



School of Arts & Sciences Course Syllabus

Course Number/Title/Credits: CHMU 101 / Introduction to Chemistry / 4 credits

Catalog Course Description: An introductory chemistry course for non-science majors. Introduces the fundamental concepts of general chemistry (scientific notation, atomic structure, elements and compounds, phases and properties of matter, chemical reactions and equilibrium) as well as standard laboratory procedures. *This course includes a virtual laboratory component.*

LEARNING OUTCOMES and ASSESSMENT:

Learning Outcomes are statements that specify what learners will know, understand, or be able to demonstrate at the end of a learning experience.

Types of Learning Outcomes include:

- ✓ Course Learning Outcome – Result of finishing a course.
- ✓ Program Learning Outcome – Result of finishing a program.
- ✓ Institutional Learning Outcome – Result of finishing a degree at an institution, reflecting the core learning values and experiences of all graduates.

A Signature Assignment is an assignment used to measure a student's mastery of a program or institutional learning outcome. If a course you are taking includes a Signature Assignment, it will be clearly marked (**SIGNATURE ASSIGNMENT**).

Access the following link(s) for information on the Program Learning Outcomes (PLOs) and Curriculum Map related to this course:

[Click Here for Learning Outcomes](#)

Access the following link(s) for information on the Institutional Learning Outcomes (ILOs) and Curriculum Map related to this course:

[Click Here for Learning Outcomes](#)

Prerequisites: None

Restrictions: None

Essential Equipment and Facilities: By the end of the first week of class, students must have the ability to access MyBrandman, the Blackboard portal to their class site, and other key locations necessary to meet course requirements. Individual browser preferences vary, and, at times, some work with Blackboard better than others. Therefore, if you try one browser, such as Firefox, and you have difficulty, try another browser, such as Internet Explorer. Since versions of Microsoft Office vary, students who do not use the most recent version may need the free conversion software available via the Microsoft.com website. Java is also required for courses. Students who do not have Java may download it for free at java.com.

Last Revision Date: 5/16/2019

Academic Integrity: As a learning community of scholars, Brandman University emphasizes the ethical responsibility of all members to seek knowledge honestly and in good faith. Students are responsible for doing their own work. Academic dishonesty of any kind will not be tolerated. Violations of academic integrity include, but are not limited to, cheating, plagiarism, or misrepresentation of information in oral or written form. Plagiarism means presenting someone else's idea or writing as if it were your own. If you use someone else's idea or writing, be sure the source is clearly documented. Further information may be found in the *Brandman University Catalog* available under Academic Resources in MyBrandman.

Americans with Disabilities Act Statement: According to the Americans with Disabilities Act (ADA) of 1990, an individual with disability is defined as having functional limitations resulting from a diagnosed disability and applies to an individual who has a physical or mental impairment that substantially limits one or more of the individual's major life activities; has a record of such an impairment; or is regarded as having such an impairment. In compliance with ADA guidelines, students who have any condition, either permanent or temporary, that may impair or impact their ability to successfully complete assignments, tasks or satisfy course criteria are requested to notify their Advisor or Campus Director in order to understand how to apply for Student Disability Services. If and when the student is granted formal approval by the Director of ADA Services, both the student and professor will be notified. It is highly suggested that the student contact their professor to discuss the accommodations during the first week of the session. The granting of accommodations will not be retroactive and cannot jeopardize the academic standards or integrity of the course.

University Policies: Students are responsible for complying with university policies including, but not limited to: incompletes, course drops, and student conduct. Information may be found in the *Brandman University Catalog* available under Academic Resources in MyBrandman.

Online Brandman Library Resources: Click on red "Library" button in Blackboard.

Texts are available at the Brandman Online Bookstore: See "Bookstore" under Academic Resources in MyBrandman.

Required Text: **Required Text:** Hein, M., Arena, S., and Willard, C. (2016), Foundations of College Chemistry, 15th Ed., John Wiley and Sons, Inc., ISBN-13: 978-1-119-08390-0. Book is also available in paperback, in a "binder-ready" format, and as an e-book.

Students may also choose to purchase a Student Study Guide (paperback or e-book) for their own use, but this is not required for the course.

Required Lab Program: Students must also purchase and download an individual copy of ChemLab software from www.ModelScience.com. Make sure that you purchase the correct version for your operating system (PC, Mac) and that you are choosing the Standard Version of the program (approximately \$35).

Course Learning Objectives:

By the end of the course, students should be able to:

1. Describe atomic structure, the periodic nature of atoms and elements, and types of chemical bonds.
2. Differentiate between physical and chemical properties in all phases of matter.
3. Recognize chemical formulas and write and balance chemical equations and stoichiometric problems.
4. Plan and conduct laboratory experiments (online) using introductory lab techniques and equipment.

5. Evaluate the results of their online laboratory experiments and support their findings with chemical principles presented in the course.

Major Study Units:

1. Introduction to Chemistry, Standards for Measurement
2. Elements and Compounds, Properties of Matter, Atomic Theory
3. Nomenclature of Inorganic Compounds, Quantitative Composition of Compounds
4. Chemical Equations and Equilibrium
5. Calculations from Chemical Equations, Modern Atomic Theory and the Periodic Table
6. The Gaseous State of Matter
7. Properties of Liquids, Solutions
8. Acids, Bases, and Salts

Instructional Strategies: This class includes readings, textual and video instruction, exercises, discussions, and projects. Instructional Strategies may be further explained in the course Blackboard site.

