

DEGREE PROGRAM CURRICULAR MAPPING (cont'd)

DEFINED PROGRAM SLOs	Course No.	LINK TO PROGRAM SLOs							
		CH PR-31	CH PR-32	CH PR-33	CH PR-34				
<ul style="list-style-type: none"> ● CH PROGRAM GOAL-3: Demonstrate the ability to clearly articulate, formulate, and communicate scientific information using computer, written and oral communication skills with the following objectives: <ul style="list-style-type: none"> ○ CH PR-31: Students will communicate critical analysis of scientific information through written reports and laboratory notebooks. ○ CH PR-32: Students will effectively communicate scientific information through oral presentations. ○ CH PR-33: Students will use computer technology to gather, process, analyze, and present chemical data. ○ CH PR-34: Students will use chemical literature and computer resources to gather research information. 	CH 100	6							
	CH 100L	3							
	CH 101	7	7						
	CH 101L	4,5	5	5					
	CH 102	8							
	CH 102L	6	7	7					
	CH 103	4	4,6	4,6					
	CH 103L	6,7,9	6,7	7					
	CH 310a	7			9				
	CH 310b	7	7	7	9				
	CH 311	4							
	CH 312	10	10	10	11				
	CH 330	8							
	CH330L	4	4	7					
	CH392	8							
	CH410	7	7						
	CH410L	6	6	6	5				
	CH419								
	CH419L								
	CH450								
CH451L									
CH491	2,7	4	3	1,2					

DEGREE PROGRAM CURRICULAR MAPPING (cont'd)

DEFINED PROGRAM SLOs	Course No.	LINK TO PROGRAM SLOs								
		CH PR-41	CH PR-42	CH PR-43	CH PR-44	CH PR-45				
<ul style="list-style-type: none"> • CH PROGRAM GOAL-4: Demonstrate critical thinking, problem solving skills and the ability to use chemical knowledge and mathematical skills to identify, evaluate, analyze, synthesize, and integrate data and abstract ideas in solving problems with the following objectives: <ul style="list-style-type: none"> ○ CH PR-41: Students should be able to describe the structure & composition of matter. ○ CH PR-42: Students should be able to solve qualitative & quantitative problems. ○ CH PR-43: Students should be able to apply theoretical and mechanistic principles to the study of chemical systems using quantitative and qualitative approaches. ○ CH PR-44: Students should be able to explain the role of energy in determining the structure and reactivity of matter. ○ CH PR-45: Students should be able to apply theoretical knowledge and chemical information to industry and everyday experience. 	CH 100	3	2	1						
	CH 100L			4						
	CH 101	1	2	3, 6		5				
	CH 101L			3						
	CH 102		2	4	4,5,6	9				
	CH 102L			4						
	CH 103		2	3						
	CH 103L			4						
	CH 310a	1	4	5						
	CH 310b	1	4	5						
	CH 311			6						
	CH 312		5	8						
	CH 330	4	1,2,4,5	1,2,5		3				
	CH330L		3							
	CH392		6, 9							
	CH410	1,5	1,2,3,4	5	5					
	CH410L	1	5	5		10				
	CH419									
	CH419L									
	CH450	1	3		4	5,8				
CH451L		3	1		6					
CH491	6	1, 6			1,2,7					

DEGREE PROGRAM CURRICULAR MAPPING (cont'd)

