The Department of Biology

Overview

The Department of Biology curriculum familiarizes students with basic concepts inherent to biological science and allows them to master new, cutting edge areas of biological research. Its degree programs prepare students to enter exciting and challenging careers in the many diverse and rapidly expanding areas of biological employment, including environmental biology, conservation, microbiology, the health sciences, science teaching, pharmacology, biotechnology, molecular biology, neurobiology, and forensics as well as in basic biological research. Superior teaching and faculty involvement with students is a high priority in the department. Many of its faculty have received university-wide awards for teaching excellence. Biology faculty have internationally recognized research programs in which students are actively encouraged to participate through credit for supervised research. Thus, students can prepare for careers in specific areas of biology by being actively engaged in research related to that career area under faculty supervision.

The Department of Biology offers four programs of study leading to an undergraduate degree. These are the Bachelor of Arts (B.A.) degree in Biology and the Bachelor of Science (B.S.) degrees in Biology, Microbiology or Medical Technology. The Microbiology B.S. degree prepares students to enter careers in the highly diverse field of microbiology, ranging from control of infectious diseases, through public health and environmental microbiology to genetic engineering and molecular biology or to pursue graduate study. The B.S. in Medical Technology combines course work with 16 months of clinical laboratory training in an accredited hospital school of medical technology. This degree prepares students for careers as technicians in medical laboratories, clinics, hospitals and industry. The Biology B.S. program provides students with a strong background in the fundamental tenets of the biological sciences while allowing them to customize their degree plans to meet specific career goals. The Biology B.A. program is suitable for career preparation in a number of biological fields and for teaching certification in Biology or Composite Science.

There are five degree plan options through which students can complete their Biology B.S. degree. Option one in General Biology allows students to choose elective courses beyond the biology core that prepare them to enter a specific professional field or graduate school for further study and research. Option two in Genomics specifically prepares students for careers in the rapidly expanding area of genetics research. Option three in Environmental Biology prepares students to enter a broad range of exciting and rewarding professions in environmental science and conservation. Option four, Pre-medical, Pre-dental and Pre-veterinary Biology, provides students with course work that makes them highly competitive for acceptance into medical,
dentistry or veterinary schools. Option five in Forensics, provides students with the training necessary to pursue exciting careers in biological forensics, DNA testing or police department laboratories.

All Biology degrees and degree plan options are supported by providing students with ready access to both academic and career advice provided by a full-time undergraduate advisor and faculty members knowledgeable with a student’s particular areas of academic and/or career interests. Students are strongly encouraged to interact with departmental and faculty advisors throughout their academic careers, particularly through independent research under faculty supervision, to develop the skills and course work background that will allow them to achieve their future academic/career goals. Detailed information on Biology and degree plan options is provided later in this section.

Beyond the undergraduate B.A. and B.S. degrees, the Department of Biology offers programs leading to graduate degrees, including the Master of Science in Biology (M.S.) which allows students to pursue biological careers requiring a greater knowledge base than provided by an undergraduate B.A. or B.S. degree and a Doctor of Philosophy Degree in Quantitative Biology (Ph.D.) which allows students to carry out independent dissertation research within a chosen area of biological research leading to a career in research and/or university teaching. The Ph.D. degree in Biology provides students with a strong background in modern mathematical approaches to biological research, including biostatistics, experimental design and mathematical modeling of biological systems. The Graduate Catalog provides details of the Biology M.S. and Ph.D. degree programs.

The Department of Biology takes pride in offering students outstanding degree programs supported by excellent teaching, undergraduate research opportunities and superior academic advising. These programs make graduates highly competitive in the job market or when applying to graduate or professional degree programs. Please visit the Biology Department and speak with one of our advisors. Phone 817-272-2408 to make an appointment.

**Applying for Major Status in Biology**

Freshmen who have no previous college work must complete the following courses before applying to the Biology Department to become a major:

19 hours from the University core (consisting of courses in English, history, political science, et al. See list of general core curriculum requirements set by the University elsewhere in this catalog) and a minimum of 20 hours from the courses below:

**Biology**

BIOL 1441. Cell and Molecular Biology
BIOL 1442. Structure and Function of Organisms
BIOL 2343. Evolution, Ecology and Biodiversity
BIOL 3315. Genetics
MedTech

BIOL 1441. Cell and Molecular Biology
BIOL 1442. Structure and Function of Organisms
BIOL 3444. General Microbiology

MicroBiology

BIOL 1441. Cell and Molecular Biology
BIOL 3444. General MicroBiology
BIOL 3445 Methods in Microbiology
BIOL 4302 Microbial Genetics

Chemistry

CHEM 1441. General Chemistry 1
CHEM 1442. General Chemistry 2

The applicant for status as a biology major MUST have a GPA of 2.25 or better in all courses taken, and 2.25 or better in biology courses. An application form is available from the undergraduate advisor (Room 345 or 346 LS).

A suggested course sequence for entering freshmen students for the first two years is:

Freshman Year

First Semester: ENGL 1301; MATH 1323; CHEM 1441; BIOL 1441; HIST 1311 - Total Credit 17 hours
Second Semester: ENGL 1302; MATH 1426; CHEM 1442; BIOL 1442 or 2343 1; HIST 1312 - Total Credit 17 or 18 hours.

Sophomore Year

First Semester: ENGL or COMS, 3 hours; CHEM 2181 and 2321; BIOL 1442 or 2343; POLS 2311 - Total Credit 13 or 14 hours
Second Semester: ENGL or COMS, 3 hours; CHEM 2182 and 2322; BIOL 3315; POLS 2312 - Total Credit 13 hours.

1 Micro majors will substitute 3444 in the second semester of their freshman year, and another micro class in the first semester of their sophomore year. Med Tech majors will substitute 3444 during the first semester of their sophomore year.

Transfer students interested in one of the degree programs in biology will, after admission to UT Arlington, be placed into pre-major status: BIOL intended, MEDT intended, or MICR intended major. To apply for status as a major in biology, microbiology, or medical technology, these students must have a minimum of 39 hours which include:
At least 28 hours in the University core curriculum including eight hours of freshman chemistry, with lab (credit by transfer or earned at UT Arlington).

At least 11 hours in biology courses taken at UT Arlington that apply to one of the three programs awarded by the department.

At the time of application for major status in biology, the student must have a GPA of 2.25 or better in courses taken at UT Arlington (both overall and in biology courses). An application form for requesting major status is available from the Department Advisor (Room 346 LS). Transfer students will be evaluated for major status only after completing 11 hours in biology in residence at UT Arlington.

Maintaining Major Status

- Students who are accepted as majors in biology, microbiology, or medical technology must thereafter maintain a GPA of 2.25 or better in all courses and in biology courses. Any student whose GPA falls below 2.25 in either of these categories will be returned to undeclared status at the end of the semester in which the deficiency occurs.
- Students who fall into academic difficulty will be required to meet with their Advisor and/or Academic Dean in order to discuss academic consequences and their future status in the College of Science. Please refer to the College of Science section of the catalog, "Academic Policies for College of Science Majors".
- Students who have lost status as a major must have departmental permission to enroll in any junior or senior course in biology at UT Arlington.
- Students in the medical technology program should have a 2.8 GPA or higher after completing three years of course work to be competitive when applying for the final year of training in medical technology.

