

Lecture: CHEM 111.01
Recitation/Lab: CHEM 111.01A, CHEM 111.01B, CHEM 111.01C
Introductory Chemistry I
Fall 2023

Instructor: Dr. Maria V. Schiza, Ph.D.
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Office Phone #: 717-871-7437
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Meeting Times: **Lecture:** M W F 11:00-11:50 am – Roddy 149 – Dr. Schiza
Recitation/Lab:
Wednesday - Section A:
Recitation: 2:00-2:50 pm – Roddy 153 / **Lab:** 3:00-4:50 pm - Caputo 328
Thursday – Section B:
Recitation: 9:00-9:50 am – Roddy 153 / **Lab:** 10:00-11:50 am - Caputo 328
Thursday - Section C:
Recitation: 1:10-2:00 pm – Roddy 153 / **Lab:** 2:10-4:00 pm - Caputo 328

Office Hours: **Office Hours: in person-Caputo 219**
Mon, Wed: 9-10:30 am & Tue, Fri: 9-10 am
Alternative times can be scheduled by appointment or virtually through Zoom.

Welcome to CHEM 111:

I would like to welcome you all to CHEM 111 – Introductory Chemistry!! I am very excited to start this semester and meet you in-person.

Required Course Materials:

- **Textbook (free):** is available in web view (recommended) and PDF for **free** online at the following webpage: <https://openstax.org/details/books/chemistry-2e>
You can also choose to purchase it on iBooks or get a print version via the campus bookstore or from OpenStax on Amazon.com. You can use whichever formats you want. Chemistry, 2e from OpenStax, Print ISBN 194717262X, Digital ISBN 1947172611
- **Online Homework/Quiz Code (\$):** Aktiv Chemistry, Author & Publisher: Aktiv Learning, Inc. / The Activation of the Access Code would need to be purchased online - directly from the company. (Follow the directions given on the course D2L).
- **Calculator:** Scientific calculator capable of performing logarithmic (log, ln) and exponential (10^x , e^x , y^x) functions.
- **Regular access to Desire to Learn/Brightspace (D2L):** <https://millersville.desire2learn.com> and university email

Required Laboratory Materials:

- **Laboratory Manual (free):** is available in PDF for **free** online at the following webpage: <https://paadopt.org/wp-content/uploads/2023/06/Chemistry-Techniques-DALbert-20230616-1.pdf>
 - **Safety Glasses/Goggles for the laboratory:** can be purchased in the bookstore or online
 - **Laboratory Notebook:** can be purchased in the bookstore (bound/quadrille based) or online
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Course Description and Learning Objectives:

CHEM111 is the first semester course of General Chemistry (followed by CHEM112) for students majoring in chemistry as well as biology, earth sciences and physics. Learning the material covered in CHEM111 provides students with a foundational understanding of scientific principles needed in future studies in any field of science. Students who successfully complete CHEM111 should have a fundamental understanding of chemical stoichiometry, atomic structure, ideal gas behavior, chemical energy, intermolecular forces, covalent and ionic bonding, and properties of liquids, solutions, and solids.

Chapters 1 through 11 are covered in CHEM111.

Learning Outcomes: Upon the completion of CHEM 111 students should have an understanding of:

1. properties of atoms, molecules, and the various states of matter
2. the atomic structure and the periodicity of elements in the periodic table
3. the idea of a mole and the use of chemical stoichiometry
4. precipitation reactions, acid/base reactions, and redox reactions
5. the "gas laws" governing the physical/chemical behavior of gases
6. chemical reactions that involve energy flow
7. simple quantum mechanical treatments of atoms and molecules
8. current bonding models for simple inorganic and organic molecules in order to predict structures and important bonding parameters
9. how to predict molecular geometries of selected molecular species
10. properties of solids, liquids and solutions and intermolecular forces

Tentative Lecture Schedule - CHEM 111 – Fall 2023:

