PimaCommunityCollege
West Campus

CHM 152 General Chemistry II
Syllabus for Fall 2008

Course Information:

Course Prefix/Number: **CHM 152**

Course Title**: General Chemistry II**

Semester: **Fall 2008**

CRN (Section Code): **11801 or 11802**

Class Days/Times: **MW 1:40-3:30 (CRN 11802)**
TTh 9:40-11:30 (CRN 11801)

Site/Room: **F-219 (CRN 11802)**
F-215 (CRN 11801)

Credit Hours: 4**.0**

Teaching Format: **Lecture**

Instructor Information:

Name: **David A. Katz**

Office: **E-235**

US Mail: **Pima Community College**
2202 W. Anklam Rd.
Tucson, AZ 85709-0270

Phone/Voice Mail: **(520) 206-6044**

E-mail: **David.Katz@pima.edu**

Web site: **http://www.chymist.com** (Select Pima Chem Courses, then CHM 152)

Availability: **Office hours**: **Office hours**: **MW 8:30-9:30; 4:30-5:30; TTh 8:30-9:30**

Generally, in addition to my office hours, I am in the office at least 30 minutes before or after class (if I am not in the lab)
I am also available by appointment.

Instructional Materials - Lecture:

Required Text: Brown, Theodore L., LeMay, H. Eugene, Jr., Bursten, Bruce E., **Chemistry: The Central Science**, 10th Ed., Pearson Education, 2006. (Available at the West Campus bookstore and other academic bookstores in town. The PCC Bookstore can be accessed and books ordered via the Internet at www.Pima.bkstr.com.)

Important: You must have access to a computer with Internet connections. Important materials for CHM 151 problem reviews for class are available at www.chymist.com under the submenu "General Chemistry Survival Manual". In addition, you should be able to search the Internet for information and data needed for this course.

This syllabus is also available on my web site under the submenus "Pima Chem Courses" and "Chem 152".

Required: A **scientific calculator**. Cell phones and PDA's are not permitted in place of calculators in class.

Optional: Wilson, Roxy, **Solutions to Red Exercises** or **Solutions to Black Exrecises**, or
Hill, James C., **Student's Guide**

Additional Information:

This course requires an understanding of the material from CHM 151. That includes topics such as formula writing and nomenclature of compounds, completing and balancing chemical equations, stoichiometry calculations, solution terminology and Molarity, and bonding and molecular structure.

It is expected that you can solve problems using a clear and organized set-up including all the proper physical units.

It is important that you are able to do algebraic calculations, including setting up and solving the quadratic equation.

You must be able to draw and label a proper graph or to construct and label graphs using a computer program such as Microsoft Excel.

Course Description:

CHEMISTRY 152 is a continuation of CHM 151, an introduction to the foundations of chemistry for upper-level sciences and engineering. The content of this course includes both principles and problems in the areas of solutions, chemical kinetics, equilibrium, acids and bases, thermodynamics, electrochemistry, nuclear chemistry, and introductory organic chemistry and polymers.

Problem solving is a necessary part of the course, students should review basic mathematics and algebra with emphasis on exponents and roots, manipulations of algebraic equations, and construction of graphs and tables along with the problem solving techniques used in CHM 151. The use of scientific calculators is permitted for all aspects of this course.

Course Objectives:

Upon completion of the course, the student will be able to do the following:

1. Define the rate of a reaction and the rate law, determine the components of the rate law, and describe the effects of concentration, temperature and catalysts on the rate of a reaction.
2. Write and calculate equilibrium constants for a chemical reaction, calculate equilibrium concentrations from initial concentrations, apply Le Châtelier's principle to a chemical reaction and predict how changes in concentration, temperature, pressure, and volume influence the equilibrium system.
3. Distinguish between Arrhenius and Bronsted acids and bases, identify conjugate acid/base pairs, predict the direction of a neutralization reaction, determine dissociation constants (K_a,K_b), pH and pOH in aqueous solutions, and relate molecular structure to acid strength.
4. Define equilibria of acid/base buffer systems, describe buffer capacity, buffer range, common ion effect, and discuss acid/base titration curves.
5. Define the first and second laws of thermodynamics, predict the change in entropy for a chemical reaction, define Gibbs free energy, ΔG, relate the sign of the free energy, enthalpy and entropy to the spontaneity of a chemical system, relating Gibbs free energy, ΔG, and the equilibrium constant K.
6. Balance redox equations, use redox potentials to determine the relative strength of oxidizing and reducing agents, describe the construction and functioning of voltaic and electrolytic cells, determine the cell potential, and discuss applications of electrochemical principles in batteries, corrosion, and electrolysis.
7. Demonstrate an understand the basics of the chemistry associated with the nucleus including nuclear stability; the emission of radiation and one or more applications of nuclear chemistry.