Requirements for a Minor in Biology

A minor in biology will consist of a minimum of 18 credit hours of approved biology classes that would be applicable toward a major in Biology. Non-majors' courses such as BIOL 1301, 2317, 2457, 2458, 2460, 3303, and 3309 will not apply toward a minor in biology. Non-lecture courses such as research, directed study, co-op, or lab TA credit may not be used toward a minor in Biology. A minimum of six of the 18 credit hours required for the minor must be at the 3000 or 4000 level. Limitations may be placed on certain courses, such as those in the UTTER program. BIOL 1441 and 1442, or equivalent, are required for the minor. The remaining 10 hours must be chosen with and approved by a Biology Advisor.

A 2.0 grade average must be maintained in the minor. Transfer students must complete at least nine hours toward the minor at UT Arlington, and six of the nine hours must be 3000 or 4000 level.

General Information

- In order to receive a B.A. degree in Biology or a B.S. degree in Biology or Microbiology from UT Arlington, transfer students must complete a minimum of 18 hours of junior or
senior level courses (12 of the 18 hours in Biology) at UT Arlington. Transfer students who are approved for admission to the medical technology program must complete at least 13 hours of junior or senior level courses in biology at UT Arlington to qualify for a B.S. Degree in Medical Technology from UT Arlington.

- No student working toward a B.A. degree in Biology or a B.S. degree in Biology, Medical Technology or Microbiology may take any biology course on a Pass/Fail basis other than BIOL 3149, 3249, 3349, 4179, 4279, 4379, 4189, or 4289.
- Students are not allowed to receive credit for biology courses at the sophomore level or above by special examination.
- Exceptions to the core course prerequisites for advanced courses will be made only for specialized degree programs such as Medical Technology, Nursing, and Physical Education, and for selected non-majors with special needs.

Computer and Oral Communication Competency Requirement

Students majoring in Biology, Microbiology, or Medical Technology are required to demonstrate computer use and oral communication competencies. In order to fulfill the University requirement of competency in computer usage, a student must take an approved computer literacy course or obtain a passing score on the University proficiency exam. Oral communication competency can be demonstrated by completion of COMS 1301, 2305 or an approved substitute.

Requirements for a Bachelor of Arts Degree in Biology

The Bachelor of Arts Degree in Biology is suitable for career preparation in a number of biological career fields and for students who desire teaching certification with a teaching field in biology or composite science. Students choosing this program are required to consult with the Department of Biology's undergraduate advisor to develop an acceptable degree plan. Students seeking teaching certification with a teaching field in biology or composite science are required to consult with the Department of Biology certification advisor in order to develop an acceptable teaching certification degree program.

English (9 hours)

ENGL 1301, 1302, plus three hours of literature.

Liberal Arts Elective (3 hours)

Three hours at the 2000 level from philosophy, fine arts, or any other approved course offered through the College of Liberal Arts.

Political Science (6 hours)

2311, 2312.
History (6 hours)
1311, 1312.

Fine Arts (3 hours)
Three hours from art, dance, music, architecture or the theatre arts.

Social/Cultural Studies (3 hours)
See the biology undergraduate advisor for a list of courses which can be used to fulfill this requirement.

Computer Literacy Requirement
Students may demonstrate competency by passing the University proficiency exam, or if they wish, they may take CSE 1301 or INSY 2303.

Oral Communication (3 hours)
COMS 1301, 2302 (preferred), or other approved communication course.

Mathematics ³ (6 hours)
1302, 1303.
³ Transfer students must present a minimum of six semester credit hours of equivalent or higher level mathematics courses.

Electives (18 hours)
Twelve hours of advanced elective courses (3000/4000 level courses) and 6 hours of any level electives

Modern and Classical Languages (8 or 9 hours)
Eight hours in a single language or nine hours from one liberal arts cluster (see liberal arts cluster substitution list in the introductory information for the College of Science).

Natural Science other than Biology (19 hours)
CHEM 1441, 1442, 2321, and PHYS 1441 and 1442.

Major (36 hours)
36 hours including the 14 hours of core curriculum consisting of BIOL 1441, 1442, 2343 and 3315; 12 hours of diversity courses chosen from BIOL 3427, 3444 and 3454; 7 hours of advanced core courses chosen from BIOL 3310, 3301, 3339, 3442, and 3457, plus a 3-hour advanced BIOL elective course.

Total of 120 hours

Suggested Course Sequence

Freshman Year:
ENGL 1301, MATH 1302, CHEM 1441, BIOL 1441, HIST 1311 - 17 hours
ENGL 1302, MATH 1303, CHEM 1442, BIOL 1442 - 14 hours

Sophomore Year:
CHEM 2321, Liberal Art (3 hours), BIOL 2343, Literature (3 hours), POLS 2311 - 15 hours
BIOL 3427, BIOL 3315, HIST 1312, POLS 2312, Social/Cultural Studies elective (3 hours) - 16 hours

Junior Year:
BIOL 3444, PHYS 1441, Modern Language (4 hours), Elective (3 hours) - 15 hours
BIOL 3454, PHYS 1442, Modern Language (4 hours), Advanced Elective (3 hours) - 15 hours

Senior Year:
BIOL Adv. Core (4 hours), COMS (3 hours), Advanced Elective (3 hours), BIOL Adv. Elective (3 hours) - 13 hours
BIOL Adv. Core (3 hours), Fine Arts Elective (3 hours), Adv. Elective (3 hours), Electives (6 hours) - 15 hours

Requirements for a Bachelor of Arts Degree in Biology -- Secondary Teacher Certification

This program is suitable preparation for students who desire secondary teacher certification in biology. In addition to consulting with their major department advisor, students are encouraged to meet with the UTeach campus advisor.

English (9 hours)

ENGL 1301, 1302, and three hours of literature.

Liberal Arts Elective (3 hours)

PHIL 2314

Political Science (6 hours)
2311, 2312.

**History (6 hours)**

1311, 1312.

**Fine Arts (3 hours)**

Three hours from art, dance, music, architecture or the theatre arts.

**Social/Cultural Studies (3 hours)**

See the biology undergraduate advisor for a list of courses which can be used to fulfill this requirement.

**Computer Literacy**

This requirement will be satisfied by completion of EDUC 4331.

**Oral Communication**

This requirement will be satisfied by completion of SCIE 1101.

**Mathematics (6 hours)**

1302, 1303.

**Modern and Classical Language (8 hours)**

1441, 1442. (any language)

**Natural Science other than Biology (19 hours)**

CHEM 1441, 1442, 2321, and PHYS 1441 and 1442.

**Education - Teacher Preparation Courses (18 hours)**

SCIE 1101, 1102, 4107, 4607.
EDUC 4331, 4332, 4333.

**Major (39 hours)**
BIOL 1441, 1442, 2343, 3315, 3427, 3444, 3454, 3310 (Research Methods), 7 hrs. chosen from 3301, 3339, 3442, 3457, plus a 3 hour advanced BIOL elective course approved by the biology advisor.

