



**CHEM 101**  
**General Chemistry I**  
**Fall 2012**

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**COURSE DESCRIPTION:**

CHE 101 General Chemistry I (3–3) A

This course looks at atomic and molecular structure; it examines the elements and chemistry of the periodic table, bonding, kinetics, and the basis of chemical reactions.

*Prerequisite: High School Chemistry 30*

*This course has an existing transfer credit agreement through Alberta Council on Admissions and Transfer. Visit; [www.transferralberta.ca](http://www.transferralberta.ca) for details*

**LECTURE AND LAB SCHEDULE:**

**Lecture:**

Wednesday and Friday                      1:00 pm —2:15 pm                      Room: A2141

**Lab:**

Thursday    8:15 – 11:00 am                      Room: A2151

**LECTURE AND LABORATORY INSTRUCTOR:** Dr. Ross Gilmore

Phone:    403 410-2000 extension 5914  
Fax:    403 571-2556  
Email:     rgilmore@ambrose.edu  
Office:     G2202, music wing  
Office Hours:                                        Wed 11:00 am-12:30 pm or by appointment  
Moodle access :                                     <http://moodle.ambrose.edu/course/index.php>

**REQUIRED TEXTS:**

- I. *Chemistry: Human Activity, Chemical Reactivity, 1<sup>st</sup> Canadian Ed.*
- II. *Laboratory Manual: Selected Laboratory Experiments.* This manual is an Ambrose University Compilation and will be used as a guide and resource through the laboratory component of the course. Availability will be discussed during the first lecture.

**REQUIRED MATERIALS:**

Lab coat, lab notebook, lab glasses/goggles, scientific calculator.

**SUPPLEMENTARY MATERIALS:**

Almost any general chemistry text is a useful tool to have as a supplement to your required text. This course does not follow either the sequence or content of your textbook to a significant degree. It is a supplement to the lecture material and, like, any other text, can be used to clarify concepts and to expand upon topics covered in the lectures.

**RECOMMENDED TEXTS:**

*Math Review Toolkit* by Long and Long, or, any other math review booklet that is relevant to the sciences (especially chemistry and physics). This is only recommended if your math skills need refreshing or bolstering.

**PRE-REQUISITES:**

Chemistry 20/30 and Mathematics 20/30 or their equivalents.

Mathematics 251 (Calculus I) is a suggested Co-requisite but neither differentiation nor integration will be encountered in this course. A large component of calculus, however, is algebra. An understanding of basic algebra will be required.

**COURSE OBJECTIVES:**

Upon completion of the course, students will have acquired the background knowledge required to move forward into General Chemistry II.

This includes an understanding of the fundamental concepts of chemistry, acquisition of basic chemistry language skills, and an experience with chemical problem solving.

I hope that you will also come to appreciate the importance of chemistry as a tool for understanding the complexity and beauty of natural processes.

It has been my experience that many students entering General Chemistry are in their 1<sup>st</sup> year of undergraduate studies. Upon entry into University or College, they are often surprised to find that primary responsibility for their education has shifted from the teacher to themselves. The University Instructor has become a facilitator of the student's education rather than a designated tutor. I have discovered that some students may have initial difficulties transitioning to this novel mode of learning.

To succeed in chemistry you are advised to read relevant topics in your text the day before or morning of your chemistry lectures. An experienced student will also review their notes within several hours of the lecture to shift acquired knowledge from short to long-term memory. In addition, since chemistry involves problem solving, you must practice these skills by completing the questions at the end of each chapter.

**EVALUATION:**

Assignments and In-Dry Lab Lecture-based on-line Quizzes	10%
Midterm Exam #1	10%
Midterm Exam II	15%
Laboratory Reports	20%
Laboratory Exam	10%
Final Exam	35%

A passing level of performance in the laboratory is a requirement for completion of the course. To pass the lecture component of the course a student must attain a minimum of 50%. To move on to courses for which this course is a pre-requisite, a C-grade (60%) is required.

**LETTER GRADE GUIDELINE**

<b>Percentage (%)</b>	<b>Grade</b>	<b>Grade Point</b>
95-100	A+	4.0
86-94	A	4.0
80-85	A-	3.7
78-79	B+	3.3
74-77	B	3.0
70-73	B-	2.4
68-69	C+	2.3
64-67	C	2.0
60-63	C-	1.7
56-60	D+	1.3
50-55	D	1.0
0-49	F	0

**Table 1: TENTATIVE LECTURE SCHEDULE: (will only be loosely followed)**

Students are expected to review chapters 1 to 6 of their text within the first two weeks of lectures. Topics covered in those six chapters encompass a partial review of Chemistry 20 and 30. Their content will be briefly revisited in the lectures, as necessary, but it is expected that students are entering the course with a basic knowledge of chemistry. There is not sufficient time to cover these sections in detail. Nonetheless, you must know this material to understand the rest of the course.

