

Sussex County Community College  
Newton, NJ 07860

**Instructor: Professor Michael Love**

**COURSE SYLLABUS**

Course: **College Chemistry I – Lecture**

Cat. No. **CHEM 110**

Class Hours:   3  

Lab Hours:   3  

Credit Hours:   4  

**1. Prerequisite:** None

**2. Co-requisite:** CHEM 110L (College Chemistry I Lab), MATH110

**3. Textbook:** Chemistry, 5<sup>th</sup> Edition; Gilbert; ISBN 9780393628166.

**4. Supplementary Books:** None

**5. Supplementary Materials**

Scientific calculator is required (graphing calculators are not allowed to be used for exams).

Online supplement is <http://www.drlchem.com/chem110.html>.

**6. Specialized equipment, supplies, facilities for classes limited by enrollment or restricted by accreditation and/or equipment limitations**

None

**7. Statement of Course Objectives**

Provide a foundation of chemical principles and applications.

**8. Statement of Relation to Curriculum(s)**

Required for Science/Math – AS – Biology, Chemistry, Engineering, Pre-medical/Dental, and Pre-nutrition/dietetic Options; and Environmental Studies – AS.

**9. Catalog Course Description**

This course covers general chemical principles and applications in research and industry. Topics include matter and measurement; math in chemistry; atoms; molecules, and ions; elemental periodicity; stoichiometry; formulas, equations; the mole; intramolecular and intermolecular bonds; reaction types including redox and acid/base; properties and reactions of solutions, gases, and the solid state; nuclear reactions, industrial processes. The lab component covers materials separation, analytical methods and instruments, qualitative and quantitative analysis; and lab report writing skills.

## 10. Course Outline

**College Chemistry I Lecture - CHEM 110**  
**Instructor: Professor Michael Love**  
**Email: [mlove@sussex.edu](mailto:mlove@sussex.edu)**  
**Office Hours – Tuesday 9-4, Thursday 9-4**  
**Class Meets: W9:25am-12:05pm (Section 01)**  
**Fall 2019**

Date*	Lecture	Topics	Chapter	End of Chapter Homework**
4-Sep	1	<a href="#">Matter, Measurement, Mathematics</a>	1	21, 43, 57, 63, 65, 90, <a href="#">SmartWork</a>
11-Sep	2	<a href="#">Periodic Table, Atoms, Elements, Isotopes,</a> <a href="#">Chemical/Physical Properties. Quiz 1 due</a>	2.1-2.5	19, 31, 45, <a href="#">SmartWork</a>
18-Sep	3	<a href="#">Molecules, Ions and Compounds</a> , Atomic <a href="#">Mass, Mole, Molar Mass. Quiz 2 due</a>	2.5-2.6, 3.1-3.2	2(35,39,63, 67,75,81,83,87) 3(17,19,23,31,39) <a href="#">SmartWork</a>
25-Sep	4	<a href="#">Quiz 3 due. Exam I (Lectures 1-3)</a> <a href="#">Chemical Formulas: Mass/Mole Relationships</a>	3.6-3.8	75, 77, 85a, 97, <a href="#">SmartWork</a>
2-Oct	5	<a href="#">Chemical Reactions: Mass/Mole Relationships</a> <a href="#">Quiz 4 due.</a>	3	51, 53, 59, 109, 115, <a href="#">SmartWork</a>
9-Oct	6	<a href="#">Aqueous Solutions</a> : Concentration, Molarity, Dilution, Reaction Types, Net Ionic. <a href="#">Quiz 5 due</a>	4.1-4.5, 4.7	13a,17a,29a,43,45,47,57a,59a 75,77,79,85,129a, <a href="#">SmartWork</a>
16-Oct	7	<a href="#">Reactions in Solution</a> : Titration, Activity Series, Oxidation-Reduction Reactions, <a href="#">Quiz 6 due</a>	4.6, 4.9	63, 67, 68, 101a, 103a, 115, <a href="#">SmartWork</a>
23-Oct	8	<a href="#">Quiz 7 due. Exam II (Lectures 4-7)</a> <a href="#">Nuclear Reactions</a>	19	21, 22, 26, 37, <a href="#">SmartWork</a>
30-Oct	9	<a href="#">Gas Laws, Kinetic Molecular Theory</a>	6	37, 47, 55, 57, 69, 73, 79, 85, 105a, 137, <a href="#">SmartWork</a>
6-Nov	10	<a href="#">Atomic Structure, Quantum Theory. Quiz 8 due</a>	7.1-7.7	27, 29, 55, 80, 85, 87, <a href="#">SmartWork</a>
13-Nov	11	<a href="#">Quantum Theory, Electron Configuration,</a> Trends in Atomic Properties. <a href="#">Quiz 9 due</a>	7.8-7.12	89, 97, 99, 101, 103, 105, 107,119,121,123, <a href="#">SmartWork</a>
20-Nov	12	<a href="#">Chemical Bonding, Lewis Structures,</a> Molecular Shape. <a href="#">Quiz 10 due</a>	8.1-8.3, 8.5-8.7 9.1-9.2	8(22, 37, 44, 47, 53, 55) 9(11, 25, 29), <a href="#">SmartWork</a>
27-Nov	13	<a href="#">Molecular Structure: Bond and Molecular</a> Polarity. <a href="#">Quiz 11 due</a>	8.8, 9.3-9.4, 9.7	8(115, 119) 9(41, 45), <a href="#">SmartWork</a>
4-Dec	14	Molecular Structure <a href="#">Exam III (Lectures 8-14)</a>		
11-Dec	15	Final Exam (comprehensive)		

\* Dates are subject to change at the discretion of the faculty. \*\* Checked the following week.

