

CHEM B1B: GENERAL CHEMISTRY and CHEMICAL ANALYSIS

Fall 2009

CRN 71242 (Chem B1B)	MW 9:35 -11:00 am	SE 26	Lecture
CRN 71242 (Chem B1B)	MW 1:00 – 4:10 pm	SE 26	Discussion/Lab
CRN 71240(Chem B1A)	TR 1:00 – 4:10 pm	SE 27	Discussion/Lab

Instructor:	Dr. Wayne Cooper
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Web site:	http://www2/bakersfieldcollege.edu/wcooper
Office Hours:	At the end of syllabus, posted by my office, <i>or by appointment</i>

Course Prerequisites: Chemistry B1A with a grade of C or better

Textbook: Ebbing, Gammon, General Chemistry, (9th Edition, Houghton Mifflin.)

Optional: Any study guide you find useful (check it out before you buy.)

Other Supplies:

- 1) Scientific Calculator: (TI – 30 series) Bring your calculator to every class and lab. No programmable calculators allowed for use on exams.
- 2) Lab coat or apron covering the chest and down to the knees, UVEX goggles and a combination lock. The goggles must completely enclose the area around the eyes.
- 3) USERID to use BC's personal computer labs. Even if you already had one before, please make sure that it works.
- 4) Laboratory research notebook (100 duplicate pages spiral bound - found in the bookstore) There will be a number of handouts and other articles for our labs and procedures.

Course Description: 5 units. Continuation of Chemistry B1A. Includes kinetics; equilibrium; thermodynamics; equilibrium as it applies to acid-base, solubility, and electrochemistry; nuclear chemistry; coordination chemistry; the descriptive chemistry of selected elements; and an introduction to organic chemistry. The laboratory includes qualitative analysis, quantitative techniques, and descriptive experiments. Transferable to UC, CSU and private colleges. CAN CHEM 4; CHEM B1a + B1b = CAN CHEM SEQ A.

Who should take the course? All biology and chemistry and some engineering majors must take this course. It is accepted as the second semester of general chemistry at just about any university. If you have completed Chemistry B1A with a C or better (the prerequisite for this course) then you already know that this course will take a lot of your time. Many of you have jobs and other commitments outside of school, but in order to succeed here, you must consider this class a major commitment both in time and in energy. (*Hint: have no fear of math and hard work*)

Students with disabilities who believe they may need accommodations in this class are encouraged to contact **Supportive Services in FACE 16, 395-4334**, as soon as possible to better ensure such accommodations are implemented in a timely fashion.

General Learning Objectives:(What you should be able to do Academically)

1. Relate chemical safety and the fundamental importance of chemistry to other disciplines, your future career, current events, and to everyday life.
2. Relate the observable properties of matter to the fundamental building blocks of matter, how these forms larger structures, how they interact, and the role energy plays in matter's behavior. This includes the application of these chemical concepts to problem solving, relating properties to atomic and molecular structure, moles and all levels of bonding.
3. Students will demonstrate the ability to form and apply the logical thinking process in learning and problem solving related to chemistry. They should demonstrate the ability to analyze, formulate and calculate mathematical manipulations related to chemistry, reporting the numbers with appropriate units and correct numbers of significant figures. They should be able to design and organize logical problem solving methodologies that link observations with fundamental chemical concepts and conclusions.
4. Students will be able to make and report accurate observations using both the SI and British systems of measurement. They will be able to make accurate/precise qualitative and quantitative measurements as well as unit conversions and the use of formulas and chemical equations.
5. They should be able to characterize/identify several standard, common chemical systems and behaviors. Examples are general kinetics, equilibria, electrolytes, and buffers. These form a framework for later learning in the chemical and biological sciences. Assessments for these will come in laboratories, quizzes, homework, and exams.
6. They should be able to characterize/identify several standard, common chemical changes. Oxidation/reduction reactions, acid/bases reactions, and radioactivity are examples frequently encountered. Students will find practice and assessment of this outcome in all areas of their work.

Student Success Outcomes (What you should do to become successful in this class)

1. Take **responsibility** for your education
2. Have **confidence** in what you know and can do.
3. Do not **procrastinate** in doing your assignments.
4. Learn to **listen** and read precisely. Avoid distractions
5. **Prepare.** Read your text, do your **homework** and make and use **practice** tests to prepare for tests.
6. Be **persistent.** Never give up.
7. Learn to **recognize** patterns and utilize **diagrams** to assist in understanding a problem.
8. **Draw** pictures and diagrams to aid in communication and understanding. (**Visualize**)
9. Learn to **think** sequentially or in steps.
10. **Avoid** sloppy work. Waiting until the last minute guarantees errors.
11. Study and work in **groups**, someone else may have a bit of knowledge that you do not.
12. Try something new – a **different approach.**
13. Use your **resources** (know what they are) and get help early and often if you need it.
14. **Expect** the class to require a lot of time. **Prepare** a schedule and stick to it.

