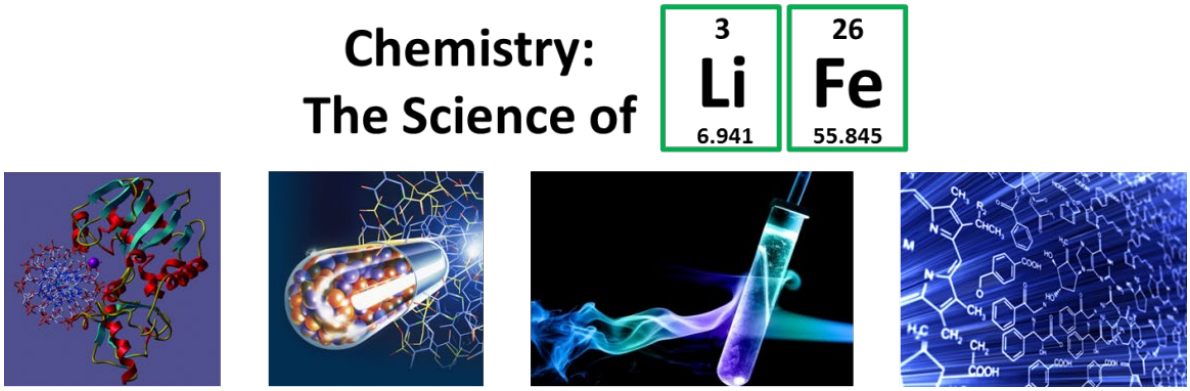
Chemistry 1003

Fundamentals of General, Organic and Biological Chemistry



Welcome to CHE 1003, Fall 2019:

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 AND LAB COORDINATOR

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

Office Hours:

T	8:00 am – 12:00 pm
W	1:30 pm – 2:30 pm
R	11:00 am – 2:00 pm

SCHEDULE

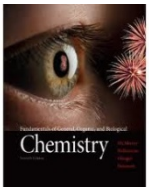
Lecture Section 1:	**MWF**	**8:30 am – 9:35 am**	**LA 102**	**Jansma**
Lecture Section 2:	MWF	11:00 am – 12:05 pm	SB 100	Lockner
Lecture Section 3:	MWF	8:30 am – 9:35 pm	LA 02	Lockner
Lab Section 2:	M	6:00 pm – 9:50 pm	ST 221	Cobbs
Lab Section 4:	T	1:30 pm – 4:20 pm	ST 221	Orlando
Lab Section 5:	T	6:00 pm – 8:50 pm	ST 221	Baker
Lab Section 6:	W	6:00 pm – 8:50 pm	ST 221	Baker
Lab Section 7:	R	6:00 pm – 8:50 pm	ST 221	Cobbs

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 103L (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
  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. 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 – **SAME FOR LAB (attendance will be recorded based on the lab quiz and report).**

HOMEWORK

Online homework will be assigned through MasteringChemistry (www.masteringchemistry.com course ID: **CHE103SP19**). 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..... 15%
- Final Examination..... 15%

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 %		

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.

LABORATORY

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**. If you must miss a lab for a valid reason, you should make prior arrangements with the lab coordinator (Dr. Jansma) to ascertain if you can attend another lab section. No other shifts in lab schedules will be permitted. **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 scale above.

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

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 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.

CHEMISTRY 103 *TENTATIVE* CLASS SCHEDULE

WEEK	DATE	LECTURE TOPICS	CHAPTERS	LAB
Week 1	Tues 09/03	**NO CLASS – Administrative Day**	//////////////////////////	**No lab**
	Wed 09/04	Introduction: syllabus/ course overview	ASSIGN Hwk Intro	
	Fri 09/06	Ch 1: Measurements in Chemistry	1.1 – 1.6	
Week 2	Mon 09/09	Ch 1: Measurements in chemistry	1.7 – 1.14 Hwk Intro: DUE	**09/09 Lab 1: Measurement**
	Wed 09/11	Ch 2: Atoms and the Periodic Table AT HOME: Atoms and Periodic Table, 2.4 – 2.6	2.1 – 2.3 ASSIGN Hwk 1	
	Fri 09/13	Ch 2: Atoms and the Periodic Table and Practice Problem Session **(scheduled QUIZ)**	2.7 – 2.9	
Week 3	Mon 09/16	Ch 3: Ionic Compounds AT HOME: Ionic Compounds in water	3.1 – 3.5 Hwk 1 DUE ASSIGN Hwk 2	**09/16 Lab 3: Ions, role in nutrition**
	Wed 09/18	Ch 3: Ionic Compounds	3.6 – 3.10	
	Fri 09/20	Ch 4: Molecular Compounds	4.1 – 4.4	
Week 4	Mon 09/23	Ch 4: Molecular Compounds	4.5 – 4.8	**09/23 Handout And Exam Review**
	Wed 09/25	Ch 4: Molecular compounds AT HOME: Polar Molecules	4.9 – 4.10 Hwk 2 DUE	
	Fri 09/27	**EXAM 1** (Chapters 1 to 4)	//////////////////////////	

