CHEM 104 General Chemistry
University of Delaware
Second Summer Session, 2012

Instructor: Dr. Michael A. Stemniski

Office: 171 Brown Lab

Office Hours: Before class, after class, or by appointment

Phone: 302-239-4890 (H)

e-mail: mastem@Udel.edu

Lectures: July 9 to August 9, Final Exam - August 10

Time: 8:00 A.M. - 9:30 A.M.

Location: 101 Brown Lab

Texts: Chang/Goldsby - Chemistry (11th Ed) - Recommended
Chang - Student Study Guide (11th Ed) - Optional
Chang - Student Solution Manual (11th Ed) - Optional

NOTE: Attendance to class is not mandatory. However, excess absences will
severely affect your grade as pertinent information concerning the course
is presented in lecture.

Laboratory Assignments

Location: 054 Drake Hall (Section 920L)
070 Drake Hall (Section 921L)

Scheduled Time: 12:30 P.M. - 3:30 P.M., Monday, Wednesday, Friday

Laboratory Manual: Experiments for General Chemistry - Required

Instructors: Ayomide Osunkoya (Section 920L) ayados@udel.edu
Shoshana Dickerson (Section 921L) shoshana@udel.edu

NOTE: Attendance to laboratory is mandatory and it is imperative that
the entire experiment be read and the procedure familiarized before
each session. Proper dress is required and goggles must be worn at
all times in the laboratory.

ADA Reasonable Accommodations

Pursuant to Section 504 of the Rehabilitation Act of 1973 and the Americans
with Disabilities Act of 1990, the University provides reasonable accommodations for
individuals with documented disabilities. Students registered in this course who
need reasonable accommodations should make this known to the instructor and also
document the needs with the Office of Americans with Disabilities Act.

CHEM 104 Summer 2012 – Tentative Examination Schedule

Text Assignment	Exam Assignment
Chang, Chap 5,11,12	Exam I, Monday 7/16
Chang, Chap 13,14	Exam II, Monday 7/23
Chang, Chap 15,16	Exam III, Monday 7/30
Chang, Chap 18,19,24	Exam IV, Wednesday 8/8
	Final Exam – Friday 8/10

Ch 5 – Gases

Ch 11 – Intermolecular Forces and Liquids and Solids

Ch 12 – Physical Properties of Solutions

Ch 13 – Chemical Kinetics

Ch 14 – Chemical Equilibrium

Ch 15 – Acids and Bases

Ch 16 – Acid-base Equilibria and Solubility Equilibria

Ch 18 – Electrochemistry

Ch 19 – Nuclear Chemistry

Ch 24 – Organic Chemistry

CHEM 104 Summer 2012 – Proposed Laboratory Schedule

Jul 11	Safety and Exp 8	Gas Laws and Volatile Liquids
Jul 13	Exp 14	Colligative Properties
Jul 16	Exp 21	Kinetics
Jul 18	Exp 16	Equilibrium: Determination of the Equilibrium Constant
Jul 20	Exp 17	Equilibrium: LeChatelier's Principle
Jul 23	Exp 20	pH and Its Applications
Jul 25	Exp 23	Qualitative Analysis: Anions
Jul 27	Exp 18	Equilibrium: Determination of a Solubility Prod Constant
Jul 30	Exp 25	Qualitative Analysis: Cations: Groups I & III
Aug 01	Exp 26	Voltaic Cells
Aug 03	Exp 22	Organic Synthesis: Preparation of an Ester

CHEM 104 Summer - Grading Policy

The minimum requirements for obtaining a passing grade and credit in CHEM 104, Summer 2012 are:

a. Completion of ten laboratory experiments/reports/meetings

b. Completion of the four scheduled examinations

c. Completion of the final exam

d. Obtaining an average of at least 60% according to the suggested scale

A) Examinations (50%) - Four 100 percentage point examinations will be given and must be taken by all students. An unexcused missed examination will be recorded as a ZERO and may not be made up. All exams will cover material in lecture and from the assigned problems (but not from the laboratory).

B) Laboratory (25%) - Eleven laboratory meetings are scheduled and the best ten (10) laboratory meeting scores will determine the laboratory grade

C) Final Exam (25%) - The final exam will be given at the conclusion of the course and must be taken by all students

Failure to complete any of the above requirements will merit no credit for CHEM 104, Summer 2012

If an examination is missed for whatever reason, it is the responsibility of the student to contact the instructor within a reasonable period of time. If not, it will be assumed that the student does not wish to continue in the course.

The University of Delaware policy on Academic Honesty will be followed in this course. Violations of any parts of this policy could mean your removal from this course with no academic credit.

