POINT 1902 LOMA
NAZARENE UNIVERSITY

Department of Chemistry

CHEMISTRY 1003 *General, Organic and Biological Chemistry*

Number of Units: 4 Units (plus 1 unit CHE1003L corequisite laboratory)

Fall 2025

Meeting days/times:

MWF 11:00 am – 12:05 pm (Section 3)

MWF 1:30 pm – 2:35 pm (Section 4)

Meeting location Latter Hall 2

Final Exam:

Wednesday, 12/17, 4:30 – 7:00 pm

INFORMATION	SPECIFICS FOR THE COURSE
Instructor title and name:	Dr. Ho Fung (Edmund) Cheng, Assistant Professor of Chemistry
Phone:	619 849 2581
Email:	hcheng@pointloma.edu
Office location and hours:	Rohr Science 360, Tues 10:30 am – 12:00pm, Weds 8:30 – 9:40 am, Thurs 12:30 – 1:30 pm, Fri 8:30 – 9:40 am, and by appointment. Google calendar link for office hour.

PLNU Mission

To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

General Education Mission

PLNU provides a foundational course of study in the liberal arts informed by the life, death, and resurrection of Jesus Christ. In keeping with the Wesleyan tradition, the curriculum equips students with a broad range of knowledge and skills within and across disciplines to enrich major study, lifelong learning, and vocational service as Christ-like participants in the world's diverse societies and culture.

Course Description

From the PLNU Catalog: Examination of those aspects of inorganic and organic chemistry that are pertinent to biology and chemistry. Examines the structures and metabolic reactions of biomolecules. Provides a background for nursing, family and consumer sciences and physical education majors. (Meets a general education requirement; does not count toward any Chemistry Department majors.)

Chemistry 1003 is an introductory chemistry class suitable for anyone who has never taken any chemistry classes before.

Course Learning Outcomes

At the end of the course, you will be able to:

1. Speak fluently in the language of chemistry, describing the composition of matter at multiple levels: from the macroscopic to the atomic level.
2. Predict the properties of atoms, molecules, ions and molecular compounds, on the basis of structure.
3. Write balanced equations to describe common types of chemical transformations, including acid-base reactions.
4. Identify the main organic functional groups and explain how intermolecular forces influence their properties.
5. Identify major classes of biological molecules and describe how their chemical structure facilitates their biological function.

General Education Learning Outcomes

The following General Education Learning Outcome (GELO) will be assessed in this class (Link to GELO's): GELO 1e: Quantitative Reasoning: Students will be able to solve problems that are quantitative in nature. Assessment of GELO 1e comprises 3-5 free response problems included as part of the course final exam.

Required Texts and Recommended Study Resources

Students are responsible for having the required course textbooks prior to the first day of class.

Fundamentals of General, Organic and Biological Chemistry, by McMurry, Castellion, Ballantine, Hoeger and Peterson, Pearson, 8th Edition, 2017. (ISBN-13: 9780134665708) *Required*

Mastering Chemistry (Online homework platform that comes bundled with the textbook if you purchase it through the PLNU bookstore; for more information, visit Course Materials.) *Required*

Calculator: Texas Instruments **TI-30XIIS** *Scientific Calculator* or equivalent*:* This specific calculator model will be provided for all quizzes, midterms, and exams in CHE 1003. You need your own TI-30XIIS calculator for homework and worksheets (and practice). *Required*

All supplemental materials posted on this course site (including articles, book excerpts, or other documents) are provided for your personal academic use. These materials may be protected by copyright law and should not be duplicated or distributed without permission of the copyright owner.

Assessment and Grading

Pre-class quiz –You are required to complete a short pre-class quiz (taking ~ 10 min) that is heavily based on the assigned reading. During class, the question with the worst performance will be reviewed. The pre-class quiz is due 9 am on the day of the class. Your lowest-scoring quiz will be dropped.

Question submission – You will submit at least one question on poll everywhere every week. This question should be related to pre-class reading, quiz, or lecture materials. At the beginning of Friday's class, you will view others' questions and upvote the ones you want addressed. One of the most upvoted question will be addressed in class, and you will discuss your own question(s) with your group (of four). This exercise aims to encourage critical thinking and group learning. This is graded by participation; however, non-sensical, clearly generic/irrelevant, or repeated questions will not receive credit. Your submission is due 9 am Friday, but I highly encourage you to submit your questions as they pop up.

Online homework - Problems requiring more thought and reflection (taking 45 – 90 min) are completed outside of class and are due each week on Friday 11:59 pm. To facilitate rapid feedback, assignments will be *electronic* and provided through Mastering Chemistry. If you bought a new book from the book store you already received access to Mastering in your bundle; alternatively, access to Mastering with the eBook can be purchased online. The Mastering format allows you to check your answer in real time. Note that the interface only accepts homework submissions up to the set due time and date. Your lowest-scoring homework will be dropped.