Total of 120 hours

Suggested Course Sequence

Freshman Year: ENGL 1301, MATH 1302, CHEM 1441, BIOL 1441, SCIE 1101 - 15 hours
ENGL 1302, MATH 1303, CHEM 1442, BIOL 1442, SCIE 1102 - 15 hours

Sophomore Year: CHEM 2321, BIOL 2343, Literature (3 hours), HIST 1311, EDUC 4331 - 15 hours
BIOL 3427, HIST 1312, EDUC 4332, POLS 2312 - 13 hours

Junior Year: BIOL 3444, PHYS 1441, Modern Language (4 hours), PHIL 2314, POLS 2311 - 18 hours
BIOL 3454, PHYS 1442, Modern Language (4 hours), Biology Advanced Elective (3 hours), BIOL 3310 (Research Methods) - 18 hours

Senior Year: BIOL Advanced Core (4 hours), BIOL 3315, EDUC 4333, Fine Arts (3 hours) - 13 hours
BIOL Advanced Core (3 hours), Social Cultural Studies (3 hours), SCIE 4607, SCIE 4107 - 13 hours

Requirements for a Bachelor of Arts Degree in Biology - Composite Science Certification

Students wishing to teach on a composite science certificate must have earned a bachelor's degree that encompasses general studies, an academic specialization or field (in this case, composite science), and teaching knowledge and skills taught through the College of Education. In addition to consulting with their major department advisor, students are encouraged to meet with the Uteach campus advisor.

English (9 hours)
ENGL 1301, 1302, and three hours of literature.

Liberal Arts Elective (3 hours)
PHIL 2314

Political Science (6 hours)
2311, 2312.

History (6 hours)
1311, 1312.

**Fine Arts (3 hours)**

Three hours from art, dance, music, architecture or the theatre arts.

**Social/Cultural Studies (3 hours)**

See the biology undergraduate advisor for a list of courses which can be used to fulfill this requirement.

**Computer Literacy**

This requirement will be satisfied by completion of EDUC 4331.

**Oral Communication**

This requirement will be satisfied by completion of SCIE 1101.

**Mathematics (6 hours)**

1302, 1303.

**Modern and Classical Language (8 hours)**

1441, 1442. (any language)

**Natural Science other than Biology (27 hours)**

CHEM 1441, 1442, 2321, PHYS 1441, 1442, GEOL 1425, 1426

**Education - Teacher Preparation Courses (18 hours)**

SCIE 1101, 1102, 4107, 4607.
EDUC 4331, 4332, 4333.

**Major (36 hours)**

BIOL 1441, 1442, 2343, 3315, 3427, 3444, 3454, 3310 (Research Methods), 7 hrs. chosen from 3301, 3339, 3442, 3457.

**Total of 125 hours**

**Suggested Course Sequence**

The University of Texas at Arlington 2013-2014 Undergraduate Catalog

© 2013-2014 The University of Texas at Arlington. All rights reserved.
Freshman Year: ENGL 1301, MATH 1302, CHEM 1441, BIOL 1441, SCIE 1101 - 15 hours
ENGL 1302, MATH 1303, CHEM 1442, BIOL 1442, SCIE 1102 - 15 hours

Sophomore Year: CHEM 2321, BIOL 2343, Literature (3 hours), HIST 1311, EDUC 4331, GEOL 1425 - 19 hours
Modern Language (4 hours), BIOL 3427, HIST 1312, EDUC 4332, GEOL 1426 - 18 hours

Junior Year: BIOL 3444, PHYS 1441, Modern Language (4 hours), PHIL 2314, POLS 2311 - 18 hours
BIOL 3454, PHYS 1442, BIOL 3310 (Research Methods), POLS 2312 - 14 hours

Senior Year: BIOL Advanced Core (4 hours), BIOL 3315, EDUC 4333, Fine Arts (3 hours) - 13 hours
BIOL Advanced Core (3 hours), Social Cultural Studies (3 hours), SCIE 4607, SCIE 4107 - 13 hours

Requirements for a Bachelor of Science Degree in Biology

The requirements to receive a Bachelor of Science Degree in Biology can be achieved through degree plans under any one of five options (i.e., Option 1-General Biology, Option 2-Genomics, Option 3-Environmental Biology, Option 4-Pre-Medical, Pre-Dental and Pre-Veterinary, and Option 5-Forensics) detailed in this section. Before choosing a B.S. degree program under one of these options, please consult with the biology undergraduate advisor and biology faculty associated with the chosen option.

Option 1: General Biology

The General Biology Option is intended for students studying basic aspects of the biological sciences. It is not directed toward a specific biological career path as are Option 2 (Genomics), Option 3 (Environmental Biology), Option 4 (Pre-Medical, Pre-Dental and Pre-Veterinary), and Option 5 (Forensics). Students developing degree plans under the General Biology Option choose elective courses in Biology, other sciences and nonscience areas to develop either a broad knowledge-base in Biology or to focus their studies in a particular area of Biology (a list of potential areas of study in Biology and the faculty who can assist students in developing degree plan programs in these areas is available from the undergraduate biology advisor). The General Biology Option will prepare students for careers in the Biological Sciences not included in Options 2-5 or for graduate study in Biology at the Master's or Ph.D. levels.

English (9 hours)

ENGL 1301, 1302, three hours of literature.

Liberal Arts Elective (3 hours)

Three hours at the 2000 level from philosophy, fine arts, or any other approved course offered through the College of Liberal Arts.
Political Science (6 hours)
2311, 2312.

History (6 hours)
1311, 1312.

Fine Arts (3 hours)
Three hours from art, dance, music, architecture or theatre arts.

Social/Cultural Studies (3 hours)
See the biology undergraduate advisor for a list of courses which can be used to fulfill this requirement.

Computer Literacy Requirement
Students may demonstrate competency by passing the University proficiency exam, or if they wish, they may take CSE 1301 or INSY 2303.

Oral Communication (3 hours)
COMS 1301, 2302 (preferred), or other approved communication course.

Mathematics* (7 hours)
1323, 1426

*Transfer students must present a minimum of six semester credit hours of equivalent or higher level mathematics courses through transfer or placement examination.

Electives (14 hours)
14 hours of elective courses, 8 hours of which must be advanced (i.e., 3000/4000 level courses)

Natural Science other than Biology (24 hours)
CHEM 1441, 1442, 2321, 2322, 2181, and 2182, and PHYS 1441 and 1442.

Major (42 hours)
42 hours including the 17 hours of core curriculum consisting of BIOL 1441, 1442, 2343, 3315, and 2300 or approved substitute; 8 hours of diversity courses chosen from BIOL 3427, 3444 and 3454; 6 hours of advanced core courses chosen from BIOL 3339, 3442, 3457, and 3301, plus 11 hours of advanced BIOL elective courses.

**Total of 120 hours***

*University requires a minimum of 36 advanced hours to satisfy degree requirements.

**Suggested Course Sequence**

**Freshman Year:**
ENGL 1301, MATH 1323, CHEM 1441, BIOL 1441, HIST 1311 - 17 hours  
ENGL 1302, MATH 1426, CHEM 1442, BIOL 1442 - 15 hours

**Sophomore Year:**
CHEM 2181/2321, Liberal Art (3 hours), BIOL 2343, Literature (3 hours), POLS 2311 - 16 hours  
CHEM 2182/2322, BIOL 2300, BIOL 3315, HIST 1312, POLS 2312 - 16 hours

**Junior Year:**
BIOL Diversity (4 hours), BIOL Adv. Core (3 hours), PHYS 1441, COMS (3 hours) - 14 hours  
BIOL Diversity (4 hours), BIOL Adv. Core (3 hours), PHYS 1442, Elective (3 hours) 14 hours

**Senior Year:**
BIOL Adv. Elective (with lab, 4 hours), BIOL Adv. Elective (3 hours), Social/Cultural Studies elective (3 hours), Elective (3 hours) - 13 hours  
BIOL Adv. Elective (with lab, 4 hours), Fine Arts Elective (3 hours), Adv. Elective (8 hours) - 15 hours

**Option 2: Genomics**

The genomics option is intended to prepare students for laboratory-oriented careers in genetics research and biotechnology industries as well as entry into graduate programs. Students are strongly advised to consult with appropriate faculty members to outline a course of study directed at their specific career goals (a list of faculty members who can assist students in developing a degree plan program in this area is available from the undergraduate biology advisor).

