

LAGUARDIA COMMUNITY COLLEGE
CITY UNIVERSITY OF NEW YORK
NATURAL SCIENCES DEPARTMENT

SCC202: General Chemistry 2

Spring 1 2016

Your Instructor's Name: _____

Your Instructor's Contact Information: _____

SCC202 Course Coordinator: Dr Philippe Mercier
Email: pmercier@lagcc.cuny.edu

Office: M-221B

Chemistry Program Coordinator: Dr Dionne Miller
Email: dmiller@lagcc.cuny.edu

Office: M-214

Course Description:

This course is part II of two-semester sequence covering the basic concepts of chemistry and their historical development. The experimental nature of chemistry as well as the role of chemistry in many aspects of life is stressed. Among the topics studied are liquids, solids, solutions, acid-base theory, chemical kinetics, chemical equilibrium, chemical thermodynamics, electrochemistry, and nuclear chemistry.

Pre-requisites: SCC201 or General Chemistry 1.

Course Materials:

- 1. Textbook:** CHEMISTRY: THE CENTRAL SCIENCE, 13th Edition, by Theodore L. Brown, H. Eugene LeMay, Jr., Bruce E. Bursten, Catherine J. Murphy, Patrick M. Woodward, Matthew W. Stoltzfus (Pearson, 2014)
Several formats are available: go to www.mypearsonstore.com for more information
- 2. Laboratory Manual:** SCC202 Fundamentals of Chemistry II Laboratory Manual, Cengage Publishing, 2009
- 3. Optional:** STUDENT'S GUIDE for Chemistry the Central Science 13th Edition, by Theodore L. Brown and James C. Hill (Pearson, 2014)
- 4. Safety Goggles:** All students are required to bring safety glasses (available in the Bookstore) to **every** laboratory session. *You will not be permitted to remain in the lab and perform experiments without them.*
- 5. Scientific Calculator:** All students are required to have their own scientific calculator. *Borrowing calculators or using cellphones/IPODs will NOT be allowed during quizzes and exams.*

Attendance Policy: Attendance at all class sessions, lecture and laboratory, is essential for proper understanding and mastery of the course material. A student who is absent from more than one laboratory session seriously jeopardizes his/her grade for the course.

Instructional Objectives:

To introduce the student to the fundamental concepts of:

- Behavior of solids, liquids, and solutions
- Descriptive chemistry of oxygen, hydrogen, and selected other elements
- Chemical kinetics; equilibrium; thermodynamics; acids and bases; electrochemistry;
- Nuclear chemistry

To foster an awareness of the historical development of the major laws and concepts encountered in introductory chemistry

To continue the development of basic laboratory skills introduced in SCC201. New laboratory skills will be learned including chromatography techniques; spectroscopy, computer titrations, kinetics; oxidation reduction reactions; electrochemistry; qualitative and quantitative analysis.

To familiarize the student with the mathematical methods involved in solution chemistry; kinetics; equilibrium; thermodynamics; pH calculations; electrochemistry; environmental chemistry; and nuclear chemistry.

To cultivate an appreciation of the role of chemistry in various aspects of life.

To introduce the student to the use of computer applications in the study of chemistry including Internet based chemistry research, data analysis and graphing using Microsoft Excel, and computer based self-study using the publisher's CD-ROM

Academic Integrity Policy: Instructors of this course are required to implement the College Policy regarding cheating on examinations and quizzes. A complete statement of the policy is available at the student counseling services.

