

GENERAL CHEMISTRY I (CHE152) Fall 2015 SYLLABUS

INSTRUCTORS:

Dr. Laurance Beauvais
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Office Hours: MWR 1:30 – 2:30 pm
T 10:00 – 10:55 am
and by appointment

Dr. Ken Martin
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Email: kenmartin@pointloma.edu
Office Hours: MTWR 1:30 – 3:00 pm
and by appointment

LECTURE:

Section 1 (LA 2) MWF 8:30–9:35 am
Section 2 (LA 2) MWF 11:00 am–12:05 pm
Section 3 (LA 1) MWF 8:30–9:35 am
Section 4 (LA 1) MWF 11:00 am–12:05 pm

TUTORIAL:

Section 1 (LA 1) T 11:00 – 11:50 am
Section 2 (LA 1) T 12:30 – 1:20 pm
Section 3 (LA 1) T 1:30 – 2:20 pm

LAB: (ST 209)

Section 1 M 2:45 – 6:15 pm
Section 2 M 6:30 – 10:00 pm
Section 3 T 8:00 – 11:30 am
Section 4 T 1:30 – 5:00 pm
Section 5 T 6:00 – 9:30 pm
Section 6 W 2:45 – 6:15 pm
Section 7 W 6:30 – 10:00 pm
Section 8 R 8:00 – 11:30 am
Section 9 R 1:30 – 5:00 pm
Section 10 R 6:00 – 9:30 pm

REVIEW SESSIONS:

Lab Coordinator:

Dr. Sara Choung
Email: schoung@pointloma.edu

LEARNING MATERIALS*:

1. *Textbook*: Tro, Chemistry: A Molecular Approach Plus MasteringChemistry with eText, Prentice Hall, 3rd Edition 2014, ISBN-13: 9780321804716.
2. *Laboratory Manual*: Postma, Roberts and Hollenberg, Chemistry in the Laboratory, W. H. Freeman and Company, 7th Edition 2011, ISBN-13: 9781429219549.
3. *Online Homework*: MasteringChemistry www.masteringchemistry.com (bundled with text or purchased separately)
4. *Course Website*: Canvas, canvas.pointloma.edu
5. *Scientific Calculator*: Non-graphing, non-programmable calculator required.
6. *Clicker*: I-Clicker 2, ISBN-13: 9781429280471
7. *Laboratory Safety Glasses and Lab Coat*: Sold in lab.
8. *Optional Materials*: Tro and Shanoski, Study Guide for Chemistry: A Molecular Approach, Prentice Hall, 3rd Edition 2014, ISBN-13: 9780321813626. Tro, Saginaw and Kramer, Student Solutions Manual for Chemistry: A Molecular Approach, Prentice Hall, 3rd Edition 2014, ISBN-13: 9780321813640.

* These materials are used for both semesters of the General Chemistry. No new materials will be required for the second semester of General Chemistry (CHE153).

COURSE DESCRIPTION:

This is the first course in a two-semester sequence studying the general principles of chemistry. The course is designed to teach chemical facts and theories; to provide a conceptual framework for chemistry and chemistry related disciplines; and to develop laboratory skills relevant to the practice of chemistry.

LEARNING OUTCOMES:

An understanding of chemistry is a necessary part of an education in the basic and applied sciences, engineering, and medical professions. It also provides insight and increased comprehension regarding current events and proposed policies.

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

- Demonstrate a foundational knowledge of the general principles of chemistry including atomic and molecular structure, chemical bonding, states of matter, and behavior solutions.
- Solve problems related to unit conversions, stoichiometry, energy calculations, and gas laws.
- Perform basic chemical laboratory techniques related to the topics listed above.

General Education Learning Outcomes: GELO 1e will be assessed directly using problems on the final exam that are quantitative in nature.

PREREQUISITE:

Satisfactory high school background, Chemistry 103, Physical Science 110, or the equivalent. Math skills equivalent to those taught in a typical pre-calculus course.

COREQUISITE:

CHE152L and CHE151 (unless waived by exam).

EVALUATION:

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

Hour Examinations (4)	40%
Laboratory Work	25%
Homework (online & other)	10%
Quizzes and In-Class Activities	10%
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 – 89%
C	70 – 79%
D	60 – 69%
NC/F	< 60%

(+) and (–) grades will be assigned within each bracket. (There is no A+ grade.) CHE151 is graded on a Credit/No Credit basis.

