

Chemistry 1B

Fall 2015

Instructor:

- Nada Khouderchah
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- Office hours and location: Tuesday and Thursday from 5:00 – 5:50 pm, in the faculty space SC-1 on the second floor.

Sections:

If you are enrolled in this course, you have a lecture period and a laboratory period.

CHEM 1B Section 62 (CRN 21584)

- Class Lecture: TTh 6:00 – 7:15 pm S44
- Lab Lecture: TTh 7:30 – 8:20 pm SC2204
- Lab: TTh 8:30 – 10:20 pm SC2204

Course Content:

Chemistry 1B is the second part of a three-quarter general chemistry course, which will cover topics that include gases and their behavior, the kinetic-molecular theory, the intermolecular forces and their effect on the physical properties on solids, liquids, and gases, chemical kinetics dealing with reaction rates, chemical equilibrium, acids and bases and thermodynamics dealing with entropy, free energy and equilibrium. This class assumes that you already have knowledge of the first quarter of chemistry Chem 1A. Mathematics skills, particularly algebra, are essential for your success in this class. You must be comfortable with word problems, ratios, percentages, and logarithm.

Required Materials:

1. **Chemistry: The Molecular Nature of Matter and Change, 7th edition by Martin Silberberg and Amateis** (McGraw-Hill: 2015; ISBN 9780073511177)
2. For the lab you don't need to purchase a lab manual. Please go to the following website and download the lab experiments pdf files: <http://deanza.edu/chemistry/Chem1B.html>
3. A scientific calculator that has at least log and exponential functions (will be used in lecture as well).
4. 8.5 x 11 permanently bound laboratory notebook.
5. OSHA approved laboratory safety goggles purchased from the De Anza Book Store. Other types of goggles will not be permitted.
6. Latex or Nitrile Gloves available from the bookstore (optional).

Attendance and Conduct:

Attendance during lecture, lab lecture, and all laboratory periods are mandatory. Tardiness and leaving before the lecture or laboratory period has ended will not be tolerated. If you miss lecture, laboratory lecture, or a laboratory period for any reason within the first week of class, you will be dropped from the course. Unexcused absences from lab two or more times will result in an automatic “F” grade for the entire course.

Cell phone use during lab or lecture is not allowed. If you need to answer the phone due to an emergency, please do so outside and un-disruptively. Students are responsible for reading and following the Academic Integrity policy outlined in the De Anza College catalog at all times. If a student is caught cheating or plagiarizing at any time on any assignment, exam, or quiz, they will be expelled from the course and will receive a grade of “F.” If students are caught assisting in the act of cheating or plagiarizing, they too will receive the same punishment.

Dropping the Course:

If you wish to drop the course, this is YOUR responsibility. If you do chose to drop, you must officially check out of your lab locker. Failure to check out of lab by the scheduled check-out date will result in an administrative fee and a block will be placed on your future registration.

Course Breakdown and Grading Scale:

The class is worth 960 pts.

- The lecture part of the class is worth 690 pts.
- There are three exams and one final exam. Each lecture exam is worth 125 pts.
- Lecture exams will test your knowledge on materials covered in lecture, homework, and exercises found at the end of the chapter.
- The final exam is worth 225 pts. There will be NO make-up on the midterm tests or finals. The finals will be comprehensive and mandatory. Dates for all scheduled midterms, and the finals are indicated in the class schedule (in this syllabus). If you missed any of the quizzes or examinations due to sickness, please bring a doctor’s note with you on your next attendance.
- The homework is mandatory and needs to be turned in on the specified day at the beginning of the class period; otherwise no credit will be given. It is important that you show the complete solutions for each problem. No credit will be awarded if you simply write the answers without showing the work or calculations. The homework is worth 60 pts.
- The homework for each chapter will be at the end of the power point presentation. It can be typed or hand written (clear enough to read) and stapled. Failure to comply with this rule will result in no credit.
- Quizzes are worth 30 pts. There will be NO make-up on any of the quizzes. The unscheduled quizzes will NOT be re-scheduled for any reason. Therefore, it is important that you come to class regularly and be on time.
- Final grades are based on the total points earned and not on the curve.

