

Chemistry Pro

ISLOs, PSLOs, CSLOs, Mapping

INSTITUTIONAL STUDENT LEARNING OUTCOMES - ISLOs

INSTITUTIONAL STUDENT LEARNING OUTCOMES - ISLOs	
ISLO 1	COMMUNICATION
1A	Read
1B	Listen
1C	Write
1D	Dialogue
ISLO 2	TECHNOLOGY AND INFORMATION COMPETENCY
2A	Demonstrate Technical Literacy
2B	Apply Technology
2C	Access Information
2D	Evaluate and Examine Information
ISLO 3	CRITICAL AND CREATIVE THINKING
3A	Inquire
3B	Analyze
3C	Problem Solve
3D	Express
ISLO 4	CITIZENSHIP
4A	Ethics
4B	Diversity
4C	Sustainability/Global Awareness
4D	Personal Responsibility

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CHEMISTRY PROGRAM OUTCOMES - PSLOs		Related ISLOs
PSLO A	Demonstrate proficiency in chemistry concepts by scoring above the national median in the subject matter ACS (American Chemical Society) exams.	1A, 1a (1B), 1C; 2B; 3A, 3B, 3C; 4D
PSLO B	Demonstrate proficiency in scientific communication.	1A, 1B, 1C, 1D; 2A, 2B, 2C, 2D; 3A, 3B, 3C; 4A, 4D
PSLO C	Apply critical thinking skills to problem solving.	1A, 1B, 1C; 2B, 2C, 2D; 3A, 3B, 3C; 4A, 4D
Total Number of Program Outcomes (manually enter)		3
Number of Program Outcomes Assessed (per formula)		
Percentage of Program Outcomes Assessed (per formula)		

Chemistry A.S. Degree Outcomes - same as the PSLOs.

CHEM A FOUNDATIONS OF COLLEGE CHEMISTRY		Related PSLOs
CSLO 1	Solve problems and analyze data related to chemical formulas and stoichiometry.	A, B, C
CSLO 2	Solve problems and analyze data related to atomic and molecular structure.	A, B, C
CSLO 3	Solve problems and analyze data related to aqueous solutions.	A, B, C
CSLO 4	Solve problems and analyze data related to states of matter.	A, B, C
CSLO 5	Demonstrate proper scientific communication through lab work that shows clear calculations, correct use of significant figures and units, and proper use of chemical nomenclature.	B
CSLO 6	Be able to determine significant figures in measurements and how they propagate through calculations to final results.	A, B
CSLO 7	Be able to work with metric system and SI units, especially in dimensional analysis and converting between metric units.	A, B

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	CHEM 1A GENERAL CHEMISTRY	
CSLO 1	Demonstrate proficiency in solving problems and analyzing data related to chemical formulas and stoichiometry.	A, B, C
CSLO 2	Demonstrate proficiency in solving problems and analyzing data related to atomic and molecular structure.	A, B, C
CSLO 3	Demonstrate proficiency in solving problems and analyzing data related to structure and properties of matter.	A, B, C
CSLO 4	Demonstrate proficiency in solving problems and analyzing data related to states of matter.	A, B, C
CSLO 5	Demonstrate proficiency in scientific communication.	B
	CHEM 1B GENERAL CHEMISTRY	
CSLO 1	Demonstrate proficiency in solving problems and analyzing data related to molecular structure and bonding.	A, B, C
CSLO 2	Demonstrate proficiency in solving problems and analyzing data related to chemical and physical equilibrium.	A, B, C
CSLO 3	Demonstrate proficiency in solving problems and analyzing data related to chemical kinetics (dynamics) and thermodynamics (energetics).	A, B, C
CSLO 4	Demonstrate proficiency in solving problems and analyzing data related to electrochemistry (redox) and transition metal ion bonding.	A, B, C
CSLO 5	Demonstrate proficiency in scientific communication.	B
	CHEM 1X CHEMISTRY 1A PROBLEM SOLVING	
CSLO 1	Solve problems related to structure and properties of matter, atomic and molecular structure, chemical formulas and stoichiometry, chemical bonding, and states of matter.	A, C
CSLO 2	Apply mathematical problem solving techniques to solve problems in chemistry.	C
CSLO 3	Develop rules and strategies for problem solving that are effective in solving new sets of problems.	C
	CHEM 1Y CHEMISTRY 1B PROBLEM SOLVING	
CSLO 1	Solve problems related to thermodynamics, electrochemistry, chemical kinetics, and chemical and physical equilibrium.	A, C
CSLO 2	Apply mathematical problem solving techniques to solve problems in chemistry.	C
CSLO 3	Develop rules and strategies for problem solving that are effective in solving new sets of problems.	C