Lecture Outline

The following outline presents topics in the order they will be discussed in class along with reading assignments and problem assignments. The course content does not necessarily follow the book in a chapter by chapter and page by page order. Read chapters before the material is discussed in lecture.

Problem assignments list the problem sections at the end of each chapter. Applicable problems will be assigned after methods of problem solving are demonstrated and explained in class. Answers to odd number problems are located in the back of the textbook. An optional student solutions manual is available.

Lecture Topics	Reading Assignment	Problem Assignment
1. Thermochemistry a) Definitions and units b) Heat and work c) Law of Conservation of Energy (The First Law) d) Enthalpy e) ΔE and ΔH f) Calorimetry g) Specific heat h) Hess's Law i) Standard heats of formation j) Heat of reaction k) Bond energies l) Foods and fuels	Chapter 5 pages 167-204 Chapter 8 pages 328-334	Chapter 5 pages 204-215 5.3-5.8, 5.27-5.39 (odd nos.), 5.49-5.57 (odd nos.), 5.61-5.64, 5.67-5.85 (odd nos.) 5.96-5.98, 5.111 Chapter 8 page 339 8.65-8.71 (odd nos.)
2. Solutions (Part 1) a) Intermolecular forces and solutions b) Types of solutions c) Nonelectrolytes vs electrolytes d) The solution process e) Heat and the solution process f) Temperature and solubility	Chapter 13 pages 528-543	Chapter 13 pages 564-573 13.1-13.6, 13.10, 13.11-13.31 (odd nos.)
3. Carbon and Organic Chemistry a) Carbon b) Allotropes: graphite to nanotubes c) Compounds of carbon c) Petroleum d) Alkanes e) Isomers and nomenclature f) Alkenes g) Alkynes h) Aromatic hydrocarbons i) Reactions of hydrocarbons j) Alcohols k) Ethers l) Aldehydes and ketones m) Carboxylic acids n) Esters o) Polymers	Chapter 25 pages 1063-1091	Chapter 25 pages 1109-1112 25.1-25.4, 25.6, 25.7, 25.8, 25.11-25.27 (odd nos.) 25.31, 25.39, 25.41, 25.43

Lecture Topics	Reading Assignment	Problem Assignment
4. Kinetics and Equilibrium a) Reaction rates b) Rate laws c) Order of a reaction d) Concentration and rate e) Reaction half-life f) Effects of temperature g) Collision theory h) Activation energy i) Reaction mechanisms j) Catalysis k) The dynamics of the equilibrium condition l) The Law of Mass Action m) The equilibrium constant n) What the equilibrium quotient tells us o) K_p vs K_c p) Equilibrium calculations q) Heterogeneous equilibria r) Le Châtelier's Principle	Chapter 14 pages 574-616 Chapter 15 pages 628-659	Chapter 14 pages 617-627 14.1-14.10, 14.13-14.175 (odd nos.), 14.84, 14.87, 14.91, 14.94 Chapter 15 pages 660-667 15.1-15.8, 15.9-15.55 (odd nos.)
5. Thermodynamics a) Spontaneous changes b) Reversible processes c) The Second Law d) Entropy e) The Third Law f) Free energy g) Free energy and equilibrium	Chapter 19 pages 802-836	Chapter 19 pages 837-845 19.1-19.6, 19.7, 19.11, 19.15, 19.21, 19.25, 19.29, 19.31, 19.37-19.79 (odd nos.)
6. Acids, Bases, and Ionic Equilibria a) Properties of acids and bases b) The Arrhenius theory c) The Brønsted Theory d) Conjugate acid-base systems e) K_w f) pH and pOH g) Strong and weak acids and bases h) Dissociation of weak acids and bases i) K_a and K_b j) Polyprotic acids k) Acid-base properties of salts l) The leveling effect m) The Lewis theory n) Buffers o) The common ion effect p) Acid-base titrations q) Indicators r) Precipitation reactions s) Ksp t) pH and solubility	Chapter 16 pages 668-712 Chapter 17 pages 720-760	Chapter 16 pages 712-719 16.1-16.10, 16.13-16.69 (odd nos.), 16.75-16.95 (odd nos.) 16,101, 16.103 Chapter 17 pages 760-767 17.1-17.8, 17.9-17.65 (odd nos.)
7. Solutions (Part 2) a) Concentration units: %, ppt, ppm, ppb b) M, m, X c) Colligative properties d) Freezing point depression e) Boiling point elevation f) Osmotic pressure g) Colloids	Chapter 13 pages 543-564	Chapter 13 pages 564-573 13.7-13.9, 13.33-13.85 (odd nos.) 13.88, 13.91, 13.95

