

SYLLABUS
FOR CHEMISTRY 120
PREPARATION FOR GENERAL CHEMISTRY

Sections
1123/1127

Laurie LeBlanc
Cuyamaca College
Fall 2009

Table of Contents

Letter to Student.....	3
My presuppositions about You.....	4
Syllabus	
Materials/Text.....	5
Course Description	5
Grading.....	6
Attendance.....	7
Academic Accommodations.....	7
Helpful Hints.....	8
Laboratory Guidelines	
Lab Notebook.....	9
Lab Reports.....	11
Lab Safety.....	12
Appendix	
Sample Lab Notebook Prep	
Periodic Table	

LETTER TO STUDENTS

Welcome to Chemistry 120! I am glad that you are here and hope that you are glad to be here, too. I know that you may be a little nervous about this course. Chemistry is a difficult course because you will be learning a new language in addition to new concepts and principles. This chemistry class will provide the basis for understanding many of your future classes. It will prepare you for challenges in your future career as well.

You are probably considering a major in science or engineering since you are taking this prep class. You will discover that chemistry is all around you in this class. My goal for the class is to make it as practical as possible. We will work as a group to bring in as many real-life examples of chemistry as possible this semester.

Each of you has in mind or is engaged in a demanding and challenging career. Success in the job and your career will be achieved only with determination and hard work. This is also true of this chemistry course. Your employer expects you to be at work everyday, on time and prepared to work. In this class, promptness and regular attendance are also crucial for success. In order to succeed in this course, you must be willing to work. By work, I mean attending class, reading the assigned text before each class session, completing all homework assignments to the best of your ability before each class session and preparing for experiments in the lab before they take place. You will not get the full benefit of this course if you come to class unprepared. Coming to class continually unprepared usually equates to failure.

By coming to class prepared you will be able to review and correct your homework, ask questions, discuss problems and participate. Being prepared for each class equals learning. Learning will help you to feel less nervous about this course, increase your motivation to do the next assignments, encourage you to learn more and ultimately enable you to succeed.

My goal for you is to introduce you to the chemistry that is all around you. My goal for myself is to help you succeed in this course. I hope you find this course as interesting as I do!

Laurie LeBlanc

My presuppositions about You

- You are eager to learn about chemistry.
- You have completed two years of high school algebra or two semesters of college algebra (through MATH 110 at Cuyamaca).
- You realize the value of good study habits and are intent on further developing your own effective study habits.
- You respect and support your peers. You recognize the importance of a supportive class and campus environment and are willing to work with your instructor and peers to create such an environment.
- You are willing to ask questions and respect the questions of others.
- You recognize the importance of setting short- and long-term academic goals.
- You understand that education is a lifetime path that one must choose to follow.
- You recognize that you are responsible for your own education.

Preparation for General Chemistry
Chemistry 120
Fall 2009

Instructor: Laurie LeBlanc
Office: H209
Phone: (619) 660-4454
Email: Laurie.LeBlanc@gcccd.edu
Office Hours: MW 12:30-2
T 10:30-12:30

Course Description

Chemistry 120 is a preparatory course in chemistry that covers the elementary principles of inorganic and general chemistry. It is designed to prepare students for Chem 141 and Chem 142 at Cuyamaca College. If your major is a physical science, a life science, premed, pre dental or preveterinary, you are probably required to take both semesters of general chemistry. If you are an engineering major, you are required to take at least one semester of general chemistry.

If you have never taken a chemistry course or you do not feel well prepared by your previous chemistry course to do well in general chemistry, this class is for you.

Prerequisites

The prerequisite for this course is successful completion two years of high school algebra or the equivalent. A "C" or better in Math 90 and Math 110 at Cuyamaca College would be the equivalent.

Required Texts and Supplies

Tro, Introductory Chemistry, 3rd Edition

LeBlanc, Chemistry 120 Supplementary Materials

Scientific Calculator (Required, no programmable or graphing calculators can be used on quizzes or exams) **At no time will you be allowed to use a cell phone for calculating or any other purpose in class. Be sure your cell phone is put away at all times.