**English (9 hours)**

ENGL 1301, 1302, plus three hours of literature.

**Liberal Arts Elective (3 hours)**

Three hours at the 2000 level from philosophy, fine arts, or any other approved course offered through the College of Liberal Arts.
Political Science (6 hours)
2311, 2312.

History (6 hours)
1311, 1312.

Fine Arts (3 hours)
Three hours from art, dance, music, architecture, or theatre arts.

Social/Cultural Studies (3 hours)
See the biology undergraduate advisor for a list of courses which can be used to fulfill this requirement.

Computer Literacy Requirement
Students may demonstrate competency by passing the University Proficiency exam, or if they wish, they may take CSE 1301 or INSY 2303.

Oral Communication (3 hours)
COMS 1301, 2302 (preferred), or other approved communication course.

Mathematics* (7 hours)
1323, 1426

*Transfer students must present a minimum of six semester credit hours of equivalent or higher level mathematics courses through transfer or placement examination.

Electives (8 hours)
8 hours of elective courses, 2 hours of which must be advanced (i.e., 3000/4000 level courses)

Natural Science other than Biology (30 hours)
CHEM 1441, 1442, 2321, 2322, 2181, 2182, 4311 and 4312, and PHYS 1441 and 1442.

Major (42 hours)
42 hours including the 17 hours of core curriculum consisting of BIOL 1441, 1442, 2343, 3315, and 2300 or approved substitute; 6 hours of genomics core courses consisting of BIOL 3317 and 3339; and 19 hours of advanced biology electives; no more than two courses should be chosen from BIOL 3427, 3341, 3444, 3454 or 4312; the remaining hours must be obtained from BIOL 3301, 3319, 3330, 3420, 4302, 4307, 4308, 4330.

Total of 120 hours*

*University requires a minimum of 36 advanced hours to satisfy degree requirements.

Suggested Course Sequence

Freshman Year:
ENGL 1301, MATH 1323, CHEM 1441, BIOL 1441, HIST 1311 - 17 hours
ENGL 1302, MATH 1426, CHEM 1442, BIOL 1442 - 15 hours

Sophomore Year:
HIST 1312, POLS 2311, CHEM 2321, CHEM 2181, BIOL 2343, PHYS 1441 - 17 hours
POLS 2312, CHEM 2322, CHEM 2182, PHYS 1442, BIOL 3315 - 14 hours

Junior Year:
BIOL 3444, CHEM 4311, COMS (3 hours), Liberal Arts (3 hours) - 13 hours
BIOL 2300, BIOL Advanced Electives (6 hours), CHEM 4312, Social/Cultural Studies Elective (3 hours) - 15 hours

Senior Year:
Elective (3 hours), BIOL Adv. Electives (5 hours), Fine Arts Elective (3 hours), Literature (3 hours) - 14 hours
BIOL Adv. Electives (6 hours), BIOL Adv. Elective with Lab (4 hours), Advanced Elective (2 hours), Elective (3 hours) - 15 hours

Option 3: Environmental Biology

The option in Environmental Biology is intended to prepare students to enter a wide range of environmental professions or graduate school in Environmental Science by emphasizing relevant courses in biology and other environmentally-related disciplines. Students pursuing this option are strongly encouraged to seek advice from appropriate faculty advisors (a list of biology faculty members who can assist students in developing degree plan programs in Environmental Biology is available from the undergraduate biology advisor).

English (9 hours)

ENGL 1301, 1302, plus three hours of literature.

Liberal Arts Elective (3 hours)
Three hours at the 2000 level from philosophy, fine arts, or any other approved course offered through the College of Liberal Arts.

**Political Science (6 hours)**

2311, 2312.

**History (6 hours)**

1311, 1312.

**Fine Arts (3 hours)**

Three hours from art, dance, music, architecture, or theatre arts.

**Social/Cultural Studies (3 hours)**

See the biology undergraduate advisor for a list of courses which can be used to fulfill this requirement.

**Computer Literacy Requirement**

Students may demonstrate competency by passing the University Proficiency exam, or if they wish, they may take CSE 1301 or INSY 2303.

**Oral Communication (3 hours)**

COMS 1301, 2302 (preferred), or other approved communication course.

**Mathematics* (11 hours)**

1323, 1426, 2425. (BIOL 2350 and 3350 may substitute for MATH 2425.)

*Transfer students must present a minimum of nine semester credit hours of equivalent or higher level mathematics courses through transfer or placement examination.

**Electives (4 hours)**

4 hours of 3000 level elective courses.

Recommended courses include: ECON 4302 and MANA 3319, and courses approved for the Minor Program in Environmental and Sustainability Studies.

**Natural Science other than Biology (24 hours)**
CHEM 1441, 1442, 2321, 2322, 2181 and 2182, and PHYS 1441 and 1442.

Electives in other sciences (6 hours)

6 hours to be chosen from GEOL 3305, 4320, 4350, 4352, 4408; and PSYC 3316 or approved substitution. Majors level science courses from the Minor Program in Environmental and Sustainability Studies may also be taken.

Major (42 hours)

42 hours including the 17 hours of core curriculum consisting of BIOL 1441, 1442, 2343, 3315, and 2300 or approved substitute; 12 hours of diversity courses, including BIOL 3427, 3444, 3454; 13 hours of advanced biology courses (at least one course must have a laboratory component, laboratory courses are indicated by *) chosen from BIOL 3149/3249 *, 3328, 3341*, 3339, 3170*/3318, 3457 *, 4338, and 4444 *.

Total of 120 hours*

*University requires a minimum of 36 advanced hours to satisfy degree requirements.

Suggested Course Sequence

Freshman Year:
ENGL 1301, MATH 1323, CHEM 1441, BIOL 1441, HIST 1311 - 17 hours
ENGL 1302, MATH 1426, CHEM 1442, BIOL 1442 - 15 hours

Sophomore Year:
CHEM 2181/2321, Liberal Art (3 hours), BIOL 2343, BIOL 2300, POLS 2311 - 16 hours
CHEM 2182/2322, BIOL 3315, BIOL 3427, HIST 1312, POLS 2312 - 17 hours

Junior Year:
BIOL 3444, Soc Sci Elective (3 hours), MATH 2425, PHYS 1441 - 15 hours
BIOL 3454, BIOL Adv. Elective (3 hours), PHYS 1442, COMS (3 hours) - 14 hours

Senior Year:
Other Science Elective (3 hours), Fine Arts Elective (3 hours), Elective (4 hours), BIOL Adv. Elective (3 hours) - 13 hours
Other Science Elective (3 hours), BIOL Adv. Elective (3 hours), BIOL Adv. Elective with Lab (4 hours), Literature (3 hours) - 13 hours

Option 4: Pre-Medical, Pre-Dental and Pre-Veterinary Biology

The Pre-Medical, Pre-Dental, and Pre-Veterinary Option provides the most suitable combination of courses to prepare students for the study of medicine, dentistry, or veterinary medicine. Students interested in these career paths may select any other biology option or the degree program in Microbiology and still satisfy minimum requirements for admission to professional
schools. Students should maintain contact with the Health Professions Advisor who is available through the Dean of Science Office in Room 206, Life Science Building.

