

## **SYLLABUS**

Course: General Chemistry I: CHEM-1030-003 (call #16279)  
Lecture: 9:00-10:25AM Mon.-Wed.; Room 6068  
Recitation: 1 hour per week: Mon.; 12:00-1:00 Room 3066  
Laboratory: 3 hours per week: Mon.; 1:00-4:00 Room 3066

### **Course Requirements**

Text: **General Chemistry**  
10<sup>th</sup> Edition, Chang, 2010

Laboratory Manual: The lab experiments are on the CCRI chemistry website: under academic departments. Click on "Faculty and Staff", then to "R. Kreiser", then to labs. The individual experiments can be downloaded as needed at CCRI or at home. You will need Adobe Acrobat Reader to open and print the lab experiments.

Homework Disks: Chem. Skill Builder is to be used for homework credit. It is found online at [www.chemskillbuilder.com](http://www.chemskillbuilder.com)

Laboratory: Department Approved Safety Glasses  
Scientific Calculator

Instructor: Dr. Ralph Kreiser  
Room 3290

Introduction: This course is the first semester of General Chemistry for science, pharmacy, or engineering students. The lectures cover such topics such as chemical bonding, chemical reactions, solids, liquids, and gases. This material covers chapters 1-12 of the text. Three exams (given during the lecture period) and a cumulative final are given. The lowest exam grade is dropped. Weekly quizzes (given by the lab instructor) covering current lecture material are given. The lowest quiz grade will be dropped. In the one hour recitation before the lab the quiz will be given, questions answered, and current experiment discussed.

The lab experiments coordinate with the lecture material. There is a prelab assignment (prestudy), which must be done and handed in before the lab. Points are deducted if late. Lab reports involve filling in the report sheets in the lab manual and are due no later than a week after the lab is done. The lowest prestudy and lab report grades are dropped.

ChemSkill Builder, an online homework set is required and is worth an exam grade. The assigned topics must be done by the due dates for full credit.

No makeups are given for missed exams, quizzes or lab experiments. They will count as a drop.

Spring 2010

**SAVE THIS SYLLABUS FOR REFERENCE DURING THE SEMESTER.**

COMMUNITY COLLEGE OF RHODE ISLAND  
CHEM-1030-003

General Information

Office: Room 3290, Third floor  
Phone and Voice Mail: (401) 825-2261  
Office Hours: Monday and Tuesday: 8:30-9:30  
10:30-11:00  
Wednesday and Thursday 8:30-9:30  
10:30-11:00

Chemistry Secretary: (401) 825-2257

EMAIL: [rkreiser@ccri.edu](mailto:rkreiser@ccri.edu)

School Cancellations: (401) 825-2344

Chemistry Website: [http:// ccri.edu/chemistry](http://ccri.edu/chemistry)

Laboratories cancelled due to snow etc will not be made up.

The due dates for laboratory prestudies and laboratory reports will be assigned by and handed in to the individual laboratory instructor.

Quizzes are given at the beginning of the recitation class by the individual laboratory instructor and are usually on the previous weeks lectures material.

Exams are given during the normal lecture period.

**No make-ups are given for missed quizzes, prestudies, exams, or labs. One quiz, prestudy, and lab are dropped. No quizzes are given the recitation period following an hour exam.**

Grading Scheme

The final grade is based on the following point distribution:

<u>Assignments</u>	<u>Maximum Points*</u>
a. Assigned Homework from disks	100 Points
b. Best 9/10 Quizzes	90 Points
c. Best 2/3-Hour exams	200 Points
d. Best 12/13 Prestudies	120 Points
e. Best 12/13 Laboratory	240 Points
f. <u>Comprehensive Final Exam</u>	<u>200 Points</u>
Total Maximum Points	950 Points