Bound Quadrille Notebook (contains graph paper NOT lined paper)

Safety Glasses or Goggles

Combination Lock

Course Content

The main theme of this course is the nature of matter — its structure, composition and properties. Basic concepts of chemistry are emphasized, but as much as possible practical applications of the concepts are noted and discussed. The following topics are covered:

1. The Nature of Matter
2. Chemical Nomenclature
3. Chemical Reactions
4. Chemical Calculations
5. Atomic Structure & Bonding
6. Properties of Solutions
7. Introduction to Acid/Base Chemistry
& Chemical Equilibrium
8. The Behavior of Gases

The Course

Much of the course material is delivered in a lecture format. As much as possible, chemical demonstrations are used in the lectures to present basic concepts. Group work will often be used as a follow up to ensure student understanding of lecture material.

Lab experiments allow you to make your own observations. You will learn to keep a detailed notebook that will contain all of your in-lab work. The use of this notebook will acquaint you with the type of notebook kept in an industrial or biotech lab. In preparing lab reports, you will interpret observations using theories being discussed in the lectures.

The instructor will provide learning objectives/outcomes in the form of a study guide for each unit. Students will be required to develop proficiency of these objectives by successfully completing assignments, quizzes, exams and laboratory activities.

Course Outcomes

Upon completion of this course you will be able to:

- Understand the nature of matter
- Recognize, construct formulas for and name ionic & covalent compounds and hydrates
- Understand & classify chemical reactions
- Write & balance chemical equations
- Perform chemical calculations
- Understand modern theory of atomic structure
- Use atomic theory to predict structure, bonding and trends in the behavior of matter
- Understand the properties of and relationships between solids, liquids and gases
- Comprehend the behavior of solutions
- Perform calculations related to solutions
- Become familiar with acid-base chemistry
- Understand the behavior of ideal gases
- Perform calculations using gas laws

Grading

Your grade will be based on written exams (~46%), lab reports (~28%), a combination of quizzes (21%) and miscellaneous homework sets (~6%). Grades will be based on a scale rather than a curve. The scale will be as follows:

A	90% and above	Approximate points:	870—783 pts
B	80% - 89.9%		782—696
C	70% - 79.9%		695—609
D	60% - 69.9%		608—522
F	59.9% and below		521 and below

EXAMS: Three exams will be given during the semester. Each is worth 100 points. Exams will consist of problem-solving and discussion questions. Your lowest exam score

will be dropped. A **comprehensive, final exam** worth 200 points will be given at the end of the semester. (400 pts total)

EXPERIMENTS: There will be approximately **13 lab experiments**. A lab report is required for each one. Lab reports are due at the beginning of lecture period one week after the experiment was completed and will not be accepted after the lecture has begun. Each lab report is worth 20 points. Your lowest lab will be dropped. (240 pts total)

QUIZZES: Approximately **12 quizzes** worth 15 points each will be given during weeks with no exam. (180 pts total)

HOMEWORK: Occasional **homework** sets will be collected, as will some classroom assignments. (approximately 50 pts)

Total Points in the Course: **approximately 870 points**. I reserve the right change the distribution of points during the semester. If major changes are made, I will let you know.

**** You must pass both the lecture and lab portions of the class to pass the course. What this means is that you must have a 60% or better cumulative percentage for all lab reports as well as a passing grade in the lecture portion of the course to pass the course.**

Homework

Homework assigned and collected is due at the start of the lecture period it is due and **will not be accepted after the lecture has started**. It is extremely important that you do the homework in order to master chemical principles needed in later coursework. Exams are patterned after the homework. If you can do the homework, you can do the exams. Answers to odd-numbered textbook problems are in the back of the textbook.

Attendance/Tardiness

Attendance will be taken at the beginning of class. Late arrival to lecture will be noted as an absence. If you are late to lab, **PLEASE DO NOT** interrupt lecture. This is common courtesy. Sit in the back of the class (do not walk in front of your classmates) and do not attempt to turn anything in at the front of the class. If you are late to lab, you will not be permitted to do the laboratory that day for safety reasons. **If a student misses six or more hours of class** (either lecture, lab or both), **s/he will be dropped for excessive absence**.