Lecture Topics	Reading Assignment	Problem Assignment
8. Electrochemistry a) Metallic and electrolytic conduction b) Half reactions and redox c) Electrochemical cells d) Voltaic cells e) Standard cell potentials f) Free energy and electrical work g) The Nernst equation h) Commercial cells and batteries i) Corrosion	Chapter 20 pages 846-890	Chapter 20 pages 890-899 20.1-20.7, 20.11-20.89 (odd nos.)
(If time permits) **9. Nuclear Chemistry** a) Radioactivity b) Radioactive decay c) Nuclear stability d) Kinetics of radioactive decay e) Radioisotope dating f) Nuclear transformations g) Extending the periodic table h) Effects of radiation i) Applications of radioisotopes j) Nuclear reactors k) Making a nuclear device	Chapter 21 pages 901-930	Chapter 21 pages 931-935 21.1-21.6, 21.7-21.47 (odd nos.), 21.53-21.59 (odd nos.)

Course Requirements:

The final course grade will be based on quizzes, hour exams, and a final exam. The approximate percent weight of each is given below:

Quizzes …….... 20%

Exams …….. 60%

Final Exam ……..……..... 20%

Chem 152 Course Policies and Information

Homework/Problem Assignments
Each type of problem or calculation is explained in class. Problem assignments, as listed in the lecture outline, are your responsibility to work out and review. Specific problems may be specified or deleted by your instructor. Since student solution manuals are available, problem assignments are not collected or graded. After a particular type of problem is reviewed in class, your instructor will schedule a quiz on that type of problem.

Proper problem solving means that each problem requires a clear and organized set-up. If the problem involves a formula, you must show the formula, substitution of fixed values and variables, and the proper units. Problems that do not utilize a formula must be clearly set up with all the proper units. Final answers should be underlined or circled and must include the proper units. Whether or not it is stated on exams or quizzes, you cannot get full credit for a problem without an organized set-up. The final numerical answer to any problem, on a quiz or exam, is worth one point.

Calculators
You are required to have a scientific calculator (graphing functions not required) for quizzes and exams. You may not use the calculator function on your cell phone or on a Palm Pilot or equivalent PDA.

Computer
This course is taught as a web-enhanced course. You must have access to a computer. This syllabus, along with reading material and problem sets are available on my web site at http://www.chymist.com. The syllabus and some additional readings are located on the *Pima Chem Courses* link under Chem 152. Reading material and problem sets are located under the heading of **General Chemistry Survival Manual**.

You may need to access additional information for this course on the Internet.

Quizzes
There will be frequent quizzes during the semester. All quizzes are announced in class. Each quiz will cover a specific topic or assignment. Questions and problems on quizzes are aimed at showing basic skills in problem solving.

All quizzes have the same weight, even if the point count on particular quizzes differs. Every effort is made to grade and return quizzes by the next class. Grades on quizzes are calculated as fractions or percentages.

At the conclusion of each quiz, an answer key is distributed to the class and the quiz is reviewed. Once the first answer key is distributed, the quiz is considered to be over and anyone arriving late will be considered to have missed that quiz.

There is no curve applied to any quiz.

Assuming at least 6 quizzes have been given during the semester, if you have taken all the quizzes, your lowest quiz grade will be dropped when calculating your final quiz average.

If you miss more than 30% of the quizzes during the semester, then the weight of your quiz average, in calculating your final class average will be discounted by 50%. If you miss more than 50% of the quizzes, then none of your quizzes will be counted in your final class average.

