CHEM 210 - General Chemistry I

Skyline College • Fall 2009

Instructor:	**Professor A.J. Bates**	**Valeria Martinovic, Ph.D.**
Section:	***Lecture:*** Room 7-106 *(AC, AD & AE sections)* MW 1:10 – 2:25 pm ***AC Lab:*** Room 7-333 MW 9:10 am – 12:05 pm	***AD Lab:*** Room 7-333 MW 2:40 – 5:45 pm ***AE Lab:*** Room 7-333 MW 6:30 – 9:45 pm
Office:	Building 7, Room 7-326A	Please see in lab: 7-333
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Phone:	(650) 738-4374	*Please contact by email. If urgent, contact the SMT division office at (650) 738-4221.*
Office Hours:	**M:** 12:30 – 1:00 pm 2:30 – 3:30 pm **T:** 9:00 – 9:30 am **W:** 12:30 – 1:00 pm 2:30 – 3:30 pm **R:** 11:00 am – 12:30 pm *Office hours also by appt.*	**Monday & Wednesday:** 12:10 – 1:00 pm (7-333 LAB) 5:45 – 6:30 pm (7-333 LAB) *Office hours also by appt.*
Website:	**http://www.smccd.edu/accounts/batesa**	

Course Objective: Upon completion of General Chemistry I, students should have an understanding of the basic composition of matter, including atomic, ionic, and molecular structures, be able to predict products of chemical reactions, apply stoichiometry, and evaluate the role of energy in chemical reactions. Students should also be proficient in the safe use of laboratory chemicals and the basic principles, techniques, and equipment used to collect, analyze, and interpret experimental data. Problem-solving, critical-thinking, and communication of ideas will be emphasized in the course.

Prerequisites: The prerequisite for the course is completion of MATH 120 (Intermediate Algebra) or the equivalent with a grade of C or better, or an appropriate math placement score. Completion of CHEM 192 (Introductory Chemistry) or the equivalent is also highly recommended. Please see me if you have any questions regarding this requirement.

Required Materials:

- ***CHEMISTRY, 5th Edition*** **by Martin Silberberg**
- ***SKYLINE CHEMISTRY 210 Laboratory Manual*** (Current Revision – August 2009)
- ***Laboratory Handbook for General Chemistry, 3rd ed.*** **by Stanitski, Griswold, Neidig, & Spencer**
- **Laboratory Notebook:** Bound, page-numbered, carbon copy student laboratory notebook
- **Scientific Calculator:** A scientific calculator is required. Devices with a full alpha-numeric (qwerty) keyboard, or wi-fi or cellular capability will NOT be allowed during quizzes or exams. Most graphing calculators are acceptable.
- **Laboratory Safety Glasses or Goggles**
- **Ruler / Straightedge**
- **3** ***Scantron*** **forms:** 4¼" x 11" – 50 questions per side
- **Sargent-Welsh Periodic Table**

Optional Materials:

- **Student Solutions Manual to accompany** ***CHEMISTRY*** **by Silberberg (Highly Recommended)**
- **Study Guide to accompany** ***CHEMISTRY*** **by Silberberg**
- **Three-ring binder for course notes/handouts/exams/quizzes (Highly Recommended)**

Course Calendar – Important Dates

August 19	First day of classes
September 7	*Labor Day – No classes*
September 9	**QUIZ #1**
September 11	Last day to DROP course with no record on transcript
September 23	**EXAM #1**
October 7	**Lab Test #1**
October 21	**EXAM #2**
November 11	*Veteran's Day / Instructor Meetings – No classes*
November 19	Last day to WITHDRAW from course (grade = W)
November 23	**EXAM #3**
December 7	**Lab Test #2**
December 16	**FINAL EXAM (2:10-4:40 pm)**

Note: The above schedule is subject to change.

Lecture & Laboratory Schedule

The lecture and laboratory schedule will be maintained on the course website. Please see the website for the specific experiments that will be performed, topics for lecture, discussion sessions in lab, some due dates, and other course activities.