Attendance Policy

Requirements for students' attendance and participation will be defined by each instructor based on the following policy:

- Monday of the first week is considered the first day of class for online and blended instruction. This includes instruction for fully online classes and online instruction supporting blended classes.
- Regular onsite attendance is expected for student success. If a student misses more than one onsite class or one week of engagement in an online class, the student may, at the discretion of the instructor, fail the course. Students are expected to attend all classes, particularly the first night of class.
- Students should consider withdrawing from a course if they will be absent more than once. Instructors may, but are not obligated to, accommodate students under extraordinary circumstances, but the student must request accommodation and provide requested supporting documentation. Students enrolled in blended courses must attend at least one class during the first two weeks of classes.
- If a student misses a portion (e.g., arriving late or leaving early) of an onsite course, the student's grade may be adversely affected. Students who are not in attendance for at least 75 percent of any scheduled class may be considered absent for that class. Students should discuss missing portions of a class with their instructor to determine how their grade may be affected.
- Regular online attendance/participation and engagement is expected for student success in both fully online and blended courses. Online participation is evident through posting to a discussion board, blog, completing assignments including journal entries, or taking quizzes and exams.
- Schools and programs may have different attendance policies. Refer to school and program specific information for additional attendance policies.

Letter Grade/Percentage Equivalents:

Grade Point System (Rounded up at .5 and up)			
A = 93%-100%	B = 83%-86%	C = 73%-76%	D = 63%-66%
A- = 90%-92%	B- = 80%-82%	C- = 70%-72%	D- = 60%-62%
B+ = 87%-89%	C+ = 77%-79%	D+ = 67%-69%	F=59% and below

Methods of Evaluation for Determining Grades: Online

Assignment Detail	Possible Points
Syllabus Quiz	10
Discussion Board Participation (10 points each week, eight weeks)	80
Homework Assignments (20 points each, eight assignments)	160
Completed Online Lab Notebook Assignments (15 points each, ten assignments)	150
Midterm Exam	50
Final Exam	50
	Total: 500

Class by Class Outline: Online

Week	Topics	Assignments
Week 1	Course Introduction, Chemistry, and Standards for Measurement	Readings: Chapters 1 and 2 (pages 1-10 and 14-40) Assignment: Homework Assignment #1 (due Sunday) Assessment: Syllabus Quiz (due Sunday) Discussion: Welcome to Chemistry (initial post due Thursday; final post due Sunday) Laboratory: Lab #1: Balance Lab—Part One (final write up due Sunday)
Week 2	Elements, Compounds, Properties of Matter, and Atomic Structure	Readings: Chapters 3, 4, and 5 (pages 48-62, 68-81, and 86-97) Assignment: Homework Assignment #2 (due Sunday) Discussion: What's in Your Cabinets? (initial post due Thursday; final post due Sunday) Laboratory: Lab #2: Balance Lab—Part Two (final write up due Sunday) Lab #3: Specific Heat (final write up due Sunday)

Week 3	Nomenclature and Qualitative Composition of Inorganic Compounds	<p>Reading: Chapters 6 and 7 (pages 102-118 and 123-141)</p> <p>Assignment: Homework Assignment #3 (due Sunday)</p> <p>Discussion: Problem Solving in Chemistry I (initial post due Thursday; final post due Sunday)</p> <p>Laboratory: Lab #4: Separation of Saltwater Mixture (final write up due Sunday)</p>
Week 4	Chemical Equations and Equilibrium	<p>Reading: Chapter 8 (pages 147-167)</p> <p>Assignment: Homework Assignment #4 (due Sunday)</p> <p>Assessment: Midterm Exam (due Sunday)</p> <p>Discussion: Midterm Prep (initial post due Thursday; final post due Sunday)</p> <p>Laboratory: Lab #5: Atomic Weight of Magnesium (final write up due Sunday)</p>
Week 5	Calculations from Chemical Equations	<p>Reading: Chapters 9 and 10 (pages 175-190 and 196-212)</p> <p>Assignment: Homework Assignment #5 (due Sunday)</p> <p>Discussion: Problem Solving in Chemistry II (initial post due Thursday; final post due Sunday)</p> <p>Laboratory: Lab #6: Volumetric Analysis of Chloride (final write up due Sunday)</p>
Week 6	The Gaseous State of Matter	<p>Reading: Chapter 12 (pages 253-280)</p> <p>Assignment: Homework Assignment #6 (due Sunday)</p> <p>Discussion: Air Pollution (initial post due Thursday; final post due Sunday)</p> <p>Laboratory: Lab #7: The Dumas Method (final write up due Sunday)</p>
Week 7	Liquids and Solutions	<p>Reading: Chapters 13 and 14 (pages 288-306 and 312-334)</p> <p>Assignment: Homework Assignment #7 (due Sunday)</p> <p>Discussion: Cooking with Chemistry (initial post due Thursday; final post due Sunday)</p> <p>Laboratory: Lab #8: Double Replacement Reaction (final write up due Sunday) Lab #9: Hydrate Formula (final write up due Sunday)</p>
Week 8	Acids, Bases, and Salts	<p>Reading: Chapter 15 (pages 343-363)</p> <p>Assignment: Homework Assignment #8 (due Sunday)</p> <p>Assessment: Final Exam (due Sunday)</p> <p>Discussion: Chemistry Experiences (initial post due Thursday; final post due Sunday)</p> <p>Laboratory: Lab #10: Bond Lab (final write up due Sunday)</p>