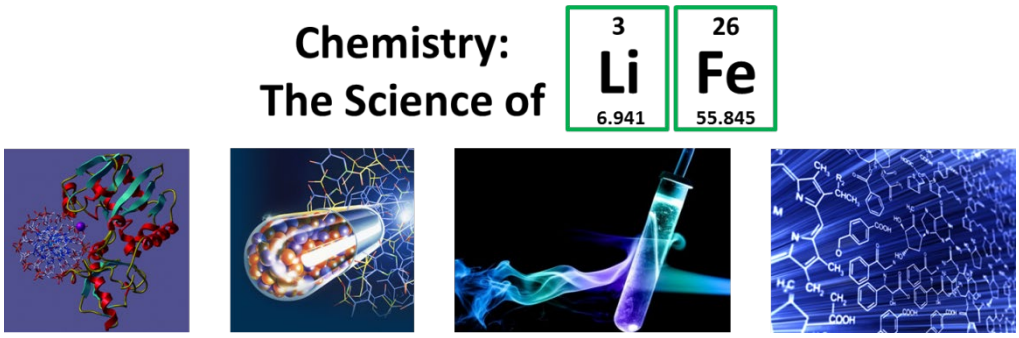
Chemistry 1003

Fundamentals of General, Organic and Biological Chemistry



Welcome to CHE 1003, Spring 2020:

Chemistry 1003 is 4 unit introductory chemistry class taught by the Department of Chemistry at PLNU. Chemistry is a fundamental building block of life since every physiological process ultimately involves chemical reactions. The field of chemistry is also critical in the development of drugs designed to help when biochemical systems are not functioning properly. As such, I will seek to demonstrate the biological relevance of chemistry as often as possible throughout this course. While chemistry may be new to some of you, I strongly encourage you to review class work regularly, practice problems daily and ask as many questions as necessary in order to succeed. Ultimately, chemistry is my favorite subject to talk about and I am very happy you are here. I look forward to helping you discover this exciting field.

INSTRUCTOR

Ariane Jansma, Ph.D.
Office: Rohr Science, 334
Phone: 619-849-2623
Email: ajansma@pointloma.edu

Office Hours (Tea Available):
M, W 1:30 pm – 2:30 pm
T 10:00 am – 1:00 pm
R 8:00 am – 9:30 am
Additional times available by appointment

SCHEDULE

Class:	MWF	12:15 pm – 1:20 pm	LA 101	
Lab Section 1:	R	9:30 am – 12:20 pm	ST 221	Jansma
Lab Section 2:	R	6:00 pm – 8:50 pm	ST 221	Rowland

Course Catalog Description

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; must also take CHE 1003L (1 unit) with this option.)

TEXT BOOK and SUPPLIES

- Fundamentals of General, Organic and Biological Chemistry, by McMurry, Castellion, Ballantine, Hoeger and Peterson, Pearson, 8th Edition, 2012 (with Mastering Chemistry).
  NEW EDITION: 9780134033099
  Required

- Laboratory Experiments to Accompany General, Organic and Biological Chemistry: An Integrated Approach, 3rd Edition, by Charles Anderson, David B Macaulay, 2013 (ISBN: 978-1-119-91825-7)
  Required

- Calculator: Texas Instrument TI-30XA or equivalent, non-programmable, no text entry
  Required

- Laboratory safety glasses and lab coat: sold by the Chemistry Department in lab during the first week.
  Required

COURSE GOALS and LEARNING OBJECTIVES

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

- Identify the different properties of solids, solutions and gases
- Describe the properties of atoms, ions, molecules and molecular compounds
- Write and balance chemical reactions and explain the energies associated with them
- Identify the main functional groups (alkenes, amines, ketone, alcohol)
- Utilize basic biochemistry concepts to assemble proteins from functional groups
- Describe biochemical processes using the functions of these protein systems

ATTENDANCE

MANDATORY!! Every year I see students who have the potential to do well and yet struggle on exams simply because they are not showing up for class. History has shown that attendance is absolutely necessary for success in this class. We will spend time in class discussing the material and working problems which will be directly covered in the exams. We will have a sign-in sheet at the beginning of each lecture section and attendance will be 10% of the course grade. Prior instructor notification via email is necessary for an absence to be excused. Otherwise points will be lost for that day.

HOMEWORK

Online homework will be assigned through MasteringChemistry (www.masteringchemistry.com course ID: **CHE1003SP20**). This program will allow you to put into practice what you have learned and you will be given several attempts to complete each problem. Successful completion of the homework problems is extremely important for success in this course. Late assignments will only be accepted with a valid excuse and must be discussed with the professor on a case by case basis.

