



# CHE 101

## General Chemistry I

Semester: Fall, 2014

Days: Wed, fri 1:00

Room: A2210

Lab – day: Mon 1:00

Lab–Room: A2151

Number of credits: 3

Prerequisite:

Instructor: Dr Ross Gilmore

Email: rgilmore@ambrose.edu

Phone: 403-410-2000 ext 5914

Office: A21

Office By appointment

hours: 10:00 am m/f

### Course Description:

This course offers exploration of atomic and molecular structure, in addition to examination of; the elements and chemistry of the periodic table, bonding, kinetics, and the basis of chemical reactions.

### Further Course Information:

Chemistry is often called the central science. This course is the first of two that cover elementary chemical principles. The intent is to provide students with a solid foundation from which to develop an integrated view of chemistry within the sciences. Topics covered will include; classic and quantum models of the atom, theories of bonding and molecular structure, properties of matter, and kinetics.

### Expected Learning Outcomes:

It is the aim of the instructor that students acquire the following skills:

1. Background and fundamental knowledge required to move forward into General Chemistry II and Organic Chemistry I.
2. An understanding of the core concepts of general chemistry such as; atomic structure/models, molecular structure/models, states of matter.
3. Learning of basic chemistry terminology and symbology
4. An ability to do introductory level quantum chemistry problems
5. Insight into chemical processes, chemical equations, and

### Important Dates:

First day of classes: September 3, 2014

Registration revision period: September 14, 2014

Last day to request revised examination: October 27, 2014

Last day to withdraw from course: November 12, 2014

Last day to apply for time extension for coursework: November 24, 2014

Last day of classes: December 9, 2014

**Final Exam: December 17th**

**Time: 1:00**

**Room: Airhart**

some of the factors driving chemical reactions such as kinetic effects.

## Outline:

Week Starting, Monday,	Group Letter For Lab session	Text Sections for All	Lecture Topics for All (Wed and Fri)	Lab Topics, Alternating Mondays at 1:00 pm (see group #)
Sept. 1st Tuesday is an orientation day. Lectures start Wed.		Chapters 1 to 4	Review of some high school chem. Formulas, Chemical equations, conservation of mass, stoichiometry, concentration, density, significant digits, accuracy/precision, nomenclature	No labs
Sept 8 <sup>th</sup>	A	Chapters 2 and 7	Atomic Models: Bohr, quantum	Lab #1 Block A Template format <i>Atomic Emission Spectroscopy, Flame Tests, and Atomic Absorption</i>
Sept. 15 <sup>th</sup>	B	Chapter 7	Wave functions/probabilities, orbital shapes	Lab #1 Block B Template format <i>Atomic Emission Spectroscopy, Flame Tests, and Atomic Absorption</i>
Sept 22 <sup>nd</sup> No classes on Wednesday. It is a spiritual emphasis day; as is thurs	A	Chapter 2	Trends in the periodic table: ionization energy, electron affinity, shielding, effective nuclear charge, ionic size, atomic size	Lab #2 Block A Formal Report <i>An investigation of periodic trends- groups 1, 2, transition metals, and halogens</i>
Sept 29th	B	Chapter 8	Bonding: covalent/ionic, hydrogen, van der Waals, etc	Lab #2 Block B Formal Report <i>An investigation of periodic trends</i>
Oct. 6 <sup>th</sup>	A	Chapter 8, 9	Lattice energies, formal charges, reactivity series	Lab#3: Block A Template format

				<i>Empirical determination of an Empirical Formula</i>
Oct. 13 <sup>th</sup> (Thanksgiving day holiday on monday)		Chapters 8, 9	Lewis diagrams, Octet rules and octet rule exceptions, bond length, bond order, bond energy	No lab, thanksgiving monday
Oct. 20 <sup>th</sup>	B	Chapter 9	Molecular Geometry: VSEPR theory, structural diagrams,	Lab #3: Block B Template format <i>Empirical determination of an Empirical Formula</i>
Oct. 27 <sup>th</sup>	A	Chapters, 7, 8	Hybrid orbitals, de-localized bonding, bond order and molecular orbitals	Lab #4: Block A <i>Formal Report Acetic Acid in Vinegar % by mass analysis</i>
Nov. 3 <sup>rd</sup>	B	Chapters 10, 11, 12	States of matter: solids, liquids, gases, phase changes, phase diagrams	Lab#4: Block B Formal report <i>Acetic Acid in Vinegar % by mass analysis</i>
Nov. 10 <sup>th</sup> Tuesday November 11 <sup>th</sup> is remembrance day	A	Chapters 4, 10, 11, 12	Colligative properties, solution properties	Lab#5 Template format <i>Qualitative Analysis for Cations and Anions</i>
Nov. 17 <sup>th</sup>	B	Chapter 14	Chemical Kinetics; 1 <sup>st</sup> , 2 <sup>nd</sup> , and zero order	Lab#5 Template format <i>Qualitative Analysis for Cations and Anions</i>
Nov. 24 <sup>th</sup>	A	Chapter 14	Pseudo-order kinetics	Tutorial/Dry Lab: Group A Molecular Orbitals and molecular geometry
Dec 1 <sup>st</sup>	B	Chapter 13	Organic Chemistry intro	Tutorial/Dry Lab: Group B Molecular Orbitals

				and Molecular Geometry
Dec 8 <sup>th</sup> Last day of classes is Tuesday the 9th			No lectures since Tuesday is the last day of classes	<i>No lab on last day of classes</i>
			Final Exams Dec 11 <sup>th</sup> to 18 <sup>th</sup> Date of final TBD	

**\*Note:** tutorials are Fridays at 4:00 in the chemistry lab, unless otherwise indicated or due to holidays. They will be 75 minutes in length. Bring your notes, your text, and your calculator.

