale

Textbook:
Modern Spectroscopy, 4th Edition
J. Michael Hollas

ISBN: 978-0-470-84416-8

Marking Scheme
2 Assignments 10%
2 Quizzes 10%
Midterm 30%
Final exam (50 %)

Grading Method
All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale:

Queen's Official Grade Conversion Scale

Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

PROPOSED DATES:
First assignment due at the end of the lecture [redacted]
First Quiz [redacted]
Midterm during the lecture on [redacted]
Second assignment due [redacted]
Second Quiz [redacted]

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Textbook: Modern Spectroscopy, by J. Michael Hollas

Also useful: Spectra of Atoms and Molecules, by Peter F. Bernath