Chemistry B1B is intended to help students:

1. Broaden their perception of the physical world through experiences from a chemical perspective.
2. Understand the concepts of chemistry and their application in real-world problems.
3. Learn to observe and record data, correlate theory with reality, derive specific conclusions from a series of observations, infer logical sequences from observed phenomena, and use these experiences to solve new, original problems.
4. Understand the role of chemistry both in one's own vocation and in our technological society.
5. Increase their level of scientific literacy and critical thinking.

Evaluation:

Homework: Homework will be submitted at the beginning of the class period of the day assignment is due. They will provide the basis for quizzes and exams. Homework assignments may be modified from the schedule during the course.

Lecture Quizzes: Occasionally at the beginning or end of lecture there will be a short quiz consisting of a few questions to determine comprehension. The discussion period prior to the laboratory will be a time to review these questions and clarify concepts.

Lab Quizzes: On a regular basis, quizzes will be given at the beginning of lab during the discussion period. The quizzes will be based on the homework assignments and/or the pre-lab of the lab to be conducted.

Exams: We will have several exams throughout the term (see schedule) and a comprehensive final exam.

Lab Reports: Lab reports will always be one week after completing the lab unless announced otherwise in class.

Approximate Point Distribution and Letter Grades

Homework (10 pts each)	100		A	90-100%
Quizzes (10 pts each)	100		B	80-89%
Lecture Quizzes (10 pts each)	100		C	70-79%
Lab Reports (10 pts each)	200		D	60-69%
Midterms (3 to 5) (100 pts each)	400		F	0-59%
Final	200			
Miscellaneous Assignments	100			
Approximate Total	1200	Your Grade	?	?

Assistance: My primary goal is to help you learn chemistry and I enjoy helping students one-on-one. If you are having trouble, please come and see me. If my regular office hours do not fit your schedule, feel free to make an appointment or just stop by and see if I'm here. You can set up appointments in person, by phone or by email.

Attendance: Students who attend class regularly will perform better on exams. Material and discussions may be presented in class that cannot be found in the text. Because much of the course material and experience cannot be gleaned from the course books alone, if you are absent 18 or more hours (two weeks) you may be dropped. If you are dropped you still need to go through the withdrawal process (see below). You are responsible for material missed or assignments given during absences.

Late assignments: All assignments are due at the beginning of the class period on their due date. If you are late to class, wait until the end of the period to turn in assignments. Assignments turned in after this time may lose points.

Make-ups: There will be no make-ups for missed quizzes. If you must miss an exam for unavoidable reasons see me as soon as possible. Make-up for missed exams does not usually exist unless prior arrangement is made before the scheduled exam time. If you miss a lab and the absence is for an unavoidable reason (be prepared to provide documentation), see me as soon as possible. It may be possible to make up the lab. If you miss more than one, your grade will suffer.

Withdrawal: See the BC Catalog. If you discontinue the course for ANY reason, please make an official withdrawal. To withdraw you need to

- 1) Check in your lab equipment to the stockroom and take your lock, apron and goggles.
- 2) Pay any fees owed for broken or missing equipment.
- 3) Go to Admissions and Records Office to complete withdrawal. Make sure that you do this or you could receive an "F" in the course.

Academic Honesty: I will not tolerate cheating. However, I do encourage you to study in groups. You may work in groups on your homework assignments, but I do expect that all quizzes represent your own work. Cheating, as defined in the BC catalogue will result in a loss of credit for the assignment, quiz, or test and/or suspension. Remember that you are responsible for learning the material for exams and you will not learn it if you copy your homework problems from others.

Classroom Etiquette: Please be considerate of other classmates. Students who disrupt the class may be asked to leave. If you arrive late, come into class quietly. Cell phones should be turned off unless you have prior approval.

Lab Work: Laboratory work is an essential part of this course. Each student is responsible to be ready on the day of the experiment. The student is expected to attend all laboratory sessions, complete all laboratory experiments and turn in all reports, unless he or she can demonstrate an excused absence. It is expected that you maintain a clean and safe laboratory environment at all times. You are responsible to keep your lab bench clean. If you make a mess in a common area, clean it up or see me if it is dangerous. You will be reminded of the safety rules on the first day of class. Follow them!

Laboratory Notebook: You will be required to use a laboratory notebook for every lab activity. You must purchase a “Laboratory Notebook” from the bookstore, which included white and yellow graph pages. You will turn in the yellow copy of your lab notebook with your laboratory report. It will be graded as part of your lab report. The purpose of your lab notebook is to record you laboratory activities and enable you to write a laboratory report. Your notebook should follow the following format and rules.

