

Course Prefix/Number/Title: Chem 122, General Chemistry II

Number of Credits: 4

Course Description: The course introduces the fundamental concepts of intermolecular forces and how such forces affect the properties of matter, solutions, kinetics, acids and bases, entropy, and electrochemistry.

Pre-/Co-requisites: Chem 121

Course Objectives: Students will gain:

1. an understanding of intermolecular forces, including how such forces affect bulk properties, and an understanding of the properties of different phases of matter.
2. an understanding of the physical properties of solutions, including the ability to use quantitative concentration measurements.
3. an elementary understanding of chemical kinetics. Students will gain an understanding of chemical equilibria, including the ability to perform equilibrium calculations on a variety of chemical reactions, including gas phase reactions, acid/base reactions, and solubility product calculations.
4. an understanding of the nature of acids and bases, including acid/base equilibria and buffers.
5. an understanding of the concepts of entropy, free energy, and how these affect chemical reactions.
6. an elementary understanding of electrochemistry.
7. an understanding of descriptive chemistry of simple inorganic ions and molecules.

Instructor: Angela Bartholomay

Office: NSC 111

Office Hours: MWF 10:00-10:50am, T 1:00-1:50pm or by arrangement

Phone: 701-228-5471

Email: angela.bartholomay@dakotacollege.edu

Lecture/Lab Schedule: Lecture; MWF 9-9:50am NSC 103, Lab; Thurs. 8-9:50pm NSC121

Text: Chemistry by Chang, 9th Ed. McGraw-Hill

Grades will be based on total points using the following percentage system: 100-90, A; 89-80, B; 79-70, C; 69-60, D; <60, F. Exams, research paper, and homework quizzes, and lab reports will be used to determine the final grade..

Exams (5)	500pts
Lab Reports (25 pts. Each)	300pts
Quizzes (10pts. Each)	<u>100pts</u>
	900pts

Exams: There will be five exams during the course of the semester. Exams may contain short answer/essay, multiple choice, completion and problems. Periodic tables may be used on the exams

and will be provided by the instructor. **There will be no makeup exams unless prior arrangements have been made.**

Homework will be assigned during the semester to practice the skills we are working on, these will not be graded however they can be used on quizzes done in class.

Laboratory: The laboratory portion of the course provides an opportunity to integrate lecture concepts with observable activities. **Attendance at lab is mandatory! The use of chemical splash safety goggles is required for all labs.** To obtain full credit for the lab you must be actively involved in the laboratory activities. Regular lab reports are due at the beginning of the next lab period. Late lab reports and dry labs will not be accepted

Grading Scale:	90%-100%	A
	80%-89%	B
	70%-79%	C
	60%-69%	D
	Below 59%	F

Tentative Course Outline:

<u>Lecture Schedule:</u>	<u>Reading assignment</u>	<u>lab schedule</u>	<u>topic</u>
Week 1	Chapter #11 p.461-504 Homework p. 506-507	intermolecular forces	no Lab
Week 2	Chapter #12 p.513-545 Homework p. 546--549	solutions	solutions and colloids
Week 3	Chapter #13 p.557-602 Homework p. 602-609	kinetics	rates of chemical reactions
Week 4	Chapter #13 Exam #1 chapter 11 - 13		catalysts
Week 5	Chapter #14 p.615-647 Homework p.648-652	equilibrium	Equilibrium
Week 6	Chapter #15 p.659-702	Acids & bases	properties of acids & bases
Week 7	Chapter #15 homework p. 702-705		
Week 8	Chapter #16 p. 713-757 Homework p. 757-760 & titration curve	acid/base equilibria	egg shell titration
Week 9	Chapter #16 Exam #2 Chapters 14, 15 & 16		
Week 10	Chapter #17 p.769-794 Homework – p. 794-796	atmospheric chemistry	Environmental Quality
Week 11	Chapter #18 p.801-828 Homework p. 829-831	entropy	Entropy
Week 12	Chapter #19 p. 837-873 Homework p. 873-874 & galvanic cell	electrochemistry	electro-chemistry
Exam #3	Chapters 17, 18 & 19		
Week 13	Chapter #23 p.987-1016 Homework p. 1016-1017	Nuclear chemistry	nuclear decay
Week 14	Chapter #24 p.1025-1052 Homework p.1052-1054	Organic chemistry	organic families properties
Week 15	Chapter #24 Exam #4 Chapter 23 & 24		

Week 16 [Review and Final Exam](#)

General Education Goals/Objectives: This course meets General Education Goals:

Goal 1: Describes the interrelationships between humans and their environment and the role of science in their lives

- Objective 1: Demonstrates the application of the scientific method of inquiry
- Objective 2: Demonstrates understanding of the natural environment
- Objective 3: Demonstrates an awareness of how science influences everyday life

Relationship to Campus Theme:

This course addresses the campus theme by incorporating the role that chemistry plays in our everyday life and the impact it has on our natural world. In addition students will use technology to conduct labs as well as study how technology can be used in chemistry. The course will address the role of chemistry in their everyday life as well as in their future.

Classroom Policies;

Make-up: for missed exams will not be allowed unless prior arrangements have been made. If you must be absent for a school related or family event, you are expected to make prior arrangements and take the exam prior to the event. If you are given permission to take a late exam you will have 48 hours to make it up.

Electronic Devices: No electronic devices will be allowed. Cell phones must be turned off at all times in class! You will be asked once to put the phone away, if asked again you will be asked to leave.

Headphones will not be allowed!

Be respectful of other students, technicians, instructors, and guests!

Early Warning Attendance Policy will be followed

Student Email Policy:

Dakota College at Bottineau is increasingly dependent upon email as an official form of communication. A student's campus-assigned email address will be the only one recognized by the Campus for official mailings. The liability for missing or not acting upon important information conveyed via campus email rests with the student.

Academic Integrity:

According to the DCB Student Handbook, students are responsible for submitting their own work. Students who cooperate on oral or written examinations or work without authorization share the responsibility for violation of academic principles, and the students are subject to disciplinary action even when one of the students is not enrolled in the course where the violation occurred. The Code detailed in the Academic Honesty/Dishonesty section of the Student Handbook will serve as the guideline for cases where cheating, plagiarism or other academic improprieties have occurred.

Disabilities or Special Needs:

Students with disabilities or special needs (academic or otherwise) are encouraged to contact the instructor and Disability Support Services.

Title IX:

Dakota College at Bottineau (DCB) faculty are committed to helping create a safe learning environment for all students and for the College as a whole. Please be aware that all DCB employees (other than those designated as confidential resources such as advocates, counselors, clergy and healthcare providers) are required to report information about such discrimination and harassment to the College Title IX Coordinator. This means that if a student tells a faculty member about a situation of sexual harassment or sexual violence, or other related misconduct, the faculty member must share that information with the College's Title IX Coordinator. Students wishing to speak to a confidential

employee who does not have this reporting responsibility can find a list of resources on the DCB Title IX webpage.