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GRANDE PRAIRIE REGIONAL COLLEGE  
DEPARTMENT OF SCIENCE AND TECHNOLOGY  
2008/2009

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CHEMISTRY 1010: Introductory University Chemistry I

CONTACT HOURS: 3 Lecture hours per week; 1 Seminar hour per week; 3 Laboratory hours per week

PREREQUISITE: Chemistry 30 or equivalent

TRANSFER CREDITS: CH1010 to U. of Alberta CHEM 101, 3 credits  
CH1010/1020 to U. of Calgary CHEM 201/203, 6 credits

INSTRUCTORS: A2 Som Pillay Office J210/B301 539-2985  
B2 Les Rawluk Office J214 539-2738  
C2 Les Rawluk Office J214 539-2738

EMAIL: spillay@gprc.ab.ca lrawluk@gprc.ab.ca

WEBSITE: <http://blackboard.gprc.ab.ca>

OFFICE HOURS: Unrestricted

TEXT BOOK: Required: *CHEMISTRY 7<sup>th</sup> Edition*  
Steven S. Zumdahl and Susan A. Zumdahl  
Houghton Mifflin Company ©2007

LABORATORY: Required lab manual: Introductory University Chemistry I (Chem 101 and 103), University of Alberta, 2008/2009  
**Lab coats and safety glasses are compulsory**, and are available at the Bookstore.

SEMINAR: Seminars consist of problem solving, discussion of lecture materials, and a brief introduction to the upcoming Laboratory experiment. A short quiz will be part of most seminars.

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COURSE EVALUATION

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October Midterm .....	15%
November Midterm .....	20%
Final Exam .....	38%
Quizzes/Assignments .....	5%
Laboratory Reports .....	12%
Laboratory Exam .....	10%

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Alpha Grade	Approximate Percentage Conversion
A+	90-100
A	85-89
A-	80-84
B+	76-79
B	73-75
B-	70-72
C+	67-69
C	64-66
C-	60-63
D+	55-59
D	50-54
F	0-49

Assignments will be distributed on a weekly basis; complete solutions will be available in an electronic format. Completion of assignments is strongly recommended to succeed in the course.

Attendance to all lectures and seminars is strongly recommended. Laboratory attendance to each specific experiment is compulsory; a passing grade in the laboratory component is required to pass the course. A doctor's medical note is required for **all** excused absences!

Students must obtain an overall average of 50% or better to pass the course. Students are encouraged to participate in class discussions, and help is available outside the classroom. **Appointments are not necessary.**

According to GPRC policy (see page 45 of the 2008/2009 calendar), a repeat final examination will not be granted in this course.

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CH1010 COURSE CONTENT

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- A: Matter and Stoichiometry (Review)**      Chapters 1, 2, 3, 4, 19, and 20      Pages 1–177, and 874–941
- A.1 Units, significant figures, dimensional analysis
  - A.2 Periodic Table
  - A.3 Naming simple compounds
  - A.4 The mole
  - A.5 Empirical and molecular formula of a compound
  - A.6 Calculations involving a limiting reagent
  - A.7 Aqueous solutions and molarity
  - A.8 Precipitation reactions
- B: Atomic Structure**      Chapters 2 and 7      Pages 41–55 and Pages 274–327
- B.1 Introduction to Atomic Structure
  - B.2 Electromagnetic radiation
  - B.3 Atomic spectra and the Bohr model
  - B.4 Quantum mechanics and the atom
  - B.5 Orbital shapes and energies
  - B.6 Many-electron atoms
  - B.7 Building of the periodic table
  - B.8 Trends in atomic properties
- C: Chemical Bonding**      Chapters 8 and 9      Pages 328–423
- C.1 Types of chemical bonds and electronegativity
  - C.2 Ionic bonding
  - C.3 Lattice energy
  - C.4 Covalent bonding
  - C.5 Bond energies and chemical reactions
  - C.6 Lewis structures; octet rule, resonance, formal charge, exceptions
  - C.7 VSEPR theory and molecular shape
  - C.8 Hybridization
  - C.9 Molecular orbital theory
  - C.10 Polymers (if time permits)
- D: States of Matter**      Chapters 5 and 10      Pages 178–227 and Pages 424–483
- D.1 Intermolecular forces
  - D.2 Gases
  - D.3 Liquids, solutions
  - D.4 Solids
  - D.5 Phase diagrams, changes of state
  - D.6 Semi- and superconducting materials (if time permits)
- E: Chemistry of the Elements**      Chapters 19 and 20      Pages 874–941
- E.1 Alkali metal, alkaline earth metals
  - E.2 Group 13 and 14 elements
  - E.3 Group 15 and 16 elements
  - E.4 Group 17 and 18 elements

