COURSE OUTLINE : CHEM 120
D Credit – Degree Applicable
COURSE ID 004017
Cyclical Review: October 2020

COURSE DISCIPLINE : CHEM

COURSE NUMBER : 120

COURSE TITLE (FULL) : Fundamentals Of College Chemistry (Inorganic)

COURSE TITLE (SHORT) : Fund of Col Chem

CATALOG DESCRIPTION

CHEM 120 is a course in the fundamentals of chemistry with the emphasis on health science related examples. This course and CHEM 121 are designed for health science (e.g. nursing), home economics, physical therapy, and other majors that need a year of college chemistry that includes inorganic, organic and biochemistry. CHEM 120 covers inorganic chemistry. CHEM 120 does not involve the level of mathematical applications that are found in CHEM 101.

CATALOG NOTES

Note: This course is not for science majors. At Glendale Community College CHEM 120 satisfies the prerequisite for CHEM 121 only.

Total Lecture Units: 4.00

Total Laboratory Units: 1.00

Total Course Units: 5.00

Total Lecture Hours: 72.00

Total Laboratory Hours: 54.00

Total Laboratory Hours To Be Arranged: 0.00

Total Contact Hours: 126.00

Total Out-of-Class Hours: 144.00

Prerequisite: One year high school algebra or MATH 90 or MATH 90+.

ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	MATH	90	Intermediate Algebra for BSTEM	Solve absolute value equations and inequalities;	Yes
2	MATH	90	Intermediate Algebra for BSTEM	simplify complex fractions;	Yes
3	MATH	90	Intermediate Algebra for BSTEM	perform operations with radical expressions;	Yes
4	MATH	90	Intermediate Algebra for BSTEM	simplify expressions with rational exponents;	Yes
5	MATH	90	Intermediate Algebra for BSTEM	solve rational equations;	Yes
6	MATH	90	Intermediate Algebra for BSTEM	find the equation of a line parallel or perpendicular to a given line;	Yes
7	MATH	90	Intermediate Algebra for BSTEM	solve applied problems;	Yes
8	MATH	90	Intermediate Algebra for BSTEM	find the inverse of a function;	Yes
9	MATH	90	Intermediate Algebra for BSTEM	use the properties of logarithms to simplify and expand expressions;	Yes
10	MATH	90	Intermediate Algebra for BSTEM	solve logarithmic and exponential equations;	Yes
11	MATH	90	Intermediate Algebra for BSTEM	graph functions (linear, quadratic, exponential, logarithmic);	Yes
12	MATH	90+	Intermediate Algebra for BSTEM with Support	Solve absolute value equations and inequalities;	Yes
13	MATH	90+	Intermediate Algebra for BSTEM with Support	simplify complex fractions;	Yes

14	MATH	90+	Intermediate Algebra for BSTEM with Support	perform operations with radical expressions;	Yes
15	MATH	90+	Intermediate Algebra for BSTEM with Support	simplify expressions with rational exponents;	Yes
16	MATH	90+	Intermediate Algebra for BSTEM with Support	solve rational equations;	Yes
17	MATH	90+	Intermediate Algebra for BSTEM with Support	find the equation of a line parallel or perpendicular to a given line;	Yes
18	MATH	90+	Intermediate Algebra for BSTEM with Support	solve applied problems;	Yes
19	MATH	90+	Intermediate Algebra for BSTEM with Support	find the inverse of a function;	Yes
20	MATH	90+	Intermediate Algebra for BSTEM with Support	use the properties of logarithms to simplify and expand expressions;	Yes
21	MATH	90+	Intermediate Algebra for BSTEM with Support	solve logarithmic and exponential equations;	Yes
22	MATH	90+	Intermediate Algebra for BSTEM with Support	graph parabolas and circles centered at any point.	Yes

EXIT STANDARDS

1 Use dimensional analysis method to calculate medication dosage based on body mass in both English and metric units
2 analyze supposed scientific reasoning as logical or not
3 evaluate scientific statements and develop an opinion as to their validity
4 identify and describe basic chemical data, rules, and laws.

STUDENT LEARNING OUTCOMES

1 Utilize the Dimensional Analysis method to solve chemical conversion problems
2 Perform stoichiometric calculations using moles, mass and chemical equations
3 Draw the Lewis structure for a molecule and determine its shape using Valence Shell Electron Pair Repulsion theory

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	Conversion of units; fundamental definitions • Units of length, volume and mass - metric and English • Temperature conversions • Definitions related to matter, energy and the changes in matter • Kinds of substances - elements and compounds	4	6	10
2	Atomic Structure • Elementary particles; protons, electrons, and neutrons • The nucleus	4	3	7
3	Atomic Theory • Atoms • Atomic number • Atomic weights	4	1	5
4	Radioactivity and Nuclear Chemistry • Half-life • Nuclear equations • Alpha, beta, and gamma decay • Fission and fusion • Applications	6	1	7
5	Electronic structure • Electronic energy levels • Spectra • The periodic table • Ions	5	3	8
6	Chemical bonding • Ionic • Covalent	4	0	4

7	Molecules • The concept of the formula • Molecules, molecular weight • Avogadro's number • Moles	4	6	10
8	H. Nomenclature	6	3	9
9	Chemical Equations and Stoichiometry • Empirical and molecular formulas • The concept of the chemical equation • Weight-weight relationships	4	6	10
10	K. Water	4	1	5
11	Solutions and Colloids • General concepts • Concentrations; molarity, normality, and percent	5	6	11
12	Acids, Bases, and Salts • General concepts • pH and PH • Buffers • Titrations • Stoichiometry • Acidiosis/Alkalosis • Other applications	7	9	16
13	Electrolytes • Fluid balance • Major electrolytes • Minor electrolytes • Electrolyte balance and imbalance	5	3	8
14	Oxidation - Reduction • General concepts • Applications	4	3	7

15	Equilibrium • Chemical kinetics • General concepts of equilibrium • The equilibrium constant • Weak acids and weak bases • Hydrolysis • Buffers • Applications	6	3	9
				126

OUT OF CLASS ASSIGNMENTS

1 Project: Investigation of the chemistry of consumer products in medical, cosmetics, and hygiene industries.

METHODS OF EVALUATION

1 Five one-hour examinations
2 One 2.5-hour final examination

METHODS OF INSTRUCTION

- [x] Lecture
- [x] Laboratory
- [ ] Studio
- [ ] Discussion
- [ ] Multimedia
- [ ] Tutorial
- [ ] Independent Study
- [ ] Collaboratory Learning
- [x] Demonstration
- [ ] Field Activities (Trips)
- [ ] Guest Speakers
- [ ] Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	IBSN	Date
Chemistry for Today: General, Organic & Biochemistry	Required	Cengage			Spencer L. Seager	978-1-305-96006-0	2018
Laboratory Experiments for Introduction to General, Organic, and Biochemistry	Required	Cengage			Frederick A. Bettelheim	978-1-133-10602-9	2013