Exams
There will be four exams during the semester. The exams cover information discussed in class, classroom demonstrations, and any supplementary readings or related material assigned. Questions and problems are designed to show understanding of course material and may be more complex than those problems which appeared on quizzes.

All problems will require proper organized set-ups and calculations. Some questions will be in multiple choice format and some questions may require written answers or short discussions (short essay type questions).

The first exam will cover Heat, Solutions, and organic chemistry
The second exam will cover Kinetics and Equilibrium and thermodynamics
The third exam will cover Acids, Bases and solubility equilibrium
The fourth exam will cover Solutions, Oxidation-Reduction, and Electrochemistry

Every effort is made to grade and return exams in about one week to ten days (about three class periods). Grades on exams will be calculated as percentages based on total possible point scores.

Exams are given during normal class time. You are expected to complete the exam within that time period. If you need extra time, please request taking the exam in the Testing and Assessment Center.

There is no curve applied to any exam.

Since information that appears on quizzes also appears on exams, if you have completed all the exams during the semester and your exam average is higher than your quiz average, then your quiz average will be dropped from your final grade calculation.

If you have completed all the exams during the semester, your lowest exam grade will be discounted by 50% when calculating your exam average for the semester.

Final Exam
There will be a final exam at the end of the semester. The Department of Chemistry utilizes the American Chemical Society (ACS) General Chemistry Exam as the final exam. The exam is cumulative, and will include concepts and calculations from the entire semester. Conceptual understanding of course material is important for the final exam. There are study guides for the ACS exam in the library, but do not rely on the study guide alone in preparing for the exam. In addition, there may be a sheet of supplementary questions or problems added to the exam if the class, as a whole, is not mastering specific topics.

The grades on the final exam are adjusted for both local and national norms. If your final exam grade is significantly higher than your exam and quiz average during the semester, extra weight will be given to the final exam.

The final exam utilizes a confidential test booklet. Any writing in the test booklet will reduce your final score by 10 points. If the writing in the test booklet is considered to be extensive, you will receive a grade of zero for the final exam.

The final exam is required for completion of this course. Failure to take the final exam will result in a grade of zero.

If you miss the final exam for some valid reason, you must contact your instructor within 24 hours after the exam or the assigned grade of zero will not be removed. Your instructor will require documentation of your excuse.

Submitting Work and/or Contacting Your Instructor
Any take-home quizzes, exams, or projects should be submitted in writing no later than the dates specified. Depending on the type of assignment, late papers may not be accepted. For any assignment that has a flexible deadline, late papers will be downgraded by 10 points the rest of the day after class is over. An additional 10 points will be deducted until the next class period. After that, a grade of zero will be recorded for that assignment.

You may submit your assignment via the Internet if you cannot be in class on the day it is due. The time stamp on the message, when it is received, will determine the date. **You should receive a reply confirming that your emailed assignment was received within 48 hours of submitting it.**

If you contact your instructor by email, please be advised that email occasionally gets misdirected, can end up being blocked by a spam filter, or lost in cyberspace. (Blank subject lines or subjects such as “Hello” may go directly into a trash file.) **You should receive a reply confirming that your emailed message was received within 48 hours of submitting it.** It is your responsibility to make sure that the message was received.

Make-up Policy
THERE ARE NO MAKE-UP EXAMS OR QUIZZES no matter how valid your excuse may be. All exams and quizzes are scheduled with advance notice and they are given once only. THIS INCLUDES PARTS OF A QUIZ OR EXAM MISSED AS A RESULT OF LATENESS TO CLASS. If you miss a quiz or exam, it does not count against you (i.e., you will not get a grade of “zero”), but your grade will be calculated differently from the percent weights stated in the course requirements.

MISSING THE FINAL EXAM WILL RESULT IN A GRADE OF “ZERO” AND CAN RESULT IN YOUR FAILING THE COURSE.

If you have a previous scheduled appointment or event or know in advance that you will be late or not be present for a quiz or an exam, arrangements can be made for you to take that quiz or exam under special conditions, such as taking the exam one day earlier than the class. Such requests must be made at least three days before the scheduled test day. If you have a conflict with the final exam, it must be resolved by the last day of class during the semester. Failure to resolve a conflict will not excuse you from the final exam.

If you desire more time to complete an exam or quiz or just want to take that test in a different-than-the-class environment, you may request to take the test in the Testing and Assessment Center in the C Building. Please make that request at least one class before the scheduled test.

