

# Biology - Graduate Programs

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## Objective

The program leading to the degree of Master of Science in biology is designed to provide graduate education that will prepare students for vocations in industry, government, and teaching, and to pursue further graduate education leading to the doctorate. The doctoral program is designed to train students to apply sophisticated quantitative techniques to solving basic and applied problems in biology. Students in this program will attain substantially greater quantitative skills than in traditional doctoral programs in the biological sciences, providing them with a competitive advantage in business, industry, government, and academia.

## Admission Requirements

The following are minimal requirements for entrance into the graduate program in Biology. However, satisfying or exceeding these requirements does not guarantee admission to the program. Admission to the program is determined solely by the Biology Graduate Studies Committee and the Graduate School and is based on an evaluation of all pertinent aspects of an applicant's record.

Admission status in the Master of Science program is determined as follows:

### Unconditional Admission

Decisions are based on consideration of all the information listed below and are not based on any single criterion alone.

- A Bachelor's degree in Biology or a Bachelor's degree in some other discipline with at least 12 hours of advanced level coursework (junior or senior level courses) in Biology.
- A minimum undergraduate GPA of 3.0 on a 4.0 scale, as calculated by the Graduate School. Applicants overall GPA in the Sciences and within Biology are also considered.
- A satisfactory score on the Verbal and Quantitative sections of the Graduate Record Exam. Successful students tend to have a minimum combined total score of 1000 (old GRE scale), or 296 (new GRE scale) on the Verbal and Quantitative sections, with strong performance on the Quantitative section of the GRE exam.
- Favorable letters of recommendation from at least three individuals able to assess the applicant's potential for success in graduate school.
- Evidence of previous research experience may also be considered.
- International students whose native language is not English must provide a score on the Test of Spoken English (TSE) of at least 45, a minimum score of 23 on the Speaking portion of the TOEFL iBT exam or a minimum score of 7 on the Speaking portion of the IELTS exam.

### Denial of Admission

A candidate may be denied admission if they have less than satisfactory performance on a majority of the admission criteria listed above.

### Probationary Admission

If an applicant does not meet a majority of standards for unconditional admission outlined above, he or she may be considered for probationary admission after careful examination of their application materials. Probationary admission requires that the applicant receive a B or better in his/her first two long semesters of graduate coursework at UT Arlington.

### Deferred and Provisional Admission

A deferred application decision may be granted when a file is incomplete or when a denied decision is not appropriate. An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

## Master of Science Options

### Master of Science Thesis Option (MST)

The Master of Science with a major in Biology Thesis option is a 30-hour research degree that requires 24 hours of formal course work, including BIOL 5314 Biometry, BIOL 5340 Bioinformatics, and BIOL 5101 Current Topics in Biology, plus a 6-hour thesis (BIOL 5698) and additional hours to complete the degree requirements. Students have the option to conduct research leading to a thesis in a variety of specializations, including aquatic biology, ecology, genetics, evolutionary biology, genomics, microbiology, and cell biology. The thesis option is intended to prepare students for Ph.D. programs and careers in research and industry by obtaining skills such as the collection and analysis of data, evaluation of primary literature, and essential laboratory techniques.

### Master of Science Non-Thesis Option (MSNT)

Students can elect to complete the Biology MSNT degree on-campus, fully online and asynchronously, or as a combination of the two modalities.

The Master of Science with a major in Biology non-thesis option is a 30-hour program of formal coursework requiring a capstone course, which can be satisfied by either BIOL 5349 Cooperative Program in Biology or BIOL 5391 Individual Problems in Biology, and sufficient additional hours to complete the degree requirements. The non-thesis option is intended to meet the needs of students looking to advance in their careers, for biology teachers wishing to expand their knowledge or pursuing qualification to teach dual credit, or those seeking additional preparation for professional or health science programs. Please refer to the Department of Biology website and course schedule for current course offerings and modalities. Graduates of this program can currently be found working in consulting, resource management, state and local agencies, and K-12 education.

Subject to written approval by the Graduate Advisor and within the limitations stated in the General Graduate School Regulations, a student may take up to nine hours of coursework from courses listed under Biology at the 3000 or 4000 levels. Coursework may be taken in other areas in support of the student's program subject to approval by the graduate advisor.

