

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: CHM 1025C

COURSE TITLE: Introduction to General Chemistry

PREREQUISITE(S): None

COREQUISITE(S): MAC 1105 or satisfactory score on placement test

CREDIT HOURS: 4

CONTACT HOURS/WEEK: 6

CONTACT HOUR BREAKDOWN:

Lecture/Discussion: 4

Laboratory: 2

Other _____:

FACULTY WORKLOAD POINTS: 5.4

STANDARDIZED CLASS SIZE ALLOCATION: 24

CATALOG COURSE DESCRIPTION:

This course is an introduction to the concepts of inorganic chemistry including structures of matter, atomic theory, nomenclature, bonding, gases, solutions, equilibrium, and acids and bases. This course is for students who have had no previous chemistry and plan to major in science, engineering, pre-medicine or pharmacy.

SUGGESTED TEXT(S):

Sease and Daub. Basic Chemistry, latest edition. Prentice-Hall.

Masterson and Cherim. Introduction to Chemistry, latest edition. Saunders College Publishing.

Zumdahl: Introductory Chemistry, latest edition. Houghton-Mifflin.

SUGGESTED TEXT(S): (CONTINUED)

Morris Hein Brooks/Cole. Foundations of College Chemistry, latest edition. Cole Publishers.

Hein and Best. College Chemistry, latest edition. Dickenson Publishers.

Red Moore. Fundamentals of Chemistry, latest edition. Prentice-Hall Publishers.

Introduction to Chemistry, Russo and Silver, Latest Edition. Benjamin's Cummings Publishing Co. Publisher

Introduction to Chemistry, Cowin, Latest Edition. Prentice-Hall Publishers.

Introduction to Chemistry, Stoker. Houghton-Mifflin.

EFFECTIVE DATE:

November 14, 1987

REVIEW OR MODIFICATION DATE:

May, 2002
Fall Term, 2002 (20031)
Fall Term, 2006 (20071)
Fall Term, 2008 (20091) - Outline Review 2007

COURSE TOPICS	CONTACT HOURS <u>PER TOPIC</u>
I. Introduction to Chemistry	.5
II. Measurements/Mathematics of Chemistry Metric System, mass, temperature, density, specific heat, conversions of units, scientific notation, significant digits	5
III. Basic Concepts of Matter Physical and chemical properties, states of matter, compounds/elements/ mixtures	3
IV. Atomic Structure/Periodicity Basic atomic theory, orbitals/electron configuration, electron-dot symbols, Periodic Law/Periodic Table	4
V. Concepts of bonding Valence/Oxidation numbers, bonding of atoms, Ionic (electrovalent), Covalent, Coordinate Covalent, Structural Formulas/ Dot-symbols	3
VI. Writing Chemical Formulas Law of definite proportions, use of the Periodic Table to predict bonding patterns, use of polyatomic ions	3
VII. Inorganic Nomenclature	4
VIII. Calculations Involving Elements Compounds Calculations of formula/molecular masses, calculation of molar masses/mole concept, percent composition/empirical and true molecular formulas	5
IX. Chemical Equations Definitions/symbols, balancing equations, writing and balancing word equations, types of equations, recognizing the types, prediction of products, balancing	5

COURSE TOPICS (CONTINUED)	CONTACT HOURS <u>PER TOPIC</u>
X. Stoichiometry: Calculations Involving Equations Solutions by the mole method, solutions by ratio and proportion	5
XI. Gas Laws, Kinetic Molecular Theories	4.5
XII. Introduction to Liquids and Solids	3
XIII. Solution Chemistry Definitions/types, factors affecting solubility/rates of solutions, concentrations	4
XIV. Introduction to Acids and Bases Definitions/properties, pH and pOH, electrolytes/nonelectrolytes	4
XV. Rates of Reaction and Chemical Equilibria Reaction rates, reversible and irreversible reactions and chemical equilibrium, Le Chatelier's Principle	5
XVI. Special topics	2
Total Lecture Hours	60

LABORATORY ACTIVITIES

	<u>CONTACT HOURS PER TOPIC</u>
1. Laboratory Safety/Introduction to Chemical Equipment, Laboratory notebook	2
2. Introduction to Laboratory Measurements	2
3. Density	2
4. Physical and Chemical Properties/Changes	2
5. Characteristics of Elements/Compounds	2
The professor will choose any 4 of the above to satisfy course requirements.	
Subtotal	8
6. Periodic Table Concepts	2
7. Bonding/Dot Structures (Model Building)	2
8. Mole Concept/Empirical Formula	2
9. Double Replacement Reactions	2
10. Single Replacement Reactions	2
11. Stoichiometry	2
12. Gas Laws	2
13. Molar Volume of a Gas	2
14. Molar Mass of a Gas	2
15. Solutions	2
16. Acid-Base Titration	2
17. Analysis of an Antacid Tablet	2
18. Rates of Reaction	2
19. Calorimetry/Specific Heat	2

LABORATORY ACTIVITIES (CONTINUED)