Academic Integrity
Violations of scholastic ethics are considered serious offenses by Pima Community College, the Department of Chemistry and by your instructor.

Cheating on exams or quizzes will result in a grade of “zero” for that exam or quiz, and, at the instructor's discretion, possibly an F for the course. The zero will be calculated into your final grade point average for this course. Any zero grade assigned for cheating will remain as part of your average and will not be dropped or discounted.

Duplicate answers to questions or problems on quizzes and/or exams from individuals sitting next to one another can be considered as circumstantial evidence of cheating.

Occasionally, you may receive a take-home worksheet, quiz or exam. Such assignments can be completed by conferring with other students, researching information in textbooks or reference books, or on the Internet. It is expected that the final work turned in will be essentially your own, but it may be similar to that of other students you may have worked with. A large number of identical papers in the class will invalidate that assignment.

If your instructor allows you to remain in class, any cheating will be calculated into your final grade. Students who have received zeros for cheating will not be given W grades if they have not withdrawn from the course by the official withdrawal date.

Cheating may be reported to the Academic Dean, even if the student(s) involved have withdrawn from the course.

Students may consult the PCC Student Handbook sections on student code of conduct, on scholastic ethics and on the grade appeal procedure. Copies are available at PCC campus libraries and at http://www.pima.edu/~coadmissions/studresp.htm.

Attendance
Attending class is a major responsibility you have in this course. Most of the important material that will be on the exams and quizzes is discussed in class. **Not everything is in the textbook**. Relevant information and applications of course material, both in PowerPoint presentations, as well as demonstrations, are also presented in class. You cannot pass the exams by reading the textbook and supplementary materials only. If you miss a class, your instructor can tell you what material was covered and summarize any discussions that took place, however, instructors do not have a set of formal lecture notes you can copy. It is your responsibility to get detailed notes from one (or preferably two) classmate(s).

If you are absent from class for an extended period due to illness, an accident, or another valid reason, please have someone contact your instructor.

Extra Credit
There is no extra credit other than extra credit problems and questions that may be on hour exams.

You must demonstrate that you have mastered a substantial amount of the course material to obtain a passing grade.

Lateness
Lateness to class is disruptive to the other students. Please make every effort to get to class on time. If you do arrive late for a class, please come into the room quietly, find a seat, and get organized for class. Please avoid walking across the front of the classroom, disrupting the lecture or discussion. Try to walk around the back of the room.

If work or other circumstances will prevent you from getting to class on time, please see your instructor as soon as possible to discuss the problem.

Storms/Traffic or Other Problems
In the event of a severe storm, other major weather problem, a severe traffic problem, or a power outage, the area may experience transportation disruptions and traffic delays. If an exam is scheduled or a major assignment is due on a day when there is a severe weather (this excludes normal rainfalls), a major traffic problem, or other area problem, the exam or assignment deadline will be postponed until the next class.

Classroom Behavior:
Because of insurance limitations, non-registered visitors are not allowed at class sessions or on field trips.

Possession of drugs, alcohol or firearms on college property is illegal.

Eating, drinking, smoking and soliciting are not allowed in classrooms.

Pets (service animals excepted), telephones, pagers and other electronic devices that distract students are not permitted in classrooms. Please turn off these devices during classes.

Students are expected to exhibit courteous and respectful behavior in class. You are here for the purpose of furthering your education. Students who are disrespectful of others or who are creating disturbances that interfere with the conduct of the class or the learning of others will be asked to leave.

Withdrawals
Students may withdraw from class at any time during the first 2/3 of the semester without instructor permission and without incurring any grade penalty. Please be kind enough to inform your instructor if you withdraw.

Students who are not regularly attending class and who have not submitted any assignments nor taken any quizzes or exams by the census date are assumed NOT to be participating in the class may be withdrawn by the instructor.

Please be sure to withdraw yourself before the end of the course if you do not expect to complete the class; otherwise you may receive a grade of "F" for the course and may affect your academic standing at the college as well as any financial arrangements such as loans or scholarships.

Incomplete grades are only given when a significant amount of class has been missed for medical or other legitimate reasons. (See information which follows)

ADA Compliance
Pima County Community College District strives to comply with the provisions of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. Students with disabilities requiring special accommodations must notify the instructor of this need or directly contact the Disabled Student Resources Office on your campus at the beginning of the semester.