## Admission Requirements

### DOCTOR OF PHILOSOPHY

Students interested in pursuing the Ph.D. in the Biology Department may apply for the B.S. - Ph.D. Track or the doctoral program directly depending on their background. The B.S. - Ph.D. Track is the point of entry into doctoral studies for students with a Bachelor's degree in Biology, but without 30 hours of graduate level coursework in Biology or a master's degree in Biology. Students who have already accomplished these goals may apply directly for the doctoral program as Ph.D. students. Degree requirements are the same for both groups (see below).

### B.S. - PH.D. TRACK STUDENTS

Admission status in the B.S. - Ph.D. Track program is determined as follows:

#### Unconditional Admission

Decisions are based on consideration of all the information listed below and are not based on any single criterion alone.

- a. A Bachelor's degree in Biology or a Bachelor's degree in some other discipline with at least 12 hours of advanced level coursework (junior or senior level courses) in Biology.
- b. A minimum undergraduate GPA of 3.0 on a 4.0 scale, as calculated by the Graduate School. Applicants overall GPA in the Sciences and within Biology are also considered.
- c. A satisfactory score on the Verbal and Quantitative sections of the Graduate Record Exam. Successful students tend to have a minimum combined total score of 1100 (old GRE scale), 301 (new GRE scale) on the Verbal and Quantitative sections, with strong performance on the Quantitative section of the GRE exam.
- d. Favorable letters of recommendation from at least three individuals able to assess the applicant's potential for success in graduate school.
- e. Evidence of previous research experience may also be considered.
- f. International students whose native language is not English must provide a score on the Test of Spoken English (TSE) of at least 45, a minimum score of 23 on the Speaking portion of the TOEFL iBT exam or a minimum score of 7 on the Speaking portion of the IELTS exam.

#### Denial of Admission

A candidate may be denied admission if they have less than satisfactory performance on a majority of the admission criteria listed above.

#### Probationary Admission

If an applicant does not meet a majority of standards for unconditional admission outlined above, they may be considered for probationary admission after careful examination of their application materials. Probationary admission requires that the applicant receive a B or better in their first two long semesters of graduate coursework at UT Arlington.

#### Deferred and Provisional Admission

A deferred application decision may be granted when a file is incomplete or when a denied decision is not appropriate. An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

#### Fellowships and Scholarships

Students that are unconditionally admitted will be eligible for available scholarship and/or fellowship support. Award of scholarships or fellowships will be based on consideration of the same criteria utilized in admission decisions. To be eligible, candidates must be new students coming to UT Arlington in the Fall semester, must have a GPA of 3.0 in their last 60 undergraduate credit hours plus any graduate credit hours as calculated by the Graduate School, and must be enrolled in a minimum of 6 hours of coursework in both long semesters to retain their fellowships.

### PH.D. STUDENTS

Admission status in the doctoral program is determined as follows:

## UNCONDITIONAL ADMISSION

Decisions are based on consideration of all the information listed below and are not based on any single criterion alone.

- A master's degree in Biology or at least 30 hours of graduate level coursework in Biology.
- A minimum undergraduate GPA of 3.0 on a 4.0 scale, as calculated by the Graduate School. If an Applicant has a Master's degree, the GPA from their Bachelor's degree, as calculated by the Graduate School, will also be considered. If they have 30 hours of graduate coursework but no degree, the GPA from that 30 hours, as calculated by the Graduate School, will also be considered.
- A satisfactory score on the Verbal and Quantitative sections of the Graduate Record Exam. Successful students tend to have a minimum combined total score of 1100 (old GRE scale), or 301 (new GRE scale) on the Verbal and Quantitative sections, with strong performance on the Quantitative section of the GRE exam.
- Favorable letters of recommendation from at least three individuals able to assess the applicant's potential for success in a doctoral program in quantitative biology.
- Evidence of previous research experience including publications resulting from previous graduate work may also be considered.
- International students whose native language is not English must provide a score on the Test of Spoken English (TSE) of at least 45, a minimum score of 23 on the Speaking portion of the TOEFL iBT exam, or a minimum score of 7 on the Speaking portion of the IELTS exam.

## Denial of Admission

A candidate may be denied admission if they have less than satisfactory performance on a majority of the admission criteria listed above.

## Probationary Admission

The Department of Biology does not as a matter of course admit doctoral students on a probationary basis. Under exceptional circumstances, an applicant that does not meet the standards for unconditional admission outlined above, may be considered for probationary admission after careful examination of their application materials. Probationary admission requires that the applicant receive a B or better in their first two long semesters of graduate coursework at UT Arlington.