<b>11. Grading</b>	Hourly exams (3)	30%
	Quizzes, participation, and attendance	10%
	Lab	30%
	Final exam (comprehensive)	30%

Grades are based on the percentage of points earned: A( $\geq 90\%$ ), B+( $\geq 87\%$ ), B( $\geq 80\%$ ), C+ ( $\geq 77\%$ ), C( $\geq 70\%$ ), D( $\geq 60\%$ ), F( $< 60\%$ ). Makeup exams due to class absence are with the permission of the instructor only, and may be taken only on departmental makeup days. Makeup exams will be different from the one given on the class exam day. Quizzes cannot be made up, but the lowest quiz grade is dropped before averaging. Bring homework to class. Take home assignments are due at the start of class.

Valid photo ID will be checked at exams. Electronic devices are not permitted for use on exams or quizzes. Students will not be allowed to leave the room during an exam or quiz.

## **12. Attendance**

The policy of the college is that class attendance is required. If you are not able to routinely attend the lecture or laboratory sessions of your course then you should consider taking the course at another time when your schedule permits. An absence does not excuse you from any material or provide the right to a makeup exam. Achieving a high grade in chemistry correlates with good attendance and spending at least 9-12 hours (27-36 hours for summer session) each week working the chemistry problems.

## **13. Full-Time Faculty**

Dr. Michael Love, Office L103, 973-300-2264, [mlove@sussex.edu](mailto:mlove@sussex.edu) can help you with this course.

## **14. Supplemental Help**

Get help quickly when you need it. Full-time faculty office hours are posted on the office door. Tutors and tutor schedules are available at the Science Resource Center (B300). Tape recorders may be used in the classroom with the faculty member's permission.

## **15. Learning Activities / Methods Instruction**

Attend lecture; have group discussions; conduct problem working sessions; watch demonstrations and videos; review handouts and lecture notes; work and review the homework problems

## **16. Important Dates**

**December 2<sup>nd</sup>** is the last day to withdraw with a "W"

## **17. Course Competencies / Learning Objectives**

Lecture and lab together support NJCC college-wide general education learning goals 1-4, the general education learning objectives for goals 1-4, the two NJCCC integrated goals with college-wide learning objectives, and critical thinking. In chemistry, students must master the definitions and the applications of competencies. Mastering definitions means to know both the meanings of scientific words and the correct scientific words for given meanings. Mastering applications means problem solving, where problem solving is the ability to work from the question to the answer or from an answer back to the question. Competencies are usually cumulative, which means that missing one could impair the ability to achieve the next. The course learning objectives are:

- 1) Apply concepts of accuracy, precision, and unit analysis to calculations with measurements (such as density, molar mass, and molarity), and report answers to the correct number of significant digits and units.
- 2) Write, name, and classify chemicals, including identifying properties and changes as physical or chemical.
- 3) Count and account for the quantity and composition of chemicals using moles, masses, and percentages, which includes determining empirical and molecular formulas.
- 4) Use limiting reagent, percent yield, percent composition, and percent purity to calculate masses and moles of reactants needed, as well as products obtained.
- 5) Calculate molar concentrations before and after dilution and chemical reaction.
- 6) Classify, balance, and simplify acid/base, gas forming, redox, nuclear, and precipitation reactions.
- 7) Derive and apply relationships from the Ideal Gas Law and kinetic molecular theory.
- 8) Apply atomic orbital theory to determine and rank magnetic, size, metallic character, ionization energy, and electron affinity properties of atoms.
- 9) Predict molecular shape, polarity, bond length, and bond strength using VSEPR theory, trends from LO8, electronegativity, and Lewis structures including resonance.

### **18. Academic Conduct**

In order to maintain academic integrity at Sussex County Community College, the college community will not tolerate any form of academic dishonesty. Some examples of unacceptable forms of dishonesty include cheating, copying, fabrication, plagiarism, unauthorized collaboration, submitting someone else's work as one's own; dishonesty through the use of technology sharing disks, files, programs; access to, modification of, or transfer of electronic data, system software, or computing facilities. Anyone caught cheating will receive a failure and will be reported to the administration.

### **19. Student Conduct**

Cell phones, pagers, or any other devices which may disturb others must be turned off during class time. For the respect of your fellow classmates, you are expected to arrive on time for class and to not participate in any disruptive activity during the class session. Harassment of any kind is not permitted. Students may not make derogatory or disparaging comments based on age, sexual orientation, gender, physical limitation, mental defect, culture, race, or religious affiliation. Harassment includes but is not limited to comments, jokes, notes, online discussion, email postings, or drawings.

### **20. Students with Special Needs**

The college is in compliance with the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. Students who require accommodations in order to pursue their higher education goals need to make an appointment with the adviser to the Disabilities Assistance Program (DAP) 973-300-2153. The DAP office is located in the Learning Center (B300). Students must provide official documentation to the faculty member sufficiently in advance of a request for accommodations. Sufficient notice depends on the request and is up to the faculty member. For example, affording 5 to 10 extra minutes for an assignment may be possible with little advance notice. Preparing a new exam may require 2 weeks notice. Faculty cannot be responsible to fulfill accommodation requests if these are not provided in advance by the student.

### **21. Grade Requirements to Enroll in Sequence Courses**

CHEM112 requires CHEM110 with a grade of C or better. Also check your transfer institution.