GENERAL CHEMISTRY 1B, CHEM 2050 – SPRING 2017

Required Texts:

- *Chemistry, The Central Science*, Brown, LeMay, Bursten, Murphy, Woodward, Stolzfus. Publisher--Pearson., 2014, **13th Edition**

- *Experiments in General Chemistry*, M. N. Kobrak, Ed., **THIRD** edition, Kendall/Hunt, Dubuque, IA, 2012
  Available only at the Brooklyn College bookstore.

Required Items:

- Scientific calculator. **Graphing calculators and internet devices are not allowed on exams!**
- Lock for lab drawer.--bring to first lab.
- Matches; dish detergent, roll of paper towels

Recommended Items:

- Texas Instruments calculator TI-30X
- Lab coat.

Online Supplements and Info:

www.brooklyn.cuny.edu/web/aca_naturalsciences_chemistry/Courses_Chem1100-Spr15-Syllabus.pdf (online **syllabus**)

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

http://www.brooklyn.cuny.edu/web/academics/schools/naturalsciences/undergraduate/chemistry.php (Chemistry Department Homepage)

http://www.brooklyn.cuny.edu/web/academics/honors/prehealth.php (Pre-Health Professions website)

http://www.brooklyn.cuny.edu/web/aca_honors/131125_PrehealthProfessionsHandbook.pdf

http://userhome.brooklyn.cuny.edu/mkobrak/labvideos.html (Lab instruction videos)

Counseling		
	Coordinator for General Chemistry	Prof. Joann Mathias, 3315 N jmathias@brooklyn.cuny.edu
	Undergraduate Chemistry Advisor:	Prof. Emilio Gallicchio, 3116 N egallicchio@brooklyn.cuny.edu
	Health Profession Counseling:	Prof. Silbering 2231B silbering@brooklyn.cuny.edu

LECTURE TESTS FOR DAY LECTURE: **Note that these are during common hours.**

FIRST TEST: **Tuesday, March 21, 12:30 – 2:00 PM**,

SECOND TEST: **Tuesday**, **April 25, 12:30 – 2:00 PM**,

NO Makeup exams are given for Lecture Tests. We mean it.

FINAL EXAM: **FRIDAY, MAY 26, 8:00 AM – 10:00 AM**

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 laboratory exemption request form in the Chemistry Department office (359 NE). Students who receive lab exemptions have the option of taking the lab quizzes again. If you re-take the lab quizzes, we will use whichever lab quiz grade is higher, the previous one or the new one. If you are lab exempt, **notify your laboratory instructor** early in the semester that you are attending recitation so that you don't get dropped from the course.

Drop/Add Dates:

January 29	Last day to drop a course with 0% liability (100% refund)
February 5	Last day to add a course;
	Last day to drop a course with 25% liability.
February 12	Last day to drop a course with 50% liability.
February 19	Last day to drop a course without a grade of "W"
	Last day to drop a course with 75% liability.
February 20	Course withdrawal period begins. A grade of "W" is assigned to students who officially withdraw from a course.
April 19	Course withdrawal period ends.
	Last day to withdraw from a class with a grade of "W".

To withdraw, you must withdraw using CUNYFirst (see below) and go to the stockroom to CHECK OUT from the laboratory.

Note that first-semester freshmen (and SEEK, ESL, and Honors students) must get an adviser's permission in order to withdraw; advisers are available in the Center for Advisement and Student Success in Boylan.

For information about how to withdraw using CUNYFirst and the effect of withdrawal on financial aid, see

http://www.brooklyn.cuny.edu/web/about/administration/enrollment/financial/faq/withdrawing.php

GRADING:

Your final grade will be determined as follows:

30% Two lecture tests
20% Quizzes: dates to be determined by lecturer
18% Laboratory reports
7% Two laboratory quizzes
25% Final Exam

Chem 2050 Assigned Reading

Below is the assigned reading and a corresponding set of homework problems. Your lecturer will give you guidance about where you are in the text and what to do to stay current with the reading. **Read the material at least once before the lecture**, and spend some time on the in-chapter problems to reinforce it. Unless noted otherwise, problems listed as Homework correspond to the end-of-chapter problems for the corresponding chapter. Answers to red problems are at the end of the Chapter. **If you are instructed to memorize something, the test will be written assuming you have done so.**

Homework is assigned but not graded. Quiz and examination questions will mostly be similar to those given in the text. You should do as many of these as possible.