Quizzes - Periodically, on Mondays, there will be in-class quizzes in two parts. First, you will have 10 minutes to complete the quiz on your own (for an *individual* score). Then, you'll have 10 minutes to repeat the quiz in your groups (for a *group* score). Your final score will be a combination of your individual (40%) and group (60%) scores.

Exams - There will be three midterm exams (one hour each, in class) and one final (two hours). Despite focusing on recently-covered material, midterm exams are *cumulative* and assume knowledge from earlier in CHE1003.

The final exam is a *comprehensive* standardized multiple choice exam published by the American Chemical Society, with 3-5 additional free response questions. See the course schedule for exam dates.

The activities described above will contribute to your total course grade according to the following distribution:

Grade distribution

Pre-class quiz	5%

Question submission	5%
Online homework (Mastering Chemistry)	15%
Quizzes (individual + group)	25%
Midterm exams	30%
Final exam (ACS standardized exam)	20%

Student grades will be posted in the Canvas grade book throughout the course. Letter grades will be assigned at the end of the course based on your percentage of total possible points, according to the following scale:

Grade scale

A	**B**	**C**	**D**	**F**
A ≥ 93.00	B+ 87.00-89.99	C+ 77.00-79.99	D+ 67.00-69.99	F < 60.00
A- 90.00-92.99	B 83.00-86.99	C 73.00-76.99	D 63.00-66.99	
	B- 80.00-82.99	C- 70.00-72.99	D- 60.00-62.99	

Absence Policy and Late Assignments

The following are the only accepted reasons for missing a class, quiz, or midterm. (e) and (f) requires appropriate documentation provided to me, two weeks ahead of time. Extraordinary circumstances will be evaluated case-by-case.

a) You have a contagious respiratory illness.
b) You are very sick.
c) You or your dependent has a health-related emergency that prevent you from attending. Note: if health conditions are more prolonged or non-emergent you should contact Educational Access Center (EAC) for academic accommodations.
d) Death of an immediate family member or a close friend.
e) Travel as a part of a recognized University organization (e.g., sports teams, debate teams, conferences, etc.)
f) A job interview that cannot be scheduled with alternative times.

No make-up quizzes will be provided. If your absence is approved (see above), your quiz score will be calculated, at the end of the semester, as the average of the quizzes that you did take.

Makeup midterms will be given only for approved absences (see above).

Late assignments (e.g., pre-class quiz, pre-class question, and online homework) will receive an automatic zero. Deadline extensions will only be granted for (b), (c) and (d). For (b), you must request extensions 6 h before deadline. For (c) and (d), extension can be granted post-deadline, up to 48 h.

Final Examination Policy

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the Traditional Undergraduate Records: Final Exam Schedules site. If you find yourself scheduled for three (3) or more final examinations on the same day, you are authorized to contact each professor to arrange a different time for one of those exams. However, unless you have three (3) or more exams on the same day, no requests for alternative final examinations will be granted.

Spiritual Care

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith. If you have questions, a desire to meet with the chaplain or have prayer requests you can contact your professor or the Office of Spiritual Life and Formation.

State Authorization

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on State Authorization to view which states allow distance education outside California.

PLNU Copyright Policy

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

PLNU Recording Notification

In order to enhance the learning experience, please be advised that this course may be recorded by the professor for educational purposes, and access to these recordings will be limited to enrolled students and authorized personnel.

Note that all recordings are subject to copyright protection. Any unauthorized distribution or publication of these recordings without written approval from the University (refer to the Dean) is strictly prohibited.

PLNU Academic Honesty Policy

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. For all student appeals, faculty and students should follow the procedures outlined in the University Catalog. See Academic Policies for definitions of kinds of academic dishonesty and for further policy information.

Artificial Intelligence (AI) Policy

The use of Artificial Intelligence (AI) tools (e.g., ChatGPT, iA Writer, Marmot, Botowski, GrammarlyGo, Perplexity, etc.) is strictly prohibited in this course for any homework, quizzes, midterms, and exams. However, you are allowed to use AI tools to assist in your learning and study. In addition, if any assignment encourages or allows the use of AI to generate content (text, video, audio, images), it will be stated so explicitly. Any work that utilizes AI-based tools must be clearly identified as such, including the specific tool(s) used. Please use the following sources to guide your citations when using AI.

