

COLLEGE OF MEDICINE



Changes to Note

The follow curricular changes for the College of Medicine were approved by the USF-Tampa Graduate Council on the date noted.

Program changes

Bioinformatics & Computational Bio	Add 5 elective options	9/20/10
Biotechnology	Add 5 elective options	9/20/10
Medical Sciences (M.S.M.S.)	New Conc: <i>Athletic Training</i>	1/11/11
	Change conc: <i>Clinical and Translational Research</i>	3/21/11
Medical Sciences (M.S.M.S.)	Changes to core; pre-professional program	6/6/11
	New Conc: <i>Health Informatics</i>	6/6/11

Programs/Concentrations placed inactive:

Medical Sciences (MS): Biochemistry and Molecular Biology (eff fall 2010)	12/6/10
Medical Sciences (MS): Med Microbiology and immunology (eff fall 2010)	12/6/10
Medical Sciences (Ph.D.): Biochemistry and Molecular Biology (eff fall 2010)	12/6/10
Medical Sciences (Ph.D.): Med Microbiology and immunology (eff fall 2010)	12/6/10

New Certificates

Health Informatics	9/20/10
Intellectual Property	3/21/11

Certificate changes

Metabolic and Nutritional Medicine	change requirements	9/20/10
Molecular Medicine	change requirements	10/18/10

New Courses

ATR 5xxx	Administration of Injury Prevention Programs	4/18/11
ATR 5xxx	Contemporary Issues in Athletic Training	4/18/11
ATR 5xxx	Rehabilitation Considerations for Children	4/18/11
ATR 5xxx	Youth Injury Epidemiology	4/18/11
ATR 6xxx	Athletic Training Professional Colloquium	4/18/11
ATR 6xxx	Capstone Project 1	4/18/11
ATR 6xxx	Capstone Project 2	4/18/11
ATR 6xxx	Ethical and Legal Issues in Healthcare	4/18/11
ATR 6xxx	Evidence Based Research and Writing	4/18/11
ATR 6xxx	Medical Conditions of Adolescents	4/18/11
ATR 6xxx	Pediatric Sports Medicine	4/18/11
HIM 6xxx	Foundations in Management Information Systems	4/18/11
HIM 6xxx	Legal Aspects of Health Information Management	4/18/11
GMS 6103	Foundations in Medical Microbiology and Immunology	8/18/10
GMS 6115	Medical Parasitology & Mycology	1/24/11
HIM 6114	Integrated Electronic Medical Records	8/18/10
HIM 6350	e-Medicine Business Models	8/18/10
HIM 6320	Managerial Communication	8/18/10
HIM 6118	Introduction to Health Informatics	8/18/10
GMS 6xxx	A Metabolic Approach to Pain Management	7/5/11
GMS 6xxx	Introduction to IV Therapies	7/5/11
GMS 6xxx	Metabolic Approaches to Pediatrics	7/5/11

GMS 6xxx	Toxic Metals & Functional Toxicology		7/5/11
GMS 7xxx	Aging and Neuroscience		7/5/11
GMS 7xxx	The Spinal Cord: Dev, Pathology and Therapy		7/5/11
HIM 6xxx	Case Studies in Health Information Management		7/5/11
HIM 6xxx	E-Healthcare Ethics		7/5/11
HIM 6xxx	Pharmacy Informatics		7/5/11

Course Changes

BCH 6627	Metabolic and Genetic Basis of Human Diseases	Change title, desc.	1/24/11
BCH 6746	Proteomics and Structural Biology	Change title, desc	1/24/11
GMS 6906	Grantsmanship II	Change desc.	3/21/11
GMS 6875	Ethical and Regulatory Aspects of Clinical Rsch	Change hrs	4/18/11
GMS 6921	Building a Patient-Oriented Research Center	Change hrs	4/18/11

Course Terminations

GMS 6907	Grantsmanship III		4/18/11
----------	-------------------	--	---------

University of South Florida
College of Medicine
12901 Bruce B. Downs Blvd. MDC40
Tampa, FL 33612-4799

Web address: www.health.usf.edu/medicine/graduatestudies
Email: biomed@health.usf.edu
Phone: 813-974-4181
Fax: 813-974-4317

College Dean: Steven Klasko
Associate Dean: Michael Barber
Graduate Coordinator: Michael Barber

Accreditation:

The Commission on Colleges of the Southern Association of College and Schools

Mission Statement:

The College of Medicine Graduate Faculty consist of scientists who conduct research in many fields of science basic to understanding disease processes and to the development of improved methods of diagnosis, treatment and prevention of disease. Students receive their research training in up-to-date methods of scientific investigation and gain experience in modern well-equipped laboratories. The faculty is dedicated to providing high quality education in an environment conducive to scholarly activity and scientific achievement.

Candidates for the Ph.D. in Medical Science enter into an interdisciplinary program enabling them to major in any one of the six concentrations that are offered. Collaboration among laboratory scientists of all disciplines is encouraged. The programs of study allow students to tailor their programs to individual needs and interests. Thanks to faculty research awards, students have a multitude of opportunities to participate in cutting-edge research projects. Medical Science Ph.D. graduates go on to become deeply involved in research sponsored by academic, industrial and government institutions

The master's degree in Medical Sciences (M.S.) can be completed in as little as one year and has been designed to assist students who are seeking admissions into doctoral programs (Ph.D. or M.D.). Successful graduates of the Medical Science master's program can improve their chances for admissions into professional programs by further developing their foundational knowledge of biomedical science. Currently, the Medical Sciences master's degree program boasts a ninety percent success rate for adequately preparing students for entry into doctoral or professional programs.