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	CHEM 2A INTRODUCTION TO CHEMISTRY	
CSLO 1	Demonstrate proficiency in solving problems and analyzing data related to chemical formulas and stoichiometry.	A, B, C
CSLO 2	Demonstrate proficiency in solving problems and analyzing data related to atomic and molecular structure.	A, B, C
CSLO 3	Demonstrate proficiency in solving problems and analyzing data related to physical and chemical equilibrium.	A, B, C
CSLO 4	Demonstrate proficiency in solving problems and analyzing data related to structure and properties of matter.	A, B, C
CSLO 5	Demonstrate proficiency in scientific communication.	B
	CHEM 2B INTRODUCTION TO CHEMISTRY	
CSLO 1	Demonstrate proficiency in solving problems and analyzing data related to functional groups in organic chemistry	A, B, C
CSLO 2	Demonstrate proficiency in solving problems and analyzing data related to biochemical molecules	A, B, C
CSLO 3	Apply biochemical principles to metabolism	A, B, C
CSLO 4	Demonstrate proficiency in scientific communication.	B
	CHEM 2X CHEMISTRY 2A PROBLEM SOLVING	
CSLO 1	Solve problems related to structure and properties of matter, atomic and molecular structure, chemical formulas and stoichiometry, and chemical and physical equilibrium.	A, C
CSLO 2	Apply mathematical problem solving techniques to solve problems in chemistry.	C
CSLO 3	Develop rules and strategies for problem solving that are effective in solving new sets of problems.	C
	CHEM 2Y CHEMISTRY 2B PROBLEM SOLVING	
CSLO 1	Demonstrate proficiency in solving problems related to structure and properties of organic functional groups.	A, C
CSLO 2	Solve problems related to structure and properties of biochemical molecules.	A, C
CSLO 3	Solve problems related to metabolism.	A, C
CSLO 4	Develop strategies for problem solving that are effective in solving new sets of problems.	C

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	CHEM 3A GENERAL CHEMISTRY	
CSLO 1	Demonstrate proficiency in solving problems and analyzing data related to chemical formulas.	A, B, C
CSLO 2	Demonstrate proficiency in solving problems and analyzing data related to stoichiometry.	A, B, C
CSLO 3	Demonstrate proficiency in solving problems and analyzing data related to thermodynamics.	A, B, C
CSLO 4	Demonstrate proficiency in scientific communication.	B
	CHEM 3B GENERAL CHEMISTRY	
CSLO 1	Demonstrate proficiency in solving problems and analyzing data related to atomic and molecular structure.	A, B, C
CSLO 2	Demonstrate proficiency in solving problems and analyzing data related to states of matter.	A, B, C
CSLO 3	Demonstrate proficiency in solving problems and analyzing data related to gas laws.	A, B, C
CSLO 4	Demonstrate proficiency in scientific communication.	B
	CHEM 3X CHEMISTRY 3A PROBLEM SOLVING	
CSLO 1	Solve problems related to chemical formulas, stoichiometry, and thermodynamics.	A, C
CSLO 2	Apply mathematical problem solving techniques to solve problems in chemistry.	A
CSLO 3	Develop rules and strategies for problem solving that are effective in solving new sets of problems.	A
	CHEM 3Y CHEMISTRY 3B PROBLEM SOLVING	
CSLO 1	Solve problems related to gas laws, states of matter and atomic and molecular structure.	A, C
CSLO 2	Apply mathematical problem solving techniques to solve problems in chemistry.	A
CSLO 3	Develop rules and strategies for problem solving that are effective in solving new sets of problems.	A