***Drop Reminder:** It is the student's responsibility to both formally drop the course and to check out of the locker. Failure to formally drop the course may result in a grade of "F" for the semester.

Lab Fees

It is your responsibility to check out of your lab locker at the end of the semester by the time of your final exam or, if you drop the class, at that time. You will be provided a set of glassware and equipment to use during the semester. It is expected that you will return the set in the condition you found it – clean and complete.

****Failure to check out by the deadline and/or loss or breakage of your locker materials will result in your being assessed a \$10 lab fee.**

Class Conduct

Undesirable class behavior will have a negative effect on a student's grade. Excessive talking during lecture is both discourteous and annoying to students who sit nearby. Understanding lecture material may be more difficult for some students than it is for you and your distracting conversation may make it even more difficult and frustrating! Please show consideration and respect for others and refrain from talking during lecture. **Cell phones and electronic devices are to be in silent or vibration mode during class periods. This includes breaks. Text and/or make all phone calls outside of the classroom. Texting in class will result in your being asked to leave the class – no exceptions.** Lack of proper consideration of others will result in your being asked to leave the class as well.

A high degree of integrity is expected in this class. Cheating on exams and quizzes will not be tolerated. You will fail the course if you are caught cheating.

Academic honesty is required for all assignments in this course. Plagiarism -- to take and pass off one's own work the work or ideas of another -- is a form of academic dishonesty. Penalties will be assigned for any form of dishonesty in this course. If ANY plagiarized work is discovered in an assignment, you will receive **no points** for the entire assignment. You may additionally be reported to the Assistant Dean of Student Affairs which can result in suspension or expulsion from the College. (**See Academic Honesty in the Cuyamaca College Catalog p.35)

Please note that no graphing or programmable calculators are allowed during quizzes or exams. You are REQUIRED to have an inexpensive scientific calculator for this course and bring it to each class.

Academic Accommodations

Academic accommodations are available for students with disabilities. If you know or suspect that you have a learning disability or any other type of disability, contact the Office of Disabled Students Programs and Services (DSP&S). DSP&S provides services and arranges for academic accommodations for students with disabilities. It is your responsibility to notify me during the first week of class if you have a learning disability so that the appropriate accommodations are provided to you.

If you are pregnant, please contact me during the first week of class so that we can make special accommodations for you during selected labs.

***This course adheres to the policies outlined in the Cuyamaca College catalog. For further information, see Academic Policies stated in the catalog.*

HELPFUL HINTS FOR SUCCESS IN THIS CLASS

1. Refer to your class schedule and read the material **BEFORE** coming to lecture. Even a very quick skimming of the text will make the material easier to understand and you will remember it longer. You may want to refer to the learning objectives so that you know what to look for as you read.
2. **Review lecture material as soon as possible!** Go over your lecture notes, read the text and fill in or rewrite your lecture notes. Rewriting the material *in your own words* will help you to learn it and remember it. Studies have shown that the longer you wait to review the material, the less you remember and retain. After a 24-hour period, 50% of the lecture material is lost.
3. Have a **regularly scheduled time** each day **to study chemistry**. Plan at least **16-20 hours** per week outside of classroom time. Use a calendar and set up a regular time for learning concepts, doing homework problems, interpreting lab and writing laboratory reports and studying for exams. **Ask questions** of your classmates or the instructor when you need clarification.
4. Do your assigned homework problems on a regular basis. **KEEP UP** with your homework and lab reports. Complete lab reports immediately! It takes much more time if you complete the lab several days later because it is more difficult to remember what you did!
5. Study groups are very helpful to most students. **Initially, study the material on your own** and make a list of your own questions. Then discuss the material and your questions with your study group. How do you know if you understand the material? Can you explain it clearly to someone else? If so, you know it! The best way to learn is to teach!
While it is helpful to study with others, remember that you will be tested individually so make sure you thoroughly understand comprehend the material for yourself.
6. Invest in time with a tutor if you feel you need extra help. Tutors should be available from the second week of the semester either in the Tutoring Center or at the Mesa Center (both in the LRC). Studies have shown that working with a tutor on a regular basis usually results in better comprehension and a higher grade!
7. Refer to the learning objectives and review for each unit. The exams are based on the objectives so be sure you understand and can explain each objective. Sample exams for each topic will be available to you. Use them as practice exams and review all your quizzes.
8. Know your learning style. Be aware of what works best for you and do it! Is it listening in class? Recording lecture so that you can hear it again? Taking extensive notes and reviewing them later? Rewriting notes? Using the lab component of the class to understand principles being taught in lecture?