**Requirements and Evaluation:**

Assignments and/or Quizzes (tutorial)	3 x 2%	6%
Clicker quizzes (in class)	20 x 0.5%	10%
Midterm exam 1 (in class)		10%
Midterm Exam II (in class)		15%
Formal Lab Reports	2 x 5%	10%
Template Reports	3 x 2%	6%
Final Exam		43%

You must attain at least 50% in the lab component to pass the course.

\*An example of how to do a lab report is included as a preface to your lab manual content.

**Submission of Assignments:**

Lab assignments are to be submitted in hard copy to the instructor at the start of the following lab session. No late assignments will be accepted.

**Attendance:**

Attendance and participation at labs is mandatory. Failure to attend a lab or labs will result in failure of the course regardless of performance by any other measures.

**Grade Summary:**

The available letters for course grades are as follows:

<u>Letter Grade</u>	<u>Description</u>
A+	
A	Excellent
A-	
B+	
B	Good
B-	
C+	
C	Satisfactory
C-	
D+	
D	Minimal Pass

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F Failure

Percentage (%)	Grade	Grade Point
93-100	A+	variable
86-92	A	4.0
80-85	A-	3.7
78-79	B+	3.3
74-77	B	3.0
70-73	B-	2.7
68-69	C+	2.5
64-67	C	2.0
60-63	C-	1.7
56-60	D+	1.5
50-55	D	1.0
0-49	F	0

Please note that final grades will be available on the student registration system. Printed grade sheets are no longer mailed out.

**Textbooks:**

**Required:** Chemistry, 4<sup>th</sup> Ed. Gilbert, Kirss, Foster, Davies. Norton Publishers

**Required Materials:**

Lab coat, lab notebook, and lab glasses/goggles, immediately

**Supplemental Materials:**

Study guide to accompany text.

**Policies:**

All students have received an Ambrose e-mail account upon registration. It is the student's responsibility to check this account regularly as the Ambrose email system will be the professor's instrument for notifying students of important matters (Cancelled class sessions, extensions, requested appointments, etc.) between class sessions. If students do not wish to use their Ambrose accounts, it is highly recommended that they forward all messages from the Ambrose account to the other account.

During the **Registration Revision Period** students may to enter a course without permission, change the designation of any class from credit to audit and /or voluntary withdraw from a course without financial or academic penalty. These courses will not appear on the student's transcript. Courses should be added or dropped on the student portal by the deadline date, please consult the List of Important Dates. After that date, the original status remains and the student is responsible for related fees.

Students intending to withdraw from a course after the Registration Revision Period must apply to the Office of the Registrar by submitting a Request to Withdraw from a Course by the **Withdrawal Deadline**, please consult the List of Important Dates. Withdrawal from courses after the Registration Revision period will not be eligible for tuition refund. A grade of "W" will appear on the student's transcript.

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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.

Students, who find a conflict in their exam schedule must submit a **Revised Examination** Request form to the Registrar's Office by the deadline date, please consult the List of Important Dates. Requests will be considered for the following reasons only: 1) the scheduled final examination slot conflicts with another exam; 2) three final exams within three consecutive exam time blocks; 3) the scheduled final exam slot conflicts with an exam at another institution; 4) extenuating circumstances. Travel is not considered a valid excuse for re-scheduling or missing a final exam.

### **Electronic Etiquette**

Students are expected to treat their instructor, guest speakers, and fellow students with respect. It is disruptive to the learning goals of a course or seminar and disrespectful to fellow students and the instructor to engage in electronically-enabled activities unrelated to the class during a class session. Please turn off all cell phones and other electronic devices during class. Laptops should be used for class-related purposes only. Please do not use iPods, MP3 players, or headphones. Do not text, read, or send personal emails, go on Facebook or other social networks, search the internet, or play computer games during class. The professor has the right to disallow the student to use a laptop in future lectures and/or to ask a student to withdraw from the session if s/he does not comply with this policy. Repeat offenders will be directed to the Dean. If you are expecting communication due to an emergency, please speak with the professor before the class begins.

### **Academic Policies**

It is the responsibility of all students to become familiar with and adhere to academic policies as stated in the 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).

### **Extensions**

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 deadline date, please consult the List of Important Dates. Course extensions are only granted for serious issues that arise "due to circumstances beyond the student's control".

### **Appeal of Grade**

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 Integrity**

We are committed to fostering personal integrity and will not overlook breaches of integrity such as plagiarism and cheating. 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 the university college. Students are expected to be familiar with the policies in the current Academic Calendar 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.

Students are strongly advised to retain this syllabus for their records.

### **Other**

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**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, the environment, your fellow students, and your own health. Every chemical used in the laboratory comes with a WHMIS sheet. If you are 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 since many organic chemicals are readily absorbed by the gas permeable material of the lenses and are difficult to eradicate. Always be attentive and **think** about the risks associated with the lab procedure in progress. Many organic and inorganic chemicals can cause adverse health effects and many are potential carcinogens.