

# MASTER OF SCIENCE IN BIOLOGY

**Web Site:** <https://twu.edu/biology/graduate-programs/master-of-science-in-biology/>

Our M.S. in Biology program is designed to provide you with high-quality educational experiences in modern classrooms and well-equipped laboratories that are tailored to help you meet your professional and personal goals. At TWU, you will have the opportunity to study with outstanding faculty who are strongly committed to their roles as teachers and as scholars. We offer two options, a research-based thesis option and a coursework-based professional paper option. In the research track, students write a prospectus (project proposal), conduct original research, and prepare a written thesis. In the professional paper track, students select from a variety of exciting electives and then complete a written professional paper.

Graduate programs are an essential component of the vibrant intellectual community at TWU. In addition to the personal mentoring and laboratory training that is central to our program, you will also have support for developing your writing skills through the Write Site, a writing resource center that sponsors a Dissertation Boot Camp each semester. You may also have the opportunity to work as a graduate teaching assistant, gaining valuable teaching experience and training in pedagogy that will help make you competitive for future faculty positions. For those interested in the biotechnology or pharmaceutical industry, we have a vast network of alumni working in companies in the DFW area and beyond.

The M.S. in Biology degree is an excellent way for current high school teachers to achieve the 18 semester credit hours of graduate-level coursework in Biology that is required to teach at the college level.

## Marketable Skills

Defined by the Texas Higher Education Coordinating Board's 60x30 Strategic Plan (<http://www.60x30tx.com/>) as, "Those skills valued by employers that can be applied in a variety of work settings, including interpersonal, cognitive, and applied skills areas. These skills can be either primary or complementary to a major and are acquired by students through education, including curricular, co-curricular, and extracurricular activities."

1. Written and oral communication skills.
2. Demonstrate critical thinking by using logic and reasoning to interpret scientific results.
3. Ability to design and conduct properly controlled experiments.
4. Utilize modern scientific instruments and methods.
5. Work collaboratively as part of a team to perform, analyze, and present research.
6. Ability to understand and comply with laboratory safety guidelines.

## Admissions

All students must meet the University requirements as outlined in the Admission to the TWU Graduate School (<http://catalog.twu.edu/graduate/graduate-school/admission-graduate-school/>) section of the catalog.

This academic program may have additional admission criteria that must also be completed as outlined on the program's website.

## Degree Requirements

### Total Semester Credit Hours Required

For the M.S. in Biology Research Option, 30 semester credit hours (SCH), including 6 SCH for thesis is required. For the M.S. in Biology Professional Paper Option, 36 SCH, including 3 SCH for professional paper is required. Coursework includes 24-33 SCH of courses chosen with an advisory committee to fit the needs of the student. All M.S. students must enroll in BIOL 5611 (Journal Club) and BIOL 5681 a minimum of two times.

### Research Option (30 semester credit hours)

A minimum of 30 semester credit hours is required. This degree plan is suggested for those who wish to pursue a Ph.D. in Molecular Biology or seek a position in the biotechnology or pharmaceutical industry. All students in the research track must complete either BIOL 6513 or BIOL 6334. Additional courses may be taken upon the advice of their research mentors. In the first year of studies, research track students must choose a research mentor and defend a research prospectus, which is a plan for the research project. Additional credits are earned by enrolling in elective courses or Biological Research (BIOL 5801, BIOL 5803, BIOL 5881, or BIOL 5883). The student should register for Thesis twice, BIOL 5983 while writing the prospectus and BIOL 5993 in the final semester of study. Students will write an M.S. thesis detailing their research project and defend it to their committee. The committee is composed of the research mentor and two other faculty members, typically in the department.

Code	Title	SCHs
BIOL 6513 or BIOL 6334	Molecular Biology Advanced Cell Biology	3-4
BIOL 5611	Readings in Biology (Journal Club, must be taken twice)	2
BIOL 5681	Seminar (must be taken twice)	2
Electives or research as approved by committee		17-16
BIOL 5983	Thesis (Prospectus)	3
BIOL 5993	Thesis (Written Master's Thesis and Oral Defense)	3
Total SCHs		30

### Professional Paper (36 semester credit hours)

A minimum of 36 semester credit hours is required. This degree plan is suggested for those who wish to pursue a career in teaching, health sciences, business, or other non-research scientific fields. In the first year of studies, the student must choose a faculty advisor and develop a degree plan. All students must complete 33 SCH of coursework determined in consultation with the advisor (may include up to 6 SCH of Research in Biology). Electives may include chemistry, math, or education courses. Students write a professional paper and defend it to their committee. The committee is composed of the research mentor and two other faculty members, typically in the department.

Code	Title	SCHs
BIOL 6513 or BIOL 6334	Molecular Biology Advanced Cell Biology	3-4
BIOL 5611	Readings in Biology (Journal Club, must be taken twice)	2

BIOL 5681	Seminar (must be taken twice)	2
Electives as approved by the committee		26-25
BIOL 5973	Professional Paper (Written Paper and Oral Defense)	3
Total SCHs		36

### **Final Examination**

Oral defense of the thesis or professional paper; may be retaken once upon approval of the committee.