- **PLAN FOR SUCCESS! Take responsibility for your education.**

CHEMISTRY 120 LABORATORY GUIDELINES

Laboratory Notebook

Purpose of a Notebook

Whether you are working for yourself or for a company, records must be kept of all laboratory activities. These records may be used in court to (a) prove rights to patents or (b) defend or prosecute individuals/companies where evidence is presented that was gained through laboratory work. In the case of companies engaged in research, these records (a) may be critical to making management decisions involving millions of dollars or (b) in case of your death or departure for other reasons, are the means for your replacement to pick up the research where you left off. In all cases, the notebook belongs to the agency funding the laboratory work and is kept under their lock and key.

Key Elements in a Proper Notebook

- It must be **complete**. Every detail of your laboratory procedures, results, analysis and conclusions must be recorded so that any individual could repeat the work as you did it.
- It must be **honest**. The details must be recorded immediately after carrying out the procedure, as you first carry out the analysis of the data and as you make observations. Mistakes must be recorded and explained. Bad data must be included along with the good and included in the analysis and conclusions.
- It must be **readable**. Most records are read at one time or another by other individuals. Your notebook may never be neat, but your handwriting and your general organization must be good enough so that other people can interpret exactly what you did.
- Every activity must be **dated**. These activities include mental, as well as physical time spent on the project. Examples include ideas proposed to modify or improve the procedures, design of a follow-up experiment, as well as all thoughts pertaining to the interpretation of the results. Whenever a date is logged into the notebook, all entries that follow that date to the next logged in date must have occurred on the first date. Within any given day's pages, the information is generally entered sequentially as it occurs.

Keeping a Notebook

A separate laboratory notebook is required for recording the observations that you make during lab experiments. A bound notebook with graph paper is **mandatory**. Loose pieces of paper for recording data are not acceptable. The notebook that you use for lecture notes may not be used for the lab. You record all Observations and Data from experiments in this bound notebook. Notes for Class Discussions on various experiments will also be recorded here.

Before you leave lab, you must have the Observation and Data section in your notebook initialed. The original lab notebook section for each experiment is to be photocopied and turned in with a cover page as a lab report. Data is not to be rewritten. If you make a recording error or if the data is "no good", draw a line through the data and initial it. Continue recording on the same page, ignoring data that has been lined out.

Record all data in **ink** in a legible, organized fashion. Include all relevant information. For example, in recording numbers you should include both the units and the meaning of the numbers.

The lab notebook will be organized in the following order:

Exterior Title Your name, course title and semester should go on the cover. In the (Cover) work arena, this would commonly be a project name or code and might be placed on the spine for quick identification on the shelf.

Title Page Name, course title, number and section number, the name of the school, the semester and the name of your lab instructor. Also include either your address, phone or email address (in case your notebook is misplaced) ****Number the front of each page in the upper right hand corner from this point on.**

Table of Contents One page should be set aside to list expt number, expt title, and page number. This is useful for quickly finding specific topics in the notebook and must be kept up to date.

Each experiment will have the following information recorded in the notebook:

**The first page of a new experiment should include the date, experiment name and number. The experiment name and number should then be repeated at the top of each page relating to that experiment.

