Through the study of biology, students are introduced to the cornerstones of the discipline within an evolutionary context, thereby leading to an appreciation for the diversity of life on earth and the processes supporting it. As such, graduates are well-prepared for diverse careers in biology, as well as the health sciences. Many pursue professional degrees in dentistry, medicine, nursing, pharmacy, and physical therapy. Others seek advanced degrees in academic areas as diverse as environmental biology, genetic counseling and cell biology, which lead to jobs in academia, and the public or private sector. In conjunction with teacher certification, the major prepares students to teach at the secondary school level. Regardless, our majors are instilled with a respect, concern, and sense of responsibility for life and the environment, as well as the knowledge to understand and evaluate biological advances that are transforming society.

Our curriculum is designed to offer, through core and ancillary courses, a firm foundation in those areas that provide an important background for understanding life processes. Choosing from among a variety of biology electives accommodates individual interests. In addition to the biology major requirements listed below, students must meet all graduation requirements set by the College of Liberal Arts and Sciences. Students should consult the University Catalog and CLAS Advising Office (NC 2024) for specific requirements.

I. General Requirements for the B.S. in Biology (effective Fall 2007; students admitted prior to Fall 2007 should refer to their catalog for specific degree requirements):

- Students must complete a minimum of 36 semester hours of biology courses (specified below).
- All courses in the major must be taken for a letter grade; pass/fail grades will not count.
- Students must earn a “C-” (1.7) or higher in all courses used to satisfy degree requirements.
- Students must maintain a 2.500 GPA or higher averaged across biology courses used to satisfy degree requirements.
- 15 upper division credit hours (3-4000+) must be taken in residence from UCDHSC Biology faculty.

II. Curriculum for the B.S. in Biology

**Biology core courses** — required of ALL Biology Majors: 

- General Biology I with Lab (BIOL 2051-3 and BIOL 2071-1) ........................................................................ 4
- General Biology II with Lab (BIOL 2061-3 and BIOL 2081-1) ........................................................................ 4
- Ecology requirement .......................................................................................................................... 3
  
  **NOTE:** Either Principles of Ecology (BIOL 3411-3) or Fundamentals of Applied Ecology (BIOL 3412-3) will fulfill this requirement; neither may be taken for upper-division major elective credit.
- General Cell Biology (BIOL 3611-3) ................................................................................................ 3
- General Genetics (BIOL 3832-4) ....................................................................................................... 4
- Structure and function requirement .................................................................................................. 4
  
  **NOTE:** Any one of the following four courses will fulfill this requirement; courses not used to satisfy this requirement may be taken for upper-division major elective credit.
  - Human Physiology (BIOL 3225-4)
  - Human Anatomy (BIOL 3244-4)
  - General Microbiology (BIOL 3654-4)
  - Plant Science (BIOL 4335-4)

**Biology electives** — selected to accommodate individual interests and professional objectives: ............ 14

- A minimum of four 3000-4000 courses totaling 14 credit hours beyond the core are required.
- One 4000+ level elective must be at taken in residence from UCDHSC Biology faculty.
- Four hours in biochemistry (CHEM 3810-4 or both CHEM 4810-3 and 4820-3) may be counted as biology elective hours, if not taken in place of second semester organic chemistry.

**Biology total (core courses plus electives)** .......................................................................................... 36

III. Required Ancillary Courses — must be completed with a “C-” (1.7) or higher:

- Calculus I (MATH 1401-4) .................................................................................................................. 4

  **NOTE:** Introductory Statistics (MATH 2830-3) and Applied Statistics (MATH 4830-3) together may be substituted for the Calculus I requirement.
- College Physics I and II with labs (PHYS 2010-3 and 2030-2; PHYS 2020-3 and 2040-2) ............ 10
- General Chemistry I and II with labs (CHEM 2031-3 and 2038-1; CHEM 2061-3 and 2068-2) .... 9
- Organic Chemistry I and II (CHEM 3411-4 and 3421-4) ................................................................. 8

  **NOTE:** Organic Chemistry I (CHEM 3411-4) and Biochemistry (CHEM 3810-4) together may be substituted for the two semester organic chemistry sequence.

Revised 07/01/07
IV. Additional Notes. All majors are encouraged to consult a Biology major advisor annually and must meet with an advisor within two semesters of graduation.

