BIOLOGY: BIOMEDICAL SCIENCE, B.S.
2013-2014

MAJOR REQUIREMENTS (60 UNITS) Grades of “C” or better required. Courses may not need to be completed in order listed.

### Biology core
- BIOL 111 General Biology I (4) & BIOL 111L Laboratory (1) Theme IVA*
- BIOL 111A General Biology Seminar (0)
- BIOL 112 General Biology II (4) & BIOL 112L Laboratory (1) Theme IVA* Prerequisite: BIOL 111, 111L, 111A
- BIOL 113 General Biology III (4) & BIOL 113L Laboratory (1) Theme IVA* Prerequisite: BIOL 112 & 112L
- BIOL 221 Tools and Methods I (2) Prerequisite: BIOL 113 & 113L
- BIOL 222 Tools and Methods II (2) Prerequisite: BIOL 221
- BIOL 223 Tools and Methods III (2) Prerequisite: BIOL 222
- BIOL 301 Cell and Molecular Biology (4) Prerequisite: BIOL 113, 113L, CHEM 271 & BIOL 301L Laboratory (1) Prerequisite: BIOL 223
- BIOL 302 Genetics (4) & BIOL 302L Laboratory (1) Prerequisite: BIOL 301 & 301L
- BIOL 303 Developmental Biology (4) & BIOL 303L Laboratory (1) Prerequisite: BIOL 302 & 302L
- BIOL 350 Colloquium (1) Prerequisite: BIOL 113 & 113L
- BIOL 405 Biology Seminar (2) Prerequisite: BIOL 113 & 113L and BIOL 223

### Biomedical Science emphasis
Choose 4 units from the following:
- BIOL 376 Biostatistics (4) Prerequisite: BIOL 113 & 113L
- BIOL 414 General Ecology (4) Prerequisite: BIOL 113 & 113L
- BIOL 415 Environmental Science (4) Prerequisite: BIOL 113 & 113L

Choose 20 units of electives from the following:
- BIOL 410 Science at the Cutting Edge (2)
- BIOL 466 Systems Physiology (4)
- BIOL 434 Histology (4)
- BIOL 474 Microbiology (4)
- BIOL 436 Immunology (4)
- BIOL 490 Survey of Bioinformatics and Genomics (4)
- BIOL 439 Neurobiology (4)
- BIOL 446 Human Gross Anatomy (5)
- BIOL 461 Virology (4)

**Required cognates**
- CHEM 111 General Chemistry I (4) & CHEM 111L Laboratory (1) Theme IVB* Prerequisite: MATH 121 eligibility, CHEM 110 or placement
- CHEM 112 General Chemistry II (4) & CHEM 112L Laboratory (1) Theme IVB* Prerequisite: CHEM 111 & 111L
- CHEM 113 General Chemistry III (4) & CHEM 113L Laboratory (1) Theme IVB* Prerequisite: CHEM 112 & 112L
- CHEM 271 Organic Chemistry I (3) & CHEM 271L Laboratory (1) Prerequisite: CHEM 113 & 113L
- CHEM 272 Organic Chemistry II (3) & CHEM 272L Laboratory (1) Prerequisite: CHEM 271 & 271L
- CHEM 273 Organic Chemistry III (3) & CHEM 273L Laboratory (1) Theme IVA* Prerequisite: CHEM 272 & 272L
- MATH 131 Calculus I (4) Prerequisite: MATH 122
- PHYS 231 General Physics I (4) & 231L Laboratory (1) Theme IVB* Prerequisite for PHYS 231A: MATH 122; for 231B: MATH 132
- PHYS 232 General Physics II (4) & 232L Laboratory (1) Theme IVB* Prerequisite for PHYS 232A: 231A & 231L; for 232B: 231B & 231L
- PHYS 233 General Physics III (4) & 233L Laboratory (1) Theme IVB* Prerequisite for PHYS 233A: 232A & 232L; for 233B: 232B & 232L