Course Lecture & Laboratory Outlines

Lecture Topics	Chapter(s)
Review of Mathematical Principles and Introductory Chemistry: • Atoms & Elements, Molecules & Compounds • The Mole • Introduction to Bonding: Molecules, Ions, Compounds, and Nomenclature • The Periodic Table • SI measurement system, algebra, dimensional analysis and unit conversion, scientific notation, significant figures	1, 2, & 3
Chemical Reactions	4
Stoichiometry	3
Thermochemistry	6
Quantum Theory, the Electronic Structure of the Atom, and Periodicity	7 & 8
Chemical Bonding: Electron dot structures	9 & 10
Covalent Bonding: VSEPR, Hybrid Orbitals, and VB Theory	10, 11 & 15
Oxidation – Reduction Reactions	4 & 21
Gas Laws	5
Intermolecular Forces and Liquids & Solids	12 & 13
Properties of Solutions	13

Laboratory Experiments & Activities
Safety & Check-in
Density & Measurements
Paper Chromatography
Determination of the Formula of a Metal Sulfate Hydrate
Determination of the Concentration of an Unknown Solution by Photometry
Observation & Analysis of Various Classes of Chemical Reactions
Synthesis of Alum (Potassium Aluminum Sulfate Dodecahydrate)
Detemination of the Molar Mass of a Diprotic Acid by Titration
Calorimetry: Heat Capacity of a Calorimeter & the Specific Heat of a Metal
Calorimetry: Heats of Acid-Base Neutralization Reactions
Determination of the ASA Content in a Commercial Aspirin Tablet
Observation of Bright-line Spectra from Gas Discharge Tubes
Electron Dot Structures Activity
Valence Shell Electron Pair Repulsion,Valence Bond Theory & Molecular Modeling (3 parts)
Determination of the Sodium Hypochlorite Concentration in Bleach
Determination of the Universal Gas Constant (R)

Note: The above outlines are subject to change.

Course Requirements, Policies, and Assistance

Lecture

The lecture component of the course will present the fundamental concepts of chemistry, problem solving techniques, and sample problems. Outlines of lecture notes will be provided on the course website. These are intended to facilitate note-taking during lecture – they are not a substitute for attending lecture. Problems stated in the notes outlines will be solved in lecture. Many examples, demonstrations, and additional explanations will be presented in lecture. The lecture topics listed above closely follow the order of presentation in your book. However, course notes and emphasis will vary significantly from the text. Your attendance at lecture is essential to successful performance in the class.

Laboratory Experiments & Activities

The laboratory component is a major and essential part of this course. ***Attendance in lab is REQUIRED***. Laboratory work is intended to familiarize you with basic laboratory techniques, encourage exploration of the process of scientific inquiry, and illustrate concepts of chemistry. A formal lab notebook will be kept. Written reports will be required for most exercises. ***Pre-lab assignments must be completed to begin a laboratory experiment.***

Discussion / Problem-Solving Sessions

Many laboratory sessions will include time for organized discussion of lecture topics and problem sets. These discussions are a *required* part of the course. Group problem-solving and active discussion will be encouraged.

Course Website

Problem sets, lecture notes outlines, important course announcements, updated schedules, and links to useful resources will be posted on the website. You are ***required*** to check the site regularly – I recommend a minimum of once/week. ***Some announcements may be posted only on the website.*** *If you miss a class section, you are responsible to check the web site for announcement of quiz dates or any schedule or due date changes.*

Problem Sets and Worksheets

Problem sets and worksheets will be your primary means of preparation for the lecture component of the course. The course focuses on problem solving. Successful completion of the problem sets is key to successful exam performance. Problem sets will be assigned regularly and selected problem sets collected for review/grading. Problem Sets will NOT be accepted for late credit. Your lowest score will be dropped.

Lecture Exams & Laboratory Tests

Three lecture exams and a *comprehensive* final exam will be given in the course. Additionally, two lab tests will be given. ***No make-up exams or tests (lecture, lab, or final) will be given.***

Quizzes

Lecture quizzes may be given in the course and will be announced in class or on the website a minimum of 2 calendar weekdays before they will be administered *in lab*. Lab quizzes ***may*** be given in your lab section; they will be prepared and administered by individual lab instructors and may not be announced. ***No make-up quizzes (lecture or lab) will be given.***

Seminars

You will be required to attend five science-related seminars presented on the Skyline College campus. There will be some choice (both topic and date/time) in the seminars you may attend for credit. A short synopsis of the information presented will be required. More details on this requirement will be provided in a separate document.

Office Hours

Regular office hours will be kept up-to-date on the course website. Office hours are a time to get one-on-one and small group assistance from the instructors and other students who may be attending. Take advantage of this opportunity for individualized assistance. **Office hours are also available by appointment.** Please ask if you need help and cannot make it to the regular office hours and we will arrange a time.

Tutoring

MESA program. Tutoring and/or problem-solving workshops for CHEM 210 will be available through the MESA program. All students in CHEM 210 are welcome and encouraged to use the resources available through the program, located in room 7-309 (just down the hall from the third floor elevator of building 7). Computers, tutoring for other courses, scholarship programs, and other services are also available. Please visit **http://www.smccd.edu/accounts/skymesa/** for more information.

