

## GENERAL CHEMISTRY 1B, CHEM 2050 – FALL 2014

**NOTE:** Chem 1050 is a prerequisite for Chem 2050. After passing Chem 2050, take Chem 2100.

**ALSO NOTE:** Laboratory work is required for this course. You must complete the laboratory.

Required Texts:

- *Chemistry, The Central Science*, Brown, LeMay, Bursten, and Murphy, Prentice Hall Pub., 2011, **12<sup>th</sup> Edition**
- *Experiments in General Chemistry*, M. N. Kobra, Ed., **Third** edition, Kendall/Hunt, Dubuque 2012

Required Items:

- Scientific calculator (**Graphing calculators, tablets, ipods and cell phones are not allowed on exams!**)
- Lock for lab drawer
- Safety goggles (supplied in lab kit); matches; dish detergent, paper towels

Recommended Items:

- Lab coat or apron
- Study Guide to Brown, LeMay and Bursten, J. C. Hill, 12<sup>th</sup> Ed., Prentice Hall
- Solutions to Exercises in Brown, LeMay and Bursten, R. Wilson, 12th Ed., Prentice Hall

**Online Supplements and Information:**

<http://academic.brooklyn.cuny.edu/chem/howell/practice.htm> (old BC chemistry exams)

<http://chemscript.brooklyn.cuny.edu/web/index.php> (Chemistry Department Homepage)

<http://www.brooklyn.cuny.edu/web/academics/honors/prehealth.php> (Pre-Health Professions website)--contains a link to the **Pre-Health Professions Handbook**.

See also the course Blackboard site for additional material.

**Advisement** *Coordinator for General Chemistry*

Prof. Ira Levine, 3315N  
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*Undergraduate Chemistry Advisor:*

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**Important Dates**

Last day to drop without a grade: Weds, 9/17

Last Day to drop with a "W" grade: Thurs, 11/6

Conversion Day Tues, 9/23 – Classes meet on Friday schedule, we do not meet.

No classes: 9/25, 11/27

**Final exam: 10:30 -12:30 ON TUESDAY, DECEMBER 23**

**Grading:** *Your final grade will be determined as follows:*

20% Quizzes (~5 quizzes, and the lowest grade will be dropped before averaging. No makeups.)

18% Laboratory reports and performance

7% Two laboratory quizzes

30% Midterm Exam (2 midterms, 15% each. No makeups.)

25% Final Exam -- 10:30 -12:30 ON TUESDAY, DECEMBER 23 – Exam is comprehensive.

**Examination Dates:**

10/7: Midterm 1 (Tentative)

11/6: Midterm 2 (Tentative)

**12/23, 10:30 -12:30: Final Exam** (Absolute. Do not ask to take it early or late, do not show me airline tickets, do not complain, beg, threaten or attempt bribery. Take the exam, or wait to take a make-up after the start of classes in Spring 15. You will need to e-mail me about the make-up.)

**Lecture Instructor Information:**

Prof. Mark Kobrak

e-m (preferred): mkobrak@brooklyn.cuny.edu

phone: (718) 951-5758

Office Hours: Tues 2:30 – 4:00 PM, Weds 2:30 – 4:00 PM, or by appointment

Office: 3313 Ingersoll Hall

*Your laboratory instructor will provide you with his or her information separately.*

**Academic dishonesty is prohibited in the City University of New York**

Cheating, plagiarism, internet plagiarism and obtaining unfair advantages are violations of policies of academic integrity and are punishable by penalties, failing grades, suspension and expulsion.

For more information about CUNY policy on academic integrity see

**<http://web.cuny.edu/academics/info-central/policies/academic-integrity.pdf>**

**Student Disability Services**

In order to receive disability-related academic accommodations students must first be registered with the Center for Student Disability Services. Students who have a documented disability or suspect they may have a disability are invited to set up an appointment with the Director of the Center for Student Disability Services, Ms. Valerie Stewart-Lovell at 718-951-5538. If you have already registered with the Center for Student Disability Services please provide your professor with the course accommodation form and discuss your specific accommodation with him/her.

**Lab Exemptions:** Students who are repeating the course may be able to obtain laboratory exemptions. You may file a request for a laboratory exemption in the Chemistry Department office (359 NE). Whether a lab-exempt student re-takes the lab quizzes is up to the student. If you re-take the lab quizzes, we will use whichever lab quiz grade is higher, the previous one or the one from this semester. Lab exemptions are not available after Feb. 10.

**NOTE:** TO PASS THIS COURSE WITH A GOOD GRADE, YOU MUST STUDY AT LEAST 10 HOURS EACH WEEK. PLAN YOUR SCHEDULE ACCORDINGLY!

