

## FLORIDA STATE COLLEGE AT JACKSONVILLE

## COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	CHM 1032C
COURSE TITLE:	Principles of General Chemistry
PREREQUISITE(S):	None
COREQUISITE(S):	MAT 1033 or satisfactory score on the 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:

Students will benefit by taking high school algebra or MAT 1033 prior to enrolling in this course. This course is an introduction to the concepts of inorganic chemistry including structures of matter, atomic theory, nomenclature, bonding, bases, and introduction to organic chemistry. This course is for students who have had no previous chemistry and plan to major in dental hygiene, medical technology, nursing or health related fields.

## SUGGESTED TEXT(S):

Bettelheim and March. Introduction to General, Organic and Bio-chemistry. Latest edition. Saunders College Publishers.

General, Organic, and Biological Chemistry. Timberlake, latest ed., Benjamin Cummings Publisher.

Chemistry: General, Organic, and Biochemistry. Timberlake, Latest Ed., Bettelheim, Brown and March.

SUGGESTED TEXT(S):

Introductory Chemistry. Russo and Silver. Latest edition.  
Benjamin Cummings Publisher.

Introduction to General, Organic, and Biological Chemistry  
McMurry. Castellion, latest edition.

IMPLEMENTATION 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  
PER TOPIC

I.	Matter, Energy, and Measurements		6
	A.	Properties and Classification of Matter	(2)
	B.	Types and Laws of Energy	(1)
	C.	Important Measurement Units, Unit Conversions, and the SI System of Units	(3)
II.	Elements, Atoms, and the Periodic Table		3
	A.	Structure of the Atom	
	B.	Electron Configuration	
	C.	Periodic Properties and Elements	
III.	Compounds, Molecules and Chemical Bonds		4
	A.	Writing Chemical Formulas and Naming Compounds	
	B.	Ionic and Covalent Bonds	
IV.	Chemical Equations and Stoichiometry		8
	A.	Chemical Equations	(4)
	B.	Stoichiometry	(4)
		1. Formula Weights	
		2. The Mole	
		3. Calculations Using Balanced Equations Involving Weight and Mole Relations	
V.	Gases, Liquids and Solids		7
	A.	Organization of Matter	
	B.	Gases	
	C.	Pressure and Physiology	
	D.	Gas Laws	
	E.	Liquids	
	F.	Solids	

## COURSE TOPICS (CONTINUED)

CONTACT HOURS  
PER TOPIC

VI.	Solutions	8
	A. Types of Solutions	
	B. Solubility	
	C. Concentrations of Solutions	
	D. Osmosis, Dialysis, and Electrolytes	
	E. Colligative Properties	
VII.	Chemical Equilibrium	4
	A. Factors Affecting Reaction Rates	
	B. Chemical Equilibrium System	
VIII.	Acids and Bases	7
	A. Definitions and Properties	
	B. Measurement of Hydrogen Ion Concentration and pH	
	C. Buffer Solutions	
	D. Titrations	
IX.	Introduction to Organic Chemistry	8
	A. Introduction	
	B. Molecular Structures in Organic Compounds	
	C. Recognizing Functional Groups of Most Classification of Organic Compounds	
	D. Nomenclature of Organic Compounds	
X.	Nuclear Chemistry	3
XI.	Special Topics	2
Total Lecture Hours		60

## LABORATORY ACTIVITIES

	<u>CONTACT HOURS PER TOPIC</u>
1. Laboratory Safety/Introduction to Chemical Equipment Maintenance of laboratory notebook	2
2. Measurements, Units, Significant Figures, Precision, Accuracy in Metric System	2
3. Chemical Nomenclature (IUPAC)	2
4. Graphical Analysis of Data	2
Subtotal	8
5. Bonding/Dot Structures (Model Building)	2
6. Energy and Matter, Physical and Chemical	2
7. Properties and Changes	2
8. Compounds	2
9. Chemical Reactions	2
10. Conservation of Mass during a Chemical Change	2
11. Gas Law Experiment	2
12. Preparation of Solutions, wt. %, M, N	2
13. Osmosis and Dialysis	2
14. Determination of pH	2
15. Chemical Equilibrium	2
16. Acid-base Titration	2
17. Testing a Substance for its Buffer Capacity	2
18. Hydrocarbon	2
19. Nuclear Demonstration	2
20. Properties of Solutions	2

## LABORATORY ACTIVITIES (Continued)

	<u>CONTACT HOURS PER TOPIC</u>
21. Spectroscopy	2
22. Measurement of Specific Heat	2
23. Intermolecular Interactions/Polymers	2
 <b>The professor will choose eleven activities to satisfy the laboratory requirement.</b>	
Subtotal	22
 Total Lab Contact Hours	 30



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: <b>CHM 1032C</b>	SEMESTER CREDIT HOURS: <b>4</b>

COURSE TITLE: **Principles of 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

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

Section 6

Name of Person Completing This Form: Nancy Mullins, Karen Sanchez Date: 12/10/2004

**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
<b>KNOWLEDGE</b>							
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 type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input 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: 12/10/2004