**English (9 hours)**

ENGL 1301, 1302, plus three hours of literature.

**Liberal Arts Elective (3 hours)**

Three hours at the 2000 level from philosophy, fine arts, or any other approved course offered through the College of Liberal Arts.

**Political Science (6 hours)**

2311, 2312.

**History (6 hours)**

1311, 1312.

**Fine Arts (3 hours)**

Three hours from art, dance, music, architecture, or theatre arts.

**Social/Cultural Studies (3 hours)**

See the biology undergraduate advisor for a list of courses which can be used to fulfill this requirement.

**Computer Literacy Requirement**

Students may demonstrate competency by passing the University Proficiency exam, or if they wish, they may take CSE 1301 or INSY 2303.

**Oral Communication (3 hours)**

COMS 1301, 2302 (preferred), or other approved communication course.

**Mathematics* (7 hours)**

1323, 1426.

*Transfer students must present a minimum of six semester credit hours of equivalent or higher level mathematics courses through transfer credit or placement examination.
Electives (11 hours)

11 hours of elective courses, 5 of which must be advanced (i.e., 3000/4000 level courses, CHEM 4312 recommended).

Natural Science other than Biology (27 hours)

CHEM 1441, 1442, 2321, 2322, 2181, 2182, 4311, and PHYS 1441 and 1442.

Major (42 hours)

42 hours including the 17 hours of core curriculum consisting of BIOL 1441, 1442, 2343, 3315, and 2300 or approved substitute; 8 hours of diversity courses chosen from BIOL 3427, 3444, and 3454; 8 hours of advanced core courses consisting of BIOL 3442 and 3452; and 9 hours of advanced elective courses chosen from BIOL 3301, 3312, 3345, 4312, or CHEM 4312.

Total of 120 hours*

*University requires a minimum of 36 advanced hours to satisfy degree requirements.

Suggested Course Sequence

Freshman Year:
ENGL 1301, MATH 1323, CHEM 1441, BIOL 1441, HIST 1311 - 17 hours
ENGL 1302, MATH 1426, CHEM 1442, BIOL 1442 - 15 hours

Sophomore Year:
CHEM 2181/2321, Liberal Art (3 hours), BIOL 2343, COMS (3 hours), POLS 2311 - 16 hours
CHEM 2182/2322, BIOL 2300, BIOL 3315, HIST 1312, POLS 2312 - 16 hours

Junior Year:
BIOL Diversity (4 hours), BIOL 3442, PHYS 1441, Elective (3 hours) - 15 hours
BIOL Diversity (4 hours), Elective (3 hours), PHYS 1442, Literature (3 hours) - 14 hours

Senior Year:
BIOL Adv. Electives (3 hours), BIOL 3452, Social/Cultural Studies Elective (3 hours), CHEM 4311 - 13 hours
Adv. Electives (5 hours), Fine Arts Elective (3 hours), CHEM 4312, Advanced BIOL Elective (3 hours) - 14 hours

Option 5: Forensics

The option in forensics is intended to prepare students for a career in biological forensics by emphasizing relevant courses in biology and related disciplines. This option is designed for students who wish to seek employment in a forensics, DNA testing, or a police department laboratory upon graduation, and, as such, an internship (BIOL 3349) is recommended when
possible. Students pursuing this option are encouraged to seek advice from the faculty forensics advisor.

**English (9 hours)**

ENGL 1301, 1302, plus three hours of literature.

**Liberal Arts Elective (3 hours)**

Three hours at the 2000 level from philosophy, fine arts, or any other approved course offered through the College of Liberal Arts.

**Political Science (6 hours)**

2311, 2312.

**History (6 hours)**

1311, 1312.

**Fine Arts (3 hours)**

Three hours from art, dance, music, architecture, or the theatre arts.

**Computer Literacy Requirement**

Students may demonstrate competency by passing the University Proficiency exam, or if they wish, they may take CSE 1301 or INSY 2303.

**Oral Communication (3 hours)**

COMS 1301, 2302 (preferred), or other approved communication course.

**Mathematics* (7 hours)**

1323, 1426.

*Transfer students must present a minimum of six semester credit hours of equivalent or higher level mathematics courses through transfer or placement examination.

**Forensic Electives (9 hours minimum)**

Minimum of 9 hours chosen from ANTH 4406, 4407, 4308, 4322; BIOL 3303; CRCJ 3370, 4340, 4389.
Electives (2 hours)

Minimum of 2 hours of any level elective.

Natural Science other than Biology (27 hours)

CHEM 1441, 1442, 2321, 2322, 2181, 2182, 4311, and PHYS 1441 and 1442.

Major (42 hours)

42 hours including the 17 hours of core curriculum consisting of BIOL 1441, 1442, 2343, 3315, and 2300 or approved substitute; 9 hours of advanced forensic courses consisting of BIOL 3352*, 4352 and 4355*, and 16 hours of advanced biology electives to be chosen from 3149, 3249, 3349, 3317, 3339, 3341, 4317, 3427*, 3444*, 4312, and 4331 (* indicates laboratory courses).

Total of 120 hours*

*University requires a minimum of 36 advanced hours to satisfy degree requirements.

Suggested Course Sequence

Freshman Year:
ENGL 1301, MATH 1323, CHEM 1441, BIOL 1441, HIST 1311 - 17 hours
ENGL 1302, MATH 1426, CHEM 1442, BIOL 1442 - 15 hours

Sophomore Year:
CHEM 2181/2321, Liberal Art (3 hours), BIOL 2343, BIOL 2300, POLS 2311 - 16 hours
CHEM 2182/2322, Literature (3 hours), BIOL 3315, HIST 1312, POLS 2312 - 16 hours

Junior Year:
BIOL 3352, BIOL 4352, BIOL Adv. Elective (3 hours), Social/Cultural Studies (3 hours), Elective (3 hours) - 15 hours
CHEM 4311, Elective (4 hours), Fine Arts (3 hours), COMS (3 hours) - 13 hours

Senior Year:
BIOL 4355, BIOL Adv. Elective (3 hours), BIOL Adv. Elective with Lab (3 hours), PHYS 1441 - 13 hours
BIOL Adv. Electives (7 hours), PHYS 1442, Elective (4 hours) - 15 hours

Bachelor of Science Degree in Medical Technology

A student who completes the special degree plan given below plus 16 months of clinical laboratory training in an accredited hospital school of medical technology may receive the degree of Bachelor of Science in Medical Technology, which will be conferred by The University
of Texas at Arlington. Graduates may become certified in medical technology by passing the examination of the Board of Registry of the American Society of Clinical Pathologists (ASCP).

**English (9 hours)**

ENGL 1301, 1302, plus three hours of literature.

**Liberal Arts Elective (3 hours)**

Three hours at the 2000 level from philosophy, fine arts, or any other approved course offered through the College of Liberal Arts.

**Political Science (6 hours)**

2311, 2312.

**History (6 hours)**

1311, 1312.

