BIOLOGY

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Yale offers four biological science majors: Ecology and Evolutionary Biology (E&EB); Molecular Biophysics and Biochemistry (MB&B); Molecular, Cellular, and Developmental Biology (MCDB); and Neuroscience (NSCI). The distinctions between these majors reflect the types of biological systems analysis each represents: the analysis of whole organisms, populations, and ecosystems (E&EB); the analysis of life at the molecular level using tools of chemistry and physics (MB&B); the analysis of molecular, cellular, and developmental biology, genetics, neurobiology, and quantitative biology (MCDB); and the analysis of neurons, neural circuits, brains, and behavior, using a wide range of approaches (NSCI). Yale also offers the Biomedical Engineering (BENG) major for students interested in studying biological systems from the perspectives of the physical sciences and engineering.

Together, these approaches cover the vast breadth of disciplines in the biological sciences. The courses BIOL 1010–1040 are designed as entry points to all four programs. The prerequisites for the four majors are similar, so students need not commit to a specific major in their first year. Students who wish to major in any of the four tracks (E&EB, MB&B, MCDB, and NSCI) must complete all four modules.

For information on the major requirements, course offerings, and departmental faculty of the biological sciences programs, see Ecology and Evolutionary Biology; Molecular Biophysics and Biochemistry; Molecular, Cellular, and Developmental Biology; and Neuroscience. See also information for Biomechanical Engineering.

Credit/D/Fail No course taken Credit/D/Fail may be applied toward the requirements of the biological sciences majors listed above, except with permission of the DUS.

Courses

BIOL 1010a or b, Biochemistry and Biophysics 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. If you are taking this class along with BIOL 102, you should register for the same discussion section in BOTH classes. For instance, if you are in BIOL 102 A, then you should register for BIOL 101 A as well
SC 0 Course cr

BIOL 1020a or b, Principles of Cell Biology 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. If you are taking this class along with BIOL 101, you should

register for the same discussion section in BOTH classes. For instance, if you are in BIOL 101 A, then you should register for BIOL 102 A as well. SC 0 Course cr

* **BIOL 1030a or b, Genetics and Development** Staff
Foundation principles for the study of 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. If you are taking this class along with BIOL 104, you should register for the same discussion section in BOTH classes. For instance, if you are in BIOL 103 A, then you should register for BIOL 104 A as well. SC 0 Course cr

BIOL 1040a or b, Principles of Ecology and Evolutionary Biology 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. If you are taking this class along with BIOL 103, you should register for the same discussion section in BOTH classes. For instance, if you are in BIOL 103 A, then you should register for BIOL 104 A as well. 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. SC 0 Course cr