BIOCHEMISTRY AND MOLECULAR BIOLOGY, B.S. (BERKS)

Begin Campus: Any Penn State Campus

End Campus: Berks

Program Learning Objectives

- **Collaboration and Communication:**
  - Students will be able to:
    - demonstrate the ability to work in teams to solve biochemical problems
    - communicate in a variety of formal and informal ways to discuss biochemical data

- **Core Concepts:**
  - Students will be able to:
    - trace energy/matter transformation, storage, and mobilization in biological systems
    - explain how genetic information is exchanged and stored
    - recognize how changes in biological structures can have varying effects on function
    - describe how evolutionary processes are an integral part of the molecular life sciences
    - explain examples of how organisms maintain cellular and molecular homeostasis

- **Process of Science:**
  - Students will be able to:
    - develop a hypothesis, design and conduct appropriate experiments
    - analyze and interpret data using appropriate quantitative modeling and simulation tools
    - keep an accurate laboratory notebook
    - participate in the peer review/revision process

- **Quantitative Reasoning and Data Science:**
  - Students will be able to:
    - apply basic quantitative competencies such as algebra, probability, statistics, unit conversions, and fundamental biological equations
    - organize, summarize, and interpret quantitative data
    - find and analyze data from large databases

- **Science and Society:**
  - Students will be able to:
    - explore the impacts of scientific research on society and how society influences/relied on research to inform decision-making
    - evaluate the ethical implications of biochemical research
    - recognize ethical issues in a variety of settings

- **Scientific Evidence Evaluation:**
  - Students will be able to:
    - discriminate among scientific claims presented in a variety of sources based on the strength of evidence
    - find appropriate published scientific literature

- analyze and critically evaluate data/conclusions from the scientific peer-reviewed literature