Assigned Reading	Topics	Homework
Chapter 10	Gases	Chapter 10: 19, 26, 29, 34, 35, 39, 43, 47, 51, 52, 56, 57, 61, 63, 71, 73, 75, 82, 83, 90
Chapter 6	Quantum Mechanics, Atomic Structure, Periodic Properties	Chapter 6: 13, 14, 15, 17, 18, 19, 21, 23, 25, 29, 30, 31, 37, 39, 41, 55, 56, 57, 61, 62, 63a,b, 67, 71, 75, 77, 79, 81
Sections 7.1–7.6	Atomic Structure, Periodic Properties	Chapter 7: 13, 17, 21, 23, 25, 29, 31a, 34, 37, 39, 45, 59
Chapter 8	Ionic and Covalent Bonding, Polarity	Chapter 8: 9, 13, 15, 19, 22, 24, 26, 1, 33, 35, 37, 40 41, 47, 48a,b, 51, 53, 54,55, 56, 63, 64, 69, 92
Sections 9.1–9.3	Molecular Shape, Dipoles	Chapter 9: 17, 22, 23, 25a,b,c, 26, 27, 29, 37, 41, 44, 94
Sections 11.1-11.5	Intermolecular Forces, Phase Changes	Chapter 11: 9, 10, 15, 17, 18, 21, 23, 25, 49, 51, 53, 55, 59, 61, 62
Sections 13.1–13.5	Concentration, Solubility, Colligative Properties	Chapter 13: 15, 16, 25, 33,34, 37, 39,41, 43, 45, 48, 49, 51, 65, 71, 72, 74, 79, 80
Sections 11.6, 12.1-12.2	Phase Diagrams, Solids	Chapter 11, Problems 59, 61, 62 Chapter 12, Problems 9, 11, 13, 21, 27

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. You must 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. You will be provided goggles in your 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** in your lab book immediately after a measurement is taken; partners cannot copy each other's 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. You **MUST** get your instructor's initials on your data sheet before you leave the lab.

Lab reports are due one week after you finished the experiment. All lab reports not handed in will receive a grade of zero. 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.

From meeting three (Expt. 2) on, you are **required** to hand in an outline described on the next page.

Students who miss a laboratory:

Multiple sections of Chemistry 1100 run, and students who miss a section of their assigned laboratory should 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. (You can also make up a Chem 1100 lab in a Chem 2050 section, since they do the same experiments as Chem 1100.)

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.

PREPARATION FOR LABORATORY

To help prepare you for lab, you are required to hand in before each lab (except the experiment 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 an experiment where there are no measurements, just state briefly what you are to do and what you are to observe. What you hand in 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.

Meeting	Laboratory Assignment
1	Introduction to Laboratory *Check in, Screening quiz, Lab safety..*
2	Experiment 1: Density and Measurement ***Return safety quiz and the signed safety sheet.***
3	Experiment 2: Introduction to Gravimetric Analysis *Gravimetric determination of water of crystallization.*
4	Experiment 3: Synthesis of Zinc Iodide
5	Experiment 4: Basics of Chemical Reactions
6	Experiment 5: Volumetric Analysis: Acid-Base Titration
7	Experiment 6: Introduction to Calorimetry.
8	Experiment 7: Evaluation of the Gas Law Constant
9	Experiment 8: Determining Atomic Emission by Spectroscopy
10	Experiment 9: Synthesis of Aspirin
11	Experiment 10: Spectrophotometric Analysis of Aspirin
12	Experiment 11: Intermolecular Forces and Physical Properties
13	Experiment 12: Determination of Molecular Weights by the Method of Freezing-Point Depression
14	Check out and Review *No experiments are permitted.*

Chemistry Careers In and Out of the Laboratory

A degree in chemistry opens doors to dozens of exciting and rewarding careers. Here are just a few possibilities.