The Learning Center. Tutors for CHEM 210 will also be available in the Learning Center (Bldg. 5 – ground floor). Please visit **http://www.smccd.edu/accounts/skytlc/** for more information.

Study Groups

Working with other students to complete and understand problem sets is essential to the course. You will be asked to make study groups during lab/discussion time. I recommend forming study groups to work outside of class time as well. Success in major's courses in science and math is increased by active study and discussion with classmates.

Special Needs

If you have any special needs for accessibility or any other issues – for the lab or lecture, please discuss with me so that appropriate accommodations may be made.

Dropping or Withdrawing from the Course

If you choose to DROP or WITHDRAW from the course, it is your responsibility to follow the appropriate procedures and observe the ending dates for these options. I will not initiate a drop except under circumstances outlined in the lab section of the syllabus.

Campus Smoke-Free Policy

Beginning Fall Semester 2009, smoking is now permitted *only* in designated areas in parking lots around campus. Designated areas are clearly marked and ashtrays are located nearby. The active participation and cooperation of all students, faculty, staff and guests in promoting a healthy and safe environment at Skyline College and guests are expected to observe the smoking policy. Tobacco-free resources are available in the Student Health Center, located in Building 2, room 2209, (650) 738-4270, and on the Skyline College website.

Grading

Approximate point breakdown:

Lecture Exams:	700 points
Lecture Quizzes:	35 points
Problem Sets:	55 points
Seminars:	30 points
Lab Tests:	120 points
Lab Reports/Exercises:	360 points
	1300 points

Grading scale:

A = 90.0 % – 100 %
B = 80.0 % – 89.9 %
C = 70.0 % – 79.9 %
D = 60.0 % – 69.9 %
F = 0 % – 59.9 %

See the important notes below!

IMPORTANT** additional information on grading: **READ CAREFULLY!

- **The above point and grading breakdowns are estimates only and are subject to change.**
- **If you fail to complete more than 2 laboratory exercises (experiment or activity), you will NOT earn a passing grade (C or better) in the course, regardless of your class percentages.**
  - Completion of an experiment or activity requires participation in the lab sessions in which the experiment is performed and submission of a *complete* lab report (or other required assignment) for that experiment or activity.
- **You must achieve 65.0 % or higher in BOTH the LECTURE and the LABORATORY in order to earn a C or better in the course.**
  - **This requirement is IN ADDITION TO achieving a minimum of 70.0 % or higher overall to earn a C.**
  - LECTURE percent will be based on lecture exams (including final exam), lecture quizzes and problems sets.
  - LABORATORY percent will be based on lab reports, prelabs, lab tests, lab quizzes and other lab assignments.

Make-Up & Late Work

Exams, quizzes, problem sets, and most lab exercises may not be made-up.

Problem sets and pre-labs will ***not*** be accepted for late credit. (Please also see notes about pre-lab requirements under the ***Laboratory Requirements and Guidelines***.)

Limited LAB Make-up: If an ***unavoidable*** conflict exists with a lab period, attendance at a different lab section may be arranged ***in advance***, permitting space and materials are available. You must get the approval of your own lab instructor and the instructor for the section in which you wish to make up the lab. It may not be possible to make up the lab. You will be allowed to make-up a lab by switching sections ***only once***, and only at the discretion of the instructor and or laboratory supervisor. Keep in touch with your lab instructor if an emergency or problem arises – use email for the easiest contact, or if not possible, leave a voicemail message with Professor Bates.

Late Lab Reports:

- Same day (anytime after the start of class) – Noon of the next calendar day: 20% deduction
- After noon of the day following the due date and up to one full calendar week from the original time due: 40% deduction
- After one week from the original time due: *Not accepted for credit*

Personal Conduct – Expectations

GENERAL:

- All students are expected to RESPECT themselves, one another, the instructor, the room, and the equipment. In turn, the instructors will respect students and their academic needs and progress.
- REGULAR ATTENDANCE to lecture & laboratory is required. Please be ON TIME to lecture and lab as a courtesy to the instructor and other students. Time lost due to tardiness to lab, or exams cannot be made up. I will make every effort to start and end class on time. Please also make every effort to arrive and be prepared for class to ***start*** at the scheduled time.
- SAFETY: All students are expected to abide by the safety rules in the laboratory. These will be discussed in detail in a separate handout. *Note that safety glasses or goggles are required at all times in the laboratory.*
- Please SILENCE mobile phones and pagers before entering the lab or classroom. Please do not talk on the phone or check or send voice or text messages during class.