**Fine Arts (3 hours)**

Three hours from art, dance, music, architecture, or theatre arts.

**Social/Cultural Studies (3 hours)**

Three hours from social or cultural anthropology, archaeology, social/political/cultural geography, economics, sociology, classical studies, psychology, or linguistics.

**Computer Literacy Requirement**

Students may demonstrate competency by passing the University Proficiency exam, or if they wish, they may take CSE 1301 or INSY 2303.

**Oral Communication (3 hours)**

COMS 1301, 2302 (preferred), or other approved communication course.

**Mathematics (6 hours)**

1302, and MATH 1303 or MATH 1308.

**Elective (1 hour)**
One hour of elective credit from any discipline.

**Natural Science other than Biology (27 hours)**

PHYS 1441, 1442; CHEM 1441, 1442, 2181, 2321, 2182, 2322 and 4311.

**Major (36 hours)**

36 hours including 1441, 1442, 2457, 2458, 3312, 3315, 4317, and 3444, and seven hours at the 3000/4000-level of biology electives selected with the advice of the undergraduate advisor.

**Total**

103 hours, of which 16 must be 3000/4000 level, in addition to 16 months training in a school of medical technology approved by the Committee on Allied Health Education and Accreditation (CAHEA) in conjunction with the National Accrediting Agency for Clinical Laboratory Science (NAACLS).

**Senior Year**

Sixteen-month program in a school of medical technology which has been certified by the Committee of Allied Health Education and Accreditation (CAHEA) in conjunction with the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).

**Requirements for a Bachelor of Science Degree in Microbiology**

**English (9 hours)**

ENGL 1301, 1302, plus three hours of literature.

**Liberal Arts Elective (3 hours)**

Three hours at the 2000 level from philosophy, fine arts, or any other approved course offered through the College of Liberal Arts.

**Political Science (6 hours)**

2311, 2312.

**History (6 hours)**

1311, 1312.
Fine Arts (3 hours)

Three hours from art, dance, music, architecture, or theatre arts.

Social/Cultural Studies (3 hours)

See the biology undergraduate advisor for a list of courses which can be used to fulfill this requirement.

Computer Literacy Requirement

Students may demonstrate competency by passing the University Proficiency exam, or if they wish, they may take CSE 1301 or INSY 2303.

Oral Communication (3 hours)

COMS 1301, 2302 (preferred), or other approved communication course.

Mathematics* (7 hours)

1323 and 1426.

*Transfer students must present a minimum of six semester credit hours of equivalent or higher level mathematics courses through transfer or placement examination.

Electives (11 hours)

11 hours of any level elective.

Natural Science other than Biology (27 hours)

CHEM 1441, 1442, 2181, 2321, 2182, 2322, 4311, and PHYS 1441, 1442.

Major (42 hours)

42 hours including BIOL 1441, 3444, 3445*, and 4302. Twenty seven additional hours must be selected from the following: 3170, 3311, 3312, 3318, 3327, 3328, 4312, 4317, 4345, 4440, 4388**, 4189, 4289*.

*or approved substitute.

**Must be taken under the supervision of approved faculty members.

Total of 120 hours*
*University requires a minimum of 36 advanced hours to satisfy degree requirements.

Suggested Course Sequence

Freshman Year:
ENGL 1301, MATH 1323, CHEM 1441, BIOL 1441, HIST 1311 - 17 hours
ENGL 1302, MATH 1426, CHEM 1442, BIOL 3444 - 15 hours

Sophomore Year:
HIST 1312, POLS 2311, CHEM 2321, CHEM 2181, BIOL 4302, PHYS 1441 - 17 hours
POLS 2312, CHEM 2322, CHEM 2182, PHYS 1442, BIOL 3445 - 15 hours

Junior Year:
BIOL, Microbial Electives (4 hours), CHEM 4311, COMS (3 hours), Liberal Art (3 hours) - 13 hours
BIOL, Microbial Electives (9 hours), Social/Cultural Studies Electives (3 hours), Elective (3 hours) - 15 hours

Senior Year:
BIOL, Microbial Electives (8 hours), Fine Arts Elective (3 hours), Literature (3 hours) - 14 hours
BIOL, Microbial Electives (6 hours), Electives (8 hours) - 14 hours

Dual Degree Plan: Bachelor of Science in Biology and Master of Science in Biomedical Engineering

This five-year curriculum prepares students for careers in the fast growing biotechnology and biomedical engineering industries. The curriculum also prepares students for medical school and advanced study. Students are required to take courses from engineering, life sciences and liberal arts, culminating in a five-year Master of Science Degree in Biomedical Engineering, and a Bachelor of Science Degree in Biology. The curriculum is offered jointly by the College of Engineering and the College of Science. In this program, two areas of emphasis are offered: (1) Bioimaging and (2) Biomaterials and Tissue Engineering.

Description

Biomedical engineers use quantitative methods and innovation to analyze and solve problems in biology and medicine. Students choose the biomedical engineering field to be of service to people, to partake in the excitement of working with living systems, and to apply advanced technology to the complex problems of medical care.

Through this program, students learn the essentials of life science, engineering theory, and the analytical and practical tools that enable them to be successful in the biotechnology and biomedical engineering industries. The program includes course work in the basic sciences, core engineering, biomedical engineering, and advanced biotechnology disciplines. Both didactic classroom lectures and hands-on laboratory experience are emphasized. Additionally, students are required to take general educational courses in literature, fine arts, history, political science, and social science.
Career Opportunities

The program prepares students as biomedical engineers for careers in industry, in hospitals, in research facilities of educational and medical institutions, and in government regulatory agencies. It also provides a solid foundation for those wishing to continue for advanced degrees. For those planning to pursue a medical degree, this cross-disciplinary curriculum offers a solid foundation in engineering, which is an advantage in preparing for a medical career.

Requirements

Regardless whether a student chooses Bioimaging or Biomaterials and Tissue Engineering emphasis, after completion of 83 semester credit hours of the undergraduate courses from the list for the emphasis (below) and prior to taking any graduate course, the student must apply to the UT Arlington Graduate School for admission to the Bioengineering Department. A minimum grade point average of 3.0 in the 83 semester credit hours as well as a minimum average of 3.0 in the required English courses (1301 and 1302) and a minimum average of 3.0 in the required Mathematics courses (1426, 2425, 2326 and 3319) is required for admission to the Biomedical Engineering Graduate Program. The student should also submit two letters of recommendation, one from a faculty member and one from the Biology undergraduate advisor.

For course listings and suggested course sequences, please see Biomedical Engineering in the Engineering section of this catalog.

Dual Degree Plan: Bachelor of Science in Biology and Master of Business Administration

A five-year program designed to prepare students for careers as managers with specific knowledge of the biomedical science field. Students are required to take courses from life sciences, business, and liberal arts, culminating in a dual Master of Business Administration Degree (MBA), including a Bachelor of Science Degree in Biology. The curriculum is offered jointly by the College of Business and the College of Science. The BS in Biology will be conferred at the same time as the MBA. If students in this joint degree program are not accepted into the MBA program, or if students enter the MBA program and fail to complete the requirements for the MBA, then, in order to earn a BS in Biology they must take the same, full complement of courses required for a BS as students not enrolled in the joint program.