- Get involved in product development, manufacturing, or quality control for companies producing anything from chemicals to pharmaceuticals to textiles.
- Go on to obtain a MS or PhD in chemistry, biochemistry, biotechnology, bioinformatics, pharmacology, or any other biomedical field, and take a leading role in medical research. Design and test new drugs and medical devices.
- Get involved in sales and marketing for chemical and pharmaceutical firms. Companies are always looking for people with a strong technical background to market their products, and will pay top dollar for them.
- Go into the field as an environmental chemist to study and protect the natural world.
- Use your skills in interesting and challenging ways, from evaluating risk for insurance firms to restoring artwork for museums.
- Work in law enforcement, in anything from forensic investigation to health and safety regulation. Or work inside the political process at a government agency to help formulate policy on scientific, medical and environmental issues.
- Pursue a career in patent law and help bring the next great scientific breakthrough to the market. Or work in the U.S. Patent and Trademark Office to insure that inventors' rights are protected.

Salary Information

Chemistry Degree	Median Starting Salary*	Median Base Salary (all chemists)**
BA or BS	$39,600	$72,000
MS	$55,000	$85,000
PhD	$75,700	$102,000

*From *Chemical and Engineering News*, June 2, 2014, p.28.

**From *Chemical and Engineering News,* September 1, 2014, p. 68.

Chemists do sometimes have to change jobs or make career choices, but their skills are always in demand. In 2009, the U.S. unemployment rate peaked at 10.1%; the rate for chemists and chemical engineers that year was 3.9%. (see S. L. Rovner, *Chemical and Engineering News*, Nov. 7, p. 34, 2011). A skilled chemist is a valuable commodity.

Salaries for chemists are high, but do not do justice to the excitement of the field. Science as it is practiced today is collaborative, and chemists have abundant opportunities to travel, to work with interesting people, and to present the results of their work in ways that have a profound influence on the world. Science will shape the world of the 21st century, and you have the chance to be part of that process.

Medical School, the Chemistry Major, and You

Fiction #1: Being a chemistry major will hurt my chances for medical school, because the hard courses may lead to a lower GPA.

Fact: Students majoring in mathematics and the physical sciences (this includes Chemistry) have the highest medical school acceptance rate of any major:

Primary Undergraduate Major	Acceptance Rate
Mathematics and Physical Sciences (including Chemistry)	47%
Biology and Health Sciences	41%
Humanities and Social Sciences	44%
Other	42%

Based on data for the entering class of 2013, reported by the American Association of Medical Colleges
Table compiled from data available at https://www.aamc.org/

Fiction #2: Chemists have to take a lot of hard courses so they don't have time to do volunteer work, research, and other activities that help with medical school applications.

Fact: A student who has completed his or her requirements for medical school can obtain a chemistry degree with as few as five additional courses. This leaves plenty of time for other activities.

Fiction #3: If I don't get into medical school, I may be stuck working in a lab all day.

Fact: Chemists have enormous opportunities outside the lab. Chemical and pharmaceutical companies desperately need managers and salespeople with chemical knowledge, and will pay top dollar for them. Chemists also find work in finance, insurance, law, government and manufacturing. Go to the American Chemical Society website on Careers (https://www.acs.org/content/acs/en/careers.html) and use the "College to Career" link.

Some other advantages of being a chemistry major:

- Chemistry majors can receive credit for performing research work with a faculty mentor. This means the time you spend on research gets you closer to graduating and your research experience appears on your transcript.
- Chemistry majors get the skills they need to perform advanced laboratory work, so they can get better research positions, accomplish more and get stronger letters of recommendation from their mentors.
- Thanks to generous donations by alumni, the Department of Chemistry is able to give out more than $10,000 every year in fellowships, scholarships and awards. These are an aid to both the pocketbook and the resumé.
- Brooklyn College's first Rhodes Scholar of the 21st Century is a Chemistry major.

For more information, contact the departmental advisor: Prof. Emilio Gallicchio
egallicchio@brooklyn.cuny.edu