SCC 202 Class Schedule and Instructors for Spring 1 2016

Section	Days	Time	Room	Comments	Instructor	
230A (Lec)	W	9:15 AM	10:15 AM	M-M-312	Nanoscience Section	A. Aggarwal
	F	9:15 AM	11:30 AM	M-M-312		
230B (Lab)	M	8:00 AM	11:30 AM	E-E-346		A. Aggarwal
239A (Lec)	Tu	11:45 AM	12:45 PM	M-M-312		J. Vance
	Th	1:00 PM	3:15 PM	E-E-216		
239B (Lab)	Tu	8:00 AM	11:30 AM	E-E-346		J. Vance
240A (Lec)	M	9:15 AM	11:30 AM	B-B-A11	Combined with SCC202. 241A	M. Kowalczk
	W	10:30 AM	11:30 AM	B-B-A17		
240B (Lab)	M	11:45 AM	3:15 PM	E-E-346		P. Mercier
241A (Lec)	M	9:15 AM	11:30 AM	B-B-A11	Combined with SCC202. 240A	M. Kowalczk
	W	10:30 AM	11:30 AM	B-B-A17		
241B (Lab)	W	11:45 AM	3:15 PM	E-E-346		P. Mercier
671A (Lec)	Tu	5:45 PM	7:55 PM	E-E-145	Evening	S. Dutta
	Th	5:45 PM	6:45 PM	E-E-145		
671B (Lab)	Th	6:55 PM	10:15 PM	E-E-346		S. Dutta
675A (Lec)	M	5:45 PM	7:55 PM	C-C-725	Evening	I. Tsai
	W	5:45 PM	6:45 PM	C-C-725		
675B (Lab)	W	6:55 PM	10:15 PM	E-E-346		I. Tsai

GRADING SCHEME - Student performance will be evaluated in the following ways:

Exams (3) @ 100 points each	300 points
Homework Assignments (10) @ 10 pts each	100 points
Laboratory Reports (10) @ 30 pts each	300 points
Pre-lab Quizzes (10) @ 5pts each	50 points
Research Paper/Presentation	50 points
Departmental Final Exam (cumulative)	200 points

Total: 1000 points

A minimum of 600 points (60% of 1000) is required in order to receive a passing grade for the course.

Student performance will be evaluated in the following way:

A = 93-100 %	C+ = 77-79.9 %	
A- = 90-92.9 %	C = 73-76.9 %	
	C- = 70-72.9 %	F = less than 60%
B+ = 87-89.9 %	D+ = 67-69.9 %	
B = 84-86.9 %	D = 63-66.9 %	
B- = 80-83.9 %	D- = 60-62.9 %	

Grading and Standards: A minimum of 60% of the possible points (that is, at least 600 points) must be earned in order to receive a passing grade for the course. **We will adhere exclusively to the grading distribution shown above. There will be no extra homework, special bonuses nor “bail outs”.**

Exams: Three (3) hour-long in-class exams will be administered during the semester.

Make-up Policy: There will be **no scheduled make-up exams**. A student who has missed an exam should consult the instructor on the matter. Arrangements to take a missed exam must be made **before** the exam papers have been returned to the class. **Note: makeup exams will generally be harder given the additional time available to prepare.**

Research Paper/Presentation: A research paper or presentation will be assigned by the laboratory instructor who will also provide the details and deadline(s).

Final: There will be a comprehensive departmental final that will cover the material from all the assigned chapters

Homework Assignments

ALL homework assignments will be done online through saplinglearning.com. ***NO WRITTEN HOMEWORK ASSIGNMENTS WILL BE ACCEPTED.***

Each student is therefore required to purchase a subscription at a cost of \$38.

To register for the site follow the instructions below:

1. Go to <http://saplinglearning.com>
- 2a. If you already have a Sapling Learning account, log in then skip to step 3.
- 2b. If you have Facebook account, you can use it to quickly create a Sapling Learning account. Click the blue button with the Facebook symbol on it (just to the left of the username field). The form will auto-fill with information from your Facebook account (you may need to log into Facebook in the popup window first). Choose a password and time zone, accept the site policy agreement, and click "Create my new account". You can then skip to step 3.
- 2c. Otherwise, click "create account". Supply the requested information and click "Create my new account". Check your email (and spam filter) for a message from Sapling Learning and click on the link provided in that email.
3. Find your course in the list (you may need to expand the subject and term categories) and click the link.
4. Select a payment option and follow the remaining instructions.

Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments. During sign up – and throughout the term - **if you have any technical problems or grading issues, send an email to support@saplinglearning.com explaining the issue.** The Sapling support team is almost always more able (and faster) to resolve issues than your instructor.

