

Chemistry 1011 Curriculum Outline

Nivaldo J. Tro Travis D. Fridgen Lawton E. Shaw
Chemistry (2nd Canadian Edition) A Molecular Approach

The lecture and tutorial materials required for this course include:

- Chemistry (2nd Canadian Edition) A Molecular Approach by Nivaldo J. Tro Travis D. Fridgen Lawton E. Shaw
- Mastering Chemistry Access Code (for all online assignments)
- Learning Catalytics Access Code (for tutorial sessions)

****Important note:** If you purchase a used book and are taking this course for the first time, be careful that you consider the pricing below since if you buy a used book, you will be required to purchase additionally a separate and new Mastering Chemistry access code at \$66 (online purchase) followed by a Learning Catalytics access code at \$12 US/6 months or \$20 US/12 months (online purchase) for use in this course. **Note that the Mastering Chemistry code and Learning Catalytics codes cannot be purchased used.**

Course Materials available in bookstore as follows:

Loose Leaf Version + Mastering with ebook Code \$120

Hardcover Version + Mastering with ebook Code \$180

Note: The above options include Learning Catalytics codes as well.

Chemistry Textbook Bundles:

There are several special packages that can be purchased at the MUN bookstore which include textbooks from chemistry and certain physics and biology courses. If you are taking Chemistry and the additional courses as indicated below then consider these packages as better pricing then purchasing them individually. Note that these bundles include a loose leaf copy of each text and Mastering (with ebook) codes for each course.

Biology/Chemistry Bundle (Bio1001/Chem) \$199.95

Physics/Chemistry Bundle (Phys1020/Chem) \$199.95

Biology/Physics/Chemistry Bundle (Bio1001/Phys1020/Chem) \$299.95

Note: The above options include Learning Catalytics codes as well.

There is also a Phys1050/Chem bundle for 199.95 and the books not only contain learning catalytics but Mastering Chemistry as well.

*On-line Codes Only (ie. student already has textbook) *

Mastering Chemistry (available at www.pearsonmylabandmastering.com only) \$ 66

Learning Catalytics \$12 US/6 months or \$20 US/12 months (Online only)

Be careful about the choices you make with respect to the purchase of course materials since you don't want to have to spend more than necessary. **If you have questions, please feel free to speak with your instructor upon the start of the semester.**

Some of the material in the curriculum is listed as "Suggested Reading" from the textbook. These sections will not be covered to any great extent in class but you are responsible for the material in the "Suggested Reading" sections.

Chapter 16: Aqueous Ionic Equilibrium p. 683

16.1	The Danger of Antifreeze (<i>Suggested Reading</i>)	p. 684
16.2	Buffers: Solutions that Resist pH Change	p. 685
	Calculating the pH of a Buffer Solution	p. 686
	(Emphasis on Equilibrium Approach)	
	(Note: Henderson-Hasselbalch will be discussed briefly in class)	p. 687
	Calculating pH Changes in a Buffer Solution	p. 690
	Buffers Containing a Base and Its Conjugate Acid	p. 693
16.3	Buffer Effectiveness: Buffer Range and Buffer Capacity	p. 695
	Relative Amounts of Acid and Base	p. 695
	Absolute Concentrations of the Acid and Conjugate Base	p. 695
	Buffer Range	p. 696
	Chemistry and Medicine – Buffer Effectiveness in Human Blood	p. 697
	Buffer Capacity	p. 698
16.5	Solubility Equilibria and the Solubility Product Constant	p. 712
	K_{sp} and Molar Solubility	p. 712
	Chemistry in your Day – Hard Water	p. 714
	K_{sp} and Relative Solubility	p. 715
	The Effect of a Common Ion on Solubility	p. 715
	The Effect of an Uncommon Ion on Solubility (Salt Effect)	p. 717
	The Effect of pH on Solubility	p. 717
16.6	Precipitation	p. 718 - 719 (only)

Chapter 18: Electrochemistry p. 785

18.1	Pulling the Plug on the Power Grid (<i>Suggested Reading</i>)	p. 786
18.2	Voltaic (or Galvanic) Cells: Generating Electricity from Spontaneous Chemical Reactions	p. 786
	Electrochemical Cell Notation	p. 789
18.3	Standard Electrode Potentials	p. 789
	Predicting the Spontaneous Direction of an Oxidation-Reduction Reaction	p. 795
	Predicting Whether a Metal Will Dissolve in Acid	p. 798
18.6	Batteries: Using Chemistry to Generate Electricity	p. 809
18.7	Electrolysis: Driving Nonspontaneous Chemical Reactions with	

Electricity	p. 813
18.8 Corrosion: Undesirable Redox Reactions	p. 821

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The Wave Nature of Light	p. 243
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Interference and Diffraction	p. 246
The Particle Nature of Light	p. 249
7.3 Atomic Spectroscopy and the Bohr Model	p. 253
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7.4 The Wave Nature of Matter: The de Broglie Wavelength, the Uncertainty Principle, and Indeterminacy	p. 259
The de Broglie Wavelength	p. 260
The Uncertainty Principle	p. 261
Indeterminacy and Probability Distribution Maps	p. 263
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7.6 The Shapes of Atomic Orbitals	p. 266
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p orbitals ($\ell = 1$)	p. 269
d orbitals ($\ell = 2$)	p. 270
f orbitals ($\ell = 3$)	p. 270
<i>(Phase of Orbitals and the Hydrogen-like wave functions will not be covered)</i>	
7.7 Electron Configurations: How Electrons Occupy Orbitals	p. 274
Electron Spin and the Pauli Exclusion Principle	p. 275
Sublevel Energy Splitting in Multielectron Atoms	p. 276
Electron Configurations for Multielectron Atoms	p. 280
Electron Configurations of Transition Metals	p. 282
Electron Configurations and Magnetic Properties of Ions	p. 285

Chapter 8: Periodic Properties of the Elements p. 294

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Nature's Tendency Toward Mixing: Entropy	p. 487
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