## Deferred and Provisional Admission

A deferred application decision may be granted when a file is incomplete or when a denied decision is not appropriate. An applicant unable to supply all required documentation prior to the admission deadline but who otherwise appears to meet admission requirements may be granted provisional admission.

## Fellowships and Scholarships

Students that have no provisional admission conditions to meet will be eligible for available scholarship and/or fellowship support. Award of scholarships or fellowships will be based on the same criteria utilized in admission decisions. To be eligible, candidates must be new students coming to UT Arlington in the Fall semester, must have a GPA of 3.0 in their last 60 undergraduate credit hours plus any graduate credit hours as calculated by the Graduate School, and must be enrolled in a minimum of 6 hours of coursework in both long semesters to retain their fellowships.

## Doctor of Philosophy Degree Requirements

The degree of Doctor of Philosophy in Quantitative Biology requires distinguished attainment both in scholarship and in research. In addition to meeting the minimum requirements of a planned course of study, the ultimate basis for conferring the degree must be the demonstrated ability to do independent and creative work and the exhibition of a profound grasp of the subject matter within the field.

**Mathematics:** Students will be expected to have (or complete during their first year of residence) a strong quantitative background including a formal course in differential and integral calculus (i.e., Calculus I).

**General Course Requirements:** All students are required to complete 15 hours of coursework. All students are required to take BIOL 5314 (Biometry), BIOL 5340 (Bioinformatics), two seminar courses (2 x BIOL 5101), and one elective (see course listings below) as part of their required courses. All students must also complete two of the following three courses (BIOL 6301, BIOL 6302, BIOL 6303).

**Other requirements:** Each student will make three research presentations that are open to the entire department. These may include the proposal defense, a research progress report, and the dissertation defense.

Students can choose among the following courses to fulfill additional course requirements:

BIOL 5302	MICROBIAL GENETICS	3
BIOL 5304	VIROLOGY	3
BIOL 5309	IMMUNOLOGY	3
BIOL 5311	EVOLUTION	3
BIOL 5317	BACTERIAL PATHOGENESIS	3
BIOL 5319	HUMAN GENETICS	3

BIOL 5335	ESSENTIALS OF GENOMICS	3
BIOL 5354	LIMNOLOGY	3

## Research hours:

BIOL 5101	SPECIAL TOPICS IN BIOLOGY
BIOL 5291	INDIVIDUAL PROBLEMS IN BIOLOGY
BIOL 5301	LABORATORY ROTATION
BIOL 5193 - BIOL 5693	
BIOL 5398	THESIS
BIOL 5698	THESIS
BIOL 5998	THESIS
BIOL 6191	ADVANCED RESEARCH
BIOL 6291	ADVANCED RESEARCH
BIOL 6391	ADVANCED RESEARCH
BIOL 6491	ADVANCED RESEARCH
BIOL 6591	ADVANCED RESEARCH
BIOL 6691	ADVANCED RESEARCH
BIOL 6999	DISSERTATION
BIOL 7399	DOCTORAL DEGREE COMPLETION

**Please Note:**

The grade of **R** (research in progress) is a permanent grade; completing course requirements in a later semester cannot change it. To receive credit for an **R**-graded course, the student must continue to enroll in the course until a passing grade is received. This is the case for dissertation hours.

An incomplete grade (the grade of **I**) cannot be given in a course that is graded **R**, nor can the grade of **R** be given in a course that is graded **I**. To receive credit for a course in which the student earned an **I**, the student must complete the course requirements. Enrolling again in the course in which an **I** was earned cannot change a grade of **I**. At the discretion of the instructor, a final grade can be assigned through a change of grade form.

Three-hour thesis courses and three- and six-hour dissertation courses are graded **R/F/W** only (except social work thesis courses.) The grade of **P** (required for degree completion for students enrolled in thesis or dissertation programs) can be earned only in three-, five-, six-, or nine-hour dissertation courses and nine-hour thesis courses and when the student has taken 9 or more hours of dissertation hours BIOL XX99. In the course listings below, **R**-graded courses are designated either "Graded **P/F/R**" or "Graded **R**." Occasionally, the valid grades for a course change. Students should consult the appropriate **graduate advisor** or instructor for valid grade information for particular courses. (See also the sections titled "**R**" Grade, Credit for Research, Internship, Thesis or Dissertation Courses and Incomplete Grade in this catalog.)

<sup>1</sup> these courses can be repeated for credit.