

# COURSE OUTCOME MATRIX

## COURSE SYLLABUS

### PART 2 of 3

Course Number and Title	CH 213 ^Principles of Chemistry I
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Credit Hours	4
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Course Description	Laboratory Course: 3 hours lecture and 2 hours lab work each week. Intended as a general chemistry course for STEM majors, the course covers the properties of matter and their measurement, atomic theory, gas laws, reaction stoichiometry, and thermochemistry. Electron configurations, chemical bonding, molecular geometry, and Kinetic Molecular Theory are covered.
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Prerequisite(s) and/or Corequisite(s)	MT 121 or MT 121E or MT 123 or MT 124 or MT 124A or MT 128 or minimum ACT math score of 23 or minimum SAT math score of 560.
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#### REQUIRED TEXTBOOKS/REFERENCES/COURSE MATERIALS

Principles of Chemistry I: Laboratory Exercises	"Custom"		Thomson	0534459749
Chemistry: The Central Science	12th	Brown, LeMay, Burnstein	Pearson/Prentice Hall	0321696727

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.
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	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	0	0	2	1	0
3	Describe the general progression of modern chemistry over time	C – Remembering (1)		0	0	0	0	0	0
4	Use stoichiometry to determine outcomes of chemical reactions; predict products of selected reactions	C – Applying (3)	1	0	0	0	1	2	0
5	Solve the stoichiometry of limiting reactants	C – Applying (3)	1	0	0	0	1	2	0
6	Use solution chemistry to determine quantitative outcomes in aqueous environments	C – Applying (3)	1	0	0	0	1	2	0
7	Explain atomic structure in terms of Bohr Model and quantum mechanics	C – Understanding (2)	1	0	0	0	0	0	0
8	Explain concepts of thermochemistry	C – Understanding (2)	1	0	0	0	0	0	0
9	Apply basic concepts of chemical bonding and molecular geometry based on the localized electron model, hybrid orbitals model, and the molecular orbital model	C – Applying (3)	1	0	0	0	1	0	0
10	Solve gas law problems	C – Applying (3)	1	0	0	0	1	2	0
10	Apply Kinetic-Molecular Theory	C – Applying (3)	1	0	0	0	1	0	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