Description

This degree program is designed to provide students with a strong background in the life sciences and with a contemporary education in business administration that will impart the necessary knowledge and skills to enable them to perform effectively in many career fields. The program includes course work in the basic sciences as well as accounting, economics, finance, marketing, and management. Additionally, students are required to take general education courses in literature, fine arts, history, political science, and social science.
Career Opportunities

The program prepares students for managerial and leadership positions in the biomedical sciences and biosciences research fields. It is essential that science managers have a base of technical knowledge that allows them to understand and guide the work of their subordinates and to explain the work in non-technical terms to senior management and potential customers. The program also prepares students for managerial positions in fields outside of science. Additionally, it provides a solid foundation for those planning to pursue advanced degrees.

Course Requirements

English (9 hours)

ENGL 1301, 1302, plus three hours of literature.

Liberal Arts Elective/Oral Communication (3 hours)

COMS 2302 may satisfy both the oral communication requirement and the liberal arts requirement.

Political Science (6 hours)

2311, 2312.

History (6 hours)

1311, 1312.

Fine Arts (3 hours)

Three hours from art, dance, music, architecture, or the theatre arts.

Social/Cultural Studies (3 hours)

ECON 2306 Microeconomics

Computer Literacy

INSY 2303

Mathematics (6 hours)

1315 Math for Economics and Business Analysis I
1316 Math for Economics and Business Analysis II
Biology (37 hours)

BIOL 1441 Cell and Molecular Biology
BIOL 1442 Structure and Function of Organisms
BIOL 3444 General Microbiology
BIOL 3315 Genetics
The remaining 22 hours of course work must be chosen from among the following classes and must include at least 2 laboratory classes: 2457*, 3301, 3312, 3442*, 3309, 4312, 4315, 4357.

*Indicates a laboratory course.

Science other than Biology (24 hours)

PHYS 1441, 1442, CHEM 1441, 1442, 2181, 2182, 2321, 2322.

Core Business (9 hours)

BSTAT 3321, OPMA 3306, MARK 3321.

Advanced Electives (3 hours)

Three hours of 3000 or 4000 level coursework. BCOM 3360 is recommended.

Undergraduate Courses = 112 hours

Graduate courses = 45 hours

Total

157 hours.

Suggested Course Sequence

Freshman Year:
ENGL 1301, MATH 1315, CHEM 1441, BIOL 1441, HIST 1311 - 17 hours
ENGL 1302, MATH 1316, CHEM 1442, BIOL 1442, HIST 1312 - 17 hours

Sophomore Year:
ECON 2305, POLS 2311, CHEM 2181 and 2321, INSY 2303, BIOL 3444 - 17 hours
CHEM 2182 and 2322, BIOL 3315, ENGL or COMS, POLS 2312, BSTAT 3321 - 16 hours

Junior Year:
PHYS 1441, ENGL or COMS, BIOL 4 hour elective, BIOL elective (3 hours) - 14 hours
BIOL elective, BIOL 4 hour elective, PHYS 1442, MARK 3321, BCOM 3360 - 17 hours
Senior Year:
Fine Art (3 hours), BIOL elective, BIOL elective, OPMA 3306 - 12 hours
BIOL elective, plus approved graduate business courses.

Fifth Year:
Approved graduate business courses.

Dual Degree Plan: Bachelor of Science in Biology and Master of Science in Environmental and Earth Sciences

This five-year curriculum provides a common ground for interdisciplinary communication, an understanding of the environment, and the competence necessary for evaluating and solving complex environmental problems. The degree program prepares students for applied work in the private sector and governmental positions, and serves as the professional preparation required for applied technology and environmental management.

Description

Environmental scientists apply elements of engineering, biology, chemistry, and geology in an integrated approach to environmental systems. They also need an understanding of the forces that shape implementation of alternative environmental science and engineering solutions, and an understanding of how regulatory and political entities influence the implementation of viable technical solutions.

Career Opportunities

This program prepares students for a range of positions in local, state and federal agencies responsible for managing air and water quality, land use, and other aspects of the environment. It also prepares students for careers in private consulting agencies providing advice to government and industry.

Requirements

English (9 hours)

1301, 1302, plus 3 hours of literature.

Liberal Arts Elective/Oral Communication (3 hours)

COMS 2302 may satisfy both the oral communication requirement and the liberal arts requirement.

Mathematics (11 hours)
Natural Science other than Biology (34 hours)

PHYS 1441, PHYS 1442, CHEM 1441, CHEM 1442, CHEM 2321, CHEM 2181, CHEM 2322, CHEM 2182, 10 hours of approved Geology courses (1425, 3305, 4320, 4330, 4331, 4333) or approved Chemistry courses (2335, 2285).

Biology (38 hours)

Core curriculum:
1441, 1442, 2342, 2300 (or approved equivalent), 3315.
Required courses on biological diversity, two out of the following three: 3427, 3444, 3454.
Environmental courses:
3356 Env. Sci. Biol. Aspects, plus 10 hours of approved upper division electives (3149/3249, 3328, 3341, 3339, 3318/3170, 3325, 3457, 4338, 4350, 4444 --at least one of which must have a lab.

Fine Arts (3 hours)

Three hours from art, dance, music, architecture, or theatre arts.

Political Science (6 hours)

2311, 2312.

History (6 hours)

1311, 1312.

Social/Cultural studies (3 hours)

Three hours from social or cultural anthropology, archeology, social/political/cultural geography, economics, sociology, classical studies, psychology, or linguistics (see recommended list of non-science electives below).

Computer Literacy (3 hours)

Students may demonstrate competency by passing the University proficiency exam, or if they wish, they may take an approved computer literacy course.

Non-science Electives (6 hours)
Six hours from disciplines outside the natural sciences (recommended courses include ECON 2306, ECON 4302, ARCH 4307, HIST 3350, GEOG 3355, POLS 3303, POLS 3305, POLS 3307, POLS 3302, POLS 4304, POLS 4351, CIRP 4391).

Graduate Courses

Environmental and Earth Sciences Core (15 hours)

CE 5321, CE 5319, EVSE 5310, EVSE 5311, CIRP 5341 or CIRP 5350.

Electives in Biology (9 hours)

Nine hours at the graduate level (5000 and above).

Other Graduate Electives (12 hours)

Twelve hours in Biology, Chemistry and Biochemistry, Civil and Environmental Engineering, City and Regional Planning, or Geology; must include 6 hours outside Biology.

Environmental and Earth Sciences Seminar (2 hours)

Two hours of EVSE 6100.

Total (for degrees)

160 semester hours.

Suggested Course Sequence

Freshman Year:
First Semester: ENGL 1301, MATH 1323, CHEM 1441, BIOL 1441, HIST 1311 - 17 hours.
Second Semester: ENGL 1302, MATH 1426, CHEM 1442, BIOL 1442, EXSA/DNCA - 16 hours.
Summer Session: BIOL 2343 - 3 hours.

Sophomore Year:
First Semester: ENGL 1301, MATH 1323, CHEM 1441, BIOL 1441, HIST 1311 - 17 hours.
Second Semester: ENGL 1302, MATH 1426, CHEM 1442, BIOL 1442, EXSA/DNCA - 16 hours.
Summer Session: BIOL 2343 - 3 hours.

