



# INTRODUCTORY BIOLOGY I

Molecular and cellular biology is the focus of this introductory biology course. This year-long course explores three big ideas of biology: the structure and function of biomolecules, the flow of energy through living systems via photosynthesis and cellular respiration, and how genetic information is expressed and transmitted both within and between cells.

At its core, this course is focused on **teaching students how to think like scientists**. How do scientists think? They acquire knowledge through discovery—both within and outside a laboratory environment. They communicate their conclusions to others and use critical feedback to improve their scientific thinking. With practice and continued application, scientists strengthen their skills in scientific thinking and grow their craft.

Students will learn how to apply critical thinking and quantitative skills to real-world scenarios. They will develop their scientific thinking skills through Peer Instruction, laboratory activities, and active learning in an inclusive classroom environment. Additionally, students will be guided in the development and integration of verbal, written, and graphical communication skills.

# BIG IDEAS



## **STRUCTURE RELATES TO FUNCTION**

The basics of biochemistry, the behavior of molecules in biological systems, fundamental concepts of intramolecular chemical bonding, higher-order intermolecular interactions, cell membranes, cell structures, and cell to cell communication

## **ENERGY IS TRANSFORMED IN LIVING SYSTEMS**

Electromagnetic energy, chemical bond energy, photosynthesis, cellular respiration, the role of enzymes in metabolism, and errors of metabolic pathways

## **GENETIC INFORMATION IS EXPRESSED & TRANSMITTED**

The relationship between DNA, RNA and proteins; gene

expression and the science of recombinant DNA; the regulation of protein synthesis and its role in causing human disease; and the transmission of DNA via mitosis, meiosis, and fertilization

## **CRITICAL THINKING**

Analytical skills and scientific reasoning; making and communicating scientific hypotheses and decision-making; quantitative reasoning; and interpreting and analyzing data

## **LABORATORY-BASED SCIENTIFIC SKILLS**

Lab skills; critical information evaluation; written and oral communication; and the observation of biological concepts in action

## TRANSFERABILITY

4 College Credits (3 for lecture, 1 for lab)

BIOL 1306 + BIOL 1106

UT BIO 311C + UT BIO 206LA

## PRE-REQUISITES

TEKS-based High School Biology

TEKS-based High School Chemistry

## TECHNOLOGY

Computer, Laptop, Chromebook, or Tablet Access

## PEDAGOGY

Flipped Classroom

Peer Instruction