GRANDE PRAIRIE REGIONAL COLLEGE
DEPARTMENT OF SCIENCE AND TECHNOLOGY
2009/2010

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

INSTRUCTOR: John Agak Office C219 780-539-2876

EMAIL: jagak@gprc.ab.ca

WEBSITE: http://moodle.gprc.ab.ca

OFFICE HOURS: Unrestricted

TEXT BOOK: Required: *CHEMISTRY* 8th *Edition*
Steven S. Zumdahl and Susan A. Zumdahl
Houghton Mifflin Company ©2010

LABORATORY: Required lab manual: Introductory University Chemistry I (Chem 101 and 103), University of Alberta, 2009/2010

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.

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

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 46 of the 2009/2010 calendar), a repeat final examination will not be granted in this course.

CH1010 COURSE CONTENT

A: Matter and Stoichiometry (Review) Chapters 1, 2, 3, 4, and 20 Pages 1–179, and 907–952
- A.1 Units, 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, acid/base, redox reactions

B: Atomic Structure Chapters 2 and 7 Pages 39–57 and Pages 284–338
- 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 339–437
- 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

D: States of Matter Chapters 5 and 10 Pages 180–234 and Pages 438–496
- D.1 Intermolecular forces
- D.2 Gases
- D.3 Liquids, solutions
- D.4 Solids
- D.5 Changes of state, phase diagrams

E: Chemistry of the Main Group Elements Chapter 20 Pages 907–952
- E.1 Metals *vs.* Non-metals
- E.2 Acid base properties of oxides
- E.3 A survey of the representative elements