DEFINED PROGRAM SLOs	Course No.	LINK TO PROGRAM SLOs							
		CH PR-51	CH PR-52	CH PR-53	CH PR-54				
<ul style="list-style-type: none"> • CH PROGRAM GOAL-5: Demonstrate the knowledge and skills in advanced instrumentation, applications, interpretation, and experimental design to address scientific queries in chemistry, industry, the environment, health, and related fields with the following objectives: <ul style="list-style-type: none"> ○ CH PR-51: Students should be able to use modern analytical instrumentations. ○ CH PR-52: Students should be able to interpret data and relate these to chemical structure and properties. ○ CH PR-53: Students should be able to relate the application of instrumentation to industries. ○ CH PR-54: Students should be able to develop an appreciation of the wide range of instrumental methods, their applications, and limitations. 	CH 100								
	CH 100L								
	CH 101								
	CH 101L								
	CH 102								
	CH 102L								
	CH 103								
	CH 103L								
	CH 310a		6						
	CH 310b		6						
	CH 311		7						
	CH 312		6						
	CH 330		4						
	CH330L		2						
	CH392								
	CH410	2,3,4	5	10	2				
	CH410L								
	CH419								
	CH419L								
	CH450								
CH451L									

DEFINED PROGRAM SLOs	Course No.	LINK TO PROGRAM SLOs							
		CH PR-61	CH PR-62	CH PR-63					
<ul style="list-style-type: none"> • CH PROGRAM GOAL-6: Demonstrate a sense of exploration and research approach that enables students to pursue lifelong learning in chemistry with the following objectives: <ul style="list-style-type: none"> ○ CH PR-61: Students will use chemical literature and computer resources to gather research information. ○ CH PR-62: Students should be able to critically evaluate scientific information. ○ CH PR-63: Students should be able to develop research project & design experimental approach. 	CH 100								
	CH 100L								
	CH 101								
	CH 101L								
	CH 102								
	CH 102L								
	CH 103								
	CH 103L								
	CH 310a	9							
	CH 310b	9							
	CH 311								
	CH 312	11							
	CH 330	7							
	CH330L	5							
	CH392								
	CH410	6	8						
	CH410L	5	7						
	CH419								
	CH419L								
	CH450	7	3						
CH451L			6						

CHEM SUPPORT PROGRAM IN NURSING CURRICULAR MAPPING

DEFINED CHEMISTRY/NURSING SUPPORT PROGRAM SLOs	COURSE NO.*								
		CH NU-1	CHNU-2	CHNU-3	CHNU-4	CHNU-5	CHNU-6	CHNU-7	CHNU-8
	CH100	1	2	7	3,5	4,5	6		
	CH100L						3	1,2	2,4,5
	CH101	1	3,4,5		6	1,2	7		
	CH101L				3		7	1	2

CH NU-1: Students should be able to explain the scientific method and relate its application to chemical discoveries.

CH NU-2: Students will be able to define the states and structure of matter and relate these to physical and chemical properties

CH NU-3: Students should be able to define chemistry and state its relevance to other sciences and everyday experience.

CH NU-4: Students should be able to apply the fundamental concepts of elements and compounds and their reactivity to solve chemically based problems

CH NU-5: Students should be able to solve quantitative and qualitative chemically based problems

CHNU-6: Students should be able to communicate clearly through written and oral format

CHNU-7: Students should be able to conduct safe laboratory experiments and obtain results

CHNU-8: Students should be able to synthesize and analyze chemical data

**CNAS ASSESSMENT COMMITTEE
CHEMISTRY (CH) DEGREE PROGRAM
COURSE STUDENT LEARNING OUTCOMES (SLOs) and CURRICULAR MAPPINGS**

CHEMISTRY APPROVED COURSE SLOs

COURSE NO. & TITLE	COURSE SLOs
CH100: Introduction to Inorganic Chemistry	<ol style="list-style-type: none"> 1. Define basic chemical concepts and apply in Inorganic Chemistry. 2. Apply mathematical and chemical concepts to solve simple quantitative and qualitative problems in chemistry. 3. Explain the fundamental structure of matter and how it relates to properties. 4. Identify and name simple chemical compounds. 5. Write and balance simple chemical compounds. 6. Communicate chemical concepts clearly in written and oral. 7. Relate chemistry to everyday experience. 8. Interact to enhance learning chemistry. <p style="text-align: center;">Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH100L: Introduction to Inorganic Chemistry Laboratory	<ol style="list-style-type: none"> 1. Use chemical safety knowledge and skills in laboratory to conduct experiments. 2. Conduct experiment using a procedure, collect, analyze, and interpret data. 3. Communicate laboratory results clearly, in written and oral presentations. 4. Relate experimental observation to chemical concepts. 5. Apply accuracy and precision in measurements and calculations.

