

- [Preface \(Help\)](#)
- [About the author](#)

- 1. [Introduction](#)
 - NMR
 - NMR Spectroscopy
 - Units Review
- 2. [The Mathematics of NMR](#)
 - Exponential Functions
 - Trigonometric Functions
 - Differentials and Integrals
 - Vectors
 - Matrices
 - Coordinate Transformations
 - Convolutions
 - Imaginary Numbers
 - The Fourier Transform
- 3. [Spin Physics](#)
 - Spin
 - Properties of Spin
 - Nuclei with Spin
 - Energy Levels
 - NMR Transitions
 - Energy Level Diagrams
 - Continuous Wave NMR Experiment
 - Boltzmann Statistics
 - Spin Packets
 - T₁ Processes
 - Precession
 - T₂ Processes
 - Rotating Frame of Reference
 - Pulsed Magnetic Fields
 - Spin Relaxation
 - Spin Exchange
 - Bloch Equations
- 4. [NMR Spectroscopy](#)
 - Chemical Shift
 - Spin-Spin Coupling
 - Time Domain NMR Signal
 - +/- Frequency Convention
- 5. [Fourier Transforms](#)
 - Introduction
 - The + and - Frequency Problem
 - The Fourier Transform
 - Phase Correction
 - Fourier Pairs
 - The Convolution Theorem
 - The Digital FT
 - Sampling Error
 - The Two-Dimensional FT
- 6. [Pulse Sequences](#)
 - Introduction
 - 90-FID
 - Spin-Echo
 - Inversion Recovery
- 7. [NMR Hardware](#)
 - Hardware Overview
 - Magnet

- Field Lock
 - Shim Coils
 - Sample Probe
 - RF Coils
 - Gradient Coils
 - Quadrature Detector
 - Digital Filtering
 - Safety
8. [Practical Considerations](#)
- Introduction
 - Sample Preparation
 - Exchange
 - Probe Tuning
 - Determining a 90° Pulse
 - Field Shimming
 - Phase Cycling
 - 1-D Hydrogen Spectra
 - Integration
 - SNR Improvement
 - Variable Temperature
 - Troubleshooting
 - Cryogen Fills
 - Unix Primer
9. [Carbon-13 NMR](#)
- Introduction
 - Decoupling
 - Population Inversion
 - NOE
 - 1-D Spectra
10. [2-D Techniques](#)
- Introduction
 - J-resolved
 - COSY
 - Examples
11. [Advanced Spectroscopic Techniques](#)
- Introduction
 - Diffusion
 - Spin Relaxation Time
 - Solid State
 - Microscopy
 - Solvent Suppression
 - Field Cycling NMR
-
- [Glossary](#)
 - [List of Symbols](#)
 - [References](#)
 - [Usage Statistics](#)
 - [Software License](#)

Outlines based on Online MR textbook :
<http://www.cis.rit.edu/htbooks/nmr/inside.htm>

Examinations: Mid-term and final exams.