Dr. Leo P. Bruederle, NC 3016D        Kim Regier, NC 3016E
Leo.Bruederle@cudenver.edu           Kimberly.Regier@cudenver.edu

- Hours for repeated courses are counted once, whether taken at UCDHSC or transferred to UCDHSC. When repeating a UCDHSC course at UCDHSC, both grades are used to calculate the UCDHSC grade point average.
- Majors with transfer credits in biology from other institutions should consult a major advisor to determine course equivalency and proper placement; see: http://thunder1.cudenver.edu/clas/biology/transfer.html.
  - Transfer credit from community colleges will not fulfill the requirements for upper division electives or credit hours.
  - Students who have taken both semesters of a combined anatomy and physiology course at a community college or any other institution where these courses are listed at the 2000 level may fulfill the structure/function core requirement for the B.S. in Biology.
- Biology majors with Advanced Placement, International Baccalaureate, or CLEP credits should consult a major advisor for proper placement; students declared pre-health should also consult a Health Careers advisor.
  - Advanced Placement (AP). Students scoring 4 or 5 on the AP biology subject exam may receive six hours credit toward the B.S. in Biology and be exempt from BIOL 2051-3 and 2061-3. Students who score 3, 4, or 5 on the biology subject exam and complete the associated full-year AP course may receive eight hours credit and be exempt from BIOL 2051-3, 2061-3, 2071-1, and 2081-1.
  - International Baccalaureate (IB). Students scoring 4 on the IB biology subject exam (standard level) may receive four hours credit toward the B.S. in Biology and be exempt from BIOL 2051-3 and 2071-1. Students scoring 4 on the higher level IB biology subject exam may receive eight hours credit toward the B.S. in Biology and be exempt from BIOL 2051-3, 2061-3, 2071-1, and 2081-1.
  - Students scoring at or above the 50th percentile on the CLEP Biology subject examination may receive six hours credit toward the B.S. in Biology and be exempt from BIOL 2051-3 and BIOL 2061-3.
- A maximum of six hours of Independent Study (BIOL 3840/4840) or a combined total of six hours of Independent Study and Internship/Cooperative Education (BIOL 3939), including a maximum of three credits of BIOL 3939, may be counted toward the 14 hours of upper-division electives in biology.
- Internships (BIOL 3939) are available to students who have completed 60 credit hours maintaining a 2.750 GPA or higher; for more information, contact The Career Center (http://careers.cudenver.edu).
- Majors are encouraged to include in their program of study: Evolution (BIOL 4974) or Population and Evolutionary Genetics (BIOL 4494); Biochemistry (CHEM 3810); Internship or Independent Study; and Statistics (MATH 2830).
- The following courses will not count toward the biology degree:
  - Freshman Seminar (BIOL 1111)    Human Biology (BIOL 1136)
  - Basics of Cancer Biology (BIOL 1352)  Natural History of Colorado (BIOL 3122)
  - Basic Biology (BIOL 1550 or 1560)
- Although organic chemistry laboratory is not required for the Biology major, many professional and graduate programs require a year of organic chemistry with lab. Students are encouraged to consult a Biology major advisor or Health Careers advisor.
- Students pursuing a double major should consult advisors in both departments; Biology courses may not apply to satisfy major requirements for both majors.

V. Honors in Biology. Departmental honors will be awarded to students based on their grade point average in classes taken at UCDHSC. The following minimum grade point averages must be met both for all courses taken at UCDHSC and for biology courses alone: cum laude ≥3.5; magna cum laude ≥3.7; summa cum laude ≥3.9.

VI. Biology Research Scholars. Students are encouraged to pursue research as part of their undergraduate education. Students who excel in both course work and research will be recognized as Biology Research Scholars. To qualify, students must fulfill all of the following requirements: (1) achieve a minimum grade point average of 3.5 in all courses taken from UCDHSC faculty; (2) participate in a research project, consisting of a minimum of six credit hours of independent study, taken over at least two semesters; (3) write a scientific paper describing the research; and (4) present a seminar on their research. Students who wish to become involved in research should contact Dr. Michele Engel no later than their junior year.

For more information about the Department, please visit our website at: www.cudenver.edu/clas/biology

Revised 07/01/07