Junior Year:
First Semester: BIOL 3356 Env Sci Biol, 4 hour BIOL elective w/lab, PHYS 1442, 3 hour Lit elective, 3 hour Fine Arts elective - 17 hours.
Second Semester: 4 hour BIOL diversity course, 3 hour Soc Sci elective, 3 hour BIOL elective, PHYS 1441, 3 hour Lit or COMS 3302 - 17 hours.
Senior Year:
First Semester: 3 hour BIOL elective, 6 hours GEOL electives, 6 hours non-science electives - 15 hours.
Second Semester: 3 hour GEOL elective, CE 5321, CIRP 5350 or CIRP 5341, 6 hours graduate BIOL electives - 15 hours.
Summer Session: EVSE 5310 - 3 hours.

Fifth Year
Fall Semester: CE 5319, EVSE 5311, 3 hour graduate BIOL elective, 3 hour other grad elective, 1 hour EVSE seminar - 13 hours.
Second Semester: 9 hours other grad electives, 1 hour EVSE seminar - 10 hours.

Dual Degree Plan: Bachelor of Science in Biology and Master of Science in Health Care Administration

This dual curriculum is designed to prepare students for careers in health care administration. The curriculum also prepares students for medical school and advanced study. Students are required to take courses from life sciences, business and liberal arts, culminating in a dual Master of Science Degree in Health Care Administration (HCA), including a Bachelor of Science Degree in Biology. The curriculum is offered jointly by the College of Business and the College of Science. The BS in Biology will be conferred at the same time that the student is awarded the MS in Health Care Administration. If students engaged in this joint degree program are not accepted into the HCA graduate program, or enter the HCA program and fail to complete the requirements for the master's degree in HCA, then, in order to earn a BS in Biology, they must take the same, full complement of courses required to earn the BS as taken by students not enrolled in the BIOL/HCA joint program.

Description

Rapid and radical changes in the health care industry are forcing administrators to adopt new paradigms for cost management and the redesign of health care delivery processes, while increasing the quality of care delivered. The new health industry is shifting quickly toward managed care and capitation. This change has created a pressing need for health care delivery administrators, and the dual Biology/Health Care Administration BS/MS degree will help fulfill this need. This degree program is designed to provide students with a strong background in the life sciences and with a contemporary education in health care administration that will impart the necessary knowledge, skills and abilities to enable them to perform effectively in health care delivery. The program includes course work in the basic sciences and in health care administration. Additionally, students are required to take general education courses in literature, fine arts, history, political science and social science.

Career Opportunities

The program prepares students as health care administrators for leadership roles in provider organizations such as inpatient and outpatient hospitals, rehabilitation centers, psychiatric centers, chemical dependency units, nursing homes, retirement communities, institutional
clinics, physician group practices, home health agencies, and in government regulatory agencies. It also provides a solid foundation for those wishing to continue for advanced degrees. For those planning to pursue a medical degree, this cross-disciplinary curriculum offers a solid foundation in health care administration, which is an advantage in preparing for a medical career.

Course Requirements

English (9 hours)

1301, 1302, plus 3 hours of literature.

Liberal Arts Elective/Oral Communication (3 hours)

COMS 2302 may satisfy both the oral communication requirement and the liberal arts requirement.

Political Science (6 hours)

2311, 2312.

History (6 hours)

1311, 1312.

Fine Arts (3 hours)

Three hours from art, dance, music, architecture, or theatre arts.

Social/Cultural Studies (3 hours)

ECON 2305 Macroeconomics

Computer Literacy (3 hours)

INSY 2303 or equivalent.

Mathematics (6 hours)

1315 College Algebra for Economics and Business or 1302 College Algebra, and 1316 Math for Economics and Business Analysis

Biology (37 hours)
BIOL 1441 Cell and Molecular Biology
BIOL 1442 Structure and Function of Organisms
BIOL 3444 General Microbiology
BIOL 3315 Genetics
The remaining 22 hours of course work must be chosen from among the following classes: 2457*, 3301, 3312, 3442*, 3309 (medical terminology), 4312, 4315, 4357.

*Indicates a laboratory course.

Science other than Biology (24 hours)

PHYS 1441, 1442, CHEM 1441, 1442, 2181, 2182, 2321, 2322.

Approved Elective Undergraduate Business Courses (9 hours)

Nine hours of 3000 level business courses approved by the advisor.

Graduate Course Sequence (36 hours)

Upon acceptance to the MS Program, students will begin the Cohort Graduate Courses:

1st Semester: HCAD 5301 (Health Care Administration) and HCAD 5337 (Ethics, Leadership and Teambuilding) - 6 hours
2nd Semester: ACCT 5301 (Financial Accounting) and FINA 5315 (Health Care Financial Management) - 6 hours
3rd Semester: HCAD 5310 (Health Care Law) and INSY 5350 (Health Care Information Systems) - 6 hours
4th Semester: MANA 5340 (Strategic HR Mgmt) and BSTAT 5315 (Statistical Methods for Health Care Administrators) - 6 hours
5th Semester: MARK 5330 (Service Marketing Mgmt) and ECON 5333 (Health Care Economics) - 6 hours
6th Semester: HCAD 5390 (Strategic Management of Health Care Organizations) and HCAD 5399 (Internship/Research) - 6 hours

Total

145 hours.

Suggested Course Sequence

Freshman Year:
ENGL 1301, MATH 1315, CHEM 1441, BIOL 1441, HIST 1311 - 17 hours
ENGL 1302, MATH 1316, CHEM 1442, BIOL 1442, HIST 1312 - 17 hours
Sophomore Year:
ECON 2305, POLS 2311, CHEM 2181 and 2321, BIOL 3444 - 14 hours
CHEM 2182 and 2322, BIOL 3315, POLS 2312, INSY 2303 - 13 hours

Junior Year:
PHYS 1441, ENGL or COMS (3 hours), BIOL elective (3 hours), advanced undergraduate business elective (3 hours), Fine Arts Elective (3 hours) - 16 hours
BIOL electives (7 hours), PHYS 1442, ENGL or COMS, advanced undergraduate business elective (3 hours) - 17 hours

Senior Year:
BIOL elective (3 hours), HCAD 5301, HCAD 5337, approved undergraduate business elective (3 hours) - 12 hours
ACCT 5301, FINA 5315, BIOL electives (9 hours) - 15 hours

Fifth Year:
HCAD 5310 and INSY 5350 - 6 hours
MANA 5340 and BSTAT 5315 - 6 hours

Sixth Year:
MARK 5330 and ECON 5333 - 6 hours
HCAD 5390 and HCAD 5399 - 6 hours

Teacher Certification

A student interested in earning a Bachelor of Science degree with a major in biology with secondary teacher certification, or in biology or life-earth science as a second teaching field, should refer to the "Bachelor of Arts Degree in Biology - Secondary Teacher Certification" and the "Bachelor of Arts Degree in Biology - Composite Science Certification" degree plans for teacher certification requirements and for biology courses recommended for each teaching field option.

Biology Faculty

Chair
Professor Campbell

Professors
Chippindale, Chrzanowski, Formanowicz, Grover, Robinson

Associate Professors
Bernard, Betran, Christensen, Gough, Passy, Roner, Smith-Urrutia
Assistant Professors

Castoe, Chang, Demuth, Fondon, Fujita, Hurdle, Melotto, Mydlarz, Rodrigues, Walsh

Lecturers

Badon, DeVito, Frederick, Henry, Nelson, Roelke, Schargel, Walsh, Westmoreland, Wilk-Blaszczyk

Course Descriptions

View Course Descriptions for:

Biology (BIOL)