Lectures	Text Sections	Lecture Topics	Lab Topics, thursdays
Sept. 5 <sup>th</sup> and 7 <sup>th</sup> Tuesday is an orientation day. Lectures start Wednesday	Section 3.11, 8.3	Orientation, electromagnetic spectrum, atomic spectrum of hydrogen, Rydberg equation	No Labs
Sept 12 <sup>th</sup> and 15 <sup>th</sup>	Section 8.3, 8.4, 10.9	Bohr atom model, failure of Bohr model, wave functions, atomic and molecular orbital theories	Dry lab 1: Check In Orientation, Safety Lessons, WHMIS Session and Safety Quiz
Sept. 19 <sup>th</sup> and 21 <sup>st</sup>	Sections 8.1, 8.2, 8.5, 8.6 and pages 1058 to 1060	Periodic table trends, ionisation energy, electron affinity, shielding, effective nuclear charge	Wet Lab 1: An investigation of atomic spectra
Sept 26 <sup>th</sup> and 27 <sup>th</sup> are community days. Lecture on 28 <sup>th</sup>	sections 8.2, 11.13, 26.3, 10.3	Ionic bonds, lattice energies, Lewis symbols <b>Wednesday September 26<sup>th</sup> is a Community Day, no lecture</b>	<b>Thursday the 27<sup>th</sup> is a community day, no lab this week</b>
Oct. 3 <sup>rd</sup> and 5 <sup>th</sup>	Sections, 6.3, 10.4, 10.3, 10.6 page 245	Covalent bonding, octet rule, multiple bonds, partial charges, electronegativity, reactivity series, Lewis structures, formal charges	Dry Lab 2: quiz 1, tutorial (Quantum theory)
Oct. 10 <sup>th</sup> and 12 <sup>th</sup> Monday the 8 <sup>th</sup> is thanksgiving day	Sections 10.4, 10.5, 10.8	Resonance, octet-rule-exceptions, bond length, bond order, and energy of bonds. <b>1<sup>st</sup> midterm, in class Friday October 12<sup>th</sup>.</b>	Wet Lab 2: An investigation of periodic trends
Oct. 17 <sup>th</sup> and 19 <sup>th</sup>	Sections 10.7, 10.8	VSEPR theory and shapes of molecules	Dry Lab 3, Quiz #2, Tutorial, Lewis structures
Oct. 24 <sup>th</sup> and 26 <sup>th</sup>	Sections 10.2, 10.8, 19.2	Hybridization of orbitals, multiple bonds (double/triple)	Wet Lab 3: Qualitative analysis for anions and cations
Oct. 31 <sup>st</sup> and Nov 2 <sup>nd</sup>	Sections 10.1, 10.9	Molecular orbital theory, de-localized bonding and bond order . Solids, liquids, and gas states.	Dry Lab 4, Quiz #3, Tutorial, VSEPR
Nov. 7 <sup>th</sup> and 9 <sup>th</sup>	Sections, 11.11, 1.12, 11.13,	Forces between molecules, liquid properties, states of matter, phase changes.	Wet Lab 4: Titration and gravimetric analysis
Nov. 14 <sup>th</sup> and 16 <sup>th</sup> (remembrance day holiday on Monday, the 12 <sup>th</sup> )	Sections 11.13 to 11.15 28.1 to 28.6	Phase diagrams and changes. Chemistry of materials. Metals and non-metals. <b>2<sup>nd</sup> Midterm in class Friday Nov 16<sup>th</sup></b>	Dry Lab 5: Quiz #4, tutorial, MO theory
Nov. 21 <sup>st</sup> and 23 <sup>rd</sup>	Sections 17.1, 18.1 to 18.6	Chemical Kinetics, reaction rates, rate laws, 1 <sup>st</sup> , 2 <sup>nd</sup> , and zero-order,	Wet Lab 5: Investigating the kinetics of a reaction

Nov. 28 <sup>th</sup> and 30 <sup>th</sup>	Section 18.6 pages 690 to 696, 737, 1138, 1139	Pseudo-order kinetics, Activation Energy, effect of temperature on rxn rates, mech's of rxns, Catalysts, enzymes, and reactions	<b>Lab Exam</b>
If time permits.  Tuesday Dec 4 <sup>th</sup> is the last day of classes.	Sections 3.11, 19.5, 20.2, 21.2 page 104 Sections 3.12, 22.2, 22.3 chapter 19 page 946 and 959	Organic Chemistry; functional groups, nomenclature, chemistry of groups More functional group chemistry and polymers	No lab
Finals Dec 6 <sup>th</sup> to 14 <sup>th</sup>		<b>Final Exam is Wed Dec. 12<sup>th</sup>, 1:00 pm in A2131</b>	

### Important Notes/Dates:

The last day to enter a course without permission and /or voluntary withdrawal from a course without financial penalty	Sunday, September 16, 2012
The last day to voluntarily withdraw from a course or change to audit without academic penalty	Monday, November 12, 2012 (Fall semester)
Last day to request revised time for a final exam	Monday, October 29
Last day to apply for time extension for coursework	Monday, November 26

***Please note that final grades will be available on your student portal. Printed grade sheets are no longer mailed out.***

### Lab Safety:

Lab coats and goggles are mandatory. You **must** abide by the regulations outlined in your lab manual. Proper handling and disposal of chemicals is important to protect both the environment and your fellow students. Every chemical used in the laboratory comes with a WHMIS sheet. If uncertain regarding risks, ask your lab instructor, and/or refer to the WHMIS information sheet. Be familiar with all safety equipment and emergency exits within the lab. Hair should be tied back, no open shoes/sandals, avoid wearing contact lenses. Always be attentive and anticipate the risks associated with the lab procedure in progress.

