

BIOTECHNOLOGY PROGRAM

Master of Science in Biotechnology (M.S.B.) Degree

DEGREE INFORMATION

Program Admission Deadlines:**SUMMER:**

Domestic Students:	March 1
Internat. Stud. inside/outside US:	January 1/Sept. 15

FALL:

Domestic Students:	June 1
Internat. Stud. inside/outside US:	March 1/Jan. 2

SPRING:

Domestic Students:	October 15
Internat. Stud. inside/outside US:	August 1/ June 1

In selected cases, late admission is possible.

Minimum Total Hours:	36
Program Level:	Masters
CIP Code:	26.1201
Dept Code:	MED
Program (Major/College):	MSB MD

CONTACT INFORMATION

College:	Medicine
Department:	Molecular Medicine

Contact Information: biotech@health.usf.edu

Other Resources:**Website:**

<http://health.usf.edu/medicine/molecularmedicine/PSM-Biotechnology>
www.usf4you

PROGRAM INFORMATION

The USF Master's Program in Biotechnology represents a multi-college partnership and a truly interdisciplinary collaboration. Participating colleges include the College of Medicine, the College Of Engineering, the College Of Public Health, the College of Arts And Sciences and the College of Business Administration. The program is designed to meet the increasing demand for trained people in this exploding area, which crosses the traditional fields of biological, chemical, engineering, health and computer sciences. The curriculum has been designed accordingly and provides the theoretical background, the practical training and, with the internships, the "real life" experience, which will equip students with the essential tools for a successful career in the field of biotechnology. In 2008, the USF Biotechnology Master's Program was recognized by the Council of Graduate Schools as **Professional Science Master's Program**. Program graduates take jobs in the Biotechnology Industry or move on to a PhD Program, Medical School, Dental School, Veterinary School or Pharmacy School.

Accreditation:

Accredited by the Commission on Colleges of the Southern Association of College and Schools.

ADMISSION INFORMATION

Must meet University requirements (see Graduate Admissions) as well as requirements listed below.

Program Admission Requirements

The USF Biotechnology Master's Program will be available for full-time and part-time enrollment. In order to be considered for admission to the Master's Program in Biotechnology, applicants must fulfill the following requirements:

Administrative Pre-Requirements:

- A bachelor's degree
- A minimum undergraduate GPA of 3.00 on a 4.00 scale
- A GRE test score
- Three letters of recommendation
- Statement of purpose, indicating how the program would suit the student's interests and serve his/her professional goals
- Complete transcripts of undergraduate work and any previous graduate work
- International students need to submit an official transcript evaluation, see [Graduate School Admissions](#)
- A completed USF Application to Graduate Studies

Program Pre Requirements:

A good foundation in biochemistry, molecular biology and genetics, i.e. a bachelor's degree in either the biological or chemical sciences or at least one year of studies in those disciplines would be the optimal preparation for admission to the USF Master's Program in Biotechnology. However, the faculty of the USF Biotechnology Program is aware that not all applicants who are interested in pursuing this degree will have this formal background. Instead, some might have accumulated substantial knowledge in one of these disciplines during their work as laboratory technicians, engineering assistants or environmental or public health service providers. Those students would be ideally suited to start their graduate education with the summer courses. The Department of Molecular Medicine in the College of Medicine also offers a shorter Graduate Certificate in Biotechnology. <http://www.outreach.usf.edu/gradcerts/certinfo.asp?ccode=XBT>

The Biotechnology Graduate Certificate Degree has less stringent entrance requirements (a GRE is not required) but its successful completion will serve several purposes:

- it will provide the students with a certificate of advanced studies independent of prospective additional studies in the Biotechnology Master's Program,
- it will serve as a complete package of fulfilled pre requirements for admission into the Biotechnology Master's Program,
- 12 credit hours of the Biotechnology Certificate Program can be transferred into the Master's Program.