NOTES:**2016 Spring Semester - Session I**

Day	Month	Information
Monday	February 29	Last Day to Apply for Readmission or Reinstatement from Suspension for Spring 2016 Session I
Tuesday	March 1	New Student Orientation (By Invitation A-L)
Wednesday	March 2	New Student Orientation (By Invitation M-Z)
Thursday	March 3	Opening Session for Faculty & Staff
Friday	March 4	Last Day to Drop for 100% Tuition Refund
Saturday	March 5	First Day of Saturday Classes - Spring Session I
Sunday	March 6	First Day of Sunday Classes - Spring Session I
Monday	March 7	First Day of Weekday Classes - Spring Session I
Thursday	March 10	Last Day to Add a Course or Change Course Sections / Last Day to Drop for 75% Tuition Refund
Friday	March 11	Financial Aid Certification Day / Last Day to Drop a Course without a "WD" Grade
Saturday	March 12	Course Withdrawal Drop "WD" Period Begins. A Grade of "WD" will be assigned to students who Drop a Course
Wednesday	March 16	Last Day to Drop for 50% Tuition Refund
Monday	March 21	Last Day to Drop for 25% Tuition Refund / Course Withdrawal Drop "WD" Period ends / Verification of Attendance due to the Registrar to assign WN Grades / Last Day to Change Major for Spring semester / Last Day to Submit Independence Study Contract
Tuesday	March 22	Withdrawal Period Begins – A Grade of "W" will be Assigned to students who Officially Drop a Course / Irregular Day – Classes Follow Friday Schedule
Friday - Sunday	March 25 - 27	<i>No Classes Scheduled</i>
Wednesday - Saturday	April 20 - 30	<i>Spring Recess – No Classes Scheduled</i>
Thursday	May 5	Last Day to Apply for the following Candidacies: Dietetic Tech., LPN, Nursing, Occupational Therapist Asst., Physical Therapist Asst., and Radiological Technology / Last Day to Apply for Spring 2016 Graduation
Monday	May 16	Last Day to Officially Withdraw from a Course
Sunday - Monday	May 29 - 30	<i>College Closed</i>
Friday	June 10	Last Day of Weekday Classes – Spring Session I
Saturday	June 11	Last Day of Saturday Classes – Spring Session I
Sunday	June 12	Last Day of Sunday Classes – Spring Session I
Monday	June 13	Commencement - No Classes Scheduled
Tuesday - Monday	June 14 - 20	Final Examinations
Wednesday	June 22	Grades and Attendance Due by 4 PM

Class Dates (M-F)	Lecture Chapters	Homework Sets Due and Exams Dates
Week 1 Mar 7 – 11	<i>Chapter 11 (Intermolecular Forces, Liquids and Solids)</i>	Sapling Math Set
Week 2 Mar 14 – 18	<i>Chapter 13 (Properties of Solutions)</i>	Homework 1 (Chapter 11)
Week 3 Mar 21 – 24 <i>Tue Mar 22 is Fri Schedule</i> and Week 4 Mar 28 – Apr 1	<i>Chapter 14 (Chemical Kinetics)</i>	Homework 2 (Chapter 13) and Homework 3 (Chapter 14)
Week 5 Apr 4 – Apr 8	<i>Chapter 15 (Chemical Equilibrium)</i>	EXAM #1 (Chapters 11, 13, 14)
Week 6 Apr 11 – 15	<i>Chapter 16 (Acid-Base Equilibria),</i>	Homework 4 (Chapter 15)
Week 7 Apr 18 – 19	<i>Chapter 17 (Additional Aspects of Aqueous Equilibria)</i>	Homework 5 (Chapter 16)
Apr 20 – 30	Spring Break	
Week 8 May 2 – 6	<i>Chapter 17 (Additional Aspects of Aqueous Equilibria) (cont)</i>	
Week 9 May 9 – 13 and Week 10 May 16 – 20*	<i>Chapter 19 (Chemical Thermodynamics)</i>	Homework 6 (Chapter 17) and EXAM #2 (Chapters 15, 16, 17)
	*Mon May 16 Drop Deadline	
Week 11 May 23 – 27	<i>Chapter 20 (Electrochemistry)</i>	Homework 7 (Chapter 19)
Week 12 May 31 – 3	<i>Chapter 21 (Nuclear Chemistry)</i>	Homework 8 (Chapter 20)
Week 12 (cont) Jun 6 – 10	<i>Complete material and Review</i>	Homework 9 (Chapter 21) and EXAM #3 (Chapters 19, 20, 21)
Mon Jun 13	<i>Commencement</i>	
Jun 14 - 20	<i>Finals Week</i>	Final (Departmental)

