GENERAL CHEMISTRY I (CHE152) Fall 2017 SYLLABUS

INSTRUCTORS:

Dr. Laurance Beauvais
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Email: laurancebeauvais@pointloma.edu
Office Hours: M 1:00 – 2:00 pm,
WF 12:15 – 2:00 pm, R 11:00 am – 12:15 pm,
and by appointment

Dr. Sara Choung
Office: Rohr Science 305A
Phone: 619-849-2627
Email: sarachoung@pointloma.edu
Office Hours: M 2:00 – 3:00 pm,
T 9:30 – 11:00 am, WF 1:00 – 2:00 pm,
R 1:30 – 3:00 pm, and by appointment

LECTURE:
Section 1 (LA 1) MWF 8:30–9:35 am
Section 2 (LA 102) MWF 11:00 am–12:05 pm
Section 3 (LA 102) MWF 8:30–9:35 am
Section 4 (LA 2) MWF 11:00 am–12:05 pm

TUTORIAL:
Section 1 (LA 102) R 10:00 – 10:50 am
Section 2 (LA 102) R 11:00 – 11:50 am
Section 3 (LA 102) R 12:30 – 1:20 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:
Tuesday (LA 1) 5:00 – 6:00 pm
Wednesday (LA 1) 5:00 – 6:00 pm
Thursday (LA 1) 5:00 – 6:00 pm

Lab Coordinator:
Dr. David Lingner
Office: Rohr Science 302D
Phone: 619-849-2470
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REQUIRED MATERIALS*:

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. *Laboratory Manual:* CHE 152L/153L Lab Manual, ISBN: 9781319171384, Custom Lab Manual – **Must be purchased new.**
3. *Online Homework:* MasteringChemistry www.masteringchemistry.com (bundled with text or purchased separately) Course ID: **CHE152FALL2017**
4. *Course Website:* canvas.pointloma.edu Course: **CHE152-1 FA17 – General Chemistry I**
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.

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

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.

COURSE DESCRIPTION:
This is the first course in a two-semester sequence studying the basic principles of modern 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. Emphasis on atomic and molecular structure, chemical bonding, gas laws, states of matter, and solutions. Course includes one three and one-half-hour laboratory each week.

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.

Strategies for success in CHE152

1. It is crucial that you primarily understand as well as memorize course material. You will be expected to synthesize your knowledge on homework, quizzes, and exams. 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.
3. Come prepared to class. The time you invest in reading the assigned sections and answering prelecture problems will be repaid in full when it comes time to study for exams.
4. Get help if you don't understand something. The instructors are here for you!

Advice from recent 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 his 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.
- Pay attention in lab, as long as you do well in lab you should be fine.
- 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 Class Attendance 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 or lab.

3. Online Homework: Homework will be assigned regularly through MasteringChemistry (www.masteringchemistry.com course ID: CHE152FALL2017). 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 Accommodations Policy: 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 e-mail at DRC@pointloma.edu. See Disability Resource Center for additional information.

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.

Final Examination Policy: Successful completion of this class requires taking the final examination **on its scheduled day**. See the 2017-2018 final examination schedule. 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 Mission: 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 152 CLASS SCHEDULE