Lecture	
Exams	3 x 125 = 375 pts
Final Exam	1 x 225 = 225 pts
Homework	60 pts
Quizzes	30 pts
Total	690 pts

- The Lab portion of the class is worth 270 pts

Lab	
Lab notebook	8 x 5 = 40 pts
Lab reports	8 x 10 = 80 pts
Lab Exam 1	75 pts
Lab Exam 2	75 pts
Total	270 pts

- There are eight lab experiments. Each lab report is worth 10 points.
- The lab notebook is worth 40 pts. and will be graded at the end of the quarter.
- There are two lab exams and each is worth 75 points.

Grading Scale

Grading Scale			
Grade	Percentage %	Grade	Percentage %
A+	98 - 100	C+	75 - 78
A	92 - 97	C	69 - 74
A-	89 - 91	D+	65 - 68
B+	85 - 88	D	62 - 64
B	82 - 84	D-	59 - 61
B-	79 - 81	F	0 - 58

Important Deadlines:

Note: Deadlines below are for 12-week classes.

- Last Day to Add a Class -- Saturday, Oct. 3
- Last Day to Drop for a Refund -- Sunday, Oct. 4
- Last Day to Drop a class with no record of grade -- Sunday, Oct. 4
- Last Day to Request a Pass/No Pass grade -- Friday, Oct. 16
- Last Day to Drop for a W grade -- Friday, Nov. 13

Reading/Studying

- It is crucial that you read the chapter sections before coming to class. If you come to class without knowing what topic(s) the lecture will cover, you will not gain anything during the lecture.
- You must pay attention during lectures and study the materials outside the class periods. **Studying** is not the same as reading. It is an active process, which includes summarizing concepts in your own words and memorizing formulas, as well as solving problems. You must do the homework assignments to fully grasp the concept(s) covered during each lecture

Integrity

- All work submitted for grading must be your own. Copying is cheating and is an unacceptable behavior. Cheating during quizzes, tests, or examinations will NOT be tolerated and it will earn you an automatic zero for those quizzes or examinations.
- Be a full and active participant when you work on an assignment with others. If you just copy the groups or your partner's solution or calculations, you haven't learned anything and you are wasting your time.

Additional information:

- If there are any students that need assistance due to a disability, please feel free to discuss with me any needs in private. Also contact, Disability Support Program and Services located in S41 to assist with any needs if verification/documentation of needs is available.
- In case of an emergency, we will all evacuate to the emergency assembly area for our classroom. Make sure to carry your belongings with you and stay with the class until I or an official give further directions. Call 911 in case of an emergency. The student health services are also available at 408-949-6109.
- Contact the director of human resources at Foothill-De Anza college district, human resources department at 650-949-6109 if you want to make any complaints regarding unlawful discrimination or sexual harassment.

Lecture Tentative Schedule:

Day	Date	Chapter	Topic	Homework due
Tuesday	9/22/15	5	Introduction/5.1-5.3	
Thursday	9/24/15	5	5.3-5.4	
Tuesday	9/29/15	5	5.5	
Thursday	10/1/15	12	12.3-12.4	
Tuesday	10/6/15	12	12.1-12.2	Chapter 5
Thursday	10/8/15	12	12.2, 12.6	
Tuesday	10/13/15		Test I (Chapters 5 and 12)	Chapter 12
Thursday	10/15/15	16	16.1, 16.2	
Tuesday	10/20/15	16	16.3, 16.4	
Thursday	10/22/15	16	16.5, 16.6	
Tuesday	10/27/15	16/17	17.1, 17.2	
Thursday	10/29/15	17	17.3, 17.4	Chapter 16
Tuesday	11/3/15		Test II (Chapters 16 and 17)	
Thursday	11/5/15	17	17.5, 17.6	
Tuesday	11/10/15	17/18	18.1-18.3	
Thursday	11/12/15	18	18.4	Chapter 17
Tuesday	11/17/15	18	18.5, 18.6	
Thursday	11/19/15	18	18.7-18.9	
Tuesday	11/24/15		Test III (Chapters 17 and 18)	Chapter 18
Thursday	11/26/15		Thanksgiving Day	
Tuesday	12/1/15	20	20.1	
Thursday	12/3/10	20	20.2	
Tuesday	12/8/15	20	20.3, 20.4	
Thursday	12/10/15		Final Exam from 6:15 - 8:15 pm	Chapter 20

