General Chemistry II (CHE 132) **Nassau Community College**

Dr. Charles Hicks
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Office Hours: Tu & Th 10:00-11:15, or by appointment.

Texts: Chemistry: A Molecular Approach by Nivaldo Tro, (custom NCC edition) Prentice Hall 2008.

Classic Experiments in College Chemistry II by Douglas Cody and Leonard M. Itzkowitz, Whittier, 1996.

Course Website: Class notes and other documents distributed in class can be downloaded at:

http://faculty.ncc.edu/hicksc

Announcements: Sometimes announcements will be made, or documents distributed via email. You are expected to check your email regularly.

Exams/Grading: There will be four exams and six scheduled quizzes that will be determine 75% of the grade. Missed exams or quizzes count as zeros. If the quiz average is higher than the lowest of the first three exams it will replace it. If one of the first three exams is missed *for any reason* the quiz average will replace that exam. The laboratory portion of the course is worth 25%.

Course Total = 75% Exams/Quizzes + 25% Laboratory = 100%

Lab reports are graded 60% collection of data + 40% related questions/quality of data. Lab reports are due at the beginning of the next lab period. The lowest lab report grade will be dropped. If you miss an experiment the grade for that experiment is zero. At the end of each lab period you must have Professor Hicks stamp your data and check your drawer to see that all the glassware is clean.

Academic Integrity: *Any* form of academic dishonestly is grounds for failure in the course.

Assigned Homework Problems

Chapter 6: 71, 76
Chapter 17: 15, 21-23, 25, 31, 43, 61, 67, 98, 101
Chapter 13: 5, 12, 15, 19, 20, 23, 32, 36, 37, 40, 41, 55, 69, 72
Chapter 14: 27, 35, 37, 41, 43, 45, 61, 65, 67
Chapter 17: 26, 69
Chapter 15: 35, 47, 49, 55 a, b, c, 59, 61, 71, 77, 81, 83, 91, 111, 113
Chapter 16: 1, 2, 4, 26, 29, 37, 43, 55
Chapter 4: 83, 87
Chapter 18: 4, 7, 9, 37, 45, 99
Chapter 19: 5, 6, 7, 11, 13, 18, 23, 35, 37, 39, 41, 43, 48, 53, 67, 87, 88
Chapter 20: 10, 11, 23, 24, 27, 29, 31, 32, 35, 39, 43, 45, 63, 67, 95
Chapter 21: 2, 3, 4, 8, 9, 11, 13, 14, 15, 16, 18, 19, 24, 26, 28, 67, 77, 78, 84, 87

Lecture Period Schedule (Revised March 2, 2009)

Lecture	Date Section		Topics
	AH1	C1	
1	1/22	1/20	enthalpy, first law, second law
2	1/26	1/22	Hess' Law, the standard state
3	1/29	2/3	**quiz#1,** entropy, standard free energy
4	2/2	2/4	reaction quotient, equilibrium constant, free energy of reaction **this lecture will be done in the lab period for the C1 section** **lecture 3 will be finished/reviewed in the lab period in the AH1 section**
	2/5	2/5	**Catch up and/or review**
	2/9	2/10	**Exam 1 Lectures 1-4 (Chapters 6 and 17)**
5	2/12	2/11	kinetic graphs, average rate, instantaneous rate, rate law, rate constant **this lecture will be done in the lab period for the C1 section**
6	2/23	2/12	**quiz#2,** half life**,** units on rate constant, determining rate laws
7	3/5	2/24	reaction mechanism, collision model, activation energy, rate-determining step, catalysts
8	3/9	2/26	equilibrium constant, ICE Tables (this lecture will be in lab for AH1 section)
9	3/9	3/3	**quiz#3,** Le Chatelier's Principle
	3/12	3/5	**Catch up and/or review**
	3/16	3/10	**Exam 2 Lectures 5-9 (Chapters 13, 14, and 17)** (exam will be in lab for the AH1 section)
10	3/16	3/12	conjugate acid/base, pH / pOH
11	3/19	3/17	Qualitative Analysis
12	3/23	3/19	**quiz#4,** strong acids, weak acids, strong bases, weak bases, percent dissociated
13	3/26	3/24	salts of weak acids/bases, acid strength
14	3/30	3/26	**quiz#5,** buffers
15	4/2	3/31	oxidation-reduction, balancing redox reactions in acid, standard reduction potentials, electrolysis
	4/13	4/2	**Catch up and/or review**
	4/16	4/14	**Exam 3 Lectures 10-15 (Chapters 15, 16, 4, and 18)**
16	4/20	4/16	**quiz#6,** nuclear reactions, nuclear stability
17	4/23	4/21	radioactive decay, mass defect, nuclear energy, fission
18	4/27	4/23	radiation safety, medical applications of nuclear chemistry
19	4/30	4/28	Introduction to Organic Chemistry I– alkanes, functional groups, carboxylic acid derivatives, hydrolysis reactions
20	5/4	4/30	Introduction to Organic Chemistry II- stereochemistry
21	5/7	5/5	Biochemistry – lipids, fats, carbohydrates
22	5/11	5/7	Biochemistry – amino acids, proteins, DNA
	5/14	5/12	**Catch up and/or review**
	5/18	**5/14**	**Exam 4 Lectures 16-22 (Chapters 19-21)**

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Withdrawal Policy: A withdrawal can be granted at any time *before* the last examination. If you take the last examination you *will* receive a grade in the course. If you are absent from the last exam you should contact Professor Hicks and indicate whether you would prefer a withdrawal or a grade in the course.

