# School of Natural Sciences and Mathematics

The Biology Program at UT Dallas emphasizes the unifying molecular and cellular nature of organisms. At the center of the Biology undergraduate curriculum are the biochemical, genetic, and cell biology concepts and tools used to study the genes of prokaryotes and eukaryotes, to study the proteins and ribonucleic acids (RNA) encoded by these genes, and to study how the expression of these genes is regulated during the development and lifetimes of organisms. Molecular Biology represents a fusion of the four disciplines of biochemistry, biophysics, genetics, and cell biology. Modern biology requires a background in other disciplines such as chemistry, mathematics, physics, and computer sciences. Principles from these disciplines have to be merged to understand and apply new biotechnology and genetic engineering techniques. It is desirable for entering students to have a broad interest and background in the sciences.

## Biology (BA, BS)

Both BS and BA degrees are offered in Biology at UT Dallas. The BS degrees are intended as preparation for scientific careers in biology or careers in the health professions. The BA degree is intended as a liberal arts biology major with less emphasis on calculus and more semester credit hours free for coursework in other disciplines. Biology offers a streamlined double major with Business Administration or Criminology. Fast Track BS / MS Biology and Molecular Biology degree programs are available.

## Bachelor of Arts or Bachelor of Science in Biology

### Degree Requirements

120 semester credit hours

*View an Example of Degree Requirements by Semester*

## Faculty

**Professors:** Rockford K. Draper, Juan E. González, Lawrence J. Reitzer, Stephen Spiro, Li Zhang, Michael Qiwei Zhang

**Associate Professors:** John G. Burr, Jeff L. DeJong, Nikki Delk, Heng Du, Tae Hoon Kim, Kelli Palmer, Duane D. Winkler, Zhenyu Xuan

**Assistant Professors:** Zachary Campbell, Nicole De Nisco, Jyoti Misra, Faruck Morcos

**Clinical Professor:** David Murchison

**Research Assistant Professors:** Lan Guo, Li Liu

**Senior Lecturers:** Meenakshi Maitra, Ruben D. Ramirez, Wen-Ho Yu

**Professors Emeriti:** Hans Bremer, Lee A. Bulla, Donald M. Gray
Associate Professors Emeriti: Gail A. M. Breen, Dennis L. Miller

Professors of Instruction: Scott A. Rippel, Uma Srikanth

Associate Professors of Instruction: Mehmet Candas, Wen-Ju Lin, Elizabeth Pickett, Ilya Sapozhnikov, Michelle Wilson

Assistant Professors of Instruction: Caitlin Braitsch, Ida Klang, Iti Mehta, Jing Pan, Eva Sadat, Subha Sarcar, Zhuoru Wu

I. Core Curriculum Requirements: 42 semester credit hours

Communication: 6 semester credit hours

COMM 1311 Survey of Oral and Technology-based Communication
RHET 1302 Rhetoric
Or select any 6 semester credit hours from Communication Core courses (see advisor)

Mathematics: 3 semester credit hours

Choose one course from the following:
MATH 2413 Differential Calculus \(^3\), \(^4\), \(^5\) (BA or BS)
or MATH 2417 Calculus \(^3\), \(^4\), \(^5\)
MATH 1325 Applied Calculus \(^3\) (BA only)
Or select any 3 semester credit hours from Mathematics Core courses (see advisor)

Life and Physical Sciences: 6 semester credit hours

CHEM 1311 General Chemistry \(^3\)
or CHEM 1315 Honors Freshman Chemistry \(^3\)
CHEM 1312 General Chemistry II \(^3\)
or CHEM 1316 Honors Freshman Chemistry II \(^3\)
Or select any 6 semester credit hours from Life and Physical Sciences Core courses (see advisor)

Language, Philosophy and Culture: 3 semester credit hours

Select any 3 semester credit hours from Language, Philosophy and Culture Core courses (see advisor)

Creative Arts: 3 semester credit hours

Select any 3 semester credit hours Creative Arts Core courses (see advisor)

American History: 6 semester credit hours
Select any 6 semester credit hours from American History Core courses (see advisor)

Government / Political Science: 6 semester credit hours

GOVT 2305 American National Government
GOVT 2306 State and Local Government

Or select any 6 semester credit hours from Government/Political Science Core courses (see advisor)

Social and Behavioral Sciences: 3 semester credit hours

Select any 3 semester credit hours from Social and Behavioral Sciences Core courses (see advisor)

Component Area Option: 6 semester credit hours

Choose two courses from the following:

BIOL 2311 Introduction to Modern Biology \(^3, 6\)

MATH 2414 Integral Calculus\(^3, 5\) (BA or BS)

or MATH 2419 Calculus II\(^3, 4, 5\)

or STAT 2332 Introductory Statistics for Life Sciences\(^3\) (BA only)

Or select any 6 semester credit hours from Component Area Option Core courses (see advisor)

II. Major Requirements: 53 - 62 semester credit hours beyond Core Curriculum (53-56 for BA; 59-62 for BS)

Major Preparatory Courses: 18-21 semester credit hours beyond Core Curriculum

CHEM 1311 General Chemistry \(^3\)

or CHEM 1315 Honors Freshman Chemistry \(^3\)

CHEM 1111 General Chemistry Laboratory I

or CHEM 1115 Honors Freshman Chemistry Laboratory I

CHEM 1312 General Chemistry II\(^3\)

or CHEM 1316 Honors Freshman Chemistry II\(^3\)

CHEM 1112 General Chemistry Laboratory II

or CHEM 1116 Honors Freshman Chemistry Laboratory II

CHEM 2323 Introductory Organic Chemistry \(^6\)