**Course Strategy**

You should evaluate your performance in Chemistry 1050. Did you do all of the assigned reading and homework? Could you have done better in Chem. 1050? Now is the time to improve your study skills and homework habits. You should plan to spend 10 hours each week on homework. Remember the next course, Chem. 2100, is fast-paced and you must be prepared for it. Get with it and succeed in Chemistry! Your key to success? Learning how to study properly and doing LOTS of homework! Falling behind in reading and homework is a SERIOUS MISTAKE. Organize your life around your coursework and keep up with the assignments. See your teacher during office hours for extra help.

AN APPROXIMATE COURSE SCHEDULE IS ON THE NEXT PAGE. DO THE READING, DO THE PROBLEMS, GET HELP WHEN YOU NEED IT AND DO NOT FALL BEHIND!

**Lectures and Homework Assignments**

<b>Week #</b>	<b>Assigned Material</b>
<b>Weeks 1-2</b> Read: Homework:	<b>Structure of the Atom</b> Chapter 6.1-6.9 Chapter 6, Problems 11, 12, 13, 15, 16, 17, 19, 21, 23, 27, 28, 29, 35, 37, 39, 51, 52, 53, 55, 56, 57a,b, 61, 65, 66, 69, 71, 73, 75
<b>Week 3</b> Read: Homework:	<b>Periodic Properties</b> Chapter 7.1-7.5 Chapter 7, Problems 11, 15, 19, 21, 23, 24, 25, 31, 34a, 37, 39, 42, 47, 61, 71
<b>Weeks 4-7</b> Read: Homework:	<b>Bonding and Structure</b> Chapter 8.1-8.8 Chapter 8, Problems 9, 13, 15, 19, 22, 23, 24, 26, 31, 33, 35, 37, 40, 41, 47, 48a&b, 51 (omit calculation of oxidation numbers), 53, 54, 55, 56, 63, 64, 69, 92
<i>Exam 1 will be in week 5, and will cover all of Chapters 6 &amp; 7 and some of Chapter 8. Details of coverage will be provided prior to the exam.</i>	
<b>Weeks 8-9</b> Read: Homework:	<b>The Gas Laws</b> Chapter 10.1-10.8 Chapter 10, Problems 6, 7, 21, 25, 28, 29, 31, 32, 36, 37, 41, 43, 49, 53, 54, 58, 59, 63, 65, 71, 75, 77, 84, 85, 92
<b>Week 10</b> Read: Homework:	<b>Molecular Shape, Dipole Moment</b> Chapter 9.1-9.3 Chapter 9, Problems 15, 22, 23, 25, 27a,b,c, 28, 29, 31, 39, 43, 46, 96
<b>Week 11</b> Read: Homework:	<b>Intermolecular Forces, Liquids, Phase Changes</b> Chapter 11.1, 11.2, 11.4, 11.5 Chapter 11, Problems 9, 10, 15, 17, 18, 21, 23, 25, 41, 45, 49, 51, 53, 55
<b>Week 12</b> Read: Homework:	<b>Solubility, Concentration, Colligative Properties</b> Chapter 13.1-13.4 Chapter 13, Problems 15, 16, 25, 33, 34, 37, 39, 41, 43, 45, 48, 49, 51
<i>Exam 2 will be in week 12, and will cover the remainder of Chapter 8 as well as the listed sections of Chapters 9, 10, 11 and 13.</i>	
<b>Week 13</b> Read: Homework:	<b>Colligative Properties, Phase Diagrams</b> Chapters 13.5, and 11.6 Chapter 13, Problems 65, 71, 72, 74, 79, 80 Chapter 11, Problems 59, 61, 62
<b>Week 14</b> Read: Homework:	<b>Bonding in Solids, Review</b> Chapter 12.1 Chapter 12, Problems 7, 9, 11, 21
<i>Final Exam is 12/23 from 10:30 – 12:30. It is comprehensive for all material in the course.</i>	

**Chemistry 2100 First Assignment (next semester)**

It is necessary to do some preparatory work before your first meeting in Chemistry 2100.

Read: Chapter 14.1-14.3 in the textbook on Chemical Kinetics. Homework: Chapter 14, Problems 17, 19, 21 23a,b,c 25, 27, 30, 31, 33, 34, 37

## **LABORATORY EXPERIMENTS**

Before coming to laboratory, read the scheduled experiment and any other material assigned. Unless otherwise noted, page numbers refer to your laboratory manual. Bring the lab manual to each lab class.

Brooklyn College recognizes the importance of reproductive hazard awareness and protection. During laboratory exercises students may be exposed to chemical reagents that may present specific risks to reproductive health, especially students who are pregnant. Therefore, it is strongly recommended that you do not take the following course if you are pregnant. If you become pregnant during the semester, please consult with your laboratory instructor.

