

GENERAL CHEMISTRY II (CHE1053) SYLLABUS

Spring 2020

Topics we will cover this semester include the fundamentals of solutions, kinetics, equilibrium, thermodynamics, transition metals, electrochemistry and nuclear chemistry. This is such a fun class to teach because I have the opportunity to help build your foundation for so much future learning in chemistry. I am happy you are here and very excited for this semester!

INSTRUCTOR:

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

OFFICE HOURS:

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

Additional times available by appointment

LECTURE:

Section 3 (LA101) MWF 8:30 am – 9:25 am
Section 4 (LA2) MWF 11:00 am – 11:55 am

LAB COORDINATOR:

Dr. David Lingner
Office: Rohr Science 328
Phone: 619-849-2470
Email: davidlingner@pointloma.edu

REQUIRED BOOKS AND COURSE MATERIALS:

NOTE: NO new materials are required for CHE1053 if you took CHE1052 last semester. You should already have everything on the following list.

1. *Textbook*: Tro, Chemistry: A Molecular Approach Plus MasteringChemistry with eText, Pearson, 4th Edition, ISBN-13: 9780134103976 (hardcover text), 9780134162454 (looseleaf text), or 9780134162485 (etext)
2. *Online Homework*: MasteringChemistry www.masteringchemistry.com (bundled with text or purchased separately) Course ID: **CHE1053SPRING2020**
3. *Course Website*: canvas.pointloma.edu
4. *Scientific Calculator*: Non-graphing, non-programmable calculator required for exams.
5. *Clicker*: I-Clicker 2, ISBN-13: 9781429280471

Optional Materials:

Tro, Study Guide for Chemistry: A Molecular Approach, Pearson, 4th Edition 2017, ISBN-13: 9780134066271. Tro, Selected Solutions Manual for Chemistry: A Molecular Approach, Pearson, 4th Edition 2017, ISBN-13: 9780134066288.

ACS Review Study Guide to help review for the final exam. We will be offering this guide for purchase early in the semester so wait for announcements.

COURSE OBJECTIVES:

This is the second course in a two-semester sequence studying the general principles of Chemistry. The course is designed to meet the following objectives:

- Teach chemical facts and theories
- Provide a conceptual framework of modern chemistry
- Develop laboratory skills in the practice of chemical science (CHE1053L)

Topics covered include solutions, reaction rates, chemical equilibrium (including acid-base equilibria and solubility equilibria), thermodynamics, electrochemistry, transition metals, and nuclear chemistry. Although the laboratory portion is a separate course, it is a co-requisite and thus an integral part of learning for this course.

LEARNING OUTCOMES:

An in depth knowledge of chemistry is critical in understanding basic and applied sciences, engineering, and medical professions as well as providing valuable insight for comprehending current events and policies.

Specifically, upon completion of this course, students will be able to:

- Demonstrate a foundational knowledge of the general principles of chemistry including the behavior of solutions, the characteristics of equilibrium (including acid/base equilibrium), the significance of free energy, the properties of electrochemistry, and structures of transition metal and their compounds.
- Solve problems related to describing basic chemical kinetics, characterizing reaction equilibrium, predicting the direction of spontaneous change, calculating electrochemical cell potentials and writing chemical equations for selected chemical reactions.
- Perform basic chemical laboratory techniques related to the topics listed above (CHE1053L).

PREREQUISITES:

Chemistry Prerequisite: Successful completion of General Chemistry I (CHE 1052), or the equivalent.

Mathematical Expectations: Math skills equivalent to those taught in pre-calculus.

COREQUISITE: CHE1053L

EVALUATION:

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

Hour Examinations (4)	50%
Homework	15%
Quizzes and In-Class Activities	20%
Final Examination	15%

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

A	90 – 100%
B	80 – 90%
C	70 – 80%
D	60 – 70%
F	< 60%

(+) and (-) grades will be assigned within each bracket. There is no A+ grade.

Strategies for success in CHE1053

1. It is crucial that you not only memorize but thoroughly understand course material. Focus on recognizing patterns and learn to apply the problem solving strategies that are introduced in the book and lecture.
2. Working problems is the key to success. Work the practice problems in the book as you read the material and start homework sets early so that you can take advantage of office hours and review sessions. Practice additional problems at the end of each chapter (especially if there is an area where you are struggling).
3. COME TO CLASS! History shows that attendance is critical to strong performance on exams in chemistry.
4. Come prepared to class. Not just attendance, but the time you invest in reading the assigned sections and answering prelecture problems will be very important when it comes time to study for exams.
5. Get help if you don't understand something. The instructors are here for you!

