**YC Biology**

**Mission Statement**

The mission of the Department of Biology is to prepare students for advanced studies in the biomedical sciences, particularly as related to human health care, and/or to pursue employment in various biology-related fields. This will be achieved by providing lecture and laboratory courses covering a spectrum of sub-disciplines within biology, providing majors with a comprehensive background in the principles of biology and hands-on skills in modern laboratory instrumentation, equipment, and procedures.

Program Goals/Objectives

|  |  |
| --- | --- |
| 1. Biology majors will be able to understand the main principles of biology, with an emphasis on the biomedical sciences. | a. Biology majors will be able to identify the structures of cells and organisms. |
| b. Biology majors will be able to describe the functions of cells and organisms, as well as their associated structures. |
| c. Biology majors will be able to understand the principles of evolution. |
| d. Biology majors will be able to understand the principles governing the transformation of energy and matter, including metabolism and homeostasis. |
| e. Biology majors will be able to understand the principles of genetic information storage, exchange, and flow. |
| f. Biology majors will be able to understand how disruptions in normal functioning lead to pathologies and diseases. |
| 2. Biology majors will be able to apply skills in laboratory techniques and knowledge of the scientific method to analyze scientific problems and to create their own scientific investigations. | a. Biology majors will be able to apply the scientific method to investigate problems. |
| b. Biology majors will be able to design scientific experiments |
| c. Biology majors will be able to carry out scientific experiments, including the collection and interpretation of data. |
| d. Biology majors will develop hands-on skills with modern laboratory instrumentation and techniques, including microscopy, biochemical analyses of biomolecules, and other basic laboratory skills. |
| e. Biology majors will practice using computational techniques, including bioinformatics, mathematical modeling, and simulation. |
| f. Biology majors will develop skills in quantitative reasoning. |
| 3. Biology majors will be able to critically evaluate scientific literature according to established scientific criteria. | a. Biology majors will be able to identify and categorize relevant scientific literature. |
| b. Biology majors will be able to analyze published scientific research. |
| 4. Biology majors will be able to express scientific ideas, both in written and oral communication. | a. Biology majors will be able to prepare laboratory reports that include data. |
| b. Biology majors will be able to write narrative scientific reports. |
| 5. Biology majors will be able to appreciate the connections between biology and other disciplines. | a. Biology majors will develop fluency in related disciplines. |
| b. Biology majors will be able to evaluate the impact of scientific discoveries on society, including ethical implications. |

**Curriculum Map**

|  |  |  |
| --- | --- | --- |
| **Program/Major Goals** | **SLOs** | **Courses (list each course**  **in the applicable sections)** |
| 1. Biology majors will be able to understand the main principles of biology, with an emphasis on the biomedical sciences. | a. Biology majors will be able to identify the structures of cells and  organisms. | Principles of Biology Cell Biology |
| b. Biology majors will be able to describe the functions of cells and  organisms, as well as their associated structures. | Principles of Biology Cell Biology |
| c. Biology majors will be able to understand the principles of  evolution. | Genetics |
| d. Biology majors will be able to understand the principles governing the transformation of energy and matter, including metabolism and  homeostasis. | Biochemistry Physiology |
| e. Biology majors will be able to understand the principles of genetic  information storage, exchange, and flow. | Molecular Biology |
| f. Biology majors will be able to understand how disruptions in normal functioning lead to  pathologies and diseases. | Cell Biology Principles of Biology |
| 2. Biology majors will  be able to apply skills in laboratory | a. Biology majors will be able to  apply the scientific method to investigate problems. | Microbiology Genetics |