Special Needs "If you have a physical, psychological, medical or learning disability that may impact your ability to carry out assigned coursework, I would urge that you contact the staff in The Center for Students with Disabilities (CSD) in Building "U", 572-7241, TTY 572-7617. CSD will review your concerns and determine with you what accommodations are necessary and appropriate. All information and documentation is confidential."

Nassau Community College **Department of Chemistry**
Che 132 General Chemistry II **Laboratory Outline Spring 2009**

TEXTBOOK: Classic Experiments in Modern College Chemistry II, 1st Edition
Whittier Publications 1997

AUTHORS: Itzkowitz & Cody

SAFETY EQUIPMENT REQUIREMENT: Laboratory Coat and Goggles

Week	Experiment #	Experiments	Pages
1		Station Assignments, Safety Orientation and Safety Video, 131 Skills Assessment	3-5
2	**1**	The Molar Volume of Hydrogen Gas	9-18
3	**3**	Standardization of a Sodium Hydroxide Solution	31-40
4	**4**	Percent of Acetic Acid in Commercial Vinegar	41-48
5	**5**	Hess' Law and Heat of Neutralization	49-58
6	**2**	Rates of Reaction	19-30
7	**7**	The Ionization Constant of Acetic Acid	67-76
8	**8**	Analytical Group I: Ag^+, Pb^{2+}, and Hg_2^{2+} Ions	77-85
9	**9**	Analytical Group II: Fe^{3+}, Al^{3+}, and Zn^{2+} Ions	87-94
10	**10**	Analytical Group III: Ba^{2+}, Ca^{2+}, K^+, and NH_4^+ Ions	95-104
11	**11**	General Unknown: Cations	105-110
12	**11**	General Unknown: Cations	105-110
13	**12**	A Redox Titration: Sodium Hypochlorite in Bleach	111-120
14	**13**	Organic Molecular Models	121-130
15		Check-out	131

Nassau Community College **Department of Chemistry**
Che 132 General Chemistry II **Lecture Outline Spring 2009**

TEXTBOOK: Chemistry: A Molecular Approach (Custom Edition for Nassau CC)
Prentice Hall 2008

AUTHOR: Nivaldo J. Tro

DESCRIPTION: This course may be applied toward satisfaction of the college laboratory science requirement. The course covers fundamental principles of modern chemistry including problem-solving techniques. Topics include thermochemistry, thermodynamics, kinetics, equilibrium, acid-base theory, solubility products, oxidation-reduction, nuclear chemistry, and organic chemistry. CHE 131 General Chemistry or its equivalent is a prerequisite.

OVERVIEW: The study of chemistry requires that one thoroughly master the material presented each day in order to understand what will be taught on the next day. It is therefore important that the readings and problems assigned by your instructor be completed before the next class.

This course is the second half of the General Chemistry sequence and provides continuing study to complete a one-year sequence of first-year college chemistry. Topics of special importance include:

- A review of Thermochemistry and thermodynamics
- An understanding of kinetics and the rate of reactions.
- An introduction to chemical equilibrium, including LeChatelier's principle.
- Development of the acid-base theory, pH, acids, and equilibrium.
- The study of solubility product and the common-ion effect.
- Oxidation-reduction equations and electrolytic cells.
- An overview of Nuclear Chemistry.
- An introduction to basic nomenclature in organic chemistry and biochemistry.

COURSE GRADE/ATTENDANCE: Participation in the lecture and laboratory portions of the course is mandatory. A passing grade (60%) is required for BOTH the lecture and laboratory in order to receive credit for the course.

SPECIAL NEEDS: "If you have a physical, psychological, medical or learning disability that may impact your ability to carry out assigned coursework, I would urge that you contact the staff in The Center for Students with Disabilities (CSD) in Building "U", 572-7241, TTY 572-7617. CSD will review your concerns and determine with you what accommodations are necessary and appropriate. All information and documentation is confidential."

Bring a calculator and periodic chart to every class.

NASSAU COMMUNITY COLLEGE
Department of Chemistry

DEPARTMENTAL POLICY CONCERNING SAFETY EQUIPMENT IN THE LABORATORY

All students and faculty are required to use the following protective equipment when working in the chemistry laboratory:

I. *PROTECTIVE EYEWEAR*:

Individuals working in a laboratory environment must wear **chemical splash goggles** that include:

1. An optically clear lens, which meets ANSI Z87.1, impact requirements and has anti-fog coating.

2. **INDIRECT AIR VENTS** designed to restrict the entry of liquids and small particles.

Individuals who normally wear prescription glasses must:

1. Wear the splash goggle described above over their prescription glasses. **OR**

2. Wear prescription glasses equipped with frames having SIDE, TOP and BOTTOM splash protection. Lenses must meet ANSI Z87.1 impact requirements.

3. Contact lenses are not recommended in a laboratory environment. The splash protection goggle described above **MUST** be worn with contact lenses.

II. *PROTECTIVE CLOTHING:*

Individuals working in a laboratory environment are required to wear one of the following **protective garments:**

1. A **laboratory coat** (with front closure) that is long enough to provide approximately knee length protection.

   BE ADVISED: There is some evidence that protective clothing made of 65% Dacron polyester/35% cotton may increase the severity of burn injury if the garment should catch fire. We therefore strongly recommend the use of cloth protective garments made of 100% cotton rather than a polyester/cotton mix.

2. Outerwear such as coats, jackets, sweatshirts, or sweaters **DO NOT** meet this requirement.

3. Shorts, open-toed shoes, and sandals are **NOT** permitted.