Chemistry & Society (CHE 1001)
Fall 2019 Syllabus

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 grade is foundational, truth is pursued, and holiness is a way of life.

COURSE INFORMATION: College of Natural & Social Sciences, Department of Chemistry
Chemistry 1001, Chemistry and Society. Section 1 (4 units) – Fall 2019

CLASS MEETINGS:

Regular Class Meetings:

- Monday/Wednesday/Friday (9/4/2019-12/20/2019), 8:15-9:25 am
- Liberty Station 205B.

Final Exam:

- Monday (12/16/2019), 7:30-10:00 am
- Liberty Station 205B.

PROFESSOR INFORMATION:

Course Professor: Dr. David Lingner
Office: Rohr Science 328
E-mail: dlingner@pointloma.edu (frequently checked, day & night)
Phone: 619-849-2470 (seldomly checked)

Office Hours:

- Monday 10:30 – 11:30 am
- Tuesday 10:30 – 11:30 am
- Wednesday 1:00 – 2:00 pm
- Thursday 1:00 – 2:00 pm
- Anytime via email.

REQUIRED MATERIALS:

- *Textbook*: **Chemistry for Changing Times**, 14th edition, by JW Hill & TW McCreary, Prentice Hall, 2016. Bookstore has various bundles that include access to the online homework and the textbook in print form or electronic (eText).
- *Online Homework*: http://masteringchemistry.com - You are **required** to use Mastering Chemistry for online homework assignments. With a new book you have already received Mastering Chemistry access in your bundle. If you have a used book, you may purchase access directly from the website. Course ID: MCLINGNER4451490
- *Scientific Calculator:* Non-graphing, non-programmable calculator required. Any calculator that can accept or display text is not allowed. If the front of your calculator has the letters A-Z on it, then you may not use the calculator. Recommended TI-30 or similar.
- *Course Website:* http://canvas.pointloma.com

COURSE DESCRIPTION:

Chemistry 101 is designed to introduce non-science major students to the basic ideas of modern chemistry and their relevance in society. Chemical principles are examined and applied to areas such as pollution, nutrition, energy, and medicine. (Prerequisite: Math 099 or equivalent.)

GENERAL EDUCATION CONNECTIONS:

This course is one of the components of the General Education Program at PLNU, under the category of Exploring an Interdependent World. The purpose of general education is to provide a common educational experience, to develop essential skills, and to provide a broad cultural background for personal and professional growth. By including this course in a common education experience for undergraduates, the faculty supports an introduction to the natural and social sciences as tools for exploring the world, with emphasis on collecting and interpreting empirical data for both theoretical and practical purposes.

PHILOSOPHY OF LEARNING:

I want you to gain confidence in your ability to learn chemistry, your ability to evaluate policy decisions based on scientific data and theories, and your appreciation for science in our world. The knowledge you gain here will enrich your world and make future learning easier and more fun. This quote from Cicero's orations has stuck with me since my high school Latin classes and it nicely summarizes the benefits of any general education course.

> *"haec studia adulescentiam alunt, senectutem oblectant, secundas res ornant, adversis perfugium ac solacium praebent delectant domi, non impediunt foris, pernoctant nobiscum, peregrinantur, rusticantur." – Marcus Tulius Cicero.* "These studies nourish youth and divert old age, enhance prosperity, offer refuge in solace and adversity, delight us at home, are not a hindrance away from home, serve as our companions through the night, on journeys, and in rural retreats."

My wish for you is that, with a little effort, this course will be fun and interesting for you. I pray that you will look back fondly on our time together in Chemistry 1001 at Loma.

STUDENT LEARNING OUTCOMES:

These outcomes are expected and will be assessed on exams and quizzes: (a) Demonstrate knowledge of fundamental principles of atomic structure, bonding, acids and bases, oxidation and reduction, and basic nomenclature, (b) Demonstrate knowledge of fundamentals of nuclear chemistry, (c) Demonstrate knowledge of key terminology in organic chemistry and biochemistry, (d) Demonstrate knowledge of key concepts in air and water quality as well as energy production and consumption, (e) Perform research on a topic and make a presentation intended to teach others about the key concepts.

Students will acquire knowledge of human cultures and the physical and natural world while developing skills and habits that foster life-long learning. Specifically, General Education Learning Outcome 1e (Quantitative Reasoning: Students will be able to solve problems that are quantitative in nature.) will be assessed in this course using student performance on problems that are quantitative in nature on the comprehensive final exam.

COURSE WEBSITE: http://canvas.pointloma.edu

You will be required to access this course on Canvas. Here you will find grades, notes, answer keys, study guides, this syllabus, and other course materials. You will also be required to access the Mastering Chemistry web site (http://www.masteringchemistry.com) in order to complete your online homework assignments.

ATTENDANCE POLICY:

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. If the student is absent from more than 10% of class meetings (four classes), the faculty member can file a written report which may result in de-enrollment. If the absences exceed 20% (eight classes), 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 for further details.

