

# FAIRLEIGH DICKINSON UNIVERSITY

## SONS -CHEMISTRY (METROPOLITAN CAMPUS)

**Course:** GENERAL CHEMISTRY I (CHEM-1201 sections 21 and 22) **Credits:** 3

**Meeting Times:** M, W, F Section 21 at 9:00 AM – 9:50 AM  
Section 22 at 11:00 AM –11:50 AM

**Classroom:** TBA

**Instructor:** Dr. Arthur R. Murphy

**Office:** Dickinson Hall Room 4413

**Semester:** Fall 2008

**Phone Number:** (201)-692-2322

**e-mail:** arthur\_murphy@fdu.edu

**Office Hours:** M W F 10:00 AM to 10:50 AM  
and by appointment

**Required Text:** Chemistry (9th Edition) by Raymond Chang , McGraw-Hill Publisher

### Catalog Description of Course:

The fundamental laws, theories and principles of chemistry, with emphasis on atomic structure, chemical bonding, periodic classification of the elements, solutions, equilibrium, reaction kinetics and the theory and practice of the qualitative chemistry of the common ions. Prerequisite: elementary algebra. Corequisites: CHEM 1203 General Chemistry I Laboratory I.

### Intended Audience

General Chemistry I is an essential prerequisite for taking other chemistry courses. Students interested in the natural and biological sciences, engineering, computer science, and pre-professionals will find that this course is an essential part in the pursuit of their career objectives. Non-science majors seeking to broaden their backgrounds may also find the course beneficial.

## RULES, REGULATIONS, AND GRADING PROCEDURES

- 1) Attendance is mandatory. If a student misses more than 3 lecture classes, the student is in attendance default. A student is automatically dropped from further grading and will fail the course when he or she is in attendance default and falls below the passing threshold for the course. As long as a student is passing, the attendance default has no meaning. Each time you attend class it is essential that you sign the official attendance sheet.
- 2) The chemistry hourly exams are scheduled for FRIDAYS (Sep. 26, Oct. 17, Nov. 9, Nov. 28). The dates have been marked with a (E) in the lecture schedule given below. No make-up exams will be given. The room in which the hourly exams are to be given will be announced at a later date. The exam period is from 8:00 am to 8:50 am. Students are permitted to start at 7:30 am so as to have additional time in which to complete the "hourly" exam. Free coffee and donuts will be provided prior to the exam complements of the Dean's office. Use of cell phones, ipods, iphones, pagers, etc. is not allowed during exams.
- 3) After each exam, each student will receive a written assessment of his/her performance in the course.
- 4) Eight short quizzes will be given on Fridays during the regular lecture period. The dates have been marked with a (Q) in the lecture schedule given below. The best six of the eight quiz grades will be used to determine the overall quiz component of the final lecture grade. A no make-up policy will be in effect for the quizzes.
- 5) Homework will be assigned and graded, and this grade is a component of each student's lecture grade. Late homework assignments will not be accepted. The due date of each assignment is specified on the assignment.
- 6) SOS group study activities are scheduled as a fifty minute addition to the day General Chemistry laboratory periods. Every student taking General Chemistry lecture during the day is required to participate in a SOS study group. During your first General Chemistry (day) laboratory session you will be given additional information about SOS group study. If you are taking General Chemistry lecture during the day but taking a night General Chemistry lab, you are still required to participate in a day SOS group study section: attend the start of any day

lab session and explain your situation to the instructor. If you are not taking General Chemistry I lab you are still required to take SOS group Study. To do this, simply attend the start of any day lab session, and tell your instructor that you are taking Group Study only.

During group study, students, working in small groups of 3 or 4, will be given problem sets to solve. These problem sets will be graded, and they will constitute a component of your lecture grade. Late problem sets will not be accepted.

- 7) At the start of each lecture session, an outline of the lecture will be distributed to each student.
- 8) October 28 is the last day to withdraw from the course with a letter grade of "W".
- 9) All cell phones and pagers must be turned off during lecture. Students are expected to arrive for class on time so as not to disrupt a class in session. Chatting during class is discourteous to your classmates, and your instructor. Such behavior is not allowed.
- 10) Cheating will not be tolerated. Anyone caught cheating will be dealt with very severely. Students should read the Academic Integrity Policy that appears on FDU's web site. A copy of FDU's Academic Integrity Policy appears at the end of this syllabus.

## GRADING POLICY

Grade Component	Max. Points
Hourly Exam #1	100
Hourly Exam #2	100
Hourly Exam #3	100
Hourly Exam #4	100
Homework	100
Quizzes	100
SOS Group Study	100
Final Exam	100
Final Exam	100

Note that there are 9 evaluative measures and Final Exam counts as two evaluative measures. In determining the final grade, **one** evaluative measure will be dropped. If the final exam is the lowest evaluative measure it will be counted as 100 pts rather than 200 pts.

## Course objectives and outcomes:

**Objective 1:** To become familiar with chemical reactions

*Outcome 1.1:* Understand measurements and deal with uncertainties.

*Outcome 1.2:* Understand the structure of atoms, the periodic table classification and analysis of chemical reactions.

*Outcome 1.3:* Perform stoichiometric calculations regarding moles, mass and numbers of particles.

**Objective 2:** To learn about solutions, gases and elementary thermochemistry

*Outcome 2.1:* Understand solution preparation and volumetric analysis.

*Outcome 2.2:* Know simple gas laws, the ideal equation of state, real gases and some

aspects of the Kinetic theory of gases.

**Outcome 2.3:** Understand the first law of thermodynamics, calorimetry, and perform enthalpy calculations.

**Objective 3:** To learn about quantum and bonding theories and intermolecular forces

**Outcome 3.1:** Understand blackbody radiation, photoelectric effect, electromagnetic radiation, line spectra, and qualitative applications of quantum theory to atoms and molecules.

