

Dakota College at Bottineau Course Syllabus

Course Prefix/Number/Title:

CHEM 121-General Chemistry I

Course Description:

General Chemistry I involves the discussion of the elementary principles and theories of chemistry, as well as the discussion of the elements and the compounds they form. Topics will include matter, measurement, atoms and atomic theory, ions, molecules, reactions, stoichiometry, thermochemistry, bonding, molecular theory and geometry, periodicity and applications of the periodic table, gases, intermolecular forces, and atmospheric pollution.

Course Objectives:

1. To develop an understanding of the basic qualitative and quantitative principles of chemistry.
2. To develop problem solving skills.
3. To gain an appreciation of the chemical world that surrounds us.
4. To develop fundamental laboratory skills.
5. To make informed decisions about scientific and technological issues that abound today.

Instructor:

Clarence (Gene) Bender

Office:

Nelson Science Center 113

Office Hours:

Check schedule on office door, but available when classes are not in session.

Phone:

701-228-5471

Email:

Gene.Bender@dakotacollege.edu

Lecture/Lab Schedule:

MWF 10:00-10:50

Labs: Tuesday, 6:00-7:50; Thursday, 10:00-11:50; Thursday, 1:00-2:50

Textbook(s):

Chemistry by Chang, 9th ed. McGraw-Hill.
Faculty Generated Lab Manual

Course Requirements:

The formula for grades is as follows.

Exams (5)	100 pts each	500 pts
Lab Reports (15)	15 pts each	225 pts
Research Project	100 pts	100 pts
Final Lab Project	100 pts	100 pts
Check Up Quizzes	5 pts each	75 pts

Total pts. available = 1000 pts.

90-100% - 900-1000 pts. = A

80-90% - 800-899 pts. = B

70-80% - 700-799 pts. = C

60-70% - 600-699 pts. = D

<59% - <599 pts. = F

No Incompletes will be given.

Make-up exams at 20% reduction

No make-up for missed labs.

No make-up for missed quizzes.

Tentative Course Outline:

Lab Schedule:

<u>Week</u>	<u>Experiment</u>
1	No Lab, but Safety & Equipment Quiz On due at the first lab session.
2	Mass, Volume
3	Density
4	ID of Unknown Substance
5	Calorimetry
6	Reactivity of Metals (Non-metals possibly)
7	Empirical Formulas (Dry Lab Oct.13)
8	Mole Relationships in Reactions (Oct.6)
9	Solubility Families
10	Ionic Reactions in Aqueous Solutions
11	Conductivity of Aqueous Solutions
12	Hess's Law
13	Molecular structure
14	Final Lab Project Start
15	Final Lab
16	Final Lab Due

Tentative Lecture Schedule

Week	Topic
1	Measurement and Scientific Procedure
2	Atomic Theory and Structure
3	Chemical Formulas Exam #1
4	Stoichiometry of Chemical Equations
5	Reactions of Aqueous Solutions
6	Gravimetric Analysis Exam #2
7	Gas Laws and Kinetic Molecular Theory of Gases
8	Calorimetry and Hess's Law
9	Enthalpy Problems Exam #3
10	Quantum Theory and Electronic Structure
11	Quantum Theory Continued
12	Periodic Relationships and Tendencies Exam #4
13	Concepts of Chemical Bonding I
14	Concepts of Chemical Bonding I Continued
15	Molecular Geometry and Atomic Orbitals
16	Kinetic Theory of Liquids and Solids
17	Phase Changes Exam #5

General Education Goals/Objectives:

Goal 3: Demonstrates the ability to convert, calculate, and analyze a variety of mathematical problems

Objective 1: Utilizes mathematical equations to solve problems

Skill 1: Solves equations and problems using the appropriate method

Skill 2: Employs appropriate measuring tools

Skill 3: Converts standard units to metric units

Objective 2: Applies practical application of mathematics to everyday life

Skill 1: Constructs tables, charts, graphs based on data

Skill 3: Solves word problems (in context of everyday chemistry)

Objective 3 Employs problem solving and critical thinking skills in order to solve a variety of different problems

Skill 1: Locates, evaluates, and applies research information

Skill 2: Analyzes materials to determine their validity
Skill 3: Draws conclusions from information collected

Relationship to Campus Theme:

Utilizes a variety of technological tools such as spectrophotometers, ion selective probes, computers, and miscellaneous probes, which allows the students to investigate and discuss environmental concerns.

Classroom Policies:

Reading the assigned text is the student's responsibility, and is essential to success in this course. Students will be more successful if they read the material prior to lecture/discussion. In order to learn to effectively solve chemistry problems and be successful in chemistry, students are expected to work all practice problems. Should a student have difficulty with practice work, it is essential that the student ask questions in class and seek assistance from the instructor outside class time.

Students are expected to be respectful of others if they desire the same respect in return. Please refrain from disruptive activities: frequently arriving late, visiting during class, leaving the classroom before discussion is finished, and using a cell phone or texting. All electronic devices are to be off during class time with the exception of calculators. This class does not require the use of a laptop computer; therefore they are not allowed to be operated in lecture periods.

This academic environment is an open and harassment free one. All students are free to express their personal opinions without threat of reprisal. Participation within the classroom is highly encouraged and is an integral part of the higher education experience. Ask questions – comment on discussions.

Academic Integrity:

Webster's Encyclopedic Unabridged Dictionary defines plagiarism as: "The appropriation or imitation of the language, ideas, and thoughts of another author, and representation of them as one's original work." Students will be expected to abide by all rules and laws pertaining to plagiarism and use of copyrighted material. Failure to do so is grounds for failing this course. At the very least, you will receive no score for any assignment where a violation has occurred. There will be *zero tolerance* of any form of academic dishonesty. Cheating is unacceptable and will result in the loss of all points for the exercise in which the cheating occurred. Cell phones, especially text messaging, increase the opportunity to cheat. If your phone is on, this will be considered cheating regardless of the reason for the phone being operational. If a true emergency occurs, the office will be able to contact the instructor during class.

Disabilities and Special Needs:

Please inform the instructor within the first week of classes if any assistance is required due to disabilities or special needs and make sure the accommodations are on file in the student learning center. Only verified accommodations can be provided on an individual basis.