

Student Learning Outcomes – B.S. Degree Programs

Department of Biological and Chemical Sciences, 2022

Biology

*Upon completing the **Biology** degree, graduates will be able to:*

- **LO#1** Design and/or conduct investigations to test hypotheses by applying the scientific method
- **LO#2** Critically review and communicate scientific data in a quantitative and qualitative manner via oral and written formats
- **LO#3** Prepare, identify and analyze biological specimens by anatomical and dissection analyses, histology, microscopy, biochemical and molecular techniques
- **LO#4** Analyze cell structure and function, molecular and biochemical processes and interactions
- **LO#5** Analyze structure-function relationships and distribution of organisms by applying the theory and principles of evolution
- **LO#6** Analyze and explain the flow of genetic information, basic principles on inheritance, recombination and genetic regulation
- **LO#7** Evaluate both anatomical and physiological factors and their contribution to overall health and pathology

Chemistry

*Upon completing the **Chemistry** degree, graduates will be able to:*

- **LO#1** Design and/or conduct investigations to test hypotheses by applying the scientific method.
- **LO#2** Critically review and communicate scientific data in a quantitative and qualitative manner via oral and written formats.
- **LO#3** Synthesize, isolate, separate, identify, quantify and characterize molecules.
- **LO#4** Apply the principles and techniques of analytical, inorganic, organic, biochemistry, and physical chemistry.
- **LO#5** Interpret data by applying principles of instrumental and statistical analysis.
- **LO#6** Apply molecular modeling to stereochemistry, thermodynamics, kinetics and spectroscopy.

Biotechnology

*Upon completing the **Biotechnology** degree, graduates will be able to:*

- **LO#1** Design and/or conduct investigations to test hypotheses by applying the scientific method.
- **LO#2** Critically review and communicate scientific data in a quantitative and qualitative manner via oral and written formats.
- **LO#3** Analyze DNA and protein function via instrumentation and recombinant DNA technology.

- **LO#4** Analyze and explain the principles of bioprocessing for the production of recombinant DNA-based pharmaceuticals and therapeutics.
- **LO#5** Evaluate the principles of genetic engineering for the production and application of transgenic plants and animals.
- **LO#6** Evaluate the ethical, legal, regulatory and societal impact of biotechnology.