Week 5	Mon 09/30	Ch 5: classification and balancing chemical reactions	5.1 – 5.4 ASSIGN Hwk 3	**09/30** **Lab 7: Chemical Reactions**
	Wed 10/02	Ch 5: classification, balancing chemical reactions AT HOME: Chemical Reactions, 5.6, 5.8	5.5, 5.7	
	Fri 10/04	Ch 6: Chemical reactions: mass relationship	6.2 – 6.3	
Week 6	Mon 10/07	Ch 6: Chemical reactions: mass relationship	6.4 – 6.5	**10/07** **Lab 8: Stoichiometry, Mole Relationship**
	Wed 10/09	Ch 8.2 and Ch 9: Solutions	8.2, 9.1 – 9.5 Hwk 3 DUE ASSIGN Hwk 4	
	Fri 10/11	Ch 9: Solutions	9.6 – 9.12	
Week 7	Mon 10/14	Ch 10: Acids and Bases **Scheduled Review Quiz**	10.1 – 10.5 HWK 4 DUE ASSIGN Hwk 5	**10/14** **Lab 10: Acids and Bases**
	Wed 10/16	Ch 10: Acids and Bases	10.5 – 10.7	
	Fri 10/18	Ch 10. Acids and Bases	10.8 – 10.9	
Week 8	Mon 10/21	Introduction to Organic Chemistry Ch 12: Alkanes	12.1 – 12.4 HWK 5 DUE	**10/21** **Lab 12: Aspirin**
	Wed 10/23	**EXAM 2** (Chapters 5 to 12)	//////////////////////////	
	Fri 10/25	**FALL BREAK – NO CLASS**	//////////////////////////	
Week 9	Mon 10/28	Ch 13/14: Alkenes and molecules with oxygen, sulfur or halogen (general overview)	ASSIGN Hwk 6 13/14	**10/28** **Handout: Indigo Synthesis**
	Wed 10/30	Ch 14/15: Amines AT HOME: 14.3 and 15	14.3 and 15 overview	
	Fri 11/01	Ch 16: Aldehydes and Ketones **Scheduled Organic Quiz**	16.1 – 16.5	
Week 10	Mon 11/04	Ch 16: Aldehydes and Ketones Ch 17: Carboxylic Acids	Hwk 6 DUE 16.6 – 16.7	**11/04** **Lab 4: Paper and Thin layer chromatography**
	Wed 11/06	Ch 17: Carboxylic acids	17 ASSIGN Hwk 7	
	Fri 11/08	Organic Chemistry Review	//////////////////////////	
Week 11	Mon 11/11	Ch 18: Amino Acids and Proteins	18 Hwk 7 DUE ASSIGN Hwk 8	**11/11** **Lab 16: Proteins**
	Wed 11/13	Ch 18: Amino Acids and Proteins	18	
	Fri 11/15	Ch 18: Protein Tertiary Structure **Scheduled Protein Quiz**	18	
Week 12	Mon 11/18	Ch 19: Enzymes	19	**11/18** **Lab 17: Enzymes and Exam Review**
	Wed 11/20	Ch 19: Enzymes	19 Hwk 8 DUE	
	Fri 11/22	**EXAM 3** (Chapters 12-19a)	//////////////////////////	
Week 13	Mon 11/25	Ch 21: Carbohydrates	21 ASSIGN Hwk 9	**No Lab**
	Wed 11/27	**Thanksgiving Recess – NO CLASS**	//////////////////////////	
	Fri 11/29	**Thanksgiving Recess – NO CLASS**	//////////////////////////	

Week 14	Mon 12/02	Ch 21: Carbohydrates	21	**12/02 Lab 14: Carbohydrates**
	Wed 12/04	Ch 21: Carbohydrate Metabolism	22 Hwk 9 DUE ASSIGN Hwk 10	
	Fri 12/06	Ch 22: Carbohydrate Metabolism	22	
Week 15	Mon 12/09	Ch 23: Lipids	23	**12/09 Lab 15: Lipids**
	Wed 12/11	Ch 23: Lipids/Metabolism	23 Hwk 10 DUE	
	Fri 12/13	Viruses and Final Exam Review Session	//////////////////////////	
Week 16	Mon 12/16	**FINALS WEEK – NO CLASS**	//////////////////////////	**No Lab**
	Wed 12/18	**FINAL EXAM (Cummulative), 4:30 pm**	//////////////////////////	
	Fri 12/20	**FINALS WEEK – NO CLASS**	//////////////////////////	