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	CHEM 5 CHEMISTRY - QUANTITATIVE ANALYSIS	
CSLO 1	Demonstrate the ability to evaluate accuracy, precision, and validity of data.	A, B, C
CSLO 2	Quantitatively analyze samples for chemical composition using wet-chemical methods.	B, C
CSLO 3	Quantitatively analyze samples for chemical composition using instrumental methods.	B, C
CSLO 4	Determine and/or calculate solution properties utilizing analytical chemistry theories (Volumetric analysis, gravimetric analysis, acid-bases, coordination chemistry, redox chemistry, electrochemistry, spectroscopy, and separations).	A, C
CSLO 5	Demonstrate proficiency in scientific communication.	B
	CHEM 12A ORGANIC CHEMISTRY	
CSLO 1	Use experimental data to derive the structure of molecules, draw them and predict how their structure will affect their reactivity. Focus on alkanes, alcohols, ethers, ketones, aldehydes and alkenes..	A, B, C
CSLO 2	Given the structure of reactant molecules, predict and draw mechanisms leading to products. Focus on alkanes, alcohols, ethers, ketones, aldehydes and alkenes.	A, C
CSLO 3	Given a target molecule, outline a retrosynthesis and use this to create a synthetic scheme. Focus on alkanes, alcohols, ethers, ketones, aldehydes and alkenes.	A, C
	CHEM 12B ORGANIC CHEMISTRY	
CSLO 1	Use experimental data to derive the structure of molecules, draw them and predict how their structure will affect their reactivity. Focus on Chem 12A functional groups, alkynes, aromatics, and other carbonyl containing functional groups.	A, B, C
CSLO 2	Given the structure of reactant molecules, predict and draw mechanisms leading to products. Focus on alkanes, alcohols, ethers and alkenes. Focus on Chem 12A functional groups, alkynes, aromatics, and other carbonyl containing functional groups.	A, C
CSLO 3	Given a target molecule, outline a retrosynthesis and use this to create a synthetic scheme. Focus on alkanes, alcohols, ethers and alkenes. Focus on Chem 12A functional groups, alkynes, aromatics, and other carbonyl containing functional groups.	A, C
	CHEM 28 INDEPENDENT STUDY	

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	CHEM 95 INTERNSHIP IN CHEMISTRY	
	Total Number of Courses (from last number assigned)	
	Total Number of CSLOs (manually enter)	
	Number of CSLOs Assessed Per Semester (per formula)	
	Percentage of CSLOs Assessed (per formula)	
	Number of Courses Assessed Per Semester (manually enter)	
	Percentage of Courses Assessed (per formula)	

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g, and Assessment Plan

Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
F 2013	S 2014	F 2014	S 2015	F 2015	S 2016	F 2016	S 2017	F 2017	S 2018	F 2018	S 2019
Enter "X" in boxes as appropriate											
		C		C		C					
		C				C			C		
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g, and Assessment Plan

Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
F 2013	S 2014	F 2014	S 2015	F 2015	S 2016	F 2016	S 2017	F 2017	S 2018	F 2018	S 2019
Enter "X" in boxes as appropriate											
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ISLO 1
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1B
1C
1D
ISLO 2
2A
2B
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2D
ISLO 3
3A
3B
3C
3D
ISLO 4
4A
4B
4C
4D

PSLO A
PSLO B
PSLO C

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1

CSLO 1
CSLO 2
CSLO 3
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2

CSLO 1
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	CSLO 1
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16	
	CSLO 1
	CSLO 2
	CSLO 3
17	

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INSTITUTIONAL STUDENT LEARNING OUTCOMES - ISLOs

COMMUNICATION

Read

Listen

Write

Dialogue

TECHNOLOGY AND INFORMATION COMPETENCY

Demonstrate Technical Literacy

Apply Technology

Access Information

Evaluate and Examine Information

CRITICAL AND CREATIVE THINKING

Inquire

Analyze

Problem Solve

Express

CITIZENSHIP

Ethics

Diversity

Sustainability/Global Awareness

Personal Responsibility

CHEMISTRY PROGRAM OUTCOMES - PSLOs

Related
ISLOs

Demonstrate proficiency in chemistry concepts by scoring above the national median in the subject matter ACS (American Chemical Society) exams.	1A, 1a (1B), 1C; 2B; 3A, 3B, 3C; 4D
Demonstrate proficiency in scientific communication.	1A, 1B, 1C, 1D; 2A, 2B, 2C, 2D; 3A, 3B, 3C; 4A, 4D
Apply critical thinking skills to problem solving.	1A, 1B, 1C; 2B, 2C, 2D; 3A, 3B, 3C; 4A, 4D
Total Number of Program Outcomes (manually enter)	3
Number of Program Outcomes Assessed (per formula)	
Percentage of Program Outcomes Assessed (per formula)	

by A.S. Degree Outcomes - same as the PSLOs.

