School of Natural Sciences and Mathematics

Biotechnology Program

Program Faculty

The following faculty members work with and teach students in the MS in Biotechnology degree program:

Professors: Lee A. Bulla, Santosh D'Mello, Rockford K. Draper, Stephen D. Levene, Lawrence J. Reitzer, Stephen Spiro, Li Zhang, Michael Qiwei Zhang

Professor Emeritus: Donald M. Gray

Associate Professors: Gail A. M. Breen, John G. Burr, Jeff L. DeJong, Ernest M. Hannig, Dennis L. Miller

Assistant Professors: Kelli Palmer, Zhenyu Xuan, Hyuntae Yoo

Senior Lecturers: Mehmet Candas, Li Liu, Robert C. Marsh

Master of Science in Biotechnology

36 hours minimum

Degree Objectives

The MS degree in biotechnology is intended to prepare students for careers in biotechnology and biomedicine and to assist currently employed professionals in enhancing their career opportunities.

Biotechnology captures the exciting possibilities made possible by the decoding of the human genome and by the advances in bioanalytical instrumentation, and the field is projected for continued rapid growth. The MS in Biotechnology is designed so that students may enter the program with a wide range of prior disciplinary backgrounds, prepare for and take the four core courses, and, by choice from a wide range of approved electives, tailor the remainder of the degree program to their career opportunities. In this manner, students may develop areas of additional depth in fields such as:

• molecular and cell biology
• chemistry
• engineering and computer science
The MS in Biotechnology requires 36 hours of courses, typically twelve courses of three semester hours each. Students may also elect to prepare and defend a thesis; more than 36 hours may be required for such a program.

The MS in Biotechnology is administered by the Department of Molecular and Cell Biology. Students seeking further information or advisement should contact the Molecular and Cell Biology Department office.

**Core Courses**

The core consists of four courses: **BIOL 5376** Applied Bioinformatics, **BIOL 5381** Genomics, **BIOL 6373** Proteomics, and **BIOL 6384** Biotechnology Laboratory. Students enrolled in the MS in Biotechnology program will have priority for enrollment in **BIOL 6384**. Students who can demonstrate that they have acquired the material and/or skills in a core course may petition the Committee on Biotechnology for permission to substitute an approved elective course.

**Program Policies**

The program is open to all students who hold a bachelors degree, although those with laboratory science, mathematics, computer science, or engineering degrees are particularly encouraged to apply. In general, students will not be admitted to the MS in Biotechnology program if they require more than two courses in order to be ready to take the core courses.

Every student admitted to the MS in Biotechnology program shall consult with the program advisor(s) and develop a mutually agreed degree plan. All requests for deviations from the degree program described in this catalog shall be discussed first with a program advisor, who will forward the request to the Committee on Biotechnology for decision.

There are no formal prerequisites for most of the core courses, and a student, after obtaining consent of the program advisor, may attempt one or more core courses. However, the level of the BIOL core courses is such that most students will want to have mastered the material in the following courses:

**Core Courses**

- General Chemistry (two semesters, with lab), Organic Chemistry (two semesters, with lab)
- **BIOL 2311** Introduction to Modern Biology I (with workshop)
- **BIOL 3361** Biochemistry I or **BIOL 6352** Modern Biochemistry I
- **BIOL 3301** Classical and Molecular Genetics or **BIOL 6V31** Molecular Genetics
- **BIOL 3302** Eukaryotic Molecular and Cell Biology or **BIOL 6356** Eukaryotic Molecular and Cell Biology
The four core courses should be taken in the following order: **BIOL 5376** Applied Bioinformatics, **BIOL 5381** Genomics, **BIOL 6373** Proteomics, **BIOL 6384** Biotechnology Laboratory. Consent of instructor is required for core courses taken out of this sequence.

**BIOL 6384** Biotechnology Laboratory is a skills based course. Students must show that they have adequate laboratory skills in order to enroll in **BIOL 6384**.

Students who elect to prepare and defend a thesis must satisfy the MS thesis procedures specified by the department of their thesis supervisor.

**Elective Courses**

As a general rule, any UT Dallas graduate course that is approved by the advisor as being relevant to the student's tailored degree plan may be taken as an elective for the Biotechnology MS program. Students should consult the program advisor for the current list of recommended electives.