- *The instructor reserves the right to modify and adjust the schedule as needed.*

Lab Schedule:

Date	Report Due	Topic
9/22/15		Introduction and check-in
9/24/15		Experiment 1: Molar Volume (1)
9/29/15		Experiment 1: Molar Volume (2)
10/1/15		Experiment 2: Vapor Pressure (1)
10/6/15	Lab 1	Experiment 2: Vapor Pressure (2)
10/8/15		Experiment 3: Chemical Kinetics (Iodine Clock Reaction) (1)
10/13/15	Lab 2	Experiment 3: Chemical Kinetics (Iodine Clock Reaction) (2)
10/15/15		Experiment 3: Chemical Kinetics (Iodine Clock Reaction) (3)
10/20/15		Experiment 3: Chemical Kinetics (Iodine Clock Reaction) (4)
10/22/15		Experiment 4: Chemical Equilibrium (Spectroscopy) (1)
10/27/15	Lab 3	Experiment 4: Chemical Equilibrium (Spectroscopy) (2)
10/29/15		Experiment 5: Acid/Base Dissociation Constant
11/3/15	Lab 4	Experiment 6: pK of an Indicator (1)
11/5/15	Lab 5	Experiment 6: pK of an Indicator (2) <i>Exam I?</i>
11/10/15		Experiment 7: Green Crystal (1)
11/12/15	Lab 6	Experiment 7: Green Crystal (2)
10/17/15		Experiment 7: Green Crystal (3)
10/19/15		Experiment 7: Green Crystal (4)
11/24/15		Experiment 8: Calcium Hydroxide (1)
11/26/15	Thanksgiving Day	
12/1/15	Lab 7	Experiment 8: Calcium Hydroxide (2)
12/3/15	Lab 8	Check-out/ Lab <i>Exam II</i>
12/8/15		

The Lab Notebook:

The lab notebook is a complete record of your work in the lab. It must be a **bound notebook** (not spiral!) with entries made **in ink**. If a mistake is made in writing, draw a line through the error and continue writing. The notebook must have a **table of contents** and the pages must be numbered. For each experiment you should have in your lab notebook the following:

1. Date, name of your partner, title of the experiment and the purpose of the experiment.
2. Procedure using your own words.
3. Observation
4. Data
5. At least 1 sample calculation of each type for each experiment.

Before coming to the Lab:

You WILL NOT be allowed to perform the experiment if you have NOT read the experiment or done the pre-labs. Read the procedure in the lab manual thoroughly, and complete in your lab notebook for each experiment the **pre-lab assignment** which consists of the following:

1. On the left hand side: **Experiment number, date and name of your partner.**
2. **Title of the experiment** (in the center on the next line)
3. **Purpose** of experiment and the method that will be used.
4. **Table of hazards***

Chemical name	Major hazards LD50's Toxicities	Course of action in case a small spill occurred.	Course of action for eye or skin contact.
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5. Procedure and observations.

Do not copy the procedure from the text book, instead use your own words otherwise it is considered plagiarism. As for observations, write about what really happened in the experiment, not what "should" have happened. Good notes will help you to write an insightful and accurate report.

Procedure:	Observations

6. **Data.** Prepare tables and or charts to enter your data during the experiment.
7. Lab notebooks will be checked during lab period

* Table of hazards: This is especially useful in chemistry classes, where toxic or flammable chemicals are often used. The best resources for this safety information are Material Safety Data Sheets (MSDS), which can be found at <http://deanza.edu/chemistry/Chem1B.html> under MSDS.

Lab Report:

Each student must turn in an individual lab report. During lab you may perform an experiment with a partner and you will be sharing the experimental data. However, all lab reports must be written individually. Each student is responsible for writing and turning in his/her own lab reports. DO NOT copy (plagiarize) your partner's or other student's lab reports. You will be given a "zero" for your lab reports if it is determined that you have plagiarized other people's work.

Lab reports are mandatory and are due at the beginning of the lab period one week after the experiment is completed. For every missed two lab reports your grade will be dropped by a full letter grade.