1. Please be aware where safety equipment is located (Safety Shower, Eye Wash Station, Fire Extinguishers, Fire Blankets, First Aid Kits and Emergency Exits). In case of emergency, instructors should direct students to the proper safety equipment and then call the laboratory technician.
2. **Students are required to wear safety glasses at all times for laboratory work and to observe all safety rules.**
3. **NO FOOD OR DRINK (including bottled water) is allowed in the lab at any time.**
4. **Students are required to wear closed, non-fabric shoes to adequately protect their feet – NO SANDALS, SLIPPERS, OPEN-TOED OR OPEN-HEELED SHOES ARE ALLOWED.**
5. **The student's data sheet should be signed by the instructor before leaving the lab. All entries into data sheets must be in INK with NO WHITE-OUTS (liquid paper). The original signed data sheet must be submitted with the lab report.**
6. Formal, written lab reports are required for each lab and are worth 30 points each.
7. Students are permitted to make up missed labs with another class at the instructor's discretion. A student wishing to make up a missed lab must obtain a signed permission form from his or her original instructor to take to the class where the lab will be made up. The form is available from the lab technician. At the end of the makeup lab, this form must be signed by the instructor and returned by the student to the original instructor as proof that the lab was completed. *Please note that the lab can only be made up if there is another class doing the same lab and there is space available for the student in that class.*
8. A pre-lab quiz will be given *at the beginning* of each lab session – you should read through the experiment and do the pre-lab exercises in preparation for the quiz. Please see the next page for the schedule of laboratory experiments.

Lab reports must follow the following format:

1. Cover page
 - a. Title of lab experiment
 - b. Your name
 - c. Instructor name
 - d. Date
2. Objective
 - a. A sentence or two that identifies the purpose of the experiment and what data you will try to collect
 - b. Should be written in the past tense
3. Experimental materials and methods
 - a. List the materials you used (bullet tabs are fine)
 - b. Itemize the steps
 - c. Should be written in the past tense
4. Results
 - a. Collect your data in tables and or graphs when appropriate
 - b. Tables and graphs should be appropriately numbered, titled, labeled, and captioned
 - c. Calculations should be shown when appropriate.
5. Discussion
 - a. Refer to your results and analyze your data
 - i. Say what your results were and what you expected them to be
 - ii. If results do not match your expectations because of errors explain what errors may have occurred
 - iii. If results do not meet expectations but there were no discernible errors explain what may have led to the results obtained.
 - b. Percentage error calculations should be performed when errors that are verifiable occur (erroneous results that can be compared to accepted values that are easily available)
 - c. Offer any additional relevant insights gathered during the experiment
 - d. Should be written in the past tense
6. Conclusion
 - a. A recap in a few sentences about the experiment
 - b. Should not include additional information not found elsewhere in the lab report
 - c. Should be written in the past tense
7. References
 - a. Include all sources used to conduct the experiment and analyze the results.

Lab reports should be typed, proofread, follow the guidelines provided above. Not following the guidelines will result in loss of points on the lab grade.

Week #	Exp #	LABORATORY EXPERIMENTS	Page
Week 1	0	Orientation: Lab Check-in, Safety Procedures, Guidelines for Laboratory Reports	p 1 - 8
Week 2	1	The Structure of Crystals – An Experiment Using Models	p 9
Week 3	2	Colligative Properties of Solutions	p 21
Week 4	3	Studying the Kinetics of a Chemical Reaction	p 33
Week 5	4	Introducing Chemical Equilibrium	p 57
Week 6	5	Studying the pH of Strong Acid, Weak Acid, Salt, and Buffer Solutions	p 71
Week 7	6	Determination of k_a for Weak Acids	p 91
Week 8	7	Preparation and Properties of Buffers	p 103
Week 9	8	Monitoring Acid-Base Titrations with pH meter	p 117
Week 10	9	Energy Changes in Chemical Reactions	p 137
Week 11	10	Studying Electrochemical Half-Cells and Half-Reactions	p 147
Week 12		Research Paper Presentations	

Course Coordinator: Dr. Philippe Mercier
 Email: pmercier@lagcc.cuny.edu

Office: M 221B
 Phone: (718) 482-6182