1. All entries should be in ink with no erasures or white outs. If you make a mistake, neatly draw a line through the error and write the correction. Do not scribble out the error. A neat line through the error documents and designates the error. If an entire graph or table is in error a neat “X” will designate and document the error.
2. You should write on one side only of each page. Never write on the back of a page in your lab notebook.
3. Each page should be numbered sequentially in the upper right corner. Do not number the back of any page. Only the yellow pages should be torn out to hand in with the lab report. Do not tear out any white pages. There should be no missing numbers.
4. Your name should appear on the cover of the notebook. And on each page submitted.
5. The first page should be a title page consisting of the class name, the semester (Fall 2009), your name, a phone number at which you can be reached if you leave your notebook in the lab, and the instructor’s name. Nothing else should appear on this page.
6. On the second and third pages should be a Table of Contents. They should be labeled as such with a column listing each lab and another column indicating the page in the notebook where the lab activity starts. This Table of Contents should be updated as you proceed through out the semester.
7. The first lab should begin on the fourth page. Each laboratory exercise should begin with the name and number of the experiment in big letters and underlined. The date the experiment was begun should be placed beside the title or just under it.
8. Each entry should be labeled and underlined as a procedure, observation, calculations, or conclusion. The procedure should be outlined before the lab starts so that you know what to do when you come to the lab class. The graph paper in the notebook will be useful in making tables and drawing graphs. You should date and sign your name after the last entry of each experiment. Staple the yellow copy to the back of your lab report.

Chemistry Laboratory:

Chemistry is an empirical science. Conclusions are based upon observations made from experiments conducted in the real world. The laboratory is a focal point in chemistry. The experiments you will perform in this course will demonstrate the origins of many principles you will encounter in lecture. They will also serve to teach both the tools and techniques of laboratory work and the principles of the scientific process.

Sometimes the work we will do may vary from the description given in the laboratory handout. This will force a change in your preparations. This implies the following: **Be Prepared**. If you don't know the general area of work that an experiment is covering, you may not learn much. Alteration of the experiment may force you to draw upon your knowledge of both the handout and your own ability to solve problems. If you have not prepared for the experiment you will be lost.

The Lab Reports

For all regular labs you should write an initial pre-lab which should be entered in your lab research notebook. The pre-lab report should be written carefully and neatly and include the following:

A title referring to the experiment being performed

A purpose in which you describe the experiment, its purpose, and give a general picture of what will happen in the lab. E.g. if our first experiment is about uncertainty, you should include a brief explanation of what will be done in this lab to study this topic.

A procedure which should include how you are going to carry out the experiment, what equipment and materials are to be used, and what quantities of material you expect to use. Expected calculations should be shown and any reactions should be given.

A reference to the lab's source material.

You must maintain a laboratory notebook as described above while performing the lab. This should include all data/calculations/ observations obtained during the experiment, and should follow the pre-lab sheets in your laboratory notebook. A copy of the lab's journal must be turned in at the end of each lab session. Be sure that your name, section number, experiment title and the date are clearly written as well along with your laboratory partner if you have one.

The lab write-ups (out of your handouts, or as specified) are due two lab periods after the last official day of lab work conducted on the particular experiment. Your pre-labs and journals may be used to determine your report.

- A well-done pre-lab/journal will cause your report grade to rise
- An average one will have little or no effect on the report grade.
- A poor pre-lab or journal will cause a drop in your report grade.

In addition to the sections included in your pre-lab your final lab report should also include the following sections:

Observations: Describe what you observed and how it relates to the objectives of the experiment.

Data/Calculations: Provide an organized arrangement of the data taken during the experiment and show at least one set of calculations for each type of calculation required in the experiment. Graphs of data should also be included when necessary and **they are not optional**. Include balanced equations for reactions occurring in the experiment.

Conclusions: Relate how your data and calculations relate to the purpose of the experiment.

Final lab reports should be prepared with the same degree of neatness and clarity as your pre-labs.

All lab reports must be returned to me at the end of the semester. I strongly suggest the use of a binder to hold all of your class materials, with the labs being in one section of the binder. Lab reports will constitute approximately 75% of your lab grade.

Policies and Procedures for Submitting Assignments

1) All assignments are due at the **beginning** of class period (lecture or lab) on their due dates. If you need to miss class, I am happy to accept the assignments early. If you happen to arrive late, wait until after the class to turn in papers. Just like at the video store or the library, expect a late fee.

ASSIGNMENTS WILL NOT BE ACCEPTED AFTER THE DUE DATE.

2) Write your name legibly in the upper right-hand corner of each page, and staple them together.