	<p>6. Interact and collaborate with peers in learning chemistry.</p> <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH101: Introduction to Organic Chemistry	<ol style="list-style-type: none"> 1. Identify functional groups and write name and structure of simple organic compounds. 2. Solve simple reactions of organic compounds. 3. Relate chemical and physical properties to the structure and composition of compound. 4. Identify the structure of biochemical molecules and explain their function. 5. Relate the relevance of organic chemistry to everyday life. 6. Describe basic chemical changes in the metabolic process. 7. Communicate chemical concepts clearly. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH101L: Introduction to Organic Chemistry Laboratory	<ol style="list-style-type: none"> 1. Apply chemical safety and knowledge in laboratory to carry out experiments. 2. Conduct experiment, collect, analyze, and interpret data. 3. Relate experimental observations to chemical concept. 4. Write laboratory reports clearly following the scientific reporting method. 5. Communicate data using standard software. 6. Present seminar using communication tools. 7. Collaborate with peers to conduct experiment and learn chemistry. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH102: General Chemistry	<ol style="list-style-type: none"> 1. Should be able to describe a scientific method and list the essential components of scientific method. 2. Should be able to use mathematical skills to solve quantitative and qualitative problems in chemistry. 3. Should be able to explain modern atomic structure and relate to chemical properties, composition of matter. 4. Should be able to describe the bonding theories and its application to molecular and ionic compounds, and elements. 5. Name and describe the formula of compounds using the chemical nomenclature. 6. Should describe the laws governing the behavior of gases and the kinetic model for gases and use these laws for quantitative problem solving. 7. Should be able to describe and quantify the energy in chemical and physical changes. 8. Student should be able to communicate clearly through written, oral presentations. 9. Students should be able to develop good interaction skills and use this to enhance problem solving, critical thinking, communication, and personal development. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>

<p>CH102L: General Chemistry Laboratory</p>	<ol style="list-style-type: none"> 1. Use safety knowledge and skills to conduct experiments. 2. Conduct experiment from a given procedure, collect, analyze, and interpret data. 3. Apply precision and accuracy in measurements and calculations. 4. Relate the experimental observations to chemical concepts. 5. Solve quantitative and qualitative problems in chemistry. 6. Write clear laboratory reports using standard scientific reporting method. 7. Use standard computer technology to present and analyze data. 8. Collaborate with peers in learning chemistry. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
<p>CH103: General Chemistry II</p>	<ol style="list-style-type: none"> 1. Describe the chemical concepts in solution processes, equilibrium, reaction rates, acidity and basicity, entropy, electrochemistry. 2. Use the chemical concepts to solve quantitative and qualitative problems in chemistry. 3. Explain the general properties of elements in periodic table; identify periodic trends in periodic table and use this as predictive tool for chemical and physical properties for both elements and compounds. 4. Process and communicate the chemical concepts clearly. 5. Relate the chemical principles to industrial and environmental applications 6. Communicate chemical concepts clearly both in written and oral presentations. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
<p>CH103L: General Chemistry II Laboratory</p>	<ol style="list-style-type: none"> 1. Use safety knowledge and skills to conduct experiments. 2. Conduct experiment from a given procedure, collect, analyze, and interpret data. 3. Apply precision and accuracy in measurements and calculations. 4. Relate the experimental observations to chemical concepts. 5. Solve quantitative and qualitative problems in chemistry. 6. Write clear laboratory reports using standard scientific reporting method. 7. Use standard computer technology to present and analyze data. 8. Collaborate with peers in learning chemistry 9. Present seminar using computer technology. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
<p>CH310a-b: Organic Chemistry</p>	<ol style="list-style-type: none"> 1. Give the correct I.U.P.A.C. or common names for polyenes, alcohols, ethers, aldehydes and ketones, carboxylic acids and their derivatives, amines and their derivatives, carbohydrates and amino acids. 2. Based on chemical principles predict trends in physical and chemical properties including boiling point, reaction rate, optical activity, acidity, & basicity for the following compounds: polyenes, alcohols, ethers, aldehydes and ketones, carboxylic acids and their derivatives, amines and their derivatives, carbohydrates, amino acids and