ACADEMIC INTEGRITY:

- Each student is expected to turn in only his or her own work, prepared for this course during the current semester (this applies to problem sets, prelabs, reports, and all assignments in the course).
- Each student is expected to do her or his own work on quizzes, tests, and exams without assistance from other students or any unauthorized aids (*e.g.* cheat sheets, calculator programs, *etc.*).
- Each student is expected to acquire his or her own laboratory data and report that data without alteration.
- ***Cheating, plagiarism, or academic dishonesty of any kind will not be tolerated in this course.***
- Academic dishonesty will have serious consequences. The FIRST offense (and any subsequent offense) may result in any or all of the following:
    - Receive a zero on the item in question.
    - Lowering of the course grade (in addition to the above penalty).
    - Course failure.
    - Report to the Dean of Enrollment Services (maintains a record of all incidents of cheating).
- Under the standards of Academic Sanctions, you may be subject to any or all of the following on the FIRST offense (and any subsequent offense):
    - A warning
    - Temporary exclusion from an activity or class.
    - Censure.
    - Disciplinary Probation.
    - Suspension.
    - Expulsion.
- ***Please see the Student Handbook (link available on the course website) or Course Catalog for the college's definitions and policies on academic dishonesty and its consequences.***
- Additional discussion of academic integrity may take place in lecture or lab.
- If you have questions regarding academic integrity, please ask the instructor(s).
- ***I would like to emphasize that I do NOT expect cheating to be a problem in the course. I expect that students will act with honesty and integrity in all of their work for the course.***

Laboratory Requirements and Guidelines

Safety & Accessibility

- You MUST observe all safety rules at all times.
- *Safety glasses or goggles MUST be worn in the lab at all times.* You will be asked to leave the laboratory if you fail to keep them on. That lab session may NOT be made up.
- Conduct yourself SAFELY in lab! You may be asked to leave a lab session at the instructor's discretion for failure to follow safety rules. That lab session may NOT be made up.
- Wear appropriate attire for lab work. You will not be allowed to work in the lab if you have open shoes, short pants or skirts, or other inappropriate attire. That lab session may NOT be made up.
- A full safety discussion, including a separate handout and a safety video will be presented in lab. Attendance for the discussion and video is required to begin participation in lab. To demonstrate your understanding of the safety rules, a safety quiz must be also be passed before you will be allowed to work in lab.
- If you have any special needs for accessibility or any other issues, please discuss with the lab instructor so that appropriate accommodations may be made.

Assignments, Reports, & Quizzes

- **Pre-lab assignments must be completed before you may carry out a laboratory experiment and are due at the start of the lab session.**
  - You will NOT be allowed to perform the lab if you have not completed it. That lab session may NOT be made up. If you perform the experiment without turning in the prelab, you will receive no credit for the lab activity or lab report.
  - *If your prelab is incomplete*, arrive at lab on time and inform the instructor. You may still be allowed to take quizzes or participate in activities not related to the experiment.
- All assignments (prelabs, lab reports, problem sets, etc.) are due at the START of the lab period on the due date. Assignments turned in late will receive no credit or reduced credit.
- Quizzes given in lab sections must be taken during the lab period you are registered to attend.

Attendance, Make-up, and Enrollment

- Attendance at the lab section is REQUIRED. Discussions, lab lectures, and other activities held during laboratory sessions are a REQUIRED element of the course. You may not be allowed to perform an experiment if you miss important safety information presented in lab lecture. That experiment may NOT be made up.
- Late arrival to a lab session may prevent you from working during that experiment, as you may miss important demonstrations and safety instructions. That experiment may NOT be made up.
- Due to the size of the lab and the high enrollment, laboratory make-up is LIMITED and reserved for cases with extreme circumstances. (Please see make-up section earlier in the syllabus for detailed instructions.)
- Attendance at the lab section is REQUIRED. An instructor-initiated drop *may* be considered for multiple LAB absences as outlined in the student handbook. *Additionally, an* instructor-initiated drop *may* be considered for LAB absences at the beginning of the semester to make room for students wishing to add. *However, do NOT assume you are dropped if you stop attending.* You must follow the appropriate withdrawal procedures and dates to avoid receiving a failing grade for the course.
- You must check out of your lab drawer within two weeks of dropping or withdrawing from the course. Once you are assigned a locker, you must checkout, even if you do no labs. You may check out by arrangement with the lab instructor or stockroom manager. If you remain registered for the course, you must checkout on the checkout date. If you do not properly checkout of your drawer, the stockroom will charge you a $25 checkout fee.