

Syllabus

I. General Information

Instructor:	Dr. Piotr Filipczak
Phone Number:	505-925-8876
Email:	pfilipczak@unm.edu
Office Hours:	Tuesday (On-Campus) and Thursday (via Zoom), 1:30 pm to 2:30 pm
Office Number:	VAAS 132A
Course Section:	501
Meeting Room:	VAAS 133, Zoom
Meeting Time:	On-Campus: Tuesday, 9:00 am to 10:15 am Online Lecture: available via Blackboard

II. Course Description

Prerequisite: MATH 1220 or MATH 1230 or MATH 1240 or MATH 1430 or MATH 1440 or MATH 1510 or MATH 1520 or MATH 2530 with a grade of C or higher, or a math placement score that qualifies the student.

Co-requisite: CHEM 1215L

This course is intended to serve as an introduction to General Chemistry for students enrolled in science, engineering, and certain pre-professional programs. Students will be introduced to several fundamental concepts, including mole, concentration, heat, atomic and molecular structure, periodicity, bonding, physical states, stoichiometry, and reactions.

III. Resources

- "Chemistry, a Molecular Approach" by Nivaldo J. Tro, 5th edition, Pearson (*textbook*).
- Mastering Chemistry, Pearson (*online platform for assignments and quizzes*).
- Blackboard (*learning management system for communication, online lectures, grades entry, resources navigation and exams*).

IV. Student Learning Outcomes

1. Use dimensional analysis, the SI system of units and appropriate significant figures to solve quantitative calculations in science.
2. Explain the structure of atoms, isotopes and ions in terms of subatomic particles.
3. Understand the differences between physical and chemical changes to matter, and utilize the IUPAC system of nomenclature and knowledge of reaction types to describe chemical changes, predict products and represent the process as a balanced equation.
4. Apply the mole concept to amounts on a macroscopic and a microscopic level and use this to perform stoichiometric calculations including for reactions in solution, gases and thermochemistry.
5. Apply the gas laws and kinetic molecular theory to relate atomic level behavior to macroscopic properties.
6. Describe the energy conversions that occur in chemical reactions and state changes, relating heat of reaction to thermodynamic properties such as enthalpy and internal energy, and apply these principles to measure and calculate energy changes in reaction.
7. Use different bonding models to describe formation of compounds (ionic and covalent), and apply knowledge of electronic structure to determine molecular spatial arrangement and polarity.
8. Analyze how periodic properties (e.g. electronegativity, atomic and ionic radii, ionization energy, electron affinity, metallic character) and reactivity of elements results from electron configurations of atoms.

V. Course Requirements

This course is conducted in a hybrid mode with both face-to-face and online components. In addition to 13 on-campus meetings, 16 online lectures followed by weekly online activities (*homework + quiz OR homework + exam*) are scheduled (see *section VII of the syllabus for details*). Thus, the following requirements apply to both face-to-face and online components of the course.

Attendance: Students enrolled in the course are obligated to attend at least **85%** of face-to-face meetings and complete at least **85%** of online activities. Thus, missing **2** out of 13 on-campus meetings or **5** out of 32 online activities will result a failing grade. Students who missed **15%** of the course will be dropped by the instructor with a W, F or D (depending on the stage of the course). **One** justified absence may be accepted by the instructor **ONLY** in the case of documented medical emergency, or in other special circumstances if communicated to the instructor in advance.

Performance: Students must collect at least 73% of the possible points in order to complete the course with a passing grade. In order to minimize the risk of receiving F or

D grades, students who collected less than 50% of the possible points by October 11th, 2020 (end of the 8th week of the course) may be dropped by the instructor with a W.

VI. Students Evaluation Criteria

Type of Assignment:	Points per Assignment:	Total Points in this Category:	Percentage of Overall Grade:
Homework (16x)	10 pts	160 pts	26.7%
Quizzes (13x)	10 pts	130 pts	21.6%
Partial Exam (3x)	50 pts	150 pts	25.0%
Final Exam (1x)	160 pts	160 pts	26.7%
Extra Credit (1x)	30 pts	30 pts	(5% equivalent)
Total	NA	600 pts	100%

Note: All evaluations will be executed online either via Blackboard (*partial and the final exams*) or Mastering Chemistry (homework and quizzes).