CONTACT HOURS
PER TOPIC

20.	Hydrates	2
21.	Equilibrium and Le Chatelier's Principle	2
22.	Spectroscopy	2
The professor will choose eleven activities to satisfy the laboratory requirement.		
Subtotal 2		22
Total Lab Contact Hours		30



**Florida State College
At Jacksonville**

**Course Learning Outcomes & Assessment
For All College Credit Courses**

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1 COURSE PREFIX AND NUMBER: CHM 1025C	SEMESTER CREDIT HOURS: 4
COURSE TITLE: Introduction to General Chemistry	

Section 2
 TYPE OF COURSE: (Click on the box to check all that apply)

<input type="checkbox"/> AA Elective	<input type="checkbox"/> AS Required Professional Course	<input type="checkbox"/> College Prep
<input type="checkbox"/> AS Professional Elective	<input type="checkbox"/> AAS Required Professional Course	<input type="checkbox"/> Technical Certificate
<input type="checkbox"/> Other _____		
<input checked="" type="checkbox"/> General Education: (For General Education courses, you must also complete Section 3 and Section 7)		

Section 3 (If applicable)
 INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

<input type="checkbox"/> Communications	<input type="checkbox"/> Social & Behavioral Sciences	<input type="checkbox"/> Mathematics
<input checked="" type="checkbox"/> Natural Sciences	<input type="checkbox"/> Humanities	

Section 4
 INTELLECTUAL COMPETENCIES:

<input checked="" type="checkbox"/> Reading	<input checked="" type="checkbox"/> Speaking	<input checked="" type="checkbox"/> Critical Analysis	<input checked="" type="checkbox"/> Quantitative Skills	<input checked="" type="checkbox"/> Scientific Method of Inquiry
<input checked="" type="checkbox"/> Writing	<input checked="" type="checkbox"/> Listening	<input checked="" type="checkbox"/> Information Literacy	<input checked="" type="checkbox"/> Ethical Judgment	<input checked="" type="checkbox"/> Working Collaboratively

Section 5	LEARNING OUTCOMES	METHOD OF ASSESSMENT
	<ul style="list-style-type: none"> • Explain and apply major concepts in inorganic chemistry including structures of matter, atomic theory, nomenclature, bonding, gases, solutions, equilibrium and acids and bases. 	Written tests, reports and/or use of equipment to demonstrate student competency in field.
	<ul style="list-style-type: none"> • Demonstrate knowledge of scientific method. 	Formulate problem, make observations, derive and test hypothesis and make conclusions.
	<ul style="list-style-type: none"> • Communicate scientific ideas through oral or written assignments. 	Students use analytical reasoning skills to solve problems on written tests and/or laboratory work.
	<ul style="list-style-type: none"> • Interpret scientific models such as formulas, graphs, tables and schematics, draw inferences from them and recognize their limitations. 	Written reports of lab experiments and/or written tests demonstrate student competency in the application of scientific knowledge.
	<ul style="list-style-type: none"> • Demonstrate problem solving methods in situations that are encountered outside of the classroom. 	Students use demonstrations, group discussions, written tests, laboratory reports, research projects and/or field experiences to illustrate competence in recognizing and evaluating various scientific processes.
	<ul style="list-style-type: none"> • Demonstrate proper laboratory technique including safety in the use and care of laboratory equipment and materials. 	Results from laboratory work and experiments demonstrate student awareness of science and society.
	<ul style="list-style-type: none"> • Maintain a laboratory notebook 	Results from laboratory notebook demonstrate student competency in data collection.

Section 6
 Name of Person Completing This Form: Nancy Mullins, Karen Sanchez Date: 3/4/2005

SECTION 7 MUST BE COMPLETED FOR ALL GENERAL EDUCATION COURSES ONLY (exclude AA electives)

<i>Section 7</i>	Primary	Secondary	N/A	VALUE	Primary	Secondary	N/A
KNOWLEDGE							
A. Global and Historical Knowledge & Understanding				Intellectual honesty	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Comprehends a general knowledge of the nature, origins and contributions of major civilizations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Curiosity and openness to new ideas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Comprehends the workings and interrelations of personal, business and government economies	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Recognition of one's own creative potential	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Comprehends political, social and economic systems and their effects upon society	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Acceptance of and respect for differences among people and cultures	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
B. Cultural and Aesthetic Knowledge and Understanding							
• Comprehends the contributions of the arts and humanities to the human experience on a personal, national or global level	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Civic Engagement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Comprehends the historical development of the arts and sciences	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lifelong Learning	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Comprehends religious and cultural systems and their effects upon society	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
C. Human Awareness and Understanding							
• Comprehends the dynamics of human behavior and the process of increasing self-awareness, growth and development	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
• Comprehends the stages of human development and the dynamics of human relationships in diverse cultures	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
• Comprehends the factors that promote physical, mental and social well-being	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				
D. Mathematics, Science and Technology							
• Comprehends the basic concepts and investigative processes of the natural sciences	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
• Comprehends the breadth, significance and development of the mathematical sciences	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
• Comprehends the ways science and technology have shaped and continue to reshape human cultures and the environment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

Section 8

Name of Person Completing This Form: Nancy Mullins, Karen Sanchez Date: 3/4/2005