GENERAL CHEMISTRY I, CHEM 1100 –FALL 2020

Required Texts:

- *Chemistry 2e*, P. Flowers, OpenStax, 2019
  This text is available as a free PDF at https://openstax.org/details/books/chemistry
  It is also available free for Kindle at http://www.amazon.com
  You can order a hard copy through https://brooklyn.textbookx.com/adm/ or from http://www.amazon.com – but you can always print chapters from the PDF.
- *Experiments in General Chemistry*, M. N. Kobrak, Ed., **Third or Fourth** edition. Kendall/Hunt, Dubuque, IA, 2012 (2017). *Link to buy the manual posted on blackboard.*

- Scientific calculator required
- Recommended: Texas Instruments TI-30X

Learning Objectives for Chemistry 1100

Upon completion of this course, students should:

- Understand the basic physical principles underlying chemistry and be able to apply them both to qualitatively explaining phenomena and quantitatively predicting or interpreting outcomes.
- Be able to perform simple chemical techniques and apply chemical theory in the laboratory setting.
- Understand and be able to explain fundamental ideas in the practice of science, including the nature of scientific evidence, the scientific method, and appropriate practices with respect to record-keeping, safety, and treatment of data.
- Students should be able to apply principles of chemistry to understanding its role in other fields (e.g. biology), while understanding its underpinnings in physics and mathematics.

Online Supplements and Information:

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/171219_Pre-health_Professions_Handbook.pdf (Pre-Health Professions handbook)

http://www.brooklyn.cuny.edu/web/academics/centers/learning.php Brooklyn College Learning Center (free tutoring available)

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

Counseling

Coordinator for General Chemistry	Prof. Joann Mathias jmathias@brooklyn.cuny.edu
Undergraduate Chemistry Advisor:	Prof. Aneta Mieszawska Aneta.Mieszawska@brooklyn.cuny.edu
Health Profession Counseling:	Prof. Silbering silbering@brooklyn.cuny.edu

LECTURE EXAMS: (ALL EXAMS ARE HELD ON BLACKBOARD COLLABORATE)

FIRST EXAM: **Monday, October 19, 11:00 AM-12:30 PM**

SECOND EXAM:**Monday, November 16, 11:00 AM-12:30 PM**

FINAL EXAM: **Monday, December 14, 10:30 AM-12:30 PM**

NO MAKEUP EXAMS ARE GIVEN FOR MISSED LECTURE TESTS

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.

Student Bereavement Policy

Students who experience the death of a loved one during the semester should consult the student bereavement policy here: http://www.brooklyn.cuny.edu/web/about/initiatives/policies/bereavement.php

Non-Attendance Due to Religious Beliefs

Students who are unable to attend class due to religious observations should consult the Brooklyn College Undergraduate Bulletin for the college's policy, and contact the lecturer to discuss the issue. Students must come forward with the issue in a timely manner.

Lab Exemptions: If you are repeating the course you may be able to obtain a lab exemption by filing a lab exemption request form on the Chemistry Department website. Students who receive lab exemptions **MUST attend recitation and take the recitation quizzes**. Lab exempt students may choose to retake the lab quizzes for a higher grade. Speak to your assigned lab instructor to arrange this.

Important Dates:

Wednesday, September 16	Course withdrawal period begins. A grade of "W" is assigned to students who officially withdraw from a course
Friday, November 6	Last Day to withdraw from a course with a grade of "W"
Monday, September 7	College closed (we have no class)
Monday, September 28	No classes
Tuesday, September 29	Conversion day: Classes follow a Monday schedule (**we have class**).
Monday, October 12	College closed (we have no class)
Wednesday, October 14	Conversion day: Classes follow a Monday schedule (**we have class**)

To withdraw, you must withdraw using CUNYFirst (see below)

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

Lecturer's contact information

Professor Joann Mathias

e-mail: jmathias@brooklyn.cuny.edu

Office Hours (Blackboard Collaborate): T/Th 10-11 AM

Final grades are set according to the following scale:

95 or higher: A+	68-70: C+
87-95: A	62-68: C
85-87: A-	58-62: C-
82-85: B+	58-50: D*
82-72: B	Less than 50: F
72-70: B-	

*__Note:__ If you earn a grade of D, that is the grade you will receive. Requests to change it to an F will not be honored.

Grading:

Your final grade will be determined as follows:

30% (2) lecture exams THERE ARE NO MAKEUPS!!!

20% Minimum of (6) recitation quizzes; lowest quiz will be dropped.

18% Laboratory reports

7% Two laboratory quizzes

25% Final Exam:
THE FINAL EXAM IS **CUMULATIVE**

Chem 1100 Assigned Reading

Below is the assigned reading and a corresponding set of homework problems. 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 odd-numbered problems are at the end of the text. If you are instructed to memorize something, the test will be written assuming you have done so.

Homework is assigned but not graded.