	<p>polymers.</p> <ol style="list-style-type: none"> 3. Analyze chemical reactions basic to the synthesis of polyenes, alcohols, ethers, aldehydes and ketones, carboxylic acids and their derivatives, amines and their derivatives, carbohydrates and amino acids. 4. Analyze the mechanistic pathways of the common chemical reactions of polyenes, alcohols, ethers, phenols, aldehydes and ketones, carboxylic acids and their derivatives, amines and their derivatives, carbohydrates, amino acids and polymers. 5. Combine the knowledge of reactions from all the chapters studied to synthesize compounds whose preparation requires more than one step. 6. Deduce the structure of a compound from qualitative tests and spectra data. 7. Communicate chemical concepts through written and oral presentation. 8. Interact with peers and contribute effectively to team work and learning. 9. Conduct literature research and critically read summarize scientific papers. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH 311: Basic Laboratory Techniques in Organic Chemistry	<ol style="list-style-type: none"> 1. Apply principles of chemical safety in storage and chemical preparation or testing. 2. Assemble apparatus for chemical experiment. 3. Use the laboratory procedure and conduct experiment to obtain the desired product. 4. Write clear and systematic laboratory report. 5. Participate effectively with peers in solving laboratory based problems. 6. Relate the chemical concepts to experimental data. 7. Interpret spectra data. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH 312: Laboratory Techniques in Organic Chemistry	<ol style="list-style-type: none"> 1. Apply principles of chemical safety in the storage and laboratory manipulation of organic reagents. 2. Isolate and purify organic compounds using recrystallization, distillation, extraction and chromatography. 3. Carry out synthetic reactions using ground-glassware kits. 4. Conduct synthetic reactions in which some of the reactants are sensitive to moisture or oxygen using specialized techniques and glassware. 5. Characterize and identify compounds by measuring physical properties such as melting point, boiling point, R_f values, and functional group-specific chemical tests. 6. Identify and delineate the exact constitutional and stereochemical makeup of molecules by detailed analysis of Infrared, Ultraviolet, ¹H & ¹³C Nuclear Magnetic Resonance and Mass Spectra. 7. Design the experimental set-up as well as work-up and purification procedure for a given reaction. 8. Relate the results of laboratory work to concepts of organic chemistry and report the findings and conclusions in accordance with a specified format. 9. Interact with peers to solve problems. 10. Communicate experimental data clearly through written and oral format.

	<p>11. Conduct literature research and critically evaluate scientific data.</p> <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH 330: Quantitative Analysis	<ol style="list-style-type: none"> 1. Define the chemical equilibrium and its application to quantitative analysis. 2. Use statistical concepts to solve for accuracy and precision in measurements and calculations. 3. Identify the instrumentation and methodology that is applied for chemical analysis. 4. Analyses and interpret data. 5. Solve multiple equilibrium equations. 6. Demonstrate both independent and collaborative learning skills. 7. Conduct basic research through literature search and experimentation. 8. Communicate chemical concepts clearly through written and oral presentations. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH 330L: Quantitative Analysis Laboratory	<ol style="list-style-type: none"> 1. Apply chemical safety knowledge and skills in laboratory. 2. Conduct experiment, collect, analyze, and interpret data. 3. Relate the experimental observation to chemical concepts. 4. Communicate laboratory results clearly in both written and oral presentations. 5. Conduct both independent research and demonstrate adequate collaborative skills. 6. Demonstrate adequate skills in validation of quantitative data using experimental method and statistics. 7. Use computer technology to analyze and present data. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH 392: Laboratory Teaching and Assisting	<ol style="list-style-type: none"> 1. Apply chemical safety knowledge and skill in the laboratory. 2. Explain the safety procedures clearly to students. 3. Evaluate preliminary data for improvement. 4. Conduct experiment, collect, analyze, and interpret data. 5. Set-up, calibrate, and operate standard laboratory instrument. 6. Prepare and analyze standards and samples with adequate reproducibility and accuracy. 7. Perform quality assurance for validating experimental measurements. 8. Communicate clearly procedures and chemical concepts. 9. Relate chemical concept to experimental data. 10. Adequate interaction skills with students, positive approachable. 11. Supervise a laboratory class. 12. Demonstrate leadership skills.