Workload
Students are expected to spend the normal amount of time required for a college course attending class sessions, doing assignments and research, reading and preparing for exams. The standard Carnegie Unit of college credit assigns 1 credit hour for each 15 hours of class time and assumes that students spend two hours working outside the classroom for each hour of classroom instruction. For a three-credit course, this translates to 135 hours per semester or an average of nine hours per week for a 15/16-week semester.

Fall 2008 Calendar of Important Dates

Aug. 27	Fall classes begin
Sept. 1	Labor Day holiday – College Closed
Sept. 9	Last day to withdraw with a refund
Nov. 11	Veterans Day holiday – College closed
Nov. 13	Withdrawal deadline
Nov. 27-30	Thanksgiving Holiday – College closed
Dec. 13	Last day of classes – If you want a late withdrawal grade, you must request it in writing by today.
Dec. 15-20	Final exam week

Chem 152 Grading System/Policies

Your final grade will be a weighted average of your work during the semester and are calculated as follows:

A	**=**	***100-90%***
B	**=**	***89-80%***
C	**=**	***79-70%***
D	**=**	***69-60%***
F	**=**	***below 60%***

The actual percentage may vary based on a final class distribution, but will not be higher than these percentages. At most, the above stated percentages may vary by up to 5 points. I do not grade on a curve.

When calculating final grade averages, assuming you have taken all the quizzes (a total of 5 or more), your lowest quiz grade will be dropped. Also, if you have taken all the quizzes and exams, your lowest exam score will be discounted by 50% so it will have a minimum effect on your grade average.

Any grades of "zero" assigned for cheating or plagiarism will not be dropped or discounted and will be calculated into your final average. If the ethics violation is considered severe, the "zero" can override all other grades in this course.

A grade of 70 or better on the final exam will guarantee that you will receive a grade no lower than a "C" in this course. Please note that the final exam is cumulative and obtaining a grade of 70 means that you need to understand the material from the entire semester's work.

Although quizzes generally help your grade point average, the exams and final exam carry a significant amount of weight toward your final average. **You must have a passing average for exams and the final exam to pass the course.**

An average less than 60 is a failing grade.

My policy is that no one will miss a grade by one point. If your actual average falls at 89, and 90 is an "A", then your grade will be rounded up to a 90. An 88.9 will be a "B". The same applies to the other grade ranges.

You are welcome, at any time of the semester, to stop in my office and review your course grade.

Incomplete (I) grade:

"I" grades must be requested in writing by the student. Final decisions regarding an incomplete grade are made by the instructor and are subject to review by the Department Chair and the Division Dean. Generally, the student must have successfully completed at least 2/3 of the course material to receive an "I" grade.

Incomplete grades are generally reserved for medical and family emergencies that are of significant duration or occur at a critical time during the semester, they are not a way to withdraw if you are failing the course. Please contact your instructor before the last week of class to be sure that there is sufficient time to consider your request.

An incomplete grade generally implies that a student has completed a substantial portion of the course and has shown sufficient initiative to complete the course on his or her own. The student will receive a copy of the standard "I" form filed with the grade. This form will detail specifically what must be done to complete the course. A student has one year to complete the required work, otherwise the grade automatically reverts to an "F."

Late Withdrawal grade:

Your instructor has the ability to enter a late withdrawal grade (W) at the end of the semester as a final grade for the course if you request it and have not withdrawn by the normal two-thirds mark of the semester. Once final grades have been entered, you cannot retroactively request a D or F to be changed to a W.

You must request a W grade, in writing, no later than the last day of class. (Not final exam week.)

If you have not attended class, and have not withdrawn by the 2/3 semester date, your instructor will not honor a late withdrawal request.

Please be aware that a W may affect your financial aid or other funding. You are advised to check with the funding organization to make sure there are no adverse effects to a W grade.

Final Grades:

Students will receive a grade transcript from the college mailed to the address given with registration materials at the end of the semester when all grades have been recorded. For privacy and security reasons, instructors may not post grades and may **NOT** give grades over the telephone. Students who wish to check grades may call MAX 2000 at 206-4880.