Lab Report Format:

1. On the left hand side:
 - Your name
 - Date on which the experiment was performed
 - Lab section number
 - Name of your partner.
 2. Title of the experiment (in the center of the next line).
 - a. Example: Lab #4: Isolation of Caffeine from Tea Leaves
- I. **Purpose or objective** of the experiment should be expressed clearly in only one or two sentences, including the main method used to accomplish the purpose.
- a. Example: The purpose of the experiment was to determine the percentage by mass of acetic acid in vinegar using acid/base titration.

II. Introduction

The main focus of the introduction should be on helping the reader to understand the purpose, methods, and reasons these particular methods are being used.

Start with background and theory pertaining to the experiment. This can include information from previous research, explanations of theories, methods or equations used, etc.; for the example above, you might want to explain the theory behind acid/base titration and a brief description of the setup and process you will use in the experiment. If research is done for this section, be sure to cite any sources used.

Be careful to include only the information that a reader would need to know in order to understand the purpose and methods; the report should still be as straightforward as possible.

III. Procedure

Refer to the lab notebook on pages...

IV. Results

This section contains all the results of the experiment, including:

- **Raw data** (weights, temperatures, etc.) organized into graphs or tables. Each graph, table, or figure should be labeled and titled properly. The key to making tables and figures effective is to refer to and explain each one in the body of the paper.
- **Important results** in verbal form. For the main results that will be expanded upon in the discussion section, use complete sentences (i.e. “The percentage of acetic acid in vinegar was calculated to be **4.982 %**”). This will help the key results to stand out from all the calculations, tables, and figures that normally dominate the results section.
- **Calculations.** Usually, only a sample of each calculation is needed. For example, if the percentage of acetic acid in 10 samples of vinegar has to be calculated and then averaged, write out the calculation for only one of them, then mention that the calculation was repeated for 10 samples and give the average of all 10. Correct significant figures should be used in all calculations. Make sure units (cm, mL, etc.) are included in all calculations, and that major results of each calculation stand out from the rest of the numbers. This can be accomplished by typing the key numbers in boldface and by including them in a complete sentence as shown above.

V. Discussion

The discussion section is the most important part of the report. This is the section where the results are explained, and a student can show the instructor that he or she has a thorough understanding of the concept of the experiment and the results obtained. The main question to be addressed in this section is “What is the significance of the results?”

Here are some strategies to help focus your discussion:

- **Compare expected results with actual results.** If the experiment did not turn out exactly as expected, think about why the results might have been different and try to explain why you got the results you did.
- **Analyze experimental error.** There is a degree of error in every experiment, so every lab report should mention potential causes of error. Be specific about what caused the error. Was it due to the equipment? Impurity of the sample? Errors in calculations?
- **Explain how the methods could be improved.** Once you have decided what might have caused error, you should explain how the error might have been avoided. How could the setup be made more effective? Should you have been more careful with measurements? How could contamination have been prevented more effectively? Should more precise equipment be used?
- **Explain the results in terms of the purpose.** If the original purpose of the experiment was achieved, explain how the results show that the purpose was accomplished. For example, if the purpose was to determine the percentage of acetic acid in vinegar, you could research the real percentage of acetic acid in most commercial vinegars and compare that to the calculated result from the experiment. A small difference would indicate that the percentage calculated was very close to the actual percentage and the purpose was accomplished. If the purpose was not achieved, prove this by the results in a similar fashion.

VI . Conclusion

This section includes only one or two sentences that summarize definitive conclusions from the results. Here is an example of a conclusion for the acetic acid experiment used in earlier Example:

From a comparison of the results of the experimental calculations with the normal value for percent acetic acid in vinegar, it can be concluded that the percentage of acetic acid in the sample used in this experiment was about 4.982%.

Notice how the conclusion relates directly to the main objective of finding the percentage of acetic acid in the given sample of vinegar. The conclusion also justifies itself based on the results; the actual results were comparable to the expected results. The degree of confidence the writer has in the conclusion is also shown; the percentage was an average rather than an exact amount, so the word ‘about’ was used.

Guideline for writing a Formal Lab Report:

The report should be typed using a readable font face such as “Times New Roman” with a font size of 12.0 and 1.5 line spacing. Use superscript and subscript when appropriate.

