

Course # _____ Course Title _____

Instructor _____

This course fulfills the following expectations for educational outcomes for biology majors

1. Core Competencies

Be able to generate and to analyze data, to organize it for presentation, and to draw appropriate conclusions based on trends and/or supported by statistics, and to formulate new questions based on findings

Be able to find and understand primary literature pertinent to a given topic in biological sciences, to examine and interpret data presented in figures and tables, and to evaluate conclusions based on the data presented

Be able to understand techniques and methods described in current literature, or to investigate such methods through scholarly publications

Be able to perform standard laboratory techniques accurately and safely

Be able to access and utilize pertinent large databases

Be able to report experimental results in a standard written format and to write coherently and persuasively about conclusions from such results and their significance

Be able to communicate scientific results verbally, and to support their significance and relation to the current framework of understanding

Understand how to pursue scientific inquiry through formulating hypotheses, designing controlled experiments or studies, gathering or generating data, and analyzing and evaluating results

Be able to make connections between concepts in biology and the foundations of physical sciences and computational methods

Be mindful of ethical considerations and societal outcomes in research and in technological advancement

2. Knowledge base

An understanding of the major paradigms in biology, including evolution, cell theory, genetic inheritance, the central dogma, integration of living systems, and energy flow through ecosystems

An understanding of the relationship between genotype and phenotype

An understanding of the information flow between DNA, RNA, and proteins, and a basic knowledge of the processes that govern cellular function and division.

Familiarity with the processes through which evolution occurs, and an understanding that selection acts on multiple stages in the life cycle

An understanding of the dynamic nature of organismal development from inception through growth and differentiation, aging and death

Appreciation of the morphological, physiological, ecological, and behavioral diversity of life, and the importance of that diversity

Recognition that biological processes are based on chemical and physical principles, and that biology informs medicine, community health, food production, and environmental policy