**UNIVERSITY STUDIES FOUNDATIONAL STUDIES (19-37 UNITS) Grades of “C” or better required.**

| I FIRST-YEAR SEMINAR | UNST 101A (1) and 101B (1) or UNST 100A (3) and 100B (3) |
| II RHETORICAL SKILLS | A. ENGL 111 (3), 112 (3), 113 (3) College Writing or ENGL 124 Freshman Seminar (4) |
| III MATHEMATICS | College-level Mathematics course (4) MATH 131 required by major |
| IV WORLD LANGUAGES | Level 3 proficiency (e.g. 153) in one non-English language (4-12) |
| V HEALTH AND FITNESS | HLSC 120 Lifetime Fitness with laboratory (2) |

**UNIVERSITY STUDIES GENERAL STUDIES (52 UNITS, 20 UPPER DIVISION)** Grades of “D” or better required, unless courses are required by major.

| THEME IA | Understanding Human Beings or IB Humans as Thoughtful Global Citizens |
| THEME IC | Globalization, Identity and Citizenship (SSCI 104 / 105 / 106 / 107) Prerequisite: ENGL 113/124 |
| THEME IA | History and Appreciation of Visual and Performing Arts |
| IIB | Historical or Contemporary Culture and Context |
| IIC | Exploring Culture (HUMN 204 / 205 / 206) Prerequisite: ENGL 111/124 |
| THEME III | Any Theme III course (Theme III A, B, C, or D) |
| IIIIB | Required Beliefs course from RELT 104 / 106 / 245 or RLGN 304 |
| IIIIC | Scripture |
| RLGN | RLGN 304 Adventism in Global Perspective or RLGN 305 Religion in Three Cultures (4) Prerequisite: ENGL 113/124, Junior |
| THEME IVA | Life Science (4) May be fulfilled by major requirements |
| IVB | Physical Science (4) May be fulfilled by major’s cognates |
| IVC | Scientific Foundations (NSCI 404 / 405 / 406 / 407) (4) Prerequisite: ENGL 113/124, Theme IVA/Theme IVB, F3 Mathematics |
| THEME V | Senior Seminar: UNST 404B Religion, Values, and Social Responsibility (4) Prerequisite: ENGL 111/124, Junior |

* A maximum of 4 units from the Major, and 8 units of Cognates required by the Major, may apply to University Studies General Studies requirements (2013-2014 Undergraduate Academic Bulletin p. 66).

**NOTES:** A course with quarters marked by (brackets) indicate the quarters in which that course is usually offered. Should a student’s general education and major degree program not meet the minimum 190 units required for graduation, the student must complete elective units to make up the deficiency.
BIOLOGY: BIOMEDICAL SCIENCE
B.S. Degree

The objectives of the Department of Biology are to help students better understand themselves and the living things around them, to develop a scholarly approach to the study and evaluation of scientific information, and to prepare for careers in biology, medicine and environmental sciences. The department is committed to providing students with research opportunities intended to result in poster presentations at scientific meetings and/or publications in peer-reviewed journals. The faculty offers mentoring and collaboration to qualified, highly motivated students who seek research opportunities in faculty laboratories. Interested students are encouraged to discuss research opportunities with individual faculty members.

CAREER OPPORTUNITIES AND RELATED OCCUPATIONS: Biology graduates are employed in a broad variety of government and private sector positions including, but not limited to field positions (forest service, park service, fish and wildlife management, conservation, ecology), agriculture research or management, food manufacturing industries, waste management, environmental safety and testing, industrial quality control, pharmaceutical and immunochemical industries, biotechnology (genetic engineering, molecular biology, microbiology, immunology), health related research (cancer, infectious disease, genetics), health professions (medicine, dentistry, optometry, allied health, public health), and teaching at the secondary and college levels.

EDUCATIONAL QUALIFICATIONS: Biological technicians typically need a bachelor’s degree in biology or a closely related field. Students seeking employment in dentistry or medicine must graduate from an accredited health professional school and complete any applicable internships/residencies.

JOB OUTLOOK: Employment of biological technicians is projected to increase 14 percent from 2010 to 2020, as fast as the average for all occupations.

SALARY: The median annual wage of biological technicians was $39,020 in May 2010. The lowest 10 percent earned less than $24,930, and the top 10 percent earned more than $62,890.