3) Please don't crowd your work. Use lots of paper so that I can easily follow all of your hard work.

4) Label each question/problem clearly, and if you promise to circle your final answers in a calculation, I will promise to find them.

5) Neatness counts! If I have to struggle to read your writing, you may not receive proper credit.

6) Work must be shown for full credit. If the question involves the factor label method (also called dimensional analysis), USE IT! You must have your units present. For written answers, use complete and concise sentences to state your point.

7) Study groups are encouraged, but remember that all work submitted must be your work and your work only. Any violations of this will be regarded as cheating and may result in failing grades for cheaters and cheatees. In addition, the Dean of Students has made it clear that students caught cheating may be suspended from the campus.

Schedule of Class/Lab Activities – Fall 2009

The following schedule is tentative and may be changed as necessary

Week	Dates	Lecture Topic	Lab	Assignment
1	8/24	Review	Check in Assign Lab 1	Read Ch 6, 18
	8/26	Review/Ch 18 Thermo	Review Lab 1	
2	8/31	Ch 18 Thermo	Lab 2	HW- Ch 18
	9/2	Ch 18 Thermo	Hess's Law	
3	9/7	Labor Day	Written Assignment	
	9/9	Ch 13 Kinetics	Exam I (Chapter 18)	HW - Ch 13
4	9/14	Ch 13 Kinetics	Kinetics	
	9/16	Ch 13 Kinetics	Kinetics	
5	9/21	Ch 14 Equilibria Studies	Equilibria Studies	HW - 14
	9/23	Ch 14 Equilibria Studies	Exam II (Chapter 13)	
6	9/28	Ch 15 Acids/Bases	Equilibria Studies	HW - 15
	9/30	Ch 15 Acids/Bases	Acids and Bases and Buffers	
7	10/5	Ch 16 Acid-Base Equilibria	Acid Base Equilibria	HW -16
	10/7	Ch16 Acid-Base Equilibria	Acid Base Equilibria	
8	10/12	Ch 16 Acid-Base Equilibria	Exam III (chapters 14 & 15)	
	10/14	Ch 17 Solubility -Equilibria	Ksp	HW - 17
9	10/19	Ch 17 Solubility- Equilibria	Qualitative Analysis	
	10/21	Ch 17 Solubility -Equilibria	Qualitative Analysis	
10	10/26	Ch19 Electrochemistry	Qualitative Analysis	HW - 19
	10/28	Ch 19 Electrochemistry	Exam IV (Chapters 16 & 17)	
11	11/2	Ch 19 Electrochemistry	Qualitative Analysis	
	11/4	Ch 20 Nuclear Chemistry	Qualitative Analysis	HW - 20
12	11/9	Ch 20 Nuclear Chemistry	Qualitative Analysis	
	11/11	Holiday – Veterans Day	Electrochemistry	
13	11/16	Ch 21 Main Group Chemistry	Electrochemistry	HW - 21 & 22
	11/18	Ch 21 Main Group Chemistry	Nuclear	
14	11/23	Ch 22 Transition Elements	Exam V (Chapters 19 & 20)	
	11/25	Ch 23 Organic & Biochemistry	Special Presentations	HW – 23 & 24
15	11/30	Ch 23 Organic & Biochemistry	Special Presentations	
	12/2	Ch 24 Polymer Materials	Special Presentations	
16	12/7	Final Exam (Comprehensive)		

*Dates To Remember: September 4 Last Day to Add Class September 21 Last Day w/o W
 November 2 Last day to withdraw w/ W December 7 Final Exam (10:00 am)
 November 2 Last day to file for graduation

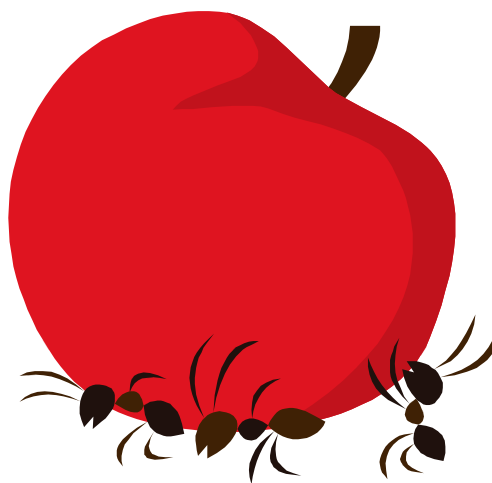
Syllabus Chemistry B1B
Fall 2009

“A problem is a chance
for you to do your best.”

Duke Ellington

“Learning is not
attained by chance,
it must be sought for with ardor
and attended to with diligence.”

Abigail Adams
1780



Don't Forget the Ant