Yale offers three different biological sciences majors: Ecology and Evolutionary Biology (EEB), Molecular Biophysics and Biochemistry (MB&B), and Molecular, Cellular, and Developmental Biology (MCDB). The distinctions between these majors reflect the types of biological systems analysis each represents: the analysis of whole organisms, populations, and ecosystems (EEB); use of the tools of chemistry and physics to study life at the molecular level (MB&B); and molecular, cellular, and developmental biology, genetics, and neurobiology (MCDB). These approaches cover the vast breadth of disciplines in the biological sciences.

The courses BIOL 101–104 are designed as entry points to all three programs in the biological sciences. The prerequisites for the three majors are similar, so students need not commit to a specific major in the freshman year.

For information on the major requirements, course offerings, and departmental faculty of the biological sciences programs, see under Ecology and Evolutionary Biology [link], Molecular Biophysics and Biochemistry [link], and Molecular, Cellular, and Developmental Biology [link].

Courses

**BIOL 101a or b, Biochemistry and Biophysics**  Samantha Lin and Staff
The study of life at the molecular level. Topics include the three-dimensional structures and function of large biological molecules, the human genome, and the design of antiviral drugs to treat HIV/AIDS. The first of four modules in a yearlong foundational biology sequence; meets for the first half of the term.  \( \text{sc} \)  ½ Course cr

**BIOL 102a or b, Principles of Cell Biology and Membrane Physiology**  Samantha Lin and Staff
The study of cell biology and membrane physiology. Topics include organization and functional properties of biological membranes, membrane physiology and signaling, rough endoplasmic reticulum and synthesis of membrane/secretory membrane proteins, endocytosis, the cytoskeleton, and cell division. The second of four modules in a yearlong foundational biology sequence; meets for the second half of the term. Prerequisite: BIOL 101.  \( \text{sc} \)  ½ Course cr

* **BIOL 103a or b, Genes and Development**  Surjit Chandhoke and Staff
Foundation principles for the study of genes, genetics, and developmental biology. How genes control development and disease; Mendel’s rules; examples of organ physiology. The third of four modules in a yearlong foundational biology sequence; meets for the first half of the term. Prerequisites: BIOL 101 and 102.  \( \text{sc} \)  ½ Course cr

**BIOL 104a or b, Principles of Ecology and Evolutionary Biology**  Surjit Chandhoke and Staff
The study of evolutionary biology, animal behavior, and the history of life. Evolutionary transitions and natural selection. Adaptation at genic, chromosomal, cellular, organismal, and supra-organismal levels. Distributional and social consequences of particular suites of organismal adaptations. The fourth of four modules in a yearlong foundational biology sequence; meets for the second half of the term. Prerequisites: BIOL 101, 102, and 103.  \( \text{sc} \)  ½ Course cr