

COURSE OUTCOME MATRIX

COURSE SYLLABUS

PART 2 of 3

Course Number and Title	CH 214 Principles of Chemistry II
-------------------------	-----------------------------------

Credit Hours	4
--------------	---

Course Description	A Laboratory Course: 3 hours lecture and 2 hours lab work each week. Intended as a general chemistry course for STEM majors, the course is a continuation of CH 213 and covers intermolecular forces, solution properties, kinetics, and acid-base reactions. Additionally, the course covers chemical equilibrium, thermodynamics, electrochemistry, and identification of organic chemical structures and basic functional groups.
--------------------	--

Prerequisite(s) and/or Corequisite(s)	CH 213 and MT 130 or MT 130A or minimum ACT math score of 26 or minimum SAT math score of 610.
---------------------------------------	--

Required Textbooks/References/Course Materials:

Chemistry: The Central Science	12th	Brown, LeMay, Burnstein	Pearson/Prentice Hall	0321696727
Principles of Chemistry II: Laboratory Exercises	"Custom"	Alcock, Gillette	Thomson Custom	0534066259

General Education Outcomes	
1	Utilize written and verbal language to discuss and comprehend information, incorporating a variety of technologies, such as text, data, and images (written language, verbal language, and information technology).
2	Identify and interpret relevant information in order to formulate an opinion or conclusion (critical thinking).
3	Demonstrate and communicate computational methods and mathematical reasoning in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate) (quantitative literacy and fluency).
4	Communicate in appropriate ways with those who are culturally diverse (intercultural competence).

Program/Department Outcomes	
1	Students demonstrate a broad knowledge of science.
2	Students demonstrate how science processes work.
3	
4	
5	
6	
7	
8	
9	
10	

	Course Outcomes (CO)	Bloom's Domain for CO (C, A, P), Category, and Level	Program/ Department Outcome(s)	Written Language	Verbal Language	Information Technology	Critical Thinking	Quantitative Literacy and Fluency	Intercultural Competence
1	Perform laboratory exercises while displaying safe laboratory practices	P – Manipulate (2)	1,2	0	0	0	0	1	0
2	Prepare formal laboratory reports	C – Applying (3)	1,2	1	0	0	2	1	0
3	Describe the general progression of modern chemistry over time	C – Remembering (1)	1,2	0	0	0	0	0	0
4	Solve problems in chemical kinetics and reaction mechanisms								
5	Solve problems in general chemical equilibrium	C – Applying (3)	1	0	0	0	1	2	0
6	Solve problems in solubility and complex ion equilibrium	C – Applying (3)	1	0	0	0	1	2	0
7	Explain the intermolecular forces that govern the process of solution formation, colligative properties, crystal structure, and phase changes	C – Understanding (2)	1	0	0	0	0	0	0
8	Solve problems involving intermolecular forces and bonding	C – Applying (3)	1	0	0	0	1	2	0
9	Solve problems involving solution composition and solute solubility	C – Applying (3)	1	0	0	0	1	2	0
10	Apply the Collision Model to mechanisms of chemical reactions, including the influence of catalysts	C – Applying (3)	1	0	0	0	1	0	0
11	Apply concepts of thermodynamics to equilibrium positions of chemical reactions	C – Applying (3)	1	0	0	0	1	0	0
12	Solve problems of entropy and free energy for chemical reactions	C – Applying (3)	1	0	0	0	1	2	0
13	Solve qualitative and quantitative equilibrium problems involving acids, bases and salts	C – Applying (3)	1	0	0	0	1	2	0
14	Describe the effect of molecular structure on the properties of acids and bases	C – Remembering (1)	1	0	0	0	0	0	0
15	Describe the three theories of acid-base chemistry and conditions for which each is used	C – Remembering (1)	1	0	0	0	0	0	0
16	Predict the effect of addition of a common ion to a system at equilibrium	C – Understanding (2)	1	0	0	0	0	0	0
17	Solve equilibrium problems in acid-base buffer chemistry	C – Applying (3)	1	0	0	0	1	2	0
18	Apply concepts in acid-base buffer chemistry to the selection of appropriate endpoint indicators	C – Applying (3)	1	0	0	0	1	2	0
19	Balance oxidation-reduction equations by the half-reaction method	C – Applying (3)	1	0	0	0	1	2	0

	Course Outcomes (CO)	Bloom's Domain for CO (C, A, P), Category, and Level	Program/Department Outcome(s)	Written Language	Verbal Language	Information Technology	Critical Thinking	Quantitative Literacy and Fluency	Intercultural Competence
20	Describe the construction and function of galvanic and electrolytic cells	C – Remembering (1)	1	0	0	0	0	0	0
21	Solve problems of cell potential, electrical work, equilibrium and free energy for galvanic and electrolytic cells	C – Applying (3)	1	0	0	0	1	2	0

Bloom's Domain Legend

C = Cognitive

A = Affective

P = Psychomotor

General Education Outcome Legend

2 = Included and Measurable

1 = Introduced and/or Minimally Addressed and Not Measurable

0 = Not included

Approved: October 14, 2021
Reviewed: November 5, 2021