NOTE: **SAFETY GOGGLES MUST BE WORN IN THE LABORATORY!** The goggles must be indirectly-vented to offer splash protection; New goggles are supplied to you in the lab kit. **If your instructor observes you violating eye protection or other safety policies, you can be removed from the laboratory and/or given a 10% (or higher) penalty on your laboratory report grade.**

Scientific data requires special treatment. It must be recorded in non-erasable ink your lab book immediately after a measurement is taken; partners cannot copy each others' data at a later time. **Altering or copying data outside of the laboratory represents academic dishonesty and will be prosecuted as such if observed.** Further, you will receive no credit for any lab report that includes data that are not your own. If your data are messy, you may copy them over onto a final report, but you must include your original data when you turn in your report.

Lab reports are due in lab the week after the experiment was concluded unless you obtain permission from your instructor. Late lab reports are penalized as follows: 10% off for 1 week or less lateness; 25% off for 2 weeks late; 35% off for 3 weeks late; 45% off for 4 weeks late, etc. All lab reports not handed in will receive a grade of zero.

### **Students who miss a laboratory:**

Multiple sections of Chemistry 1100 and 2050 run every semester, and students who miss a section of their assigned laboratory may make it up in another section as soon as possible. To do this, they must obtain a make-up card from the General Chemistry stockroom. (This card does NOT have to be signed by their regular laboratory instructor.) They then go to the lab period in which they wish to make up the experiment, identify themselves to the instructor in that section, and (if given permission) perform the work. After the experiment is complete, the instructor for that section must sign and date the make-up card. The signed make-up card must be given to the regular laboratory instructor as proof that the lab was made up.

If your lab instructor is **not** grading the lab reports and returning them to you, please **notify the lecturer.**

From meeting three (Expt. 2) on, you are required to hand in a sheet before each lab as described at the end of the lab schedule.

**Laboratory Breakage.** In some schools, a laboratory fee is charged everyone. Our practice is to charge you only for the replacement cost of any items you lose or break. After check out, a bill will be prepared which you may pay at the bursar's office the following semester.

**NOTE:** If you have checked in for any lab course **you must check out** even if you only attend class for one or two weeks before dropping the course. Students who fail to check out will be charged a fee of **\$50** plus the cost missing or broken equipment. Students who drop a course must go to the stockroom to check out **as soon as possible**.

**NOTE:** If you are repeating the course and have the second edition of the lab manual, you can get copies of experiments 7 and 8 (Gas Law, Spectra), which are not in the second edition, from the Stockroom.

Meeting	Laboratory Assignment
1	<u>Introduction to Laboratory</u> <i>Check in, Lab safety, laboratory</i>
2	<u>Experiment 1: Density and Measurement</u> <b><i>You MUST hand in the safety quiz and the signed safety sheet</i></b>
3	<u>Experiment 2: Introduction to Gravimetric Analysis</u> <i>Gravimetric determination of water of crystallization.</i>
4	<u>Experiment 3: Synthesis of Zinc Iodide</u>
5	<u>Experiment 4: Basics of Chemical Reactions</u>
6	<u>Experiment 5: Volumetric Analysis: Acid-Base Titration</u> (This is a long lab.)
7	<u>Experiment 6: Introduction to Calorimetry</u> (Note: If you are repeating the lab and have the second edition of the lab manual, you can get copies of experiments 7 and 8 from the stockroom.)
8	<u>Experiment 7: The Ideal Gas Law.</u>
9	<u>Experiment 8: The emission Spectra of Atoms and Ions.</u> ( <i>This is a very short lab.</i> )
10	<u>Experiment 9: Synthesis of Aspirin</u>
11	<u>Experiment 10: Spectrophotometric Analysis of Aspirin</u>
12	<u>Experiment 11: Intermolecular Forces and Physical Properties</u>
13	<u>Experiment 12: Determination of Molecular Weights by the Method of Freezing-Point Depression</u>
14	Check out and Review <u>No experiments are permitted.</u>

### PREPARATION FOR LABORATORY

To help prepare you for lab, you are required to hand in at the beginning of each lab (except experiment 1 in week 2) a sheet stating (a) what quantities are to be measured and (b) what quantities are to be calculated from the measurements. For example, for experiment 1: (a) Quantities to be measured: masses and volumes of various objects and of water. (b) Quantities to be calculated: Densities of various objects and of water; also, the standard deviation of a repeated measurement.

For an experiment such as experiment 4, where there are no measurements, just state briefly what you are to do and what you are to observe.

What you hand in should be no more than 4 or 5 lines long and must **not** include the detailed procedure of the experiment.

If you do not hand this in, your instructor will deduct 5% from your grade for that lab report.

### **Errata for Kobrak, “Experiments in General Chemistry, 3rd. ed.,”**

#### Experiment 6, page 61:

In the last equation on the page, the “+” after the first “ $C_{Cu}$ ” should be a multiplication sign (“x”). That is,  $C_{Cu}$  is multiplied by the value in the parentheses that follow it.

#### Experiment 12, page 126:

Six lines from the bottom of the page, in the last sentence of the second-to-last paragraph, the phrase “treated as being 2.0 molal” should read “treated as being 0.20 molal”.