Percentage of Maximum Total Points

A ; 93+	C+; 77-79
A-; 90-92	C ; 70-76
B+; 87-89	D+; 67-69
B ; 83-86	D ; 60-66
B-; 80-82	F ; 59 -

Spring 2010

COMMUNITY COLLEGE OF RHODE ISLAND  
CHEM-1030-003

	<u>Lecture Topics</u>	<u>Text Topics</u>
I.	Matter and Measurement	1.1 thru 1.9
	Physical and chemical changes and properties	
	Measurement, metric system, SI units	
	Significant figures and dimensional analysis	
	Experimental basis of chemistry	
	Specific Heat (Chapter. 6: 6.5)	
II.	Atoms and Elements	
	Atomic theory and atomic structure	2.1
	Electrons, protons, neutrons, and isotopes	thru
	Atomic Mass	2.7
	The Periodic Table of Elements	
	Variation of chemical and physical properties	
	Chemical formulas and nomenclature	
	Writing and balancing chemical equations	
III.	Stoichiometry	
	The mole and Avogadro's number	3.1
	Mole to mass conversions	thru
	Percent composition of substances	3.10
	Empirical and molecular formulas	
	Mass relationships in chemical reactions	
	Limiting reagent problems	
	Percent yield	
	<b><u>Exam No.1</u></b>	<b><u>Wednesday, Feb. 17, 2010</u></b>
IV.	Chemical Reactions	
	Molecular, ionic, and net-ionic reactions	4.1
	Precipitation reactions: Solubility rules	thru
	Acid base reactions: Neutralization	4.3
	Molarity and dilution	4.5
	Gravimetric and volumetric analysis	thru
	Titration and standardization	4.7

Spring 2010

COMMUNITY COLLEGE OF RHODE ISLAND  
CHEM-1030-003

	<u>Text Topics</u>
V. Gases	
Properties of gases	5.1
Boyle's Charle's Avogadro's, Ideal Gas Laws	thru
Dalton's law of partial pressures	5.8
Density and gram molecular weights of gases	
Molecular speeds and rates of effusion	
VI. Thermochemistry	
Kinetic and Potential energy	6.1
Units of energy	thru
Enthalpy changes in chemical reactions	6.7
Hess's Law	
Enthalpy of formation	
VII. Atomic Structure	
Electromagnetic radiation	7.1
Bohr theory of the hydrogen atom	thru
Electron transition calculations in hydrogen atom	7.9
Wave mechanical model of the atom	
Quantum numbers	
Shape of atomic orbitals	
Spectroscopic notation and orbital diagrams	
Electron configuration and quantum numbers	
VIII. Periodic Table	
Ionization energy and electron affinity	8.1
Relative sizes of atoms and ions	thru
	8.6
<b><u>Exam No.2 Wednesday, April 31, 2010</u></b>	
IX. Chemical Bonding	
Lewis dot structures	9.1
Bonding and nonbonding electrons	thru
Single, double, and triple bonds	9.10
Octet rule	
Resonance	
Exceptions to octet rule	

Spring 2010

COMMUNITY COLLEGE OF RHODE ISLAND  
CHEM-1030-003

	<u>Text Topics</u>
X. Molecular Geometry	
VSEPR theory	10.1
Prediction of molecular geometry	thru
Lone electron pairs and molecular shapes	10.8
Polar bonds, dipole moments, and electronegativity	
Hybrid orbitals	
Sigma and pi bonds	
XI. Liquids and Solids	
Intermolecular forces in liquids	11.1
Heating and cooling curves	thru
Fusion and vaporization	11.9
Vapor pressure of liquids and solids	
Phase diagrams	
Structure and properties of solids	
XIII. Solutions	
Solution concentration	12.1
Molarity, molality, mole fraction, % by mass	thru
Solubility of solids and gases	12.8
Colligative properties of solutions	
Vapor pressure lowering	
Boiling point elevation	
Freezing point depression	

**Exam No.3 Wednesday May 5, 2010**

Comprehensive Final Exam: Week of May 11-15  
(Exact date and room location will be announced)

The final exam covers all twelve chapters and generally consists of double the multiple choice and essay question as a regular hour exam. Copies of old exams I, II, and III with answers are on reserve in the Learning Center. They may be xeroxed but not taken out of the library. No copies of the final exam are available.