CHEM A FOUNDATIONS OF COLLEGE CHEMISTRY	Related PSLOs
Demonstrate proficiency in solving problems and analyzing data related to chemical formulas and stoichiometry.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to atomic and molecular structure.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to aqueous solutions.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to states of matter.	A, B, C
Demonstrate proficiency in scientific communication.	B
CHEM 1A GENERAL CHEMISTRY	
Demonstrate proficiency in solving problems and analyzing data related to chemical formulas and stoichiometry.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to atomic and molecular structure.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to structure and properties of matter.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to chemical and physical equilibrium. Demonstrate proficiency in solving problems and analyzing data related to states of matter.	A, B, C
Demonstrate proficiency in scientific communication.	B
CHEM 1B GENERAL CHEMISTRY	
Demonstrate proficiency in solving problems and analyzing data related to molecular structure and bonding.	A, B, C

Demonstrate proficiency in solving problems and analyzing data related to states of matter . Demonstrate proficiency in solving problems and analyzing data related to chemical and physical equilibrium.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to chemical kinetics (dynamics) and thermodynamics (energetics).	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to electrochemistry (redox) and transition metal ion bonding.	A, B, C
Demonstrate proficiency in scientific communication.	B

CHEM 1X CHEMISTRY 1A PROBLEM SOLVING

Solve problems related to structure and properties of matter, atomic and molecular structure, chemical formulas and stoichiometry, chemical bonding, and chemical and physical equilibrium states of matter.	A, C
Apply mathematical problem solving techniques to solve problems in chemistry.	C
Develop rules and strategies for problem solving that are effective in solving new sets of problems.	C

CHEM 1Y CHEMISTRY 1B PROBLEM SOLVING

Solve problems related to chemical bonding , thermodynamics, electrochemistry, chemical kinetics, and states of matter chemical and physical equilibrium.	A, C
Apply mathematical problem solving techniques to solve problems in chemistry.	C
Develop rules and strategies for problem solving that are effective in solving new sets of problems.	C

CHEM 2A INTRODUCTION TO CHEMISTRY

Demonstrate proficiency in solving problems and analyzing data related to chemical formulas and stoichiometry.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to atomic and molecular structure.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to physical and chemical equilibrium.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to structure and properties of matter.	A, B, C
Demonstrate proficiency in scientific communication.	B

CHEM 2B INTRODUCTION TO CHEMISTRY

Demonstrate proficiency in solving problems and analyzing data related to functional groups in organic chemistry	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to biochemical molecules	A, B, C
Apply biochemical principles to metabolism	A, B, C
Demonstrate proficiency in scientific communication.	B

CHEM 2X CHEMISTRY 2A PROBLEM SOLVING

Solve problems related to structure and properties of matter, atomic and molecular structure, chemical formulas and stoichiometry, and chemical and physical equilibrium.	A, C
Apply mathematical problem solving techniques to solve problems in chemistry.	C
Develop rules and strategies for problem solving that are effective in solving new sets of problems.	C

CHEM 2Y CHEMISTRY 2B PROBLEM SOLVING

Demonstrate proficiency in solving problems related to structure and properties of organic functional groups.	A, C
Solve problems related to structure and properties of biochemical molecules.	A, C
Solve problems related to metabolism.	A, C
Develop strategies for problem solving that are effective in solving new sets of problems.	C

CHEM 3A GENERAL CHEMISTRY

Demonstrate proficiency in solving problems and analyzing data related to chemical formulas.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to stoichiometry.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to gas laws. Demonstrate proficiency in solving problems and analyzing data related to thermodynamics.	A, B, C
Demonstrate proficiency in scientific communication.	B

CHEM 3B GENERAL CHEMISTRY

Demonstrate proficiency in solving problems and analyzing data related to atomic and molecular structure. Demonstrate proficiency in solving problems and analyzing data related to gas laws.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to molecular equilibrium. Demonstrate proficiency in solving problems and analyzing data related to states of matter.	A, B, C
Demonstrate proficiency in solving problems and analyzing data related to ionic equilibrium. Demonstrate proficiency in solving problems and analyzing data related to atomic and molecular structure.	A, B, C
Demonstrate proficiency in scientific communication.	B