Topics	Assigned Reading and Problems
Math Review, Dimensional Analysis Basic concepts	**Chapter 1**: Problems 17, 18, 23, 25, 27, 29, 30, 32, 37, 38(a,d,e,f), 40, 45, 47, 49, 51, 53, 71, 77(e), 85, 87, 89, 97 + Supplementary Problems (Factor Label Method & Unit Conversion) **Memorize:** You must know the name and symbols of the first 36 elements of the periodic table, plus the following elements: Ag, Au, Pt, Hg, Sn, and I. You do <u>not</u> have to know their atomic numbers from memory (you will always have a periodic table), but you need to be able to write the symbol if given the name, and vice versa. **Memorize:** You must know the metric prefixes from femto- to Giga-, as given in Table 1.3. You need to know the prefix (nano-), the 1-letter abbreviation ("n"), and the power of 10 (10^{-9}). **Memorize:** You need to know the relationships between metric units, and be able to convert between them (e.g. kg to g, or ^{o}C to K). You do not need to know English units or their conversions to metric, with the sole exception of temperature. You must be able to convert from ^{o}F to ^{o}C, and vice versa.
Elements, Compounds, Ions Periodic Table	**Chapter 2**, sections 2.1-2.6: Problems 1, 4, 8(a,b), 9(a,b), 10, 11, 17, 19, 23, 25, 27, 29, 31, 40, 41, 49. **Chapter 2**, section 2.7: 51, 53, 55, 57, 58, 59, 60 **Memorize***: **You will be given a table of ions. You should know the name, formula, and charge of each.***
Moles Empirical Formulas, Molarity	**Chapter 3,** sections 3.1-3.2: 3, 5, 13, 16, 17, 20, 21, 25, 27, 29, 30, 33, 35, 37, 39 **Chapter 3**, section 3.3: 47, 49, 51, 53, 57, 59, 63, 65 **Chapter 3,** section 3.4: 71, 73, 76
Chemical Equations, Stoichiometry, Limiting Reagents, Analytical Methods	**Chapter 4,** sections 4.1 & 4.3-4.4: 3, 5, 42, 43, 44, 45, 47, 52, 55, 57, 61, 63, 65 **Chapter 4**, sections 4.2 & 4.5: 9, 11, 13, 14, 17, 19, 21,23, 25, 28, 29, 30, 33, 78, 79, 81, 83, 87, 89,91, 95 ***A table of the Activity Series of Metals in Aqueous Solution will be given to you. This will be covered in lecture and you will be tested on this material.***
Thermochemistry	**Chapter 5**: Problems 3, 4(a), 5, 7, 8, 9, 11, 13, 14, 19, 21, 23, 25, 28, 29, 31, 33, 35, 45, 47, 49, 50, 55, 58, 59, 63, 69, 71, 73, 79, 83, 84, 85
Gases	**Chapter 9**, sections 9.1-9.5: Problems 5, 6, 7, 9, 13, 17, 27, 28, 29, 31, 33, 35, 37, 43, 45, 47, 49, 53, 55, 57, 59, 63, 65, 67, 71, 75, 78, 81, 85, 95
Quantum Mechanics, Atomic Structure, Periodic Properties	**Chapter 6**: Problems 3, 5(a), 7, 9, 10, 11, 18, 21(repeat for H), 22, 23, 27, 30, 35, 36, 37, 45, 49, 54, 55, 57, 58, 59, 61, 63, 64, 66, 67, 68, 69, 71, 76, 77, 79, 81, 83, 84

Chemical Bonding, Molecular Structure, Polarity	**Chapter 7**, sections 7.1-7.4: Problems 3, 5, 7, 11, 13, 14, 15, 17, 20, 21, 23, 29, 31, 32, 35, 37, 39, 45, 47, 51, 55, 59, 63, 64, 65, 67, 77, 80, 81, 83 **Chapter 7**, sections 7.5-7.6: Problems 91, 93, 97, 99, 105, 106
Intermolecular Forces, Phase Transitions, Phase Diagrams	**Chapter 10**, sections 10.1 & 10.3-10.4: Problems 1, 3, 4, 5, 9, 10, 11, 12, 13, 18, 21, 31, 35, 37, 41, 43, 51, 53, 55, 57, 59, 61, 62, 63, 65, 69
Solutions Colligative Properties	***Chapter 11**, sections 11.1-11.4: 5, 6, 9, 10, 11, 18, 20, 21, 23, 28, 31, 33, 35, 37, 38, 45, 46, 47, 48, 49, 50, 54, 55, 59, 61*

Chemistry 1100 Laboratory

Schedule of Lab Experiments in Chemistry 1100

Laboratory Assignment

Experiment 1: Density and Measurement
Experiment 2: Gravimetric Analysis
Experiment 3: Limiting Reactants
Experiment 4: Basics of Chemical Reactions
Experiment 5: Volumetric Analysis: Acid-Base Titration
Experiment 6: Introduction to Calorimetry
Experiment 7: Evaluation of the Gas Law Constant
Experiment 8: Determining Atomic Emission by Spectroscopy
Experiment 9: Synthesis of Aspirin
Experiment 10: Spectrophotometric Analysis of Aspirin
Experiment 11: Intermolecular Forces and Physical Properties
Experiment 12: Determination of Molecular Weights by Freezing Point Depression

Lab Report Submission:

Reports must be submitted as "assignments" through Blackboard. You will find a link for each assignment; each assignment has a due date.

You will be given a link to videos and/or data sheets for each experiment.

Lab reports will receive a penalty of 10% if up to one week late. 20% penalty for 2 weeks late. 30% penalty for 3 weeks late. No reports will be accepted more than 3 weeks after the deadline.

Reports not submitted, or more than 3 weeks late, receive a grade of zero.