ADMINISTRATION:

1. **Attendance:** You are responsible for all the material covered during class. History has shown that class attendance is necessary for success in this course. Missing even one class meeting is detrimental. However, you will be allowed a maximum of four absences (excused or unexcused) during the semester without incurring a grade penalty. Each absence after the fourth will result in a six-point reduction in one of your hour exam scores. Absences in excess of 20% of the total number of class meetings may result in de-enrollment from the course as described in the PLNU 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 or lab.
3. **Online Homework:** Homework will be assigned regularly through MasteringChemistry (www.masteringchemistry.com course ID: CHE152FALL2015). 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.
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. **Laboratories:** Laboratory sections will meet on a weekly basis. Attendance is mandatory at all laboratory sessions. 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. Furthermore, you are responsible for all the material covered in the lab even if you did not attend. Some experiments will be done individually, while others are best worked in pairs. Your lab instructor will specify when you work in pairs. In either case, individual lab reports will be submitted at the end of each period. A quiz, given at the beginning of each lab period, is designed to test individual understanding of the current and previous experiments.
7. **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.

OTHER MATTERS:

Academic Dishonesty: The Point Loma Nazarene University community holds the highest standards of honesty and integrity in all aspects of university life. Any violation of the university's commitment is a serious affront to the very nature of Point Loma's mission and purpose. Violations of academic honesty include cheating, plagiarism, falsification, aiding academic dishonesty, and malicious interference. Definitions of these types of violations, a response procedure, and an appeal procedure can be found in the academic catalog on the following website.

http://catalog.pointloma.edu/content.php?catoid=10&navoid=1000#Academic_Honesty

Academic dishonesty (such as copying from someone else or using unauthorized notes on quizzes or exams) will result in failure of the assignment and/or failure of the class. Further disciplinary action may result. You are not allowed to use graphing or programmable calculators on exams.

Student Privacy: Point Loma Nazarene University adheres to the provisions of the student privacy act. Following FERPA guidelines, grades in this class will be communicated to students on an individual basis. However, exams will be returned in class in such a way that scores are not visible. Individual quizzes and in-class activities will be returned during your lab section.

Academic Accommodations: While all students are expected to meet the minimum academic standards for completion of their courses as established by the instructors, students with special needs may require academic accommodations. At Point Loma Nazarene University, students requesting academic accommodations must file documentation with the Disability Resource Center (DRC), located in the Bond Academic Center. Once the student files documentation, the Disability Resource Center contacts the student's instructors and provides written recommendations for reasonable and appropriate accommodations to meet the individual needs of the student. This policy assists the university in its commitment to full compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities (ADA) Act of 1990, and ADA Amendments Act of 2008, all of which prohibit discrimination against students with special needs and guarantees all qualified students equal access to the benefits of PLNU programs and activities. Students have the right to appeal decisions regarding academic accommodations. In order to provide prompt and equitable resolution, the student must submit a written or verbal statement to the Director of Academic Advising who will conduct the appeal process in consultation with the Vice President for Student Development.

