

COURSE SYLLABUS

Course Title:	Concepts of Chemistry	Date submitted:	November 2017 (AAC:17-61)	
Department:	Mathematics and Science			
Curriculum:	Science			
Course Descriptors: Make certain that the course descriptors are consistent with college and Board of Trustees policies, and the current course numbering system.	Course Code: (eg. ACC 101)	CHE*111	Prerequisites: C- or better in Prealgebra & Elementary Algebra (MAT*085) or Introductory Algebra (MAT*094) or Elementary Algebra Foundations (MAT*095) OR placement into any credit-level mathematics course.	
	Course Type:	X		
	A: Clinical B: Lab D: Distance Learning I: Individual/Independent L: Lecture N: M: Seminar Internship P: Practicum U: Studio X: Combined Lecture/Lab Y: Combined Lecture/Clinical/Lab Z: Combined Lecture/Studio	Credit Hours:	4	Corequisites: None
	Developmental: (yes/no)	No		
	Lecture	3		
	Clinical	0		
	Contact Hours: Lab:	2		
	Studio	0		
	Other:	0	Other Requirements: Scientific calculator, safety glasses	
	TOTAL	5		
Class Maximum:	36			
Semesters Offered:	F/Sp/Su			
Catalog Course Description:	Fundamental principles and methods of chemistry are studied, including atomic theory, bonding, stoichiometry, and thermodynamics. Provides an introduction to physical, nuclear, organic, and biological chemistry. Suitable for students needing a brief survey course or science elective; not intended for science or engineering majors. Lecture and laboratory.			
Topical Outline: List course content in outline format.	Lectures: 1. Introduction, measurement, and problem solving 2. Matter and energy 3. Atoms and elements 4. Molecules and compounds 5. Moles and molar conversions			

6. Chemical reactions
7. Electron configuration and periodic trends
8. Chemical bonding
9. Physical chemistry
10. Acid-base reactions
11. Oxidation-reduction reactions
12. Nuclear chemistry
13. Organic chemistry
14. Biological chemistry

Laboratory:

1. Measurement, volume, density
2. Paper chromatography
3. Calorimetry
4. Chemical reactions
5. Lewis structures
6. Boyle's law
7. Freezing point depression
8. pH indicators
9. Acid-base titrations
10. Molecular models
11. Organic synthesis

Upon successful completion of this course, the student will be able to do the following:

1. conduct prescribed laboratory experiments to demonstrate steps of the scientific method
2. record measurements and perform simple calculations using SI units
3. discuss the concept of energy, and describe energy changes in chemical reactions
4. describe the atomic view of matter with regard to subatomic particles, mass, and charge
5. classify materials as elements, compounds, or mixtures, and apply proper nomenclature to ionic and binary molecular compounds
6. use equations to interpret chemical reactions, and perform simple molar conversions
7. use the periodic table as a reference for atomic number, molar mass, electron configuration, and periodic trends
8. predict and describe the types of chemical bonds and intermolecular forces which exist within a given substance
9. describe the various states of matter and phase changes
10. predict products and discuss applications of acid-base, oxidation-reduction, and nuclear reactions
11. apply nomenclature and explain fundamental concepts of organic chemistry and biochemistry
12. relate chemical principles to current topics in medicine and environmental science

Outcomes:

Describe measurable skills or knowledge that students should be able to demonstrate as evidence that they have mastered the course content.

GENERAL EDUCATION: *(Numbering reflects General Education Outcomes as they appear in the college catalog)*

	<p>COMPETENCY FULFILLED: Scientific Knowledge & Understanding (SCKX) OR Scientific Reasoning (SCRX)</p>
<p>Evaluation: List how the above outcomes will be assessed.</p>	<p>Assessment will be based on the following criteria: Quizzes Examinations Written term papers on selected topics Homework assignments Laboratory reports</p>
<p>Instructional Resources: List library (e.g. books, journals, on-line resources), technological (e.g. Smartboard, software), and other resources (e.g. equipment, supplies, facilities) required and desired to teach this course.</p>	<p>Required: wall-mounted periodic table; chalkboard, whiteboard, and/or Smartboard; laboratory facilities, supplies, and reagents Desired: None</p>
<p>Textbook(s)</p>	<p>Tro, <i>Introductory Chemistry</i>, current edition; Pearson <i>Chemical Periodic Table</i>, current edition; Permchart</p>