



CHEM 103
General Chemistry II
Winter 2010

LECTURE AND LABORATORY INSTRUCTOR: Dr. Ross Gilmore

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Moodle access : <http://moodle.ambrose.edu/course/index.php>

LECTURE AND LAB SCHEDULE:

Lecture:

Wednesday and Friday 2:30 pm — 3:45 pm Room: A2145

Lab:

Monday 2:00 – 5:00 pm Room: A2151

REQUIRED TEXTS:

- I. *Chemistry: Matter and It's Changes* – by Brady and Senese 5th Ed, Wiley Press
- II. *Laboratory Manual: Selected Laboratory Experiments II*. This manual is of Ambrose University issue 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:

Your text is the same as that used by the University of Calgary for their equivalent course, Chemistry 201. Their website is:

<http://www.chem.ucalgary.ca/courses/f08/chem201/>

You may find links at this site to be very helpful.

RECOMMENDED TEXTS:

- I. *Math Review Toolkit* by Long and Long, or, any other math review booklet that is relevant to the sciences (especially chemistry and physics).

PRE-REQUISITES:

Chemistry 30 and Mathematics 30.

Mathematics 251 (Calculus I) is a suggested Co-requisite.

COURSE OVERVIEW:

A continued analysis of the relationship between chemical structure and reactivity. Topics include using examples from inorganic and organic chemistry to investigate energetics, equilibria (e.g. acidity and basicity, quantitative and qualitative), and redox reactions.

General Chemistry II will move forward to examine the relationship of kinetics to equilibria, as well as equilibria in other systems. We will then explore reduction and oxidation chemistry and its application to the electrochemistry of voltaic cells and electrolytic cells. This will lead us into the study of voltaic cells and give us the opportunity to investigate the natural processes of corrosion.

The next major topic is thermochemistry. Within, we will focus on reaction enthalpies, free energies of reactions and their roles in reaction progress and reaction feasibility. Hopefully, in our final weeks, as a primer for 2nd year organic chemistry, we will begin to learn about some important organic molecules and their chemical properties.

COURSE OBJECTIVES:

Upon completion of the course, students will have acquired the background knowledge required to move forward into higher level organic and inorganic chemistry courses. Students should leave the course with a firm yet broad foundation for further chemical studies.

To succeed in chemistry students are advised to read relevant topics in their text the day before or morning of their 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, students must practice these skills by completing the questions at the end of each chapter.

Dry Lab and Wet Lab attendance is mandatory and questions assigned during labs must be attempted prior to entry. There is a clear correlation between participation and success in this course. Your study time is limited. Use these tutorial and experimental sessions wisely.

EVALUATION:

Dry Lab Assignments and 4 Quizzes	6%
Midterm Exam #1	10%
Midterm Exam II	15%
Wet Laboratory	30%
Final Exam	39%

*Note: A passing level of performance in the laboratory is a requirement for completion of the course. Your grade in the lab is at the discretion of your lab instructor.

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

Percentage (%)	Grade	Grade Point
86-100	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

TENTATIVE LECTURE SCHEDULE:

Week Starting	Text Sections	Lecture Topics	Lab Topics
Jan 4th	Chapter 14	Equilibria: constants, hetero/homogeneous, expressions	no labs this week
Jan 11th	Chapter 14	Kinetics and their relationship to equilibria, concentration predictions,	Check-in, orientation, safety and WHMIS review.
Jan 18st	Ch: 14	Le Chatelier's Principle, catalysis effects on equilibrium	Experiment 1
Jan 25 th	Ch :15	Acids/Bases: Arrhenius, Bronsted-Lowry, and Lewis definitions, Thursday the 28th is a community day	Dry Lab 1, Quiz 1
Feb 1st	Ch 15/16	pH scale. Strong/vs. weak, % ionisation and relationship to Ka and Kb	Experiment 2
Feb 8th	Ch: 16	Structure effects on acidity, acid/base prop's of salts, Buffers. Titrations. 1st Mid-term Wednesday the 10th of February	Dry Lab 2, Quiz 2
Feb 15th		Reading Week, College Closed February 15th to 20th	no labs
Feb 22rd	Ch 12, 15, 16, 17	Solubility: and equilib., and common ion effect, and Ksp, and pH, and complex ions.	Experiment 3
Mar 1	Ch: 5, Ch: 19	Balancing redox rxn's, voltaic cells, emf's, std reduction potentials, rxn spontaneity.	Dry Lab 3, Quiz 3
Mar 8	Ch 19	Equilib. constants from emf's. Nernst equation, corrosion, electrolysis. 2nd midterm, in class Wednesday March 10th.	Experiment 4
Mar 15	Ch: 16 Ch: 18	Thermochemistry: energy forms, heats of reaction, enthalpy, thermo equations, Stoichiometry for heats of reactions, calorimetry & Hess's law.	Experiment 5
Mar 22	Ch: 18	Laws of thermo, entropy, enthalpy, Gibbs Free energy	Dry Lab 4, Quiz 4
Mar 29	Ch: 18	Equilib., and free energy, free energy and temp dependence. Living systems and thermodynamics. Friday, April 2nd is Good Friday	Experiment 6, this is your last lab session
Apr 5	Ch: 22	Organic Chemistry Intro: Alkanes, cycloalkanes, alkenes, alkynes,	
Apr 12	Ch: 22	Aromatic hydrocarbons, steroids and other biomolecules April 12th is the last day of classes April 13st final exam period starts	

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.

Instructors Policy Statement on Lab Attendance: “Because of the incremental nature of knowledge, missed laboratory sessions may create a hazardous situation. Students who are judged to have missed an acceptable number of laboratory sessions in a course will be required to withdraw from that course. Depending on specific content, a single missed session may be judged as unacceptable.”

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.

Students must familiarize themselves with College Academic Policies (page 71 to 83 of the academic calendar) and penalties for plagiarism and other forms of academic dishonesty (page 79).

Ambrose University Policy: Quote (Academic Calendar, 2008/2009)

33. Academic Dishonesty

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.

33.1 Plagiarism

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 includes, but is not limited to

- I. submitting work previously submitted in another course without the consent of the instructor;*
- II. representing the words, ideas, or work of another as one's own in any academic exercise;*
- III. conducting any act that defrauds the academic process.*

Nearly all forms of plagiarism can be avoided by giving credit to others whenever using

IV. another person's idea, opinion, or theory;

V. any facts, statistics, graphs, drawings – any pieces of information – that are not common knowledge;

- VI. quotations of another person's actual spoken or written words;
- VII. a paraphrase of another person's spoken or written words.

33.2. Cheating

Cheating is a serious form of academic dishonesty. Cheating includes, but is not limited to

- VIII. sitting for an examination by surrogate or acting as a surrogate;
- IX. tampering or attempting to tamper with examinations, grades, or class records;
- X. communicating with another student during an examination in a dishonest way;
- XI. bringing into an examination any textbook, note book, paper, information or electronic device not authorized by the instructor or examiner;
- XII. consulting any person or materials outside the examination room without permission to do so;
- XIII. attempting to read other students' examination papers.

34. Penalties and Procedures for

Academic Dishonesty

If an instructor finds there is sufficient evidence of academic dishonesty on the part of a student, the student will be subject to penalty. Any form of academic dishonesty may result in a zero grade on the assignment, loss of credit in that course, suspension, or other administrative action.

All cases of academic dishonesty will be reported to the Deans' Council. Where there is reason to believe a student is in violation of an academic standard outlined in the academic policies, the following process will be in effect:

Normally, the respective faculty member will deal with the matter, although the appropriate Academic Dean may be involved at the request of the faculty member. Faculty members have the authority and responsibility to assess penalties for academic dishonesty, which will normally be an 'F' on the work so compromised.

In any event, the matter will be reported to the Deans' Council, and a written record will be kept of the violation in the student's permanent file, a copy of which will be sent to the student.

The Deans' Council has the authority to impose any penalty considered appropriate for the infraction. The most severe penalty imposed will be a recommendation to the President that the student be dismissed from University College. The Deans' Council will communicate its decision to the student in writing.

Students whose cases have been referred may appear before the Deans' Council to present their case, but must leave while the Council is deliberating and arriving at a decision. Whenever students appear to present their case before an individual or committee, they may bring one other person who is able to support them in some way. However, this person may not be professional legal counsel.

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.