The Family Educational Rights and Privacy Act of 1974 (FERPA) stipulates that test/lab grades cannot be posted, given over the phone, or by e-mail. These grades, however, can be released to students in person.

The following grade scheme will be followed with averages rounded to the nearest tenth (0.1) of a point:

Average	Grade	Average	Grade	Average	Grade
93.3 - 100	A	80.0 - 83.2	B-	66.7 - 69.9	D+
90.0 - 93.2	A-	76.7 - 79.9	C+	63.3 - 66.6	D
86.7 - 89.9	B+	73.3 - 76.6	C	60.0 - 63.2	D-
83.3 - 86.6	B	70.0 - 73.2	C-	0.00 - 59.9	F

Suggested Problems for CHEM 104, Chang 11th Ed

Ch 5:   13, 19, 20, 22a, 23, 31, 32, 33, 34, 35, 36, 38, 40, 41, 43, 44, 48,
         53, 55, 67, 72, 81, 87

Ch 11:   6, 11, 12, 18a, 21, 23, 27, 34, 49, 57, 62, 68, 71, 84, 87

Ch 12:   1, 8, 13, 15, 17, 27, 40, 42, 46, 49, 51, 55, 56, 63, 73

Ch 13:   1, 6b, 8, 10, 11a,b, 13, 16, 17a,d, 27a, 30, 35a, 46, 48, 51c,e, 52,
         55a, 60, 70, 74a,b, 94

Ch 14:   6, 8a,b,d, 9b,c, 10, 15, 17, 18, 20a, 28, 40, 43, 48, 51, 53, 58, 89

Ch 15:   1, 3b,c,e,g, 4a,d, 5a,b,c, 6a,b,c, 8b,g,h,l, 9, 12, 14, 15, 16, 17,
         18, 19a,b,c, 20a,c, 22, 23, 27, 33a,b,c,e,g,l, 34a, 43, 45, 48a, 50a,
         66, 77a,b, 78a,b, 81, 91, 93b,c,e,g,h

Ch 16:   3, 5, 7, 9, 12a,b, 15, 18, 20, 47, 49a,c, 53a, 54a, 55, 58, 61, 68,
         70, 97, 104

Ch 18:   1a,b,c,e, 3, 11, 12, 16a,c, 23, 25a, 26a,d, 29, 30a, 31, 45, 48,
         54a,c, 89b

Ch 19:   5, 6, 7, 8, 21a, 22b, 25, 27, 28, 31, 34, 37, 38, 61, 72, 74b

Ch 24:   3, 7, 8, 13, 14, 17, 24, 26a,b,e, 27a,c,e, 28a, 34, 36a,b,c,d,e,f, 42

CHEM 104 Summer Course Learning Goals

After successfully completion of this course, a student should be able to:

1. Calculate answers to fundamental gas law problems

2. Define the characteristics of the kinetic theory of matter as related to phase diagrams

3. Define the propertied of solids and liquids and phase changes among the three states of matter

4. Calculate the concentrations of the fundamental solutions used in scientific experiments

5. Solve problems associated with the colligative properties of solutions

6. Determine a rate law equation from experimental data and the value of a rate constant

7. Calculate the activation energy of a typical chemical reaction

8. Write equilibrium constant expressions used to solve problems determining equilibrium constants

9. Apply LeChatelier's Principle to explain factors that affect chemical equilibrium

10. Relate the three common acid/base theories to each other

11. Determine the pH of common acid and base solutions

12. Calculate ionization constants of weak acids and weak bases

13. Identify and calculate the pH of buffer solutions

14. Balance oxidation-reduction equations by the ion electron method

15. Diagram an electrolysis cell and write the reactions at each electrode

16. Diagram a Voltaic Cell, determine the cell potential, and write the reactions taking place

17. Determine the products and balance a nuclear equation

18. Calculate the binding energy of a isotopic nucleus

19. Determine the age of a carbon-14 artifact from half-life calculations

20. Name and draw the structures of common organic compounds

21. Determine the products of simple organic reactions

22. Identify the common functional groups used to characterize organic molecules

CHEM-104 QUESTIONNAIRE

NAME _____

ADDRESS _____

_____

_____

PHONE _____

E-MAIL _____

HIGH SCHOOL ATTENDED _____

IF NOT IN DELAWARE, WHERE LOCATED _____

WHEN AND WHERE DID YOU TAKE CHEM 103 OR ITS EQUIVALENT?

_____

_____

IF YOU HAVE NOT TAKEN CHEM 103 OR ITS EQUIVALENT, WE MUST TALK.

WHY ARE YOU TAKING THIS COURSE?

WHAT GRADE DO YOU NEED IN THIS COURSE?_____WANT?_____EXPECT?_____

TELL ME A LITTLE ABOUT YOURSELF -