I expect you to be present and on-time for each class meeting. There are no allowed or excused absences except as approved in writing by the Provost for specific students participating in certain university-sanctioned activities. If you must miss all or part of a class session for a valid reason (Provost-*approved* activity or Wellness Center-*verified* illness, etc.), then you must notify me by email prior to your upcoming absence, even if someone else representing the Provost has sent me an email on your behalf. If you're sick or injured and cannot attend class, please let me know by email (or ask a friend to send me an email) prior to the start of the class you will miss, and visit the Wellness Center to ensure that your illness can be treated and is not more serious than you think.

If you miss any class you remain responsible for everything covered (including schedule changes, assignments, etc.). There are no make-ups and you will receive a grade of zero for all missed in-class activities, quizzes, exams, or other assignments. Check the Canvas site to find out what you missed, and review notes from one or more of your classmates to make sure you understand the subject matter that was covered.

CLASSROOM ATMOSPHERE:

Please be respectful to others. Arrive on time and set your electronic devices to silent mode or (preferably) off. I expect you to participate actively and to ask questions of me or your peers, whenever you have trouble understanding anything.

STUDENT PRIVACY:

PLNU adheres to the student privacy provisions of the Family Educational Rights and Privacy Act (FERPA) of 1974. Following FERPA guidelines, grades in this class will be communicated to the students on an individual basis. To the greatest possible extent, all graded work for this class will be returned to students individually, with scores not visible to others.

GRADES:

Grades in Chemistry 1001 will be earned according to the following scale: A: 90.0% or higher; B: 80.0-89.9%; C: 65.0-79.9%; D: 50.0-64.9%; F: 49.9% and lower. Plus (+) and minus (–) grades may apply to the top and bottom thirds of each range, with allowances or deductions for attendance, responsibility, professionalism, interest, and active participation in class.

Grade points will be accumulated as follows:

- Group Project (15%)
- Online Homework on http://masteringchemistry.com (10%)
- Five tests, including four exams and a final (15% each)
- Several In-Class Activities, including some quizzes (average of ICA scores: 15%)

- The lowest test score is dropped and counts for 0% of your overall grade. From among the five remaining scores (four tests and the ICA average), the highest is bumped up to 20% of your overall grade, and the lowest is reduced to 10% of your overall grade.

- *For example, let's say your exam scores are 85% (E1), 70% (E2), 65% (E3), and 90% (E4), your ICA average is 55%, your group project earns you 85%, your online homework average is 90%, and you earn 80% on the final exam, then here's how each item will count toward your overall score and grade in the class:*
    - *Group Project (85%) is worth 15%*
    - *Online HW (90%) is worth 10%*
    - *ICA average (55%) is worth 10%*
    - *E1 score (85%) is worth 15%*
    - *E2 score (70%) is worth 15%*
    - *E3 score (65%) is worth 0%*
    - *E4 score (90%) is worth 20%*
    - *Final score (80%) is worth 15%*

  In this example, your overall score would be calculated as the weighted average of these eight items, which is 80.5%. Your grade for the course would likely be a B–.

Exams and quizzes will be closed-book tests with a fixed time limit. Therefore, your understanding of the material must be clear enough to produce answers to most of the exam/quiz questions rather quickly. Extra time will not be allowed. For problems that call for work to be shown or explanation of reasoning on an in-class activity, quiz, or test, no credit will be given for an answer alone; the method or reasoning must also be shown. Your answers and written reasoning (including unit conversions) should be clear enough so that one of your peers could easily follow what you did if they had not worked the problem before.

FINAL EXAM POLICY:

Successful completion of this class requires taking the final examination on its scheduled day and time. The final examination schedule is posted on the Class Schedules section of the PLNU website. No requests for early examinations or alternate days will be approved.

IN-CLASS ACTIVITIES (ICA's, including quizzes):

I plan to put you to work in class almost every day for part of our class period, sometimes first and sometimes last. I expect and encourage collaboration between you and your peers on in-class activities, but not on in-class quizzes (or exams). Make sure you understand an answer before you write it. These ICAs and quizzes are given to help you determine which parts of each chapter are more important than others, and what to expect on exams.

ONLINE HOMEWORK (Mastering Chemistry):

Online homework from http://masteringchemistry.com will be assigned for each chapter. You will need to check Mastering Chemistry for new assignments and due dates as the semester progresses. Usually, one or more assignments will be due as we start each chapter, with another being due near the exam date. I will give occasional reminders in class and/or via email, but it's your responsibility to meet the due dates. Late homework receives zero credit.

TESTS:

Five written tests, including the final exam and four exams during the semester. The final lasts for two and a half hours while the semester exams will go for about an hour. Each exam, quiz, the final exam, and ICA will have a fixed start and end time; you may not have time to finish. Please learn the subject matter well enough that you won't need to spend excessive time figuring out what to do. Good test-taking strategies are important and can be developed during quizzes and realistic practice exams.

