

Course Abbreviation	Program Student Learning Outcomes	Comprehend, translate, and use the language of biotechnology, chemistry, forensic science, and the environmental sciences	Perform standard laboratory practices and workplace functions.	Demonstrate ability to carry out standard laboratory techniques and operate common laboratory equipment used in biotechnology, chemistry, forensic science, and environmental	Conduct mathematical and computational operations involved in the laboratory, including the use of applicable software
	Course Level Learning Competencies				
SCI105	Perform appropriate laboratory calculations including: solution preparation calculations, standard curves and linear regressions, unit conversions using the metric (SI) system of identify and use appropriate quantitative methods in data analysis, explain results and present them appropriately in graphs and tables	I			I
	Report results appropriately in written and oral formats	I			Information Literacy
	Read and follow a standard operating procedure (SOP) in a laboratory setting		I		Quantitative Reasoning
	Demonstrate appropriate lab safety conduct		I		Public Presentation
	Maintain an appropriate laboratory notebook or similar record of work conducted in the laboratory using good documentation practices (GDP)		I		Global Awareness
	Operate common laboratory equipment and instruments and perform validation and corrective maintenance, as required		I		
	Use aseptic technique and be able to prepare sterile media		I		Written Communication
	Prepare solutions and media appropriately including obtaining the correct pH and performing the appropriate calculations for solution preparation			I	
	Use a spectrophotometer properly and be able to determine the concentration of an unknown using UV-vis spectrophotometry			I	
	Perform appropriate laboratory calculations including: solution preparation calculations, standard curves and linear regressions, unit conversions using the metric (SI) system of				I
	Use spreadsheet and word processing software appropriately to analyze and present laboratory results				I
	Demonstrate appropriate and respectful teamwork and communication skills	I			
	ASSESSMENT MILESTONE				
SCI106	Explain fundamental concepts in biotechnology, chemistry, environmental sciences, and forensics	I			
	Report results appropriately in written and oral formats	R			
	Read and follow a standard operating procedure (SOP) in a laboratory setting	R			
	Maintain an appropriate laboratory notebook or similar record of work conducted in the laboratory using good documentation practices (GDP)		R		
	Operate common laboratory equipment and instruments and perform validation and corrective maintenance, as required		R		
	Use aseptic technique and be able to prepare sterile media		I		
	Prepare solutions and media appropriately including obtaining the correct pH and performing the appropriate calculations for solution preparation			I	
	Perform basic microbiology and cell biology techniques such as cell fractionation, culturing, maintenance, enumeration, and preservation			I	

	Understand and use basic protein and nucleic chemistry techniques such as purification, quantitation, electrophoresis, blots, ELISA, and PCR			I	
	Use spreadsheet and word processing software appropriately to analyze and present laboratory results				R
	Demonstrate appropriate and respectful teamwork and communication skills	R			
ASSESSMENT MILESTONE					
CHM201	Explain fundamental concepts in biotechnology, chemistry, environmental sciences, and forensics	R			
	Gather information from a variety of reputable and appropriate sources and identify assumptions and biases in information presented. Cite information appropriately and in own	I			
	Identify and use appropriate quantitative methods in data analysis, explain results and present them appropriately in graphs and tables	R			
	Report results appropriately in written and oral formats	R			
	Read and follow a standard operating procedure (SOP) in a laboratory setting		R		
	Apply problem solving skills, mathematics and critical thinking to analyze problems, propose solutions and make decisions		R		
	Maintain an appropriate laboratory notebook or similar record of work conducted in the laboratory using good documentation practices (GDP)		R		
	Operate common laboratory equipment and instruments and perform validation and corrective maintenance, as required		R		
	Prepare solutions and media appropriately including obtaining the correct pH and performing the appropriate calculations for solution preparation			R	
	Use a spectrophotometer properly and be able to determine the concentration of an unknown using UV-vis spectrophotometry			R	
	Perform chromatographic techniques (gel filtration, ion exchange, HPLC, GC, TLC)			I	
	Understand and use basic protein and nucleic chemistry techniques such as purification, quantitation, electrophoresis, blots, ELISA, and PCR			I	
	Perform appropriate laboratory calculations including: solution preparation calculations, standard curves and linear regressions, unit conversions using the metric (SI) system of				R
	Navigate instrument specific software appropriately to conduct instrumental analyses				I
	Use spreadsheet and word processing software appropriately to analyze and present laboratory results				R
CHM203	Explain fundamental concepts in biotechnology, chemistry, environmental sciences, and forensics	E			
	Gather information from a variety of reputable and appropriate sources and identify assumptions and biases in information presented. Cite information appropriately and in own	E			
	Identify and use appropriate quantitative methods in data analysis, explain results and present them appropriately in graphs and tables	R			
	Report results appropriately in written and oral formats	E			
	Thoughtfully analyze results and data, identifying potential errors and uncertainties and their effects on results	R			
	Read and follow a standard operating procedure (SOP) in a laboratory setting		E		
	Apply problem solving skills, mathematics and critical thinking to analyze problems, propose solutions and make decisions		R		
	Maintain an appropriate laboratory notebook or similar record of work conducted in the laboratory using good documentation practices (GDP)		E		
	Operate common laboratory equipment and instruments and perform validation and corrective maintenance, as required		R		
	Prepare solutions and media appropriately including obtaining the correct pH and performing the appropriate calculations for solution preparation			E	