CHEM 3X CHEMISTRY 3A PROBLEM SOLVING

Solve problems related to chemical formulas, stoichiometry, and thermodynamics gas laws.	A, C
Apply mathematical problem solving techniques to solve problems in chemistry.	A
Develop rules and strategies for problem solving that are effective in solving new sets of problems.	A

CHEM 3Y CHEMISTRY 3B PROBLEM SOLVING	
Solve problems related to gas laws, states of matter and atomic and molecular structure, molecular equilibrium, and ionic equilibrium.	A, C
Apply mathematical problem solving techniques to solve problems in chemistry.	A
Develop rules and strategies for problem solving that are effective in solving new sets of problems.	A
CHEM 5 CHEMISTRY - QUANTITATIVE ANALYSIS	
Demonstrate the ability to evaluate accuracy, precision, and validity of data.	A, B, C
Quantitatively analyze samples for chemical composition using wet-chemical methods.	B, C
Quantitatively analyze samples for chemical composition using instrumental methods.	B, C
Determine and/or calculate solution properties utilizing analytical chemistry theories (Volumetric analysis, gravimetric analysis, acid-bases, coordination chemistry, redox chemistry, electrochemistry, spectroscopy, and separations).	A, C
Demonstrate proficiency in scientific communication.	B
CHEM 12A ORGANIC CHEMISTRY	
Use experimental data to derive the structure of molecules, draw them and predict how their structure will affect their reactivity. Focus on alkanes, alcohols, ethers, ketones, aldehydes and alkenes..	A, B, C
Given the structure of reactant molecules, predict and draw mechanisms leading to products. Focus on alkanes, alcohols, ethers, ketones, aldehydes and alkenes.	A, C
Given a target molecule, outline a retrosynthesis and use this to create a synthetic scheme. Focus on alkanes, alcohols, ethers, ketones, aldehydes and alkenes.	A, C
CHEM 12B ORGANIC CHEMISTRY	
Use experimental data to derive the structure of molecules, draw them and predict how their structure will affect their reactivity. Focus on Chem 12A functional groups, alkynes, aromatics, and other carbonyl containing functional groups.	A, B, C
Given the structure of reactant molecules, predict and draw mechanisms leading to products. Focus on alkanes, alcohols, ethers and alkenes. Focus on Chem 12A functional groups, alkynes, aromatics, and other carbonyl containing functional groups.	A, C
Given a target molecule, outline a retrosynthesis and use this to create a synthetic scheme. Focus on alkanes, alcohols, ethers and alkenes. Focus on Chem 12A functional groups, alkynes, aromatics, and other carbonyl containing functional groups.	A, C
CHEM 28 INDEPENDENT STUDY	

CHEM 95 INTERNSHIP IN CHEMISTRY	

Total Number of Courses (from last number assigned)	
Total Number of CSLOs (manually enter)	

Number of CSLOs Assessed Per Semester (per formula)	
Percentage of CSLOs Assessed (per formula)	
Number of Courses Assessed Per Semester (manually enter)	
Percentage of Courses Assessed (per formula)	

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Year 1		Year 2		Year 3		Year 4		Year 5		Year 6	
F 2013	S 2014	F 2014	S 2015	F 2015	S 2016	F 2016	S 2017	F 2017	S 2018	F 2018	S 2019

Enter "X" in boxes as appropriate

	C	C	C	C	X	X	X	X	X	X	X
	C	C	C	C	X	X	X	X	X	X	X
	C	C	C	C	X	X	X	X	X	X	X
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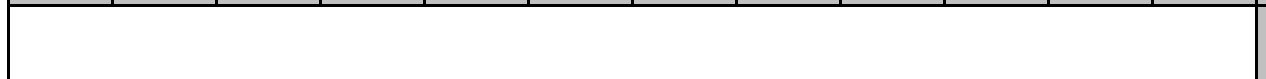


Enter "X" in boxes as appropriate

		C	C								
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Enter "X" in boxes as appropriate

	C	C	C							X	X
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Enter "X" in boxes as appropriate

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Enter "X" in boxes as appropriate

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Enter "X" in boxes as appropriate

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	C		C		X		X		X		X
	C		C		X		X		X		X
	C		C		X		X		X		X

Enter "X" in boxes as appropriate

		C		C		X		X		X	
		C				X		X		X	
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