Grading scale:

- 100 or higher: A+
- 94-99.99: A
- 90-93.99: A-
- 87-89.99: B+
- 83-86.99: B
- 80-82.99: B-
- 77-79.99: C+
- 73-76.99: C
- 70-72.99: C-
- 60-69.99: D
- below 60: F

VI. Course Policies

Academic Integrity: All homework, quizzes and exams in this course must be completed by students as their original and individual work. No group work is allowed when it comes to completing assignments. While taking quizzes and exams, only resources listed by the instructor (such as non-graphing calculator, scratch paper, periodic table etc.) are allowed. Use of any other resources such as but not limited to textbooks, unauthorized internet websites, personal notes are forbidden. Plagiarism or cheating is not tolerated. Any instance of this will result in a grade of zero for that

assignment. For more details on academic integrity violation examples, please see the UNM Academic Dishonesty Policy:

<https://policy.unm.edu/regents-policies/section-4/4-8.html>

Communication: Instructor will do his best to follow original schedule of this course. However, because of the element of unpredictability caused by ongoing COVID-19 pandemic, some modest changes to the course design such as exact number of assignments, face-to-face meetings or other aspects of the course cannot be completely ruled out. Whenever the modification is applied, it will always be implemented to favor students' success in the course, and will be announced by the instructor as soon as possible. It is the student's responsibility, however, to pay attention to the instructor's communications, and in case of any confusion or conflict, communicate back ASAP. All information important to the course will be passed to students via Blackboard: either as announcement posted in the course content, or as an email sent to all students via Blackboard, or both. Thus, keep in mind to (i) log in to your Blackboard account REGULARLY (at least two times per week) and (ii) remember that all email correspondence will take place via student's @unm.edu address which is associated with your Blackboard account (correspondence via other email addresses is not allowed).

Disruptive Behavior: Disruptive behavior will not be tolerated and can lead to being dropped from the course at the instructor's discretion. No "guests" will be allowed unless they are explicitly invited to attend the class by the instructor.

Students with Disabilities: If you have a documented disability, the Equal Access Services office will provide me with a letter outlining your accommodations. I will then discuss the accommodations with you to determine the best learning environment. If you feel that you need accommodations, but have not documented your disability, please contact Yolanda Pino, the coordinator for Equal Access Services at 925-8910 or pinoy@unm.edu.

Equal Opportunity and Non-Discrimination: In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered "responsible employees" by the Department of Education. This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA must be reported to the Title IX Coordinator at the Office of Equal Opportunity (oeo.unm.edu). For more information on the campus policy regarding sexual misconduct, see: <https://policy.unm.edu/university-policies/2000/2740.html>.

General Chemistry I for STEM Majors, Fall 2020

Week	On-Campus Meeting Date	Topic	Assignments
1	08/18/2020	Chapter 1: Matter, Measurement, and Problem Solving	Homework #1 Quiz #1
2	08/25/2020	Chapter 2: Atoms and Elements	Homework #2 Quiz #2
3	09/01/2020	Chapter 3: Molecules, Compounds, and Chemical Equations	Homework #3 Quiz #3
4	09/08/2020	Chapter 4: Chemical Quantities and Aqueous Reactions	Homework #4 Quiz #4
5	09/15/2020	Chapters 1-4 Revision	Homework #5 Exam #1
6	09/22/2020	Chapter 5: Gases	Homework #6 Quiz #5
7	09/29/2020	Chapter 6: Thermochemistry	Homework #7 Quiz #6
8	10/06/2020	Chapter 6: Thermochemistry (Continue)	Homework #8 Quiz #7
9	10/13/2020	Chapter 7: The Quantum-Mechanical Model of the Atom	Homework #9 Quiz #8
10	10/20/2020	Chapter 7: The Quantum-Mechanical Model of the Atom (Continue)	Homework #10 Quiz #9
11	10/27/2020	Chapters 5-7 Revision	Homework #11 Exam #2
12	NO MEETING	Chapter 8: Periodic Properties of the Elements	Homework #12 Quiz #10
13	11/10/2020	Chapter 9: Chemical Bonding I: Lewis Theory	Homework #13 Quiz #11
14	11/17/2020	Chapter 10: Chemical Bonding II: Molecular Shapes, Valence Bond Theory, and Molecular Orbital Theory	Homework #14 Quiz #12
15	NO MEETING	Chapters 8-10 Revision	Homework #15 Exam #3
16	NO MEETING	Final Course Revision	Homework #16 Quiz #13
FINAL WEEK	12/07/2020 -12/10/2020	Online Final Exam via Blackboard	N/A

VII. Course Schedule