	<p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH 410: Instrument Methods of Analysis	<ol style="list-style-type: none"> 1. Define the chemical concepts used for instrumentation. 2. Describe the process of acquiring data in analytical instrument and the limitations of response based on signal to noise ratio, interference. 3. Describe types of interference and how they are minimized. 4. Use procedure to set up and calibrate and instrument and collect data. 5. Interpret data and relate it to both quantitative and qualitative information. 6. Conduct research using literature and laboratory experimentation. 7. Communicate chemical knowledge very clearly both in written and oral using computer software. 8. Critically evaluate scientific information. 9. Explain the basic principles for data collection in major in instrumentations. 10. Identify the specific application for each instrumentation and its limitations. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH 410L: Instrument Methods of Analysis Laboratory	<ol style="list-style-type: none"> 1. Apply chemical safety knowledge and skill in the laboratory. 2. Conduct experiment, collect, analyze and interpret data. 3. Set up, calibrate, and operate analytical instrument. 4. Prepare and analyze standards and samples with adequate reproducibility and accuracy. 5. Conduct research using literature and laboratory experimentation. 6. Communicate chemical knowledge very clearly both in written and oral using computer software. 7. Critically evaluate scientific information. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH 419/BI 419: Biochemistry	<ol style="list-style-type: none"> 1. To learn the fundamental language of biochemistry, the major classes of biomolecules and the molecular logic of life. 2. To learn the structure and function of proteins and the latest methods and instrumentation used to analyze them. 3. To learn the importance of understanding the 3-D structure of proteins and the complex problem of protein folding and implications for neurodegenerative diseases. 4. To learn the structure and function of enzymes and the mechanism of enzyme catalysis and enzyme regulation in both health and disease. 5. To learn the approaches and instrumentation employed in the emerging field of Proteomics paralleling the Genomics revolution. 6. To learn the basic principles of bioenergetics. 7. To learn the fundamentals and of metabolism and its regulation. 8. To learn the cellular generation of the chemical energy required for sustaining life.

	<p>9. To learn the fundamentals of the complex balance of the physical, chemical, and biological context in which each biomolecule, reaction, or pathway operates and the relationship between structure and function.</p> <p>10. To learn applications of biochemistry to problems in medicine, dentistry, agriculture, forensics, anthropology, environmental sciences, and other fields.</p> <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH 419L/BI 419L: Biochemistry Laboratory	<p>1. To learn the fundamentals of biochemistry laboratory science, including laboratory safety; scientific notation; significant figures in calculations; errors in experiments; accuracy vs. precision; international system of measurements; expressing concentrations of biochemical solutions; preparing dilutions; use of pipets and pipetman; analysis and interpretation of experimental data, and presentation of experimental data by preparing data tables, and graphs by hand and computer.</p> <p>2. To perform titration experiments to learn the acid-base behavior of amino acids.</p> <p>3. To conduct experiments in photometry and the use of both UV & visible spectrophotometer.</p> <p>4. To perform, with the use of the Spectrophotometer, a series of experiments on enzyme kinetics and enzyme regulation & inhibition.</p> <p>5. To perform experiments in <i>in vivo</i> biochemistry, integrating genetics with biochemistry in order to learn the biochemical basis and approaches that are undertaken to explain genetic processes.</p> <p>6. To learn molecular biochemical approaches to purify and characterize proteins, essential to investigating cellular and organismal physiology.</p> <p>7. To learn two high tech instrumentation (HPLC and GC-MS), useful for biochemical analysis.</p> <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH 420: Nuclear Magnetic Resonance Spectroscopy	<p>Students should be able to</p> <ul style="list-style-type: none"> • Describe the principles of nuclear magnetic resonance • Explain the significance of the shielding constants and proton chemical shifts. • Explain the origin and the effect of spin-spin coupling. • Analyze first order and second-order NMR spectra. • Outline the features of Fourier Transform NMR. • Explain the connection between line-broadening and rate processes-Dynamic NMR. • Analyze the Carbon-13 NMR spectra and recognize the trends in Carbon-13 chemical shifts. • Explain the two-dimensional NMR spectra and learn some multiple-pulse techniques. • Describe spin relaxation processes. • Explain high-resolution NMR spectra in the solid state and liquid crystal phase.