Chapter	Module	Assessment/Comment
Essential Ideas -Chapter 1	Module 1: Properties of Matter	Graded Online Homework Graded Online Quizzes (every other week) Graded Exam 1 (the exam date will be announced a week in advance - material examined from modules 1-6)
	Module 2: Measurements	
Atoms, Molecules, and Ions – Chapter 2	Module 3: Atomic Theory	
	Module 4: Elements and Compounds	
Composition of Substances and Solutions – Chapter 3	Module 5: The Mole	
	Module 6: Aqueous Solutions	
Stoichiometry of Chemical Reactions – Chapter 4	Module 7: Chemical Equations	Graded Online Homework Graded Online Quizzes (every other week) Graded Exam 2 (the exam date will be announced a week in advance - material examined from modules 7-14)
	Module 8: Reaction Stoichiometry	
Gases – Chapter 9	Module 9: Gas Laws	
	Module 10: Gas Stoichiometry	
	Module 11: The Kinetic- Molecular Theory	
Thermochemistry – Chapter 5	Module 12: Introduction to Energy	
	Module 13: Calorimetry	
	Module 14: Enthalpy	

Electronic Structure and Periodic Properties of Elements – Chapter 6	Module 15: Electromagnetic Energy / Bohr Model of the Atom	Graded Online Homework Graded Online Quizzes (every other week) Graded Exam 3 (the exam date will be announced a week in advance - material examined from modules 15-21)
	Module 16: Quantum Theory	
	Module 17: Periodic Properties	
Chemical Bonding and Molecular Geometry – Chapter 7	Module 18: Ionic and Covalent Bonding	
	Module 19: Lewis Structures	
	Module 20: Molecular Structure and Polarity	
Advanced Theories of Covalent Bonding – Chapter 8	Module 21: Advanced Theories of Covalent Bonding	
Liquids and Solids – Chapter 10	Module 22: Intermolecular Forces	Graded Online Homework Graded Online Quizzes (every other week)
	Module 23: Phase Changes	
	Module 24: The Solid State of Matter	
Solutions and Colloids - Chapter 11	Module 25: Solubility	
	Module 26: Colligative Properties	
CUMULATIVE FINAL EXAM – All modules covered	Friday, December 8th, 8-10 am	

LECTURE: (750 pts)

Graded ONLINE Homework: There will be ten (10) online homeworks based on material covered in class. Graded online homework will be assigned regularly through the Aktiv Chemistry platform.

Graded ONLINE Quizzes: There will be seven (7) online quizzes. Those will be based on previous covered material in lecture. Completing assigned homework/textbook practice problems/worksheets/handouts related to the lecture material is very helpful with mastering the material and performing well in quizzes and exams. The quizzes will be given on Fridays through the Aktiv Chemistry platform, every other week. There will be no quiz the first week of classes or the last week of classes.

Graded IN-CLASS Exams: There will be three (3) exams and one (1) cumulative final exam. Those will be based on covered material from the lecture as indicated by the modules. All exams will be given in person.

RECITATION:

Recitation sessions are dedicated to a) mastering the lecture material, b) problem solving, and c) introduction/discussion of the experiment of the week. Practice problems will be assigned from the textbook and additional worksheets/handouts which will be posted on D2L. Such problems will be discussed and solved during recitation.

LAB: (250 pts)

The lab is 250 pts of the course. All labs/experiments and all assignments need to be completed to pass the course. At least 60% of the points need to be earned in the lab in order for those points to be added to the overall course points. If you cannot attend a scheduled lab for reasons in the University-Approved Guidelines, please contact your lab instructor as soon as possible to arrange an alternate time.

Graded Prelab Questions: Each new experiment in the lab manual has a set of prelab questions. Those need to be answered/completed before performing the experiment. The prelab questions will be posted on D2L, as a word document, so students can type up their answers and print the document to submit during recitation. Any challenging questions will be discussed during that time.