DATE	LECTURE TOPICS	READING ASSIGNMENT	LABORATORY
8/29 (T)	Introduction, Atoms, Molecules, Scientific Approach	1.1 – 1.2	**No Lab**
8/30 (W)	Classification of Matter, Physical/Chemical Changes and Properties, Energy	1.3 – 1.5	
9/1 (F)	Units/Reliability of Measurements and Solving Chemical Problems	1.6 – 1.8	
9/4 (M)	**Labor Day – No Class**		Check-in Scientific Measurements *(p. 23)*
9/6 (W)	Atoms, Modern Atomic Theory and Laws, Electrons, Atomic Structure and Subatomic Particles	2.1 – 2.6	
9/8 (F)	Periodic Law, Periodic Table, Atomic Mass and Molar Mass	2.7 – 2.9	
9/11 (M)	Chemical Bonds, Chemical Formulas, Molecular Models, Elements and Compounds	3.1 – 3.4	Determination of a Chemical Formula: The Reaction of Iodine with Zinc *(p. 41)* AND Nomenclature Worksheet
9/13 (W)	Ionic Compounds, Molecular Compounds, Formula and Molar Mass of Compounds	3.5 – 3.8	
9/15 (F)	Composition of Compounds, Determining Chemical Formulas and Writing/Balancing Chemical Equations	3.9 – 3.11	
9/18 (M)	Reaction Stoichiometry, Limiting Reactant, Theoretical and Percent Yield	4.1 – 4.3	A Cycle of Copper Reactions *(p. 49)*
9/20 (W)	**EXAM #1 (day 10)**	Chapters 1 – 3	
9/22 (F)	Solution Concentration and Stoichiometry, Aqueous Solutions and Solubility	4.4 – 4.5	
9/25 (M)	Precipitation Reactions and Representing Aqueous Reactions	4.6 – 4.7	Volumetric Titration of Acids & Bases *(p. 61)*
9/27 (W)	Acid–Base and Gas Evolution Reactions	4.8	
9/29 (F)	Oxidation–Reduction Reactions	4.9	
10/2 (M)	Pressure and Gas Laws	5.1 – 5.5	Gas Laws and Airbags *(p. 69)* AND Oxidation-Reduction Worksheet
10/4 (W)	Gas Mixtures and Gas Stoichiometry	5.6 – 5.7	
10/6 (F)	Kinetic Molecular Theory, Diffusion, Effusion, and Real Gases	5.8 – 5.10	
10/9 (M)	Energy Definitions, Internal Energy, Heat and Work	6.1 – 6.3	Determining R using a Metal-HCl Reaction *(p. 75)*
10/11 (W)	**EXAM #2 (day 19)**	Chapters 4 – 5	
10/13 (F)	Heat and Work, Calorimetry	6.4 – 6.5	
10/16 (M)	Enthalpy and Calorimetry	6.6 – 6.7	Enthalpy Changes in Chemical Reactions: Hess's Law *(p. 83)*
10/18 (W)	Enthalpy of Reaction	6.8 – 6.10	
10/20 (F)	**Fall Break – No Class**		

DATE	LECTURE TOPICS	READING ASSIGNMENT	LABORATORY
10/23 (M)	Quantum Mechanics and Nature of Light	7.1 – 7.2	Absorption Spectroscopy (p. 95) AND Emission Spectroscopy *(p. 99)*
10/25 (W)	Atomic Spectroscopy, Bohr Model and Wave Nature of Matter	7.3 – 7.4	
10/27 (F)	Quantum Mechanics and Atomic Orbitals	7.5 – 7.6	
10/30 (M)	Periodic Table and Electron Configurations	8.1 – 8.4	Paper Chromatography *(p.103)*
11/1 (W)	Quantum Mechanical Model, Periodic Trends and Ions	8.5 – 8.7	
11/3 (F)	Electron Affinities, Metallic Character and Periodic Chemical Behavior	8.8 – 8.9	
11/6 (M)	Types of Chemical Bonds, Lewis Structures, Ionic Bonding and Covalent Bonding	9.1 – 9.5	Ionic and Covalent Bonding: Conductivity of Solutions of Ionic and Covalent Compounds *(p. 109)*
11/8 (W)	**EXAM #3 (day 30)**	Chapters 6 – 8	
11/10 (F)	Electronegativity, Bond Polarity, Lewis Structures, Resonance and Formal Charge	9.6 – 9.8	
11/13 (M)	Exceptions to Octet Rule, Bond Energies, Bond Lengths and Metallic Bonds	9.9 – 9.11	Writing Lewis Structures *(p. 121)* AND Models of Molecular Shapes: VSEPR Theory and Orbital Hybridization *(p. 139)*
11/15 (W)	VSEPR Theory and Molecular Geometries	10.1 – 10.4	
11/17 (F)	Molecular Shape, Polarity	10.5	
11/20 (M)	Valence Bond Theory	10.6 – 10.7	**Thanksgiving Recess** **No Lab**
11/22 (W)	**Thanksgiving Recess – No Class**		
11/24 (F)	**Thanksgiving Recess – No Class**		
11/27 (M)	Molecular Orbital Theory	10.8	Liquids and Solids: Vapor Pressure, Enthalpy of Vaporization, Enthalpy of Fusion *(p. 165)*
11/29 (W)	Intermolecular Forces	11.1 – 11.4	
12/1 (F)	Intermolecular Forces Vaporization, Vapor Pressure, Sublimation, Fusion and Phase Diagrams	11.1 – 11.4	
12/4 (M)	Vaporization, Vapor Pressure, Sublimation, Fusion and Phase Diagrams	11.5 – 11.9	Crystal Structures Lab *(p. 179)* Ch. 12.1 – 12.6
12/6 (W)	**EXAM #4 (day 40)**	Chapters 9 – 11	
12/8 (F)	Review For The Final Exam		
12/15 (F)	**COMPREHENSIVE FINAL EXAM** **All Sections Friday 4:30 – 7:00 pm** ***(See Final Exam Schedule)***	Chapters 1 – 12	