Purpose a brief paragraph introducing and explaining the purpose of the experiment to be performed. The technique used should always be mentioned here (i.e. titration, vacuum filtration, etc.) as well as the determination of unknowns.* (This section should include 3-4 sentences)

Procedure A detailed summary of each step in the experiment.** Indicate chemicals used along with amounts. Also include any safety information important to the experiment. The important thing to remember here is that you should theoretically be able to use the instructions in your procedure rather than the lab manual to perform the experiment. This section should also be written in your own words. Use any format you prefer: paragraph, a list of procedures or numbered steps, inclusion of diagrams – whatever is easiest for you. Any change to the experiment on the day of the lab should be noted here as well, along with the name of your lab partner if you work in pairs. Do not start the next section until you come to lab.

**** NOTE****

The above two sections (Purpose and Procedure) in your lab notebook must be completed and turned into your instructor at the start of the lab period in which the experiment is to be done or it will be assumed you are not prepared to do the lab and you will be asked to leave the lab.

Data & Observations a legible and complete record of all observations and data collected during the course of the lab period in which the experiment is performed. These notes will lead you to accept or abandon a hypothesis and help you decide the course of future experiment. You must be as objective and honest in recording your observations as you are in making them.

Most of the observations and data section can be a narrative description, a story telling what you did and what you saw. Use the first person to make clear that you did the work. If someone else did the work, be sure that point is obvious. If you work in pairs, be sure to note that as well. Write in reasonably brief, declarative sentences as the work progresses.

**** The instructor must initial this section when you have completed your lab work for the day.**

Lab Reports (Each is worth 20 points)

A formal lab report is required for each experiment performed. Lab reports must be typed or written in ink in a legible, organized fashion (except for the photocopied section). Each lab report will be organized in the following way:

Title Page—should contain Experiment Title, Name, Class, Section Number

Purpose

Procedure

Data & Observations

(These three sections should be photocopied from your lab notebook. Be sure to copy the entire page including dates and page numbers for credit. Also the copied pages should be 8 1/2" x 11" in size.)

Analysis—this section contains your complete calculations used to obtain results, if applicable, and complete answers (in full sentences) to all questions posed in the experiments. ALL work must be shown for credit. This section is NOT to be done in the notebook but on a separate, clean sheet of paper. It is the final draft of your answered questions and calculations and should be done in pen with no errors. If you have not turned in a neat section here, I will NOT grade your analysis.

Conclusion—This section must be done on a clean sheet of paper, neatly typed with no grammatical or spelling errors. This final section of the lab report consists of a minimum of **three paragraphs** in which your results are presented and discussed in the following order: (1) What you learned from the experiment should be discussed, (2) results should be summarized here. If you have questions as to what results should be included, ask your instructor before the lab is due. In addition, if you feel that your results are poor be sure to discuss the reasons WHY they are. (3) In the third paragraph errors which

occurred in your lab should be discussed. A minimum of three potential sources of experimental error should be discussed in some detail here.

Lab reports will usually be due a week after the experiment is done. The report must be turned in at the beginning of that lecture period to receive credit. Labs turned in once the lab period has begun will not be accepted. Some experiments are done in pairs. Questions and calculations are to be done independently even though the experiment itself may have been done in pairs. If a student's lab notebook or lab report contains exactly the same words as another student's work, both will receive no credit.

Missed Labs

You are expected to do all the labs. A lab is a hands-on experience and there is no substitute. None of the labs may be made up. It is for this reason that your lowest lab report may be dropped.

Late arrival to lab will be noted as a missed lab and you will not be permitted to do the lab experiment. Since the explanations given at the beginning of lab period are crucial to safety in the lab and performance of an experiment, it is unsafe and unfair to the class to be late to a lab period.

Safety

Remember that the lab contains hazardous materials. As a result there is no eating, drinking or horseplay in the lab. It is also required that you always wear safety glasses and close-toed shoes at all times in the lab.

You will be given a safety sheet complete with safety rules during the first lab period. You will be asked to agree to the lab rules and sign the sheet during your first laboratory class.

APPENDIX