*\*Note: You must pass the safety quiz covered during the first lab to progress onward.*

**Instructors Policy Statement on Lab Attendance:** Each lab session builds upon those coming before it. Consequently, failure to attend any one session poses a safety risk to the individual and to other students in the group. Therefore, students who miss one or more laboratory sessions in a course may be required to withdraw from that course.

### Instructors Classroom Policies:

Questions are encouraged. Participation in classroom discussions is expected. If a point requires clarification, feel free to interject. Exceptions to this open lecture policy will occur when, or if, the time available to cover a topic is limited.

No cell phones or MP3 players are to be turned on during lectures. Phones should also be out of site and off your desk. Use of camera phones, digital cameras, recording devices, or laptop cameras is prohibited without prior permission from your instructor. Repeat offences may result in expulsion from the class.

### ACADEMIC REGULATIONS:

Attendance at lectures and labs is mandatory.

**Instructor's Attendance Policy:**

Students are expected to attend all classes and laboratories. Unexcused absence may result in loss of marks or in additional assignments being required. Absence from class not satisfactorily validated by the course instructor may lead to a penalty on the final grade. When possible, students should advise their instructor of anticipated absence from class.

A student may be denied permission to write the final examination on the recommendation of the instructor pending approval of the Deans Council. Grounds for such debarment are: failure to complete a substantial part of the written assignments for a course; frequent absence from class; or failure to complete a sufficient amount of the required practical or laboratory work in a course.

**Institutional Policies:**

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the Student Handbook and Academic Calendar. Personal information, that is information about an individual that may be used to identify that individual, may be collected as a requirement as part of taking this class. Any information collected will only be used and disclosed for the purpose for which the collection was intended. For further information contact the Privacy Compliance Officer at [privacy@ambrose.edu](mailto:privacy@ambrose.edu).

Although extensions to coursework in the semester are at the discretion of the instructor, students may not turn in coursework for evaluation after the last day of the scheduled final examination period unless they have received permission for a "Course Extension" from the Registrar's Office. Requests for course extensions or alternative examination time must be submitted to the Registrar's Office by the appropriate deadline (as listed in the Academic Calendar <http://www.ambrose.edu/publications/academiccalendar>). Course extensions are only granted for serious issues that arise "due to circumstances beyond the student's control."

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from the university college. Students are expected to be familiar with the policies in the current Academic Calendar and the Student Handbook that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean.

Students are advised to retain this syllabus for their records.

Course changes, including adding or dropping a course, may be made during the Registration Revision period, as outlined in the Calendar of Events. All course changes must be recorded on a Registration form, available from the Office of the Registrar. Due to circumstances such as class size, prerequisites or academic policy, the submission of a Registration form does not guarantee that a course will be added or removed from a student's registration. Students may change the designation of any class from credit to audit up to the date specified in the Calendar of Events, although students are not entitled to a tuition adjustment or refund after the Registration Revision period.

Withdrawal from courses after the Registration Revision period will not be eligible for tuition refund. Students intending to withdraw from some or all of their courses must submit a completed Registration form to the Registrar's office. The dates by which students may voluntarily withdraw from a course without penalty are listed in the Calendar of Events. A grade of 'W' will be recorded on the student's transcript for any withdrawals from courses made after the end of the Registration Revision period and before the Withdrawal Deadline (also listed in the Calendar of Events). 'W' grades are not included in grade point average calculations. A limit on the number of courses from which Academic a student is permitted to withdraw may be imposed. Students wishing to withdraw from a course, but who fail to do so by the applicable date, will receive the grade earned in accordance with the course syllabus. A student obliged to withdraw from a

course after the Withdrawal Deadline because of health or other reasons may apply to the Registrar for special consideration.

An appeal for change of grade on any course work must be made to the course instructor within one week of receiving notification of the grade. An appeal for change of final grade must be submitted to the Office of the Registrar in writing within 30 days of receiving notification of the final grade, providing the basis for appeal. A review fee of \$50.00 must accompany the appeal to review final grades. If the appeal is sustained, the fee will be refunded.

Academic dishonesty is taken seriously at Ambrose University College as it undermines our academic standards and affects the integrity of each member of our learning community. Any attempt to obtain credit for academic work through fraudulent, deceptive, or dishonest means is academic dishonesty. Plagiarism involves presenting someone else's ideas, words, or work as one's own. Plagiarism is fraud and theft, but plagiarism can also occur by accident when a student fails or forgets to give credit to another person's ideas or words. Plagiarism and cheating can result in a failing grade for an assignment, for the course, or immediate dismissal from Ambrose. Students are expected to be familiar with the policy statements in the current academic calendar and the student handbook that deal with plagiarism, cheating, and the penalties and procedures for dealing with these matters. All cases of academic dishonesty are reported to the Academic Dean and become part of the student's permanent record.