	Use a spectrophotometer properly and be able to determine the concentration of an unknown using UV-vis spectrophotometry			R	
	Perform chromatographic techniques (gel filtration, ion exchange, HPLC, GC, TLC)			I	
	Perform appropriate laboratory calculations including: solution preparation calculations, standard curves and linear regressions, unit conversions using the metric (SI) system of use spreadsheet and word processing software appropriately to analyze and present laboratory results				R
					E
ASSESSMENT MILESTONE					
BIO230	Explain fundamental concepts in biotechnology, chemistry, environmental sciences, and forensics	R			
	Gather information from a variety of reputable and appropriate sources and identify assumptions and biases in information presented. Cite information appropriately and in own	R			
	Report results appropriately in written and oral formats	R			
	Read and follow a standard operating procedure (SOP) in a laboratory setting		R		
	Apply problem solving skills, mathematics and critical thinking to analyze problems, propose solutions and make decisions		R		
	Maintain an appropriate laboratory notebook or similar record of work conducted in the laboratory using good documentation practices (GDP)		R		
	Operate common laboratory equipment and instruments and perform validation and corrective maintenance, as required		E		
	Use aseptic technique and be able to prepare sterile media		E		
	Use a spectrophotometer properly and be able to determine the concentration of an unknown using UV-vis spectrophotometry		R		
	Perform chromatographic techniques (gel filtration, ion exchange, HPLC, GC, TLC)			R	
	Perform basic microbiology and cell biology techniques such as cell fractionation, culturing, maintenance, enumeration, and preservation			I	
	Understand and use basic protein and nucleic chemistry techniques such as purification, quantitation, electrophoresis, blots, ELISA, and PCR			I	
Perform appropriate laboratory calculations including: solution preparation calculations, standard curves and linear regressions, unit conversions using the metric (SI) system of				R	
SCI230	Gather information from a variety of reputable and appropriate sources and identify assumptions and biases in information	R			
	Identify and use appropriate quantitative methods in data analysis, explain results and present them appropriately in graphs and tables	R			
	Report results appropriately in written and oral formats	R			
	Thoughtfully analyze results and data, identifying potential errors and uncertainties and their effects on results	R			
	Read and follow a standard operating procedure (SOP) in a laboratory setting		R		
	Apply problem solving skills, mathematics and critical thinking to analyze problems, propose solutions and make decisions		R		
	Maintain an appropriate laboratory notebook or similar record of work conducted in the laboratory using good documentation practices (GDP)		R		
Operate common laboratory equipment and instruments and perform validation and corrective maintenance, as required		R			
Use spreadsheet and word processing software appropriately to analyze and present laboratory results				R	
	Explain fundamental concepts in biotechnology, chemistry, environmental sciences, and forensics	E			
	Gather information from a variety of reputable and appropriate sources and identify assumptions and biases in information presented. Cite information appropriately and in own	E			

ASSESSMENT MILESTONE