Graded Lab Notebook Setup: The lab notebook serves as proof of your work in the laboratory. For proper lab notebook setup & guidelines for maintaining a good laboratory notebook, please refer to the laboratory manual (page 12): <https://paadopt.org/wp-content/uploads/2023/06/Chemistry-Techniques-DALbert-20230616-1.pdf>

Graded Lab Reports:

Each experiment's lab report should be completed in the lab notebook and should include the following: experiment title, well documented procedure, data tables, calculations, answers to post-lab questions, and summary of findings. If an experiment requires the preparation of graphs, those should be entered after the calculations in the lab notebook. **All handwritten work should be legible. Non-legible work will not be graded.** Lab notebooks will be due for grading, the Monday after the completion of each experiment. There will be designated bins outside my office (Caputo 219) where you can drop your lab notebook of by 12 pm on Mondays.

Tentative Laboratory Schedule:

Wednesday Lab (Afternoon 111.01A)

Week	Date	Title of Experiment	Laboratory #
Week 1	Aug 23	Safety and Record Keeping / Lab Drawer Check-in	Lab 1
Week 2	Aug 30	Separating Substances, Measuring Mass & Analyzing Data – Technique Laboratory	Lab 2
Week 3	Sep 6	Measuring Volumes – Technique Laboratory	Lab 3
Week 4	Sep 13	Reaction Types & Qualitative Analysis – Technique Laboratory	Lab 4 (2 Weeks)
Week 5	Sep 20	Reaction Types & Qualitative Analysis – Technique Laboratory	Lab 5
Week 6	Sep 27	What is Contaminating the Water Supply? – Exploration Laboratory	Lab 6 (2 Weeks)
Week 7	Oct 4	What is Contaminating the Water Supply? – Exploration Laboratory	Lab 7
Week 8	Oct 11	Titration – Technique Laboratory	Lab 8
Week 9	Oct 18	What is the Acidity of Vinegar? – Exploration Laboratory	Lab 9 (2 Weeks)
Week 10	Oct 25	What is the Acidity of Vinegar? – Exploration Laboratory	Lab 10
Week 11	Nov 1	Absorption Spectroscopy - Technique Laboratory	Lab 11
Week 12	Nov 8	What is the Dye Composition of a Drink? – Exploration Laboratory	Lab 12 (2 Weeks)
Week 13	Nov 15	What is the Dye Composition of a Drink? – Exploration Laboratory / Lab Drawer Check-out	Lab 13
Week 14	Nov 22	Thanksgiving Break / No Lab	-----
Week 15	Nov 29	Molecular Models and Covalent Bonding / Theoretical Lab (Handout will be posted on D2L)	Lab 14 (done in a reserved classroom)
Week 16	-----	Finals / Evaluation Period / No Lab	-----

Thursdays Labs (Morning 111.01B & Afternoon 111.01C)

Week	Date	Title of Experiment	Laboratory #
Week 1	Aug 24	Safety and Record Keeping / Lab Drawer Check-in	Lab 1
Week 2	Aug 31	Separating Substances, Measuring Mass & Analyzing Data – Technique Laboratory	Lab 2
Week 3	Sep 7	Measuring Volumes – Technique Laboratory	Lab 3
Week 4	Sep 14	Reaction Types & Qualitative Analysis – Technique Laboratory	Lab 4 (2 Weeks)
Week 5	Sep 21	Reaction Types & Qualitative Analysis – Technique Laboratory	Lab 5
Week 6	Sep 28	What is Contaminating the Water Supply? – Exploration Laboratory	Lab 6 (2 Weeks)
Week 7	Oct 5	What is Contaminating the Water Supply? – Exploration Laboratory	Lab 7
Week 8	Oct 12	Titration – Technique Laboratory	Lab 8
Week 9	Oct 19	What is the Acidity of Vinegar? – Exploration Laboratory	Lab 9 (2 Weeks)
Week 10	Oct 26	What is the Acidity of Vinegar? – Exploration Laboratory	Lab 10
Week 11	Nov 2	Absorption Spectroscopy - Technique Laboratory	Lab 11
Week 12	Nov 9	What is the Dye Composition of a Drink? – Exploration Laboratory	Lab 12 (2 Weeks)
Week 13	Nov 16	What is the Dye Composition of a Drink? – Exploration Laboratory / Lab Drawer Check-out	Lab 13
Week 14	Nov 23	Thanksgiving Break / No Lab	-----
Week 15	Nov 30	Molecular Models and Covalent Bonding / Theoretical Lab (Handout will be posted on D2L)	Lab 14 (done in a reserved classroom)
Week 16	-----	Finals / Evaluation Period / No Lab	-----