Advice from previous General Chemistry students

- Read the sections assigned for each lecture beforehand. Even if you don't understand what you are reading, it will make so much sense when the instructor explains it. Doing this keeps you on top of this class and makes quizzes and tests much easier to study for.
- I advise them to start mastering chemistry assignments as soon as they are assigned. They should take advantage of office hours, too.
- Go to office hours if you don't understand something! Read the textbook - it actually helps so much to go over those examples and do them yourself. When studying for the exams, redo examples from class handouts.
- Dedicate a certain amount of time each day to reviewing in class material and go to office hours if you are confused about anything at all.
- Pay attention and show up to class! Also read and take notes on the sections that will be covered in lecture. If you're struggling in the class or just not understanding even one thing, go to the tutoring center or office hours and really get it down.
- Stay on top from the beginning. Work on test taking strategy. Study. Exams are everything.
- Study hard and prioritize your time. Also, make a good relationship with the professor.
- Apply yourself and work hard. You as an individual determine your success in general chemistry.
- Take the class seriously from the very beginning. Review notes directly after class.

ADMINISTRATION:

1. **Attendance:** You are responsible for all the material covered during class. Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the 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. A lab absence will result in a zero on that lab report and lab quiz.
2. The use of portable electronic devices (phones, laptops, iPods, etc.) not related to the course is not permitted in the classroom.
3. **Online Homework:** Homework will be assigned three times per week, due Monday, Wednesday and Friday, through MasteringChemistry (www.masteringchemistry.com course ID: **CHE1053SPRING2020**). Successful completion of the homework is essential in mastering the course material. Late assignments will not be accepted.
4. **In-Class Activities:** In-Class activities will be assigned and collected periodically during the semester. In-class activities cannot be made up; however, the lowest in-class activity score will be discarded when final grades are computed. **iclickers will be used regularly to record in-class participation.**
5. **Exams and Quizzes:** Four exams and a comprehensive final will be given during the semester. Make-up exams will be arranged only if the instructor is contacted prior to the scheduled exam time and then only if you present an institutionally valid excuse. Unannounced quizzes will be given periodically throughout the semester. Quizzes cannot be made up; however, the lowest quiz score will be discarded when final grades are computed. *Only non-graphing and non-programmable calculators may be used for exams and quizzes.*
6. **Canvas:** Canvas (canvas.pointloma.edu) is used as a repository for course material such as lecture notes, slides, and miscellaneous items. Announcements will be sent out via Canvas. It is your responsibility to check Canvas regularly and to confirm that your correct email address is in the system. Grades will be posted periodically to Canvas.

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.

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 [Class Schedules](#) site. No requests for early examinations or alternative days will be approved.

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 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. Faculty should follow and students may appeal using the procedure in the university Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

PLNU ACADEMIC ACCOMMODATIONS POLICY

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center. (DRC@pointloma.edu or 619-849-2486). The DRC's policies and procedures for assisting such students in the development of an appropriate academic adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student's specific learning needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in all such courses.

If students do not wish to avail themselves of some or all of the elements of their AP in a particular course, it is the responsibility of those students to notify their professor in that course. PLNU highly recommends that DRC students speak with their professors during the first two weeks of each semester about the applicability of their AP in that particular course and/or if they do not desire to take advantage of some or all of the elements of their AP in that course.

PLNU ATTENDANCE AND PARTICIPATION POLICY

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the 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.

