

# Syllabus

## I. General Information

Instructor:	Dr. Piotr Filipczak
Email:	<a href="mailto:pfilipczak@unm.edu">pfilipczak@unm.edu</a>
Office Hours:	Monday and Wednesday via Zoom, 10:45 am to 11:30 am
Course Section:	550
Meeting Time:	Asynchronous – resources and activities published via Blackboard and Chem 101 on the weekly basis.

## 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*).
- Chem 101 (*online platform for homework and quizzes*).
- Blackboard (*learning management system for communication, online lectures, grades entry, resources navigation and exams*).

## 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 energy 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.

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### **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 (both analog and digital).

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 course is a 16-week course conducted online in the asynchronous mode with lectures, other learning resources, homework, quizzes and exams published by the instructor on the weekly basis. Online office hours which are voluntary (although encouraged) is the only synchronous activity in this class. The following course requirements are in place:

**Attendance:** Although this is an online course, participation is required and is measured by completion of online activities by the student. 22 assignments including 5 homework, 5 quizzes, 10 lab reports, 1 midterm exam and 1 final exam are scheduled. Students who fail to complete all assignments scheduled in two consecutive weeks of the course, or who failed to complete 15% of all assignments (which stands for 4 assignments overall despite of the category) will be dropped by the instructor with a W, F or D (depending on the stage of the course).

**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 March 14<sup>th</sup> (Spring break) 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 (5x)	10 pts	50 pts	14
Quizzes (5x)	10 pts	50 pts	14
Lab Reports (10x)	10 pts	100 pts	29
Midterm Exam (1x)	50 pts	50 pts	14
Final Exam (1x)	100 pts	100 pts	29
<b>Total</b>	<b>NA</b>	<b>350 pts</b>	<b>100%</b>

**Note:** All evaluations will be executed online either via Blackboard (*lab reports, midterm and the final exam*) or Chem 101 (homework and quizzes). All assignments will be included into the final grade. However, student is eligible to makeup/redo one homework, quiz and lab report.

**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, lab reports 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 or others cannot be completely ruled out. Whenever the modification is applied, it will always be implemented to favor student's 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).

**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

Week	Date	Topic	Online Assignments
1	1/19-1/24	Ch 1: Essential Ideas	H1
2	1/25-1/31	Ch 2: Atoms, Molecules, and Ions	Q1, L1
3	2/1-2/7	Ch 3: Electronic Structure and Periodic Properties of Elements	H2, L2
4	2/8-2/14	Ch 4: Chemical Bonding and Molecular Geometry	Q2, L3
5	2/15-2/21	Ch 6: Composition of Substances and Solutions	L4
6	2/22-2/28	Ch 7: Stoichiometry of Chemical Reactions	H3, L5
7	3/1-3/8	Ch 8: Gases	Q3
8	3/9-3/13	<u>Midterm Exam</u>	
9	3/14-3/21	<b>Spring Break</b>	
10	3/22-3/28	Ch 9: Thermochemistry	L6
11	3/29-4/5	Ch 10: Liquids and Solids	H4, L7
12	4/5-4/11	Ch 11: Solutions and Colloids	Q4, L8
13	4/12-4/18	Ch 13: Fundamental Equilibrium Concepts	L9
14	4/19-4/25	Ch 14: Acid-Base Equilibria	H5, L10
15	4/26-5/2	Ch 15: Equilibria of Other Reactions Classes	Q5
16	5/3-5/9	Course Review	
<b>FINAL WEEK</b>	<b>5/10-5/13</b>	<b>Online Final Exam via Blackboard</b>	

H – homework, Q – quiz, L – Lab Report