

Syllabus

I. General Information

Instructor:	Dr. Piotr Filipczak
Phone Number:	505-925-8876
Email:	pfilipczak@unm.edu
Office Hours:	Monday through Thursday, 3:00 pm to 4:30 pm
Office Number:	VAAS 132A
Course Section:	501
Meeting Room:	VAAS 131
Meeting Time:	Tuesday and Thursday, 9:00 am 10:15 am

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 homework and quizzes*).
- Canvas (*learning management system for communication, grades entry, resources navigation and selected assignments*).

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 is a 16-week, face-to-face course with the following requirements:

Attendance: In-person participation is required in this course. Student who missed 15% of a class time (which stands for 5 meetings) may be dropped by the instructor with a W, F or D (depending on the stage of the course). Exceptions may be made for documented medical reasons including COVID-19.

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 14th (Fall break) may be dropped by the instructor with a W.

Technology & Computer Requirements:

- Dependable computer
- Reliable internet connection
- Computer speakers
- Reliable web browser
- Microsoft Suite (PowerPoint and Word)
- Adobe Flash Player

VI. Students Evaluation Criteria

Type of Assignment:	Points per Assignment:	Total Points in this Category:	Contribution to the Final Grade:
Homework (10x)	15 pts	150 pts	18.75%
Quizzes (10x)	15 pts	150 pts	18.75%
Partial Exams (3x)	100 pts	300 pts	37.50%
Final Exam (1x)	200 pts	200 pts	25.00%
Total	NA	800 pts	100.00%

- **Homework:** To be completed online via Mastering Chemistry. One lowest score will be dropped from the final grade.
- **Quizzes:** To be completed online via Mastering Chemistry. One lowest score will be dropped from the final grade.
- **Partial Exams:** To be completed in class on days indicated in the course schedule. All three exams count.
- **Final Exam:** To be completed in class during the final week of the course.
- **Extra Credit:** Practice final exam, which will be administrated online via Canvas in the second last week of the course, is the only extra credit opportunity that will contribute up to 5% of student's final grade.

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

VII. 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>.

Compliance and Safety: Students must read, understand and obey safety rules while present in chemical laboratory. That will be documented by signing safety contract during the first on-campus meeting. Student who does not obey the safety rules and brings the risk on himself/herself and/or on colleague students, may be suspended from the class by the instructor at any time of the course with the consequent non-passing grade.

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 Canvas: either as announcement posted in the course content, or as an email sent to all students via Canvas, or both. Thus, keep in mind to (i) log in to your Canvas 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 Canvas 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.

Communication on Change in Modality: The university may direct that classes move to remote delivery at any time to preserve the health and safety of the students, instructor and community. Please check your email and your UNM Learn site regularly for updates about our class, and please check <https://bringbackthepack.unm.edu> regularly for general UNM updates about COVID-19 and the health of our community.

COVID-19 Health and Awareness: UNM is a mask friendly, but not a mask required, community. To be registered or employed at UNM, Students, faculty, and staff must all meet UNM's Administrative Mandate on Required COVID-19 vaccination. If you are experiencing COVID-19 symptoms, please do not come to class. If you have a positive COVID-19 test, please stay home for five days and isolate yourself from others, per the

Centers for Disease Control (CDC) guidelines. If you do need to stay home, please communicate with me at pfilipczaak@unm.edu; I can work with you to provide alternatives for course participation and completion. UNM faculty and staff know that these are challenging times. Please let us know that you need support so that we can connect you to the right resources and please be aware that UNM will publish information on websites and email about any changes to our public health status and community response.

Support:

- *Student Health and Counseling (SHAC) at (505) 277-3136. If you are having active respiratory symptoms (e.g., fever, cough, sore throat, etc.) AND need testing for COVID-19; OR If you recently tested positive and may need oral treatment, call SHAC.*
- *LoboRESPECT Advocacy Center (505) 277-2911 can offer help with contacting faculty and managing challenges that impact your UNM experience.*

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>.

VIII. Course Schedule

Wk	Date	Topic	Assignments
1	8/22	Matter, Measurement, and Math	H#1, Q#1
2	8/29	Atoms and Elements	H#2, Q#2
3	9/5	Chemical Compounds	H#3, Q#3
4	9/12	Types of Chemical Reactions (i)	Exam #1
5	9/19	Types of Chemical Reactions (ii)	H#4, Q#4
6	9/26	Reaction Stoichiometry	H#5, Q#5
7	10/3	Solutions	H#6, Q#6
8	10/10 – No Thu. Meeting	Thermochemistry (i)	Exam #2
9	10/17	Thermochemistry (ii)	H#7, Q#7
10	10/24	Quantum Mechanics	H#8, Q#8
11	10/31	Periodic Properties of the Elements	H#9, Q#9
12	11/7	Lewis Theory (i)	Exam #3
13	11/14	Lewis Theory (ii)	H#10, Q#10
14	11/21 – No Thu. Meeting	VSEPR Theory and Molecular Geometry	H#11, Q#11
15	11/28	Advanced Theories of Bonding	-
16	12/5	Course Review	PFE
17	12/13 (Tue.) 9:00 – 11:00 am	In-Person Final Exam	

Wk – Week of the Course, H – Homework, Q – Quiz, PFE – Practice Final Exam