EVALUATION

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

- Lecture Examinations (3)..... 40%
- Attendance..... 10%
- Online Homework..... 20%
- Quizzes..... 10%
- Final Examination..... 20%

GRADES

Letter grades will be assigned at the end of the course based on your percentage of total possible points, according to the following scale:

	A 93 – 100%	**A-** 90 – 92.9%
B+ 87 – 89.9 %	**B** 83 – 86.9 %	**B-** 80 – 82.9 %
C+ 77 – 79.9 %	**C** 73 – 76.9 %	**C-** 70 – 72.9 %
D+ 67 – 69.9 %	**D** 63 – 66.9 %	**D+** 60 – 62.9 %
F < 59.9 %		

LABORATORY (See also Laboratory Syllabus)

The Laboratory portion of this class receives a separate grade with 1 unit of credit. Lab sections will meet on a weekly basis. Your lab grade will be based primarily on attendance, in addition to quizzes and lab reports, so **DO NOT MISS LAB**. Your lab attendance will be recorded each week by your section Teaching Assistant. If you must miss a lab for a valid reason, you should make prior arrangements with the lab coordinator to ascertain if you can attend another lab section. No other shifts in lab schedules will be permitted. There will be no opportunity to make up missed labs. **The following activities will contribute to your overall lab grade: 70% reports, 15% quizzes, 15% attendance**. Letter grades will be assigned at the end of the semester based on your percentage of total possible points, according to the following APPROXIMATE scale: A 90 – 100%, B 80 – 89%, C 70 – 79%, D 60 – 69%, NC/F < 60%.

FINAL EXAMINATION POLICY

Successful completion of this class requires taking the final examination **on its scheduled day**. The final examination schedule is posted below as well as the Class Schedules site. No requests for early examinations or alternative days will be approved, unless the student is able to demonstrate 3 or more final examinations on the same day.

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. See Academic Policies in the undergrad student catalog for definitions of kinds of academic dishonesty and for further policy.

PLNU COPYRIGHT POLICY

PLNU ATTENDANCE and PARTICIPATION POLICY

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If a student is absent from more than 10 percent of class meetings, the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university drop date or, after that date, receive the appropriate grade for their work and participation. See Academic Policies in the Undergraduate Academic Catalog.

PLNU ACADEMIC ACCOMMODATION

If you have a diagnosed disability, please contact PLNU's Disability Resource Center (DRC) within the first two weeks of class to demonstrate need and to register for accommodation by phone at 619-849-2486 or by email at DRC@pointloma.edu. See Disability Resource Center for additional information.

PLNU MISSION STATEMENT

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 becomes an expression of faith. Being of Wesleyan heritage, we aspire to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

FOUNDATIONAL EXPLORATIONS MISSION STATEMENT

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 cultures.

CHEMISTRY 103 *TENTATIVE* CLASS SCHEDULE

WEEK	DATE	LECTURE TOPICS	CHAPTERS	LAB
Week 1	Tues 01/14	Introduction: syllabus/ course overview	ASSIGN Hwk Intro	**No lab**
	Wed 01/15	Ch 1: Measurements in Chemistry	1.1 – 1.6	
	Fri 01/17	Ch 1: Measurements in chemistry	1.7 – 1.10	
Week 2	Mon 01/20	**MLK Day – NO CLASS**	//////////////////////////	**01/23 Lab 1: Measurement**
	Wed 01/22	Ch 1: Measurements in chemistry and Practice AT HOME: Atoms and Periodic Table, 2.4 – 2.6	1.11 – 1.12 Hwk Intro: DUE ASSIGN Hwk 1	
	Fri 01/24	Ch 2: Atoms and the Periodic Table **(scheduled QUIZ)**	1.13 – 1.14 2.1 – 2.3	
Week 3	Mon 01/27	Ch 2: Atoms and the Periodic Table and Practice Problem Session	2.7 – 2.9	**01/30 Lab 3: Ions, role in nutrition**
	Wed 01/29	Ch 3: Ionic Compounds AT HOME: Ionic Compounds in water	3.1 – 3.5 Hwk 1 DUE ASSIGN Hwk 2	
	Fri 01/31	Ch 3: Ionic Compounds **Scheduled Quiz**	3.6 – 3.10	
Week 4	Mon 02/03	Ch 4: Molecular Compounds	4.1 – 4.4	**02/06 Handout And Exam Review**
	Wed 02/05	Ch 4: Molecular compounds AT HOME: Polar Molecules	4.5 – 4.10 Hwk 2 DUE	
	Fri 02/07	**EXAM 1** (Chapters 1 to 4)	//////////////////////////	
Week 5	Mon 02/10	Ch 5: classification and balancing chemical reactions	5.1 – 5.4	**02/13 Lab 7: Chemical Reactions**
	Wed 02/12	Ch 5: classification, balancing chemical reactions AT HOME: Chemical Reactions, 5.6, 5.8	5.5, 5.7 ASSIGN Hwk 3	
	Fri 2/14	Ch 6: Chemical reactions: mass relationship **(scheduled QUIZ)**	6.2 – 6.3	
Week 6	Mon 02/17	Ch 6: Chemical reactions: mass relationship	6.4 – 6.5	**02/20 Lab 8: Stoichiometry, Mole Relationship**
	Wed 02/19	Ch 8.2 and Ch 9: Solutions	8.2, 9.1 – 9.5 Hwk 3 DUE ASSIGN Hwk 4	
	Fri 02/21	Ch 9: Solutions	9.6 – 9.12	
Week 7	Mon 02/24	Review of Chemistry up to this point (worked out problems, etc.), **Scheduled Quiz**	//////////////////////////	**02/27 Lab 10: Acids and Bases**
	Wed 02/26	Ch 10: Acids and Bases	10.1 – 10.7	
	Fri 02/28	Ch 10: Acids and Bases	10.8 – 10.13 HWK 4 DUE	
Week 8	Mon 03/02	Introduction to Organic Chemistry Ch 12: Alkanes	12.1 – 12.4 ASSIGN Hwk 5	**03/05 Lab 12: Aspirin**
	Wed 03/04	Flexible day	//////////////////////////	