Financial Aid - A limited number of assistantships, fellowships, and tuition waivers are available for doctoral students.

Major Research Areas:

Allergy, Immunology and Infectious Diseases Cancer Biology, Cardiovascular Research, Neuroscience Research

Degrees, Programs, Concentrations:

[Master of Arts in Bioethics and Medical Humanities \(M.A.B.M.H.\)](#)
Bioethics and Medical Humanities (BMH)

[Master of Science in Bioinformatics and Computational Biology \(M.S.B.C.B.\)](#)
Bioinformatics and Computational Biology (BCB)

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

Biotechnology (MSB)

Master of Science in Medical Sciences (M.S.M.S.)

Medical Sciences (MSG)

Aging and Neuroscience (ANS)

Athletic Training (ATL)

Anatomy (ANA)

Biochemistry and Molecular Biology (BMB) **Closed for admissions**

Clinical and Translational Research (CTR)

Health Informatics (HIN)

Health Science (HSC)

Interdisciplinary Medical Sciences (IMS)

Medical Microbiology and Immunology (MDI) **Closed for admissions**

Metabolic and Nutritional Medicine (MNM)

Molecular Medicine (MLM)

Women's Health (WSH)

Doctor of Philosophy (Ph.D.)

Medical Sciences (MSG)

Allergy, Immunology and Infectious Disease (All)

Anatomy (ANA)

Biochemistry and Molecular Biology (BMB) **Closed for admissions**

Clinical and Translational Research (CTR)

Microbiology and Immunology (MMI) **Closed for admissions**

Molecular Medicine (MLM)

Molecular Pharmacology and Physiology (MPY)

Neuroscience (NEU)

Pathology and Cell Biology (PCB)

Pathology and Laboratory Medicine (PLM)

Pharmacology and Therapeutics (PAT)

Physiology and Biophysics (PAB)

Doctor of Medicine (M.D.)***Doctor of Physical Therapy (D.P.T.)*****professional programs, offered through the College of Medicine – USF Medical School***Dual Programs:**

Biomedical Engineering (Ph.D.) and Medicine (M.D.) Dual Degree* Biotechnology (MS) and Entrepreneurship in Applied Technologies (M.A.)

Medical Sciences (Ph.D.)/Medicine (M.D.) Combined Program

Physical Therapy (D.P.T.) and Public Health (M.P.H.)

refer to the USF Medical School or the College of Engineering for information.*Graduate Certificates Offered:**

Aging and Neuroscience

Biochemistry & Molecular Biology

Bioinformatics

Biotechnology

Cardiovascular Engineering

Clinical Investigation

Health Informatics
Health Sciences
Medical Biochemistry, Microbiology and Immunology
Medicine and Gender
Metabolic and Nutritional Medicine
Molecular Medicine
Pharmacy Sciences
See: <http://www.outreach.usf.edu/gradcerts/>

COLLEGE REQUIREMENTS

Refer to College for information.

About the Catalog

The University of South Florida Graduate Catalog is organized with the degree programs offered listed in the section of the College that offers them. For example, the Master of Science degree with a “program” (also known as major) in Biology is listed in the College of Arts and Sciences section. Some colleges offer areas of specialization, or “concentrations” within a degree program.

PROGRAMS

MEDICAL SCIENCES PROGRAM

Doctor of Philosophy (Ph.D.) Degree

DEGREE INFORMATION

**Green denotes
Program (or Major)**

Black denotes degree

CONCENTRATIONS

Concentration Requirements are listed separately under each Program.

The Program and Concentration are listed on the official transcript. Other areas, such as application tracks, are not listed on the transcript.

Example:

**Doctor of Philosophy in Medical Sciences
with a Concentration in Anatomy**

BIOETHICS AND MEDICAL HUMANITIES PROGRAM

Master of Bioethics and Medical Humanities (M.A.B.M.H.) Degree

DEGREE INFORMATION

Program Admission Deadlines:

Fall:	February 15
Spring:	October 15
Summer:	February 15

Minimum Total Hours:	36
Program Level:	Masters
CIP Code:	51.3201
Dept Code:	MED
Program (Major/College):	BMH MD

CONTACT INFORMATION

College:	Medicine
Department:	Biomedical and Medical Humanities

Contact Information: www.grad.usf.edu

Other Resources: www.usf4you
<http://hsc.usf.edu/medicine/internalmedicine/bioethics/index.htm>

PROGRAM INFORMATION

This innovative program, the first in Florida to combine bioethics and medical humanities, is designed to prepare leaders for increasingly complex healthcare concerns, especially those raised by advancements in technology, the distribution of scarce resources, and emerging global tensions. It is designed to focus on questions associated with genetic research and therapy, new reproductive technologies, health care delivery systems, end-of-life decisions, bio-terrorism, and numerous challenges associated with cultural sensitivities and competencies. The program is founded on the premise that questions posed by contemporary health care dilemmas, whether local, national or international, do not reside within the province of any single discipline, but require collaborative integration of insights from science, humanities, history, law, medicine, public health, nursing, philosophy, education and social-behavioral sciences.

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

- BA or equivalent degree from a regionally accredited university, with a "B" (3.0 on a 4.0 scale) average or better in all work attempted while registered as an upper division student working toward a baccalaureate degree; AND Graduate Record Examination (GRE) scores (500V, 500Q) OR
- GMAT scores of 500 or better; OR
- An equivalent measure approved by the Board of Trustees, taken within five years preceding application

Applicants to the program will be expected to have some competency in basic research design and methods (either qualitative or quantitative) that will be determined from student transcripts. Students who do not meet this prerequisite will be encouraged to enroll in USF courses that provide this foundation.

