

# GENERAL ORGANIC AND BIOCHEMISTRY

Revised 11/28/11

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<b><u>Course Number</u></b>	CHM105
<b><u>Prerequisite(s)</u></b>	MAT 101; RDG 100, ENG 100, HS Chemistry within last 5 years or CHM 100 or CHM 110
<b><u>Co-requisite(s)</u></b>	None
<b><u>Course Description</u></b>	This course is a study of the fundamental principles of chemistry, including atomic and molecular structure, common substances and reactions, introduction to organic chemistry and biochemistry.
<b><u>Course Outcomes:</u></b>	Students should be able to demonstrate: <ol style="list-style-type: none"><li>1. Rationality, logic and coherence through critical thinking;</li><li>2. Their ability to express themselves effectively in quantitative and qualitative terms;</li><li>3. The scientific method of inquiry;</li><li>4. Their ability to access, retrieve, synthesize and evaluate information.</li></ol>
<b><u>Textbook(s)</u></b>	General Organic and Biochemistry, 7 <sup>th</sup> ed., by Denniston, Topping, and Caret, McGraw Hill Publisher, 2010.  Lab Handout will be given out every week.
<b><u>References</u></b>	N/A
<b><u>Other Required Materials, Tools, and Equipment:</u></b>	A scientific calculator (no cell phone calculator) Safety goggles for the laboratory Solutions manual (optional).
<b><u>Method of Instruction:</u></b>	Lecture and discussion, demonstrations, audio-visual materials, on-line resources, projects, quizzes and written exams.
<b><u>Grading System:</u></b>	90 - 100 = A 80 - 89 = B 70 - 79 = C 55 - 69 = D Below 55 = F

<b><u>Grade</u></b>	Tests	=	50%
<b><u>Calculation</u></b>	Quizzes	=	10%
<b><u>Method:</u></b>	Laboratory	=	25%
	Final Exam	=	<u>15%</u>
		=	100%

**Attendance Policy:** See Student Handbook Pages 77-80  
The withdrawal date for Fall semester will be 11/1/11.

**Academic Conduct:** **ACADEMIC DISHONESTY:**  
Please See Student Handbook Page 98

**CELLULAR PHONES AND PAGERS/BEEPERS:**  
Please See Student Handbook Pages 76-77

**Class procedures:** **Chemistry requires no one miss over 10 hours of lecture.**

Preparation:

1. Read over the material before coming to class.
2. Come prepared to do the work each day.
3. Be in your place with lecture notes at the beginning of each class period.
4. Pay careful attention to the printed instructions.
5. Be considerate of your class associates. Your activities may disturb them so they are unable to benefit from the lecture.
6. Report immediately to the instructor any emergencies or injuries that occur.

**Accommodations:** Students who need special accommodations in this class because of a documented disability should notify Student Disability Services by calling (864) 592-4818, toll-free 1-800-922-3679; via email through the SCC web site at [www.sccsc.edu/resources/disabilities](http://www.sccsc.edu/resources/disabilities); or by visiting the office located in the East Building Room 30-B on the SCC Central campus. Contacting Student Disability Services early in the semester gives the College an opportunity to provide necessary support services and appropriate accommodations.

**Course**  
**Competencies &**  
**Objectives:**

**Upon satisfactory completion of this course, the student will be able to:**

- I. List the fundamental units of measurement, significant figures and apply calculations using unit conversions.
- II. Describe structure and properties of matter.
  1. Physical states of matter.
  2. Composition of atoms.
  3. Model of an atom.
  4. Electron arrangement and periodic table.
  5. Trends in the periodic table.
- III. Explain the structure and properties of ionic and covalent compounds.
  1. Lewis dot structure of atoms, molecules and polyatomic ions.
  2. Properties based on molecular structure.
- IV. Apply calculation involving chemical equations and formulas.
  1. Calculate molar masses from formulas.
  2. Concentrations based on mass, moles and mole equivalents.
  3. Concentration dependent solution properties.
  4. Water as a solvent.
  5. Acid-base properties, and neutralization reactions.
- V. A brief description of States of matter.
  1. Explain the kinetic Molecular Theory of gases.
  2. Apply calculations involving gas laws.
- VI. Energy, rate and equilibrium.
  1. Explain the laws of thermodynamics, enthalpy changes and entropy changes in a chemical reaction.
  2. Describe the factors that affect the Chemical Kinetics.
  3. Apply Le-Chatelier's Principle for explaining the reactions at equilibrium.
- VII. A brief description of organic compounds.
- VIII. Describe the properties of the four primary organic molecules of life with an emphasis on their biochemical properties.
  1. Describe the properties and use of lipids in the human organism, especially in membrane construction.
  2. Describe the properties and use of proteins in the human organism with a focus on enzymes.

3. Describe the properties and use of carbohydrate in the human organism especially in relation to ATP production.

4. Describe the properties and use of nucleic acids in the human organism, study of replication, transcription, translation and Genetic code. Study mutation.

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