COURSE POLICIES:**Class and Recitation Attendance:**

Students are expected to attend all lectures and recitations. Students are responsible for all material covered. It is the responsibility of the student to master the material covered. If you need to be excused for a valid reason, please **notify me in advance** in order to arrange the make-up of any missed work. In unexpected cases (illness, death in the family), contact me **as soon as possible** by e-mail or phone within the week of the absence. Any make-up quiz or exam conducted outside the schedule may differ in form or exact content from the regularly scheduled quiz or exam. Making up missed work is at the discretion of the instructor, as long as proper and validated excuse is presented. **A grade of 60% is required in lecture and recitation to pass the course.**

Laboratory Attendance:

Students **must attend lab every week**. Students **need to complete all laboratories assignments/lab reports**. **A grade of 60% in lab is required to pass the course**. Making up missed lab work is at the discretion of the lab instructor.

Academic Honesty:

Students are expected to conduct all CHEM111 work in an honest and ethical manner. Cheating on coursework bypasses the learning process and will **NOT** be tolerated. Anyone caught cheating will be assigned a score of zero on the work. **ALL work is individual**. Habitual academic dishonesty will be penalized to the maximum.

Cooperative Environment:

Students with any special concerns about CHEM111 are welcome to approach me about them. Together, we can address each particular situation. Resources available include the Office of Learning Services and Tutoring Center (Lyle Hall).

Grading**Lecture:**

Assigned Online Homework (15 points each)	10	150 points
Online Quizzes (15 points each)	7	105 points
In-Class Exams (100 points each)	3	300 points
In-Class Final (195 points)	1	195 points
Lecture subtotal		750 points

Lab:

Prelab Questions (10 points each)	9	90 points
Lab Notebook Setup (25 points)	1	25 points
Lab Reports (15 points each)	9	135 points
Lab subtotal		250 points

Total for the class: 750 + 250 = 1000 points

Note

A grade of 60% is required in lab to pass the course. A grade of 60% is required in lecture and recitation to pass the course.

Notes

1. Class participation will be taken into consideration during final grading.
2. To pass CHEM 111, you must have a passing grade in the lecture/recitation component (at least D-). Grade of C- or better is required to enroll in CHEM 112. (Grade of C or better is required to enroll in CHEM 112 for chemistry majors).

Grading Scale:

Grade	Percentage
A	92-100
A-	90-91.9
B+	88-89.9
B	82-87.9
B-	80-81.9
C+	78-79.9
C	72-77.9
C-	70-71.9
D+	68-69.9
D	62-67.9
D-	60-61.9
F	< 60

CHEMISTRY PEER LEARNING HOURS - FALL 2023

Location: Caputo 211

- Tues. 5 – 7 pm
- Wed. 12-2 pm & 5-7 pm
- Thur. 12-2 pm & 5-7 pm

Stop in and Work on Chemistry!

No need to make an appointment simply come work on chemistry with your peers and get help from experienced tutors.

Starting August 29th and continuing through the Fall Semester.

Contact Dr. Rajaseelan - Edward.Rajaseelan@millersville.edu with any questions/concerns.

Title IX Statement

*Millersville University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to comply with the requirements of Title IX of the Education Amendments of 1972 and the University's commitment to offering supportive measures in accordance with the new regulations issued under Title IX, the University requires faculty members to report to the University's Title IX Coordinator incidents of sexual violence shared by students. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. **Faculty members are obligated to report to the person designated in the University [Protection of Minors policy](#) sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred.***