MLA Style Center: Citing Generative AI
APA Style: How to Cite ChatGPT
Chicago Manual of Style: Citing Content Developed or Generated by AI

This course is designed to assess your independent critical thinking, writing, and research skills without the assistance of AI technologies. Violations of this policy will be treated as breaches of academic integrity.

PLNU Academic Accommodations Policy

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities in accordance with the Americans with Disabilities Act (ADA). Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center (EAC@pointloma.edu or 619-849-2533). Once a student's eligibility for an accommodation has been determined, the EAC will work with the student to create an Accommodation Plan (AP) that outlines allowed accommodations. Professors are able to view a student's approved accommodations through Accommodate.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course. Accommodations are not retroactive so clarifying with the professor at the outset is one of the best ways to promote positive academic outcomes.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It

is the student's responsibility to make the first contact with the EAC. Students cannot assume that because they had accommodations in the past, their eligibility at PLNU is automatic. All determinations at PLNU must go through the EAC process. This is to protect the privacy of students with disabilities who may not want to disclose this information and are not asking for any accommodations.

Language and Belonging

Point Loma Nazarene University faculty are committed to helping create a safe and hospitable learning environment for all students. As Christian scholars we are keenly aware of the power of language and believe in treating others with dignity. As such, it is important that our language be equitable, inclusive, and prejudice free. Inclusive/Bias-free language is the standard outlined by all major academic style guides, including MLA, APA, and Chicago, and it is the expected norm in university-level work. Good writing and speaking do not use unsubstantiated or irrelevant generalizations about personal qualities such as age, disability, economic class, ethnicity, marital status, parentage, political or religious beliefs, race, gender, sex, or sexual orientation. Inclusive language also avoids using stereotypes or terminology that demeans persons or groups based on age, disability, class, ethnicity, gender, race, language, or national origin. Respectful use of language is particularly important when referring to those outside of the religious and lifestyle commitments of those in the PLNU community. By working toward precision and clarity of language, we mark ourselves as serious and respectful scholars, and we model the Christ-like quality of hospitality.

You may report an incident(s) using the Bias Incident Reporting Form.

Sexual Misconduct and Discrimination

In support of a safe learning environment, if you (or someone you know) have experienced any form of sexual discrimination or misconduct, including sexual assault, dating or domestic violence, or stalking, know that accommodations and resources are available through the Title IX Office at pointloma.edu/Title-IX. Please be aware that under Title IX of the Education Amendments of 1972, faculty and staff are required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Counseling Services at counselingservices@pointloma.edu or find a list of campus pastors at pointloma.edu/Title-IX.

If you (or someone you know) have experienced other forms of discrimination or bias, you can find more information on reporting and resources at www.pointloma.edu/bias

PLNU Attendance and Participation Policy

Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions, the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university withdrawal date or, after that date, receive an "F" grade.

Use of Technology

In order to be successful in the online or hybrid environment, you'll need to meet the minimum technology and system requirements; please refer to the *Technology and System Requirements* information. Problems with technology do not relieve you of the responsibility of participating, turning in your assignments, or completing your class work.

Lomabooks Instructions for Students:

This course is part of our course material delivery program, **LomaBooks**. The bookstore will provide each student with a convenient package containing all required physical materials; all digitally delivered materials will be integrated into Canvas.

You should have received an email from the bookstore confirming the list of materials that will be provided for each of your courses and asking you to select how you would like to receive any printed components (in-store pick up or home delivery). If you have not done so already, please confirm your fulfillment preference so the bookstore can prepare your materials.

For more information about **LomaBooks,** please go: HERE

COURSE SCHEDULE AND ASSIGNMENTS

Note: This schedule is subject to change. Any substantial changes (i.e. changes to anything other than *Details* or *Readings*) will be announced on the *Announcements* page in Canvas, and modified here in the *Syllabus*. Up-to-date reading assignments will also be listed in each Week Overview.

Course schedule

WEEK	DAY	DETAILS	READING/NOTES
1	M 9/1	Labor Day – no class	
	W 9/3	• Course Introduction • States of matter	• Syllabus
	F 9/5	• Classification of Matter • Units, prefix, and scientific notation	• δ1.2-1.5 • δ1.6-1.7
		Week 1 Assignment Due	
2	M 9/8	• Scientific measurements and significant figure • Unit conversions & density	• δ1.8-1.9 • δ1.10, 1.12
	W 9/10	• Atoms and subatomic particles • Isotopes & atomic weight	• δ2.1-2.2 • δ2.3
	F 9/12	• The periodic table	• δ2.4, 2.5