GENERAL CHEMISTRY II (CHE 1053)
TENTATIVE SPRING 2020 CLASS SCHEDULE

<u>DATE</u>	<u>TOPIC</u>	<u>READING ASSIGNMENT</u>
Jan 14 (T)	Properties of Solutions	Chapter 13.1 – 13.2, 13.5
Jan 15 (W)	Factors Affecting Solubility	Chapter 13.3 – 13.4
Jan 17 (F)	Colligative Properties	Chapter 13.6 – 13.7
<i>Jan 20 (M)</i>	<i>Martin Luther King Day</i>	<i>NO CLASS</i>
Jan 22 (W)	Colligative Properties	Chapter 13.6 – 13.7
Jan 24 (F)	Reaction Rates	Chapter 14.1 – 14.3
Jan 27 (M)	Integrated Rate Law and Effect of Temperature	Chapter 14.4 – 14.5
Jan 29 (W)	Collision Theory and Reaction Mechanisms	Chapter 14.5 – 14.6
Jan 31 (F)	Catalysis	Chapter 14.7
Feb 3 (M)	Chapter 14	Chapter 14
Feb 5 (W)	Exam 1 (Chapters 13, 14)	
Feb 7 (F)	Equilibrium Principles	Chapter 15.1 – 15.5
Feb 10 (M)	Equilibrium Calculations	Chapter 15.6 – 15.7
Feb 12 (W)	Equilibrium Calculations & Le Chatelier's Principle	Chapter 15.8 – 15.9
Feb 14 (F)	Le Chatelier's Principle	Chapter 15.9
Feb 17 (M)	Chapter 15	Chapter 15
Feb 19 (W)	Nature of Acid and Base	Chapter 16.1 – 16.4
Feb 21 (F)	pH Calculations and Acid/Base Strength	Chapter 16.5 – 16.6
Feb 24 (M)	Bases, Salts, and Polyprotic Acids	Chapter 16.7– 16.9
Feb 26 (W)	Acids Strength and Molecular Structure	Chapter 16.10 – 16.11
Feb 28 (F)	Chapter 16	Chapter 16

<u>DATE</u>	<u>TOPIC</u>	<u>READING ASSIGNMENT</u>
Mar 2 (M)	Common Ions and Buffers	Chapter 17.1 – 17.3
Mar 4 (W)	Titration Principles	Chapter 17.4
Mar 6 (F)	EXAM 2 (Chapters 15, 16, and 17a)	
<i>Mar 9 – 13</i>	<i>Spring Mid-Term Break</i>	<i>NO CLASS</i>
Mar 16 (M)	pH Curves and Indicators	Chapter 17.4
Mar 18 (W)	Solubility Equilibria	Chapter 17.5 – 17.6
Mar 20 (F)	<i>Complex Ion Equilibria</i>	Chapter 17.7 – 17.8
Mar 23 (M)	Finish 17/Start 18	Chapter 17/18
Mar 25 (W)	Spontaneity, Entropy, and 2 nd Law	Chapter 18.1 – 18.3
Mar 27 (F)	Free Energy – The Concept	Chapter 18.4 – 18.5
Mar 30 (M)	Free Energy and Chemical Reactions	Chapter 18.6 – 18.7
Apr 1 (W)	Free Energy and the Equilibrium Constant	Chapter 18.8 – 18.10
Apr 3 (F)	Exam 3 (Chapter 17b and 18)	
Apr 6 (M)	Half Reactions and Balancing	Chapter 19.1 – 19.2
Apr 8 (W)	Cell Potential and Free Energy	Chapter 19.4 – 19.5
Apr 10 (F)	<i>EASTER BREAK</i>	<i>NO CLASS</i>
Apr 13 (M)	<i>EASTER BREAK</i>	<i>NO CLASS</i>
Apr 15 (W)	Cell Potential and Concentration Effects	Chapter 19.6 – 19.7
Apr 17 (F)	Electrolysis and Corrosion	Chapter 19.8 – 19.9
Apr 20 (M)	Coordination Compounds and Isomers	Chapter 25.1 – 25.4
Apr 22 (W)	Metal-Ligand Bonding and “d” Orbitals	Chapter 25.5 – 25.6
Apr 24 (F)	Metal-Ligand Bonding and “d” Orbitals	Chapter 25.5 – 25.6
Apr 27 (M)	Nuclear Chemistry	Chapter 20.3 – 20.6

<u>DATE</u>	<u>TOPIC</u>	<u>READING ASSIGNMENT</u>
Apr 29 (W)	EXAM 4 (Chapters 19, 25 and Nuclear Chemistry)	
May 1 (F)	Nuclear Chemistry/Review	Handout
May 6 (W) (4:30 – 7:00 pm)	ACS COMPREHENSIVE FINAL EXAM COVERS ALL TOPICS IN CHE 1052 & 1053 (see Final Exam Schedule)	