CHEM 2123 Introductory Organic Chemistry Laboratory \(^6\)

CHEM 2325 Introductory Organic Chemistry II\(^6\)
CHEM 2125 Introductory Organic Chemistry Laboratory II  

MATH 2413 Differential Calculus and MATH 2414 Integral Calculus  

or MATH 2417 Calculus I and MATH 2419 Calculus II  

or MATH 1325 Applied Calculus I and STAT 2332 Introductory Statistics for Life Sciences  

PHYS 2325 Mechanics and PHYS 2125 Physics Laboratory I  

or PHYS 2421 Honors Physics I - Mechanics and Heat  

or PHYS 1301 College Physics I and PHYS 2125 Physics Laboratory I  

PHYS 2326 Electromagnetism and Waves and PHYS 2126 Physics Laboratory II  

or PHYS 2422 Honors Physics II - Electromagnetism and Waves and PHYS 2126 Physics Laboratory II  

or PHYS 1302 College Physics II and PHYS 2126 Physics Laboratory II  

Major Core Courses: 26-29 semester credit hours beyond Core Curriculum  

BIOL 2281 Introductory Biology Laboratory  

BIOL 2111 Introduction to Modern Biology Workshop I  

BIOL 2112 Introduction to Modern Biology Workshop II  

BIOL 2311 Introduction to Modern Biology I  

BIOL 2312 Introduction to Modern Biology II  

BIOL 3101 Classical and Molecular Genetics Workshop  

BIOL 3102 Eukaryotic Molecular and Cell Biology Workshop  

BIOL 3161 Biochemistry Workshop I  

BIOL 3162 Biochemistry Workshop II  

BIOL 3301 Classical and Molecular Genetics  

BIOL 3302 Eukaryotic Molecular and Cell Biology  

BIOL 3361 Biochemistry I  

BIOL 3362 Biochemistry II  

or BIOL 3335 Microbial Physiology  

BIOL 3380 Biochemistry Laboratory  

BIOL 4380 Cell and Molecular Biology Laboratory (BS only)  

Major Related Courses: 9-12 semester credit hours  

9 semester credit hours of upper-division BIOL electives (BA only)  

12 semester credit hours of upper-division BIOL electives (BS only)
Ill. Elective Requirements: 16-25 semester credit hours (22-25 for BA; 16-19 for BS)

The plan must include sufficient upper-division courses to total 51 upper-division semester credit hours.

UTeach Option

The UTeach option may be added to either the BA or BS degree. UTeach Dallas Option degree plans are streamlined to allow students to complete both a rigorous Bachelor of Science or Bachelor of Arts degree and all coursework for middle or high school teacher certification in four years. Teaching Option degrees require deep content knowledge combined with courses grounded in the latest research on math and science education. While most graduates go on to classroom teaching, UTeach alums are also prepared to enter graduate school and to work in a discipline related industry.

Fast Track Baccalaureate/Master’s Degrees

UT Dallas undergraduate students with strong academic records, including at least 15 semester credit hours of upper-division Biology core courses, who intend to pursue graduate work in Biology at UT Dallas, may apply for the Fast Track which involves taking selected graduate courses as an upper-division student. After Fast Track admission to the graduate program, 15 semester credit hours of graduate courses with an earned grade of B or better can be used toward completion of the BS and to satisfy requirements for those courses at the graduate level. Graduate courses must be approved by the graduate advisor. This program provides an opportunity to obtain the BS degree in Biology after 120 semester credit hours of work and an MS degree in Molecular and Cell Biology after an additional 21 semester credit hours of graduate course and research work. Interested students should contact the Biology undergraduate advisor well in advance of the senior year to prepare a degree plan taking maximal advantage of this Fast Track program.

Degree Planning

Upper-division biology courses taken at other institutions may be included as part of the degree plan subject to the provisions of the section on Transfer Admissions.

Major-related courses may not include more than 9 semester credit hours (BS) or 6 semester credit hours (BA) of upper-division transfer credit and not more than 3 semester credit hours (Biology major) or 6 semester credit hours (Molecular Biology major) of individual instruction (e.g., BIOL 3V90, BIOL 3V91, BIOL 3V96, BIOL 4302, BIOL 4390, BIOL 4391, BIOL 4399, or BIOL 4V99).

Students planning a career in a particular allied health profession should consult the school they expect to attend to apprise themselves of the course requirements for admission.

Admission standards for medical and dental schools are set by the individual professional school, whose specific requirements should be reviewed with the help of the UT Dallas Health Professions Advising Center (HPAC). Most professional schools prefer that admission applications be channeled through the HPAC.
1. Incoming freshmen must enroll and complete requirements of UNIV 1010 and the corresponding school-related freshman seminar course. Students, including transfer students, who complete their core curriculum at UT Dallas must take UNIV 2020.

2. Curriculum Requirements can be fulfilled by other approved courses from institutions of higher education. The courses listed are recommended as the most efficient way to satisfy both Core Curriculum and Major Requirements at UT Dallas.

3. A required Major course that also fulfills a Core Curriculum requirement. Semester credit hours are counted in Core Curriculum.

4. Six semester credit hours of Calculus are counted under Mathematics Core and Component Area Option and 2 semester credit hours of Calculus are counted as Major Preparatory Courses.

5. Students may substitute MATH 2413 and MATH 2414 by taking MATH 2417 and MATH 2419.

6. Indicates a prerequisite class to be completed before enrolling for upper-division classes.

7. Students who complete PHYS 2421 do not need to complete PHYS 2125

8. Up to 3 semester credit hours of individual instruction may be used in fulfilling this requirement for BA degree. Up to 6 semester credit hours of individual instruction may be used in fulfilling this requirement for BS degree.