	Fri 03/06	**EXAM 2** (Chapters 5 to 12)	Hwk 5 DUE at the exam	**And Exam Review**
Week 9	Mon 03/09	**SPRING BREAK – NO CLASS**	//////////////////////////	**03/12 NO LAB**
	Wed 03/11	**SPRING BREAK – NO CLASS**	//////////////////////////	
	Fri 03/13	**SPRING BREAK – NO CLASS**	//////////////////////////	
Week 10	Mon 03/16	Ch 13/14: Alkenes and molecules with oxygen, sulfur or halogen (general overview)	ASSIGN Hwk 6 13/14	**03/19 Handout: Indigo Synthesis**
	Wed 03/18	Ch 14/15: Amines AT HOME: 14.3 and 15	14.3 and 15 overview	
	Fri 03/20	Ch 16: Aldehydes and Ketones **Scheduled Quiz**	16.1 – 16.5	
Week 11	Mon 03/23	Ch 16: Aldehydes and Ketones Ch 17: Carboxylic Acids	Hwk 6 DUE 16.6 – 16.7	**03/26 Lab 4: Paper and Thin layer chromatography**
	Wed 03/25	Ch 17: Carboxylic acids	17 ASSIGN Hwk 7	
	Fri 03/27	Organic Chemistry Review	//////////////////////////	
Week 12	Mon 03/30	Ch 18: Amino Acids and Proteins	18 Hwk 7 DUE ASSIGN Hwk 8	**04/02 Lab 16: Proteins**
	Wed 04/01	Ch 18: Amino Acids and Proteins	18	
	Fri 04/03	Ch 18: Protein Tertiary Structure	18	
Week 13	Mon 04/06	Ch 19: Enzymes	19 Hwk 8 DUE	**04/09 NO LAB**
	Wed 04/08	**EXAM 3** (Chapters 12-18)		
	Fri 04/10	**Easter Recess – NO CLASS**	//////////////////////////	
Week 14	Mon 04/13	**Easter Recess – NO CLASS**	//////////////////////////	**04/16 Lab 17: Enzymes and Exam Review**
	Wed 04/15	Ch 19: Enzymes	19 ASSIGN Hwk 9	
	Fri 04/17	Ch 19: Enzymes	19	
Week 15	Mon 04/20	Ch 21: Carbohydrates	21	**04/23 Lab 14: Carbohydrates**
	Wed 04/22	Finish Ch 21:, Ch 22: Carbohydrate Metabolism	21 and 22 Hwk 9 DUE ASSIGN Hwk 10	
	Fri 04/24	Ch 22: Carbohydrate Metabolism	22	
Week 16	Mon 04/27	Ch 22: Carbohydrate Metabolism	22	**04/30 Lab 15: Lipids**
	Wed 04/29	Ch 23: Lipids/Metabolism	23	
	Fri 05/01	**Quick look at Viruses and Final Review Session**	Hwk 10 DUE	
Week 17	Mon 05/04	**Finals Week – NO CLASS**	//////////////////////////	**No lab**
	Wed 05/06	**FINAL EXAM – Cumulative with an emphasis on Ch. 19 – 23, 4:30 pm**	//////////////////////////	

	Fri 05/08	**Enjoy Your Summer!**	//////////////////////////	