DEGREE PROGRAM REQUIREMENTS

The Masters Program in Biotechnology is designed for 36 credit hours, which can be obtained in 3 semesters of study. The program will be available for full-time and part-time enrollment. Core courses will provide the foundation and basics before advanced work, including four electives and an internship, will be pursued. The curriculum is flexible and can be tailored to the individual student's background, interests and career goals.

The core courses include introductory courses in Biochemistry & Genetics, Introduction to Biotechnology, Bioinformatics, Biotechnology & Bioethics, Translational Biotechnology and Graduate Seminars on current topics in biotechnology. Most of these courses are part of the current graduate curricula in the involved colleges. Students will have the option to choose four electives out of a total of 27 electives that are contributed by five participating colleges. The electives are organized in four different categories i.e. science, engineering, public health and business/law, and the students will be free to select according to their interests and career plans.

Students must maintain an overall average of 3.0 ("B") in all courses

Core Requirements**Required Courses****36 hrs****Required courses:****SUMMER**

GMS 7930 Principles of Biochemistry & Genetics 3cr

GMS 7930 Python Programming 3cr

Students who can demonstrate significant prior training in the two course disciplines of summer I, can anytime during their studies, with written program approval, replace the two first summer courses with program electives and start the program in fall.

FALL

GMS 6012 Basic Biomedical Genetics 3cr

BSC 6436 Introduction to Biotechnology 3cr

GMS 7930 Bioinformatics 4cr

EIN 6106 Technology & Law 3cr

SPRING

GMS 7939 Graduate Seminar (all semesters) 1cr

GMS 6847 Translational Biotechnology 3cr

BSC 6437 Biotechnology & Bioethics 3cr

GMS 6943 Biotechnology Internship 3cr (all semesters)

Elective Courses:**Science:**

BCH 6135 Methods In Molecular Biology 4cr

GMS 7930 Stem Cells In Brain Repair 3c

GMS 6513 Principles of Pharmacology and Therapeutics 3cr

GMS 7930 Aging and Neuroscience 3cr

GMS 6114 Vaccines and Applied Immunology 2cr

GMS 6194 Biotechnology Forum – R&D in Florida’s Biotech Companies 1cr

GMS 6141 Basic Medical Microbiology/Immunology 3cr

GMS 6115 Medical Parasitology and Mycology 3cr

GMS 6110 Microbial Pathogenesis and Host Parasite Interactions 3cr

Engineering:

BME 6107 Biomaterials I: Material Properties 3cr

BME 6108 Biomaterials II: Biocompatibility 3cr

BME 6034 Biotransport Phenomena 3cr

ECH 6417 Bioseparations 3cr

ECH 5740 Theory and Design of Bioprocesses 3cr

BME 5040 Pharmaceutical Engineering 2cr

ENV 6667 Environmental Biotechnology 3cr

Public Health:

PHC 6310 Environmental Occupational Toxicology 3cr

PHC 6050 Biostatistics I 3cr

PHC 6051 Biostatistics II 3cr

PHC 6000 Epidemiology 3cr

PHC 6017 Design and Conduct of Clinical Trials 3cr

Business/Law:

ENT 6186 Strategic Market Assessment for New Technologies 3cr

ENT 6016 New Venture Formation 3cr

ENT 6116 Business Plan Development 3cr

ENT 6415 Fundamentals of Venture Capital and Private Equity in Entrepreneurship 3cr

GMS 6095 Principles of Intellectual Property 3cr

GMS 6933 Case Studies: Intellectual Property in Biotechnology 2cr

Project or Thesis/Dissertation:

As an alternative to a Master's Comprehensive Exam, biotechnology Master's students will have to complete a practical internship and theoretical assignment which will both require the successful application of the knowledge they have acquired during their formal training. Required are:

- an internship with a written and an oral internship report and
- a review paper providing an overview of recent advancements in an area of biotechnology of the student's choice.

COURSES

See <http://www.ugs.usf.edu/sab/sabs.cfm>. For more information on individual courses, please see <http://www.ugs.usf.edu/sab/sabs.cfm> or contact the program directly: biotech@health.usf.edu