	<ul style="list-style-type: none"> •Understand NMR imaging in Medicine and biology. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH 430: Inorganic Chemistry	<p>Students should be able to</p> <ol style="list-style-type: none"> 1. Explain the structure of the atom. 2. Apply Symmetry and Group Theory to inorganic molecules. 3. Explain bonding models in Inorganic Chemistry as applied to (a) Ionic compounds (b) the covalent molecules. 4. Describe Solid State 5. Explain Acid-Base chemistry and chemistry in Aqueous and non-aqueous Solvents. 6. Use the properties of coordination chemistry in the context of Structure, Bonding, Spectra and magnetism, Kinetics and Mechanism. 7. Describe Organometallic chemistry, Inorganic chains, Rings, Cages and Clusters. 8. Describe the chemistry of Halogens and the Noble gases. 9. Apply Periodicity to predict properties of compounds <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH 450a-b: Physical Chemistry	<ol style="list-style-type: none"> 1. Explain advance chemical concepts in thermodynamics, kinetics, equilibrium, quantum theory, electrochemistry, and surface chemistry. 2. Organize a vast array of interconnected chemical concepts and communicate them effectively. 3. Analyze chemical information and to formulate solutions to chemical problems. 4. Identify, analyze and interpret chemical data. Develop an ability to adequately apply the chemical concepts, facts and models of chemistry to other disciplines in sciences and engineering 5. Apply mathematical concepts, equations, and quantitative information to the solution of chemical problems. 6. Accomplish long-term retention of chemical facts and concepts. 7. Use the chemical literature and computer resources to gather research information. 8. Use computer programs to generate and analyze data. 9. Communicate chemical information clearly. <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>
CH 451: Physical Chemistry I Laboratory	<ol style="list-style-type: none"> 1. Apply chemical safety knowledge and skill in the laboratory. 2. Conduct experiment, collect, analyze, and interpret data. 3. Critically evaluate the experimental results and relate to chemical concepts. 4. Communicate laboratory results clearly and accurately. 5. Use computer to analyze data. 6. Design experimental approach for physical measurements.

	Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.
CH 491: Seminar	<ol style="list-style-type: none">1. Use the scientific publication databases to acquire <i>primary</i> journal article, e.g. Chemical Abstracts Indexes, Pubmed and EBSCO2. To write a concise summary (with pertinent references) on a specific topic in the chemical sciences.3. Identify relevant audio, visual aids using standard computer software to accompany a presentation4. To deliver a clear and well organized presentation5. To deliver a presentation within the allotted time6. To review and summarize background and historical coverage to meet the needs of the audience7. Critically evaluate the topic propose improvements, future work8. To adequately address questions from the audience in a non-defensive manner9. To correctly estimate the time required for each activity in the preparation of a chemistry seminar <p>Note: With Program Faculty Consultation, an instructor may add additional SLOs to the above Program Faculty approved SLOs.</p>