

Syllabus

I. General Information

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|-----------------|---|
| Instructor: | Dr. Piotr Filipczak |
| Phone/Email: | 505-925-8876 / pfilipczak@unm.edu |
| Office Hours: | Monday through Thursday, 3:00 pm to 4:30 pm |
| Office Number: | VAAS 132A |
| Course Section: | 502 |
| Meeting Room: | VAAS 131 (Lecture), VAAS 128 (Lab) |
| Meeting Time: | Monday and Wednesday, 8:30 am to 9:44 am (Lecture) and Wednesday, 9:45 am to 11:45 am (Lab) |

II. Course Description

Prerequisite: ACT =>22 or SAT =>510 or MATH 1215 or MATH 1220 or MATH 1240 or MATH 1430 or MATH 1440 or MATH 1510 or MATH 1520 or MATH 2530.

This course covers qualitative and quantitative areas of non-organic general chemistry for non-science majors and some health professions. Students will learn and apply principles pertaining, but not limited to, atomic and molecular structure, the periodic table, acids and bases, mass relationships, and solutions. The laboratory component introduces students to techniques for obtaining and analyzing experimental observations pertaining to chemistry using diverse methods and equipment.

III. Resources

- "Chemistry, Atoms First" 2e from OpenStax (*textbook*).
- Canvas (*learning management system for communication, grades entry, resources navigation and selected assignments*).

IV. Student Learning Outcomes

Lecture Student Learning Outcomes:

1. Use the different systems of measurements and perform conversions within the same system of measurement and between different systems of measurements.
2. Identify elements from their name or symbol, use the periodic table to describe reactivity patterns of elements and to predict compound formation.
3. Describe the basic structure of an atom using subatomic particles, and apply these concepts to nuclear reactions.

4. Describe ion formation and the difference between covalent and ionic compounds. Name and write formulas for ionic and simple molecular compounds.

5. Write and balance chemical reactions. Use balanced reactions in stoichiometric calculations.

6. Describe the differences between the solid, liquid and gas phases. Use the gas laws in calculations, and apply these laws to everyday situations.

7. Explain different types of energy, and how is released or absorbed in a reaction.

8. Describe acid and base behavior.

9. Explain the intermolecular attractive forces that determine physical properties; apply this knowledge to qualitatively evaluate these forces and predict the physical properties that result.

Laboratory Student Learning Outcomes:

1. Practice concepts associated with laboratory safety, including the possible consequences of not adhering to appropriate safety guidelines.

2. Demonstrate the computational skills needed to perform appropriate laboratory-related calculations to include, but not be limited to determining the number of significant figures in numerical value, solving problems using values represented in exponential notation, solving dimensional analysis problems, and manipulating mathematical formulas as needed to determine the value of a variable.

3. Perform laboratory observations (both qualitative and quantitative) using sensory experience and appropriate measurement instrumentation.

4. Record quantitatively measured values to the correct number of significant figures and assign the correct units.

5. Master basic laboratory techniques including, but not limited to weighing samples (liquid and solid), determining sample volumes, measuring the temperature of samples, heating and cooling a sample or reaction mixture, decantation, filtration, and titration.

6. Draw appropriate conclusions based on data and analyses.

7. Present experimental results in laboratory reports of appropriate length, style and depth, or through other modes as required.

8. Determine chemical formulas and classify different types of reactions.

9. Relate laboratory experimental observations, operations, calculations, and findings to theoretical concepts presented in the complementary lecture course.

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: | Percentage of the Final Grade: |
|---------------------|------------------------|--------------------------------|--------------------------------|
| Homework (5x) | 20 pts | 100 pts | 12.50% |
| Quizzes (5x) | 20 pts | 100 pts | 12.50% |
| Lab Reports (10x) | 10 pts | 100 pts | 12.50% |
| 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 Canvas.
- **Quizzes:** To be completed online via Canvas. One lowest score will be dropped from the final grade.
- **Lab Manuals:** To be completed in person during laboratory meetings.
- **Partial Exams:** To be completed in class on days indicated in the course schedule.
- **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 pfilipczak@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 | Assignment |
|----|--|---|----------------|
| 1 | 8/22 | Essential Ideas, Math and Measurements | H#1 |
| 2 | 8/29 | Atoms and Elements | Q#1 |
| 3 | 9/5 – No Meeting on Labor Day | Periodic Properties of Elements | H#2 |
| 4 | 9/12 | Electron Configurations | Exam #1 |
| 5 | 9/19 | Chemical Compounds | Q#2, |
| 6 | 9/26 | Lewis Model and Molecular Geometries | H#3 |
| 7 | 10/3 | Types of Chemical Reactions | Q#3 |
| 8 | 10/10 | Reaction Stoichiometry | Exam #2 |
| 9 | 10/17 | Reaction Stoichiometry (continue) | - |
| 10 | 10/24 | Solutions | H#4 |
| 11 | 10/31 | Gases | Q#4 |
| 12 | 11/7 | Thermochemistry | Exam #3 |
| 13 | 11/14 | Intermolecular Forces and Physical States | H#5 |
| 14 | 11/21 | Acids and Bases | Q#5 |
| 15 | 11/28 | Organic Chemistry | Q#6 |
| 16 | 12/5 | Course Review | PFE |
| 17 | 12/14 (Wed) 9:00 - 11:00 am | In-Person Final Exam | |

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