SOME SUGGESTIONS FOR SUCCEEDING IN CHEMISTRY

Chemistry is a complex subject. It includes a great number of abstract concepts along with mathematical manipulations of equations and data. There is also a large vocabulary of technical terms. Most important, CHM 152, General Chemistry II, requires that you understand and are able to utilize all the information from CHM 151, General Chemistry I, in topics covered in this course. Take time to review CHM 151 information.

As a college level course, the class moves through topics at a rapid pace with the expectation that students will read and review information in their textbooks and will consult additional sources (books, articles, and the Internet) to aid in learning and understanding course information. Because concepts and problem solving can be varied in many ways and be applied to different types of compounds and situations, it is important that you actually work out problems and calculations on a regular basis throughout the semester.

Succeeding in chemistry requires **constant study and review** of class material since many concepts build upon previous material. This is not a course where one can cram information the night before a quiz or exam.

The following suggestions will be helpful in helping you to succeed in this course:

1. **Always read the chapter in the textbook before it is covered in class.**
   Before a thorough reading, **scan the chapter**(s) to find out the kind of material covered. Look at any learning objectives or chapter outlines, the section headings, illustrations and tables, margin notes, and boxes containing relevant information and applications. Also look at the chapter summary and types of questions asked at the end of the chapter.

   Read the chapter. You probably will not understand all the material after the first reading, it may take several readings. *Make notations of anything you do not understand* in the textbook or on a separate sheet of paper - you will **not** remember them unless you write them down.

   When necessary, go back to previous chapters and review pertinent information that forms the foundation of the current material.

2. **Attend the lectures.**
   Each chapter will be explained in lecture along with illustrations, relevant applications, and demonstrations. Important concepts will be stressed. Often, concepts will be explained in a different way from your textbook. Keep your notes from your chapter reading handy during the lecture to check that all your questions or uncertainties are addressed.

3. **Ask questions.**
   The only *stupid questions* are those that are **not** asked. If you do not understand something, chances are that there are others with the same question - **ASK IT**, no one else will.

   If you are really self-conscious about asking questions in class, then ask your instructor before or after class. Also, stop in your instructor's office during his/her office hours or make an appointment to meet with your instructor.

4. **Keep your work organized.**
   Well organized material is easier to follow and understand. Organize your notes by topic and sub-topic or rewrite them in outline form. Make notations in your notes of things you do *not* understand. This organization is helpful when reviewing for quizzes and exams. Good organization is essential with problem solving. For each problem, you should show the formula used or a concept map of the solution, identify what is being asked, and list the given data and additional factors or information needed. Substitute the proper terms into the formula and be sure to include the proper physical units. Make sure that the units are the same throughout the problem, occasionally you need to convert units to obtain the correct solution to the problem. Unneeded units should cancel leaving you with the correct units for the answer. Do the arithmetic last. Use of the physical units in a problem provide a quick means for checking your results.

   It is essential that clear organized set-ups be used in all quizzes, worksheets, and exams. You will not get full credit for any calculation without a set-up. The final numerical answer to any problem is worth one point of the total problem points.

5. **Try all the homework questions and problems.**
   If you get stuck on a problem, no matter how little or how much you have done of it, *do not spend more than 10 minutes* with it, try another problem. Try the problem again, from scratch, the following morning or evening. If you are still stuck, then write a notation on your paper telling what your difficulty is (e.g. "what do I do next?"; "how do I use this item of data?", etc...). At the earliest possible opportunity, ASK your instructor or a tutor for help. **SAVE YOUR WORK** (including your rough notes) - it will give your instructor a starting point for an explanation and help you to see your error or difficulty.

6. **Study and review the course material on a regular basis.**
   Try to study in short sessions. You will retain more information from several 10 or 15 minute study sessions than you will from one long session. Make up some cards listing items that you have difficulty remembering, carry them with you, and review them when you find yourself unoccupied (such as waiting for someone, standing in a line, etc...). It is also helpful to make up mnemonics for lists of items or terms, or for concepts.

7. **Get the addresses and telephone numbers of TWO classmates.**
   If you miss a class, you can get the notes from one or both classmates. Study together, you will be surprised at how much you learn from each other.

One of the best ways to get help in the course is to talk to your instructor. Make an appointment with him/her and **keep it**.

Caveats:

Your instructor will make every attempt to follow the above procedures and schedules, but they may be changed in the event of extenuating circumstances.

Students submitting assignments are advised to make copies for their own protection.

If you move during the semester, please file a change of address form at any PCC campus registration office.