**Outcome 3.2:** Become familiar with ionic and covalent bonding, valence bond theory and Molecular Orbit theory, and be able to predict the behavior of various substances.

**Outcome 3.3:** Understand intermolecular interactions such as ion-ion, ion-dipole, permanent dipole-permanent dipole, dispersion interactions and intermolecular Hydrogen bonding.

#### ADDITIONAL "OUTCOMES"

Students who successfully complete this course should have a good background for pursuing more advanced chemistry courses, as well as courses in other sciences that require a knowledge of General Chemistry.

#### TEACHING METHODOLOGIES/ACTIVITIES

1) In addition to formal lectures, each student will be involved in a group study session each week. As mentioned above, students performance will be tightly monitored using quizzes, homework assignments, groups study assignments and major hourly exams. Any deficiencies should be spotted early and appropriate actions taken to attempt to rectify the situation.

2) Efforts are made to fully develop concepts and techniques via simple drill exercises, followed by applications with which a student can easily relate. Finally the concepts/ techniques are applied to situations and setting with which a student may not be familiar.

#### COURSE OUTLINE

#### TENTATIVE LECTURE SCHEDULE

Week #	Day	Date	Chapter(s)	Topic
1	M			
	W	Aug. 27	1	Math Review. Introduction.
	F	Aug. 29	1	Chemistry: The Study of Change
2	M	Sept. 1		Labor Day Recess
	W	Sept. 3	1	The Study of Change (Continued)
	F	Sept. 5	1	" " " " "
3	M	Sept. 8	1	" " " " "
	W	Sept. 10	2	Atoms, Molecules, and Ions
	F(Q)	Sept. 12	2/3	Atoms, Molecules, and Ions
4	M	Sept. 15	3	Mass Relationships in Chemical Reactions
	W	Sept. 17	3	" " "
	F(Q)	Sept. 19	3	" " "
5	M	Sept. 22	3	Mass Relationships in Chemical Reactions
	W	Sept. 24	4	Reactions in Solutions
	F(E)	Sept. 26	4	Reactions in Solutions (continued) Exam #1(morning) + Lecture (usual time)

6	M W F(Q)	Sept. 29 Oct. 1 Oct. 3	4 4/5 5	Reactions in Solutions (continued) Reactions in Solutions (continued). Gases Gases
7	M W F(Q)	Oct. 6 Oct. 8 Oct. 10	5 5 5/6	Gases Gases Gases/ Thermochemistry
8	M W F(E)	Oct. 13 Oct. 15 Oct. 17	6 6 6	Thermochemistry (continued) Thermochemistry (continued) Exam #2 (morning) + Lecture (Usual Time)
9	M W F(Q)	Oct. 20 Oct. 22 Oct. 24	6/ 7 7 7	Thermochemistry (continued) Quantum Theory /Atomic Electronic Structure " " " "
10	M W F(Q)	Oct. 27 Oct. 29 Oct. 31	7 8 8	Electronic Structure of Atoms (continued) Periodic Relationships Among the Elements " " " " "
11	M W F(E)	Nov. 3 Nov. 5 Nov. 7	9 9 9	Chemical Bonding I Basic Concepts Chemical Bonding I (continued) Exam #3(morning) + Lecture at usual time. Chemical Bonding I (continued)
12	M W F(Q)	Nov. 10 Nov. 12 Nov. 14	9 9/10 10	Chemical Bonding I (continued) Bonding Concepts II. Molecular Geometry Molecular Geometry (Continued)
13	M W F(Q)	Nov. 17 Nov. 19 Nov. 21	10 10 11	Molecular Geometry (continued) MO Theory Intermolecular Forces
14	M W F	Nov. 24 Nov. 28 Nov. 30	10 11 11	Intermolecular Forces Recess Recess
15	M W F(E)	Dec. 1 Dec. 3 Dec. 5	11	Intermolecular Forces Review for Final Exam Exam #4 (morning)+ Lecture at usual time
16	M T W Th F	Dec. 8 Dec. 9 Dec. 10 Dec. 11 Dec. 12		Review for Final Exam Reading day/Snow make-up Final Exam Week (Dec 10-Dec 16) specific day, date, and room will be announced.
17	M T	Dec. 15 Dec. 16		Final Exam (Week continued). Specific date, time, and room will be announced.

## Academic Integrity

### "What is the University's Academic Integrity Policy?"

Students enrolled at FDU are expected to maintain the highest standards of academic honesty. Students have the responsibility to each other to make known the existence of academic dishonesty to their instructor and then, if necessary, the department chair, school director or academic dean of their College.

Course instructors have the added responsibility to state in advance in their syllabi any special policies and procedures concerning examinations and other academic exercises specific to their course. Students should request this information if not distributed by the instructor.

Academic dishonesty includes, but is not limited to, the following:

**Cheating** - Giving or receiving unauthorized assistance in any academic exercise or examination. Using or attempting to use any unauthorized materials, information or study aids in an examination or academic exercise.

**Plagiarism** - Representing the ideas or language of others as one's own.

**Falsification** - Falsifying or inventing any information, data or citation in an academic exercise.

**Multiple submission** - Submitting substantial portions of an academic exercise more than once for credit without the prior authorization and approval of the current professor.

**Complicity** - Facilitating any of the above actions or performing work that another student then presents as his or her assignment.

**Interference** - Interfering with the ability of a student to perform his or her assignments.

If a student is accused of any of the above infractions, there are sanctions which will be instituted. The Undergraduate Studies Bulletin outlines the procedure followed and the sanctions administered.

The FDU web site includes an **Academic Regulations** page. It is highly recommended that all students familiarize themselves with the specific regulations.