		• Atomic structure – part 1	• 2.6
		Week 2 Assignment Due	
3	M 9/15	• Quiz 1 • Atomic structure – part 2	• Chapters 1-2.5 • δ2.6-2.9
	W 9/17	• Octet rule • Ionic bonds and compounds	• δ3.1-3.9
	F 9/19	• Covalent bonds • Drawing Lewis dot structures	• δ4.1-4.4 • δ4.6, 4.7
		Week 3 Assignment Due	
4	M 9/22	• VSEPR and molecular shape • Electronegativity and polarity	• δ4.8 • δ4.9, 4.10
	W 9/24	• Practice drawing molecules: Lewis structures and VSEPR	• Chapter 4
	F 9/26	Catch up day	TBD
		Week 4 Assignment Due	
5	M 9/29	**Exam 1**	• Chapters 1-4
	W 10/1	• Balancing chemical equations • Types of chemical reactions	• δ5.1, 5.2 • δ5.3, 5.4
	F 10/3	• Oxidation & reduction reactions	• δ5.5, 5.6
		Week 5 Assignment Due	
6	M 10/6	• Moles and molecular weight • Solving mass-to-mass conversion problems	• δ6.1-6.4
	W 10/8	• Reaction: Energy and rates • Equilibria	• δ7.1-7.6 • δ7.7-7.9
	F 10/10	• Solutions & solubility • Calculating concentration	• δ9.1-9.3 • δ9.6
		Week 6 Assignment Due	
7	M 10/13	• Quiz 2 • Dilutions	• Chapters 5-7 • δ9.7
	W 10/15	• Calculating concentration practice • Electrolytes & Osmolarity	• δ9.6-9.7 • δ9.8, 9.10
	F 10/17	• Acid-base reactions • Equilibrium recap & pKa	• δ10.1-10.2 • δ10.3
		Week 7 Assignment Due	
8	M 10/20	• pH • Predicting acid strength and calculating pH	• δ10.4-10.6 • δ10.3-10.6

	W 10/22	Catch up day	TBD
		Week 8 Assignment Due	
	F 10/24	*Fall Break - No class*	
9	M 10/27	**Exam 2**	Chapters 5-7, 9, 10
	W 10/29	• Intro to Organic Chemistry: drawing organic structures • Isomers	• δ12.1-12.2, 12.4 • δ12.3
	F 10/31	• Naming alkanes • Intermolecular forces	• δ12.6 • δ8.2, 12.7
		Week 9 Assignment Due	
10	M 11/3	• Organic functional groups • Naming alkenes & alkynes	• δ12.2, *flip through 13.8, 14.1, 14.5, 14.7-14.9* • δ13.2-13.3
	W 11/5	• Isomers, part II • Naming alcohols & ethers & alkyl/aryl halides	• δ13.3 • δ14.2, 14.7, 14.9
	F 11/7	• Intermolecular forces, part II • Naming aldehydes & ketones	• δ14.3, *review δ8.2* • δ15.2
		Week 10 Assignment Due	
11	M 11/10	• Quiz 3 • Oxidation & reduction of organic molecules	• Chapters 12-14 • δ14.4, 15.5, 15.6
	W 11/12	• Naming & classifying amines • Acid-base reactions of amines	• δ16.2 • δ16.5, 16.6
	F 11/14	• Naming carboxylic acid derivatives • Acid-base reactions of carboxylic acids	• δ17.1 • δ17.2
		Week 11 Assignment Due	
12	M 11/17	• Formation and hydrolysis of amides and esters • Amino acids & peptides	• δ17.3, 17.4 • δ18.3-18.5
	W 11/19	• Protein structure • Protein function, classes of enzymes	• δ18.6-18.10 • δ18.2, 19.1-19.4
	F 11/21	Catch up day	TBD
		Week 12 Assignment Due	
13	M 11/24	**Exam 3**	Chapters 12-19
	W 11/26 - F 11/28	*Thanksgiving Break - No class*	

14	M 12/1	• Chirality & Fischer projections • Isomers, part III	• δ14.10, 20.2 • δ14.10
	W 12/3	• Classifying sugars • Biologically important sugars	• δ20.1-20.3 • δ20.4, 20.6, 20.7
	F 12/5	• Types of lipids • Reactions of lipids • Membranes	• δ23.1-23.3, 23.5, 23.6 • δ23.4 • δ23.7
		Week 14 Assignment Due	
15	M 12/8	• Quiz 4 • Nucleic Acids structure	• Chapters 14, 20, 23 • δ26.2-26.3
	W 12/10	• Nucleic acids function and the Central Dogma	• δ26.1, 26.4-26.10
	F 12/12	Catch up Day / Exam review	
		Week 15 Assignment Due	
4:30 - 7 pm, Friday, December 17th		***Comprehensive Final Exam***	