GROUP PRESENTATIONS:

During the second half of the semester, you will work in groups of 2-3 students to research and present a topic that interests you. The textbook covers quite a few topics that we will not have time to cover formally, so the group project gives you an opportunity for more diverse learning. Ideally, the topic should be a current global issue in which chemistry plays a role for understanding, measuring, or helping to resolve the issue.

SUCCESS IN CHEMISTRY:

Force yourself, if necessary, to be interested in the concepts. You're lucky to be at a college where general education courses are taken seriously. The University wants you to be able to understand scientific concepts, and know something about how scientists think. It's likely you'll become more interested in proportion to your effort. Use the ICAs and homework to figure out what may show up on exams. Please ask questions. It is my job to answer them. Scientists are curious characters. People either know all the answers or they ask. Those who ask typically become the smartest people in the class. I have never heard an unnecessary question. Don't just check-in physically; be there in body, mind, and spirit; and pay attention. N.B.: *"In every job that must be done, there is an element of fun*." – M. Poppins.

With so many local, national, and global issues and policies centered around scientific theories, it is critical that you as a responsible citizen can separate the good science from the rhetoric, advertising, and scare tactics, so you can make informed decisions as we all strive to keep society functioning and growing, safely and sustainably, into the future.

ADMINISTRATION:

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.

I expect all students to exhibit exemplary integrity, reflecting the spirit and high standards of our shared community, and I view any dishonesty as an insult to your classmates and to the University. Cheating or plagiarism in our chemistry class includes but is not limited to direct copying of another student's homework; allowing or not preventing another student to look at your paper during a quiz or exam; looking at another student's paper during a quiz or exam; using notes, books, disallowed calculators (see page 1), cell phones, camera, or other text-capable devices during a quiz or exam. The use of portable electronic devices (phones, laptops, iPods, etc.) not related to the course is not permitted in the classroom unless otherwise authorized. Use of cell phones during quizzes or exams will result in a grade of zero and an academic dishonesty report to your department chair and/or dean.

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.

CHEMISTRY 1001 – Fall 2019
Tentative Calendar (first half)

Monday	Wednesday	Friday
Sept 2 LABOR DAY	Sept 4 Intro, Chapter 1 & 13 - Alchemy, Global Air Chemistry	Sept 6 Chapter 1 Matter, Measurements
Sept 9 Chapter 1 - Unit Conversions	Sept 11 Chapter 2 - Atomic Theory	Sept 13 Chapter 2 - Moles, Periodic Table
Sept 16 Chapter 3 - Subatomic Particles, Isotopes	Sept 18 Chapter 3 - Atomic Spectra, Bohr model	Sept 20 Chapter 3 - Quantum model, Electrons
Sept 23 Chapter 4 - Chemical Bonds	Sept 25 EXAM 1 - On Chapters 1-3	Sept 27 Chapter 4 - Chemical Bonds
Sept 30 Chapter 4 - Chemical Bonds	Oct 2 Chapter 4 - Chemical Bonds	Oct 4 Chapter 5 - Chemical Accounting
Oct 7 Chapter 5 - Chemical Accounting	Oct 9 Chapter 5 - Solutions	Oct 11 Chapter 6 - Intermolecular Forces
Oct 14 Chapter 6 - Intermolecular Forces	Oct 16 EXAM 2 - On Chapters 4-6	Oct 18 Chapter 7 - Acids and Bases
Oct 21 Chapter 7 - Acids and Bases	Oct 23 Chapter 8 - Redox	Oct 25 FALL BREAK

The topics for each date (and the dates of exams) may change as the semester moves along.

CHEMISTRY 1001 – Fall 2019
Tentative Calendar (second half)

Monday	Wednesday	Friday
Oct 28 Chapter 8 – Redox	Oct 30 Chapter 9 - Organic Chemistry	Nov 1 Chapter 9 - Organic Chemistry
Nov 4 Chapter 9 - Organic Chemistry	Nov 6 EXAM 3 - On Chapters 7-9	Nov 8 Chapter 11 - Nuclear Chemistry
Nov 11 Chapter 11 - Nuclear Chemistry	Nov 13 Chapter 16 - Biochemistry	Nov 15 Chapter 16 - Biochemistry
Nov 18 Chapter 16 - Biochemistry	Nov 20 Group Projects	Nov 22 Group Projects
Nov 25 EXAM 4 - On Chapters 10, 11, 16	Nov 27 THANKSGIVING BREAK	Nov 29 THANKSGIVING BREAK
Dec 2 Group Projects	Dec 4 Group Projects	Dec 6 Group Projects
Dec 9 Group Projects	Dec 11 Group Projects	Dec 13 Course Review

Dec 16 FINAL EXAM - Comprehensive	Dec 18	Dec 20

The topics for each date (and the dates of exams) may change as the semester moves along.