For each section bold-face subheadings

Be concise. In scientific writing, it is very important to say as much as is needed while using as few words as possible. Lab reports should be thorough, but repetition should be avoided. The entire report should be clear and straightforward.

Always write in the third person. Avoid using the words “I” or “we” when referring to the experimental procedure. For example, instead of “I boiled 50 mL of water for 10 minutes,” the report should read, “50 mL of water was boiled for 10 minutes.” This can be a bit difficult to get used to, so it is important to pay close attention to the wording in the report.

Use correct verb tenses. Many students become confused when trying to decide whether to use past or present tense in their reports. The general rules for verb tenses are as follows:

- The experimental procedure has already been conducted, so use the past tense of the verb when referring to it:
Example: The purpose of the experiment was...
The compound was weighed to 5 g...
- The report, equipment, and theory still exist, so use the present tense of the verb for them:
Example: The purpose of this report is... Bunsen burners are used...

Write about what really happened in the experiment, not what “should” have happened. Instructors grade lab reports based on understanding of the experiment rather than the results achieved, so if things did not go exactly as planned in the lab, resist the temptation to lie about the results in the report. Instead, try to explain what might have gone wrong and suggest ways the experiment might be improved in the future.

Lab Rules:

- OSHA approved safety goggles must be worn at all times
- No food, drinks or smoking are allowed
- Closed toe shoes must be worn. No bare feet or thong sandals are allowed.
- Clothes covering the skin must be worn or a lab coat
- Know the location of fire extinguisher, safety equipment, and the nearest exit
- Do not use broken or cracked glassware
- Always use a brush and dust pan to sweep up broken glassware
- Never taste or smell chemicals
- Avoid contact of chemical with skin. The use of rubber glove is recommended
- Dispose of chemical waste as directed by instructor
- Clean your work area before leaving
- Chemicals should never be taken back to your lab bench. They must be kept in the fume hood in their proper storage containers.
- Never leave a chemical bottle or waste container uncapped
- If a chemical spill occurs, notify the instructor immediately.
- If you come into contact with a chemical, flush the affected area with water immediately for 15 minutes. Depending on the degree of contact with the chemicals and the location on the body, you may need to do this in the sink or safety shower. When using the safety shower you must remove the clothing over the area that has come into contact with the chemical. The instructor will ask the other students in the class to leave the room for privacy.
- If your clothing or hair catches on fire use the safety shower immediately. If this is not possible “stop-drop and –roll”.
- If you are hurt or think that you have come into contact with a chemical, notify the instructor immediately (or send a lab partner to fetch the instructor) while following proper safety procedure.
- At the end of the lab session, check out with the instructor and wash your hands

Important Points:

- If you miss the first week of lab, you will be dropped from the course and your locker will be inspected and may be reassigned to another student. You will be held responsible for any broken or missing lab equipment prior to reassignment.
- If you drop the class, it is your responsibility to officially check out of your lab locker. Failure to do so will result in an administrative fee and a block will be placed on your future registration.
- Two or more unexcused absences from lab sessions will result in an automatic grade of “F” for the entire course.
- If the absence was due to a medical or nonmedical emergency, then it will be an excused absence only with written documentation. Make sure to contact the instructor as soon as possible.

- There are no make-up labs. If you did not perform an experiment due to an unexcused absence, your grade for that lab report will be zero. It is your responsibility to learn the theory, and know how to use the chemicals and equipment in the missed experiment.
- If you missed an exam due to an unexcused absence, your grade for that exam will be zero.
- Do not copy data, calculations or phrases from lab textbook, internet or other students this is considered plagiarism and cheating. Plagiarism will be penalized following De Anza's policy regarding academic dishonesty and will be reported to the office of Instruction.
- No late reports will be accepted.
- The ringer on all cell phones needs to be turned off during lab period.
- Notify the instructor if you need to leave the lab for any reason.
- Misbehavior in the lecture and lab classroom will not be tolerated. Any student who behaves in an inappropriate manner will be asked to leave the classroom. If that behavior gets repeated a second time, the student will be reported to the Vice President of Instruction for disciplinary action.
- ***The instructor reserves the right to modify and adjust the schedule and the grading scale as needed.***