CHEMISTRY 152 CLASS SCHEDULE

DATE	LECTURE TOPICS	READING ASSIGNMENT	LABORATORY
9/1 (T)	Introduction, Atoms, Molecules, Scientific Approach	1.1 – 1.2	No Lab
9/2 (W)	Tutorial Placement Exam		
9/4 (F)	Classification of Matter, Physical/Chemical Changes and Properties, Energy	1.3 – 1.5	
9/7 (M)	Labor Day – No Class		Check-in and Scientific Measurements
9/9 (W)	Units/Reliability of Measurements and Solving Chemical Problems	1.6 – 1.8	<i>Experiment 1</i>
9/11 (F)	Atoms, Modern Atomic Theory and Laws, Electrons, Atomic Structure and Subatomic Particles	2.1 – 2.6	
9/14 (M)	Periodic Law, Periodic Table, Atomic Mass and Molar Mass	2.7 – 2.9	Determination of a Chemical Formula
9/16 (W)	Chemical Bonds, Chemical Formulas, Molecular Models, Elements and Compounds	3.1 – 3.4	<i>Experiment 8</i> AND
9/18 (F)	Ionic Compounds, Molecular Compounds, Formula and Molar Mass of Compounds	3.5 – 3.8	Chemical Nomenclature <i>Study Assignment A</i>
9/21 (M)	Composition of Compounds, Determining Chemical Formulas and Writing/Balancing Chemical Equations	3.9 – 3.11	A Cycle of Copper Reactions
9/23 (W)	Reaction Stoichiometry, Limiting Reactant, Theoretical and Percent Yield	4.1 – 4.3	
9/25 (F)	EXAM #1 (day 11)	Chapters 1 – 3	<i>Experiment 5</i>
9/28 (M)	Solution Concentration and Stoichiometry, Aqueous Solutions and Solubility	4.4 – 4.5	Acid/Base Titration
9/30 (W)	Precipitation Reactions and Representing Aqueous Reactions	4.6 – 4.7	
10/2 (F)	Acid–Base and Gas Evolution Reactions	4.8	<i>Handout</i>
10/5 (M)	Oxidation–Reduction Reactions	4.9	Oxidation-Reduction <i>Experiment 34 (partial)</i> AND Molar Volume of a Gas <i>Experiment 11</i>
10/7 (W)	Pressure and Gas Laws	5.1 – 5.5	
10/9 (F)	Gas Mixtures and Gas Stoichiometry	5.6 – 5.7	
10/12 (M)	Kinetic Molecular Theory, Diffusion, Effusion, and Real Gases	5.8 – 5.10	The Reactivity of Metal with Hydrochloric Acid
10/14 (W)	Energy Definitions, Internal Energy, Heat and Work	6.1 – 6.4	
10/16 (F)	EXAM #2 (day 20)	Chapters 4 – 5	<i>Experiment 13</i>
10/19 (M)	Calorimetry and Enthalpy	6.5 – 6.7	Hess's Law
10/21 (W)	Enthalpy of Reaction	6.8 – 6.10	
10/23 (F)	Fall Break – No Class		<i>Experiment 15</i>

DATE	LECTURE TOPICS	READING ASSIGNMENT	LABORATORY
10/26 (M)	Quantum Mechanics and Nature of Light	7.1 – 7.2	Emission & Absorption Spectroscopy <i>Handout</i>
10/28 (W)	Atomic Spectroscopy, Bohr Model and Wave Nature of Matter	7.3 – 7.4	
10/30 (F)	Quantum Mechanics and Atomic Orbitals	7.5 – 7.6	
11/2 (M)	Periodic Table and Electron Configurations	8.1 – 8.4	Paper Chromatography <i>Handout</i>
11/4 (W)	Quantum Mechanical Model, Periodic Trends and Ions	8.5 – 8.7	
11/7 (F)	Electron Affinities, Metallic Character and Periodic Chemical Behavior	8.8 – 8.9	
11/9 (M)	EXAM #3 (day 29)	Chapters 6 – 8	Ionic Bonds and Conductivity of Solutions <i>Experiment 18</i>
11/11 (W)	Types of Chemical Bonds, Lewis Structures, Ionic Bonding and Covalent Bonding	9.1 – 9.5	
11/13 (F)	Electronegativity, Bond Polarity, Lewis Structures, Resonance and Formal Charge	9.6 – 9.8	
11/16 (M)	Exceptions to Octet Rule, Bond Energies, Bond Lengths and Metallic Bonds	9.9 – 9.11	Writing Lewis Dot Structures & Molecular Shapes, VSEPR, and Orbital Hybridization <i>Study Assignment B & Experiment 19</i>
11/18 (W)	VSEPR Theory and Molecular Geometries	10.1 – 10.4	
11/20 (F)	Molecular Shape, Polarity	10.5 – 10.6	
11/23 (M)	Valence Bond Theory	10.7	Thanksgiving Recess No Lab
11/25 (W)	Thanksgiving Recess – No Class		
11/27 (F)	Thanksgiving Recess – No Class		
11/30 (M)	Molecular Orbital Theory	10.8	Vapor Pressure and Enthalpies <i>Experiment 21</i>
12/2 (W)	Intermolecular Forces	11.1 – 11.4	
12/4 (F)	Vaporization, Vapor Pressure, Sublimation, Fusion and Phase Diagrams	11.5 – 11.9	
12/7 (M)	Crystalline Solids	11.10 – 11.13	The Packing of Atoms and Ions in Crystals <i>Handout</i>
12/9 (W)	EXAM #4 (day 40)	Chapters 9 – 11	
12/11 (F)	Review For The Final Exam		
12/15 (T)	COMPREHENSIVE FINAL EXAM All Sections Tuesday 1:30 – 4:00 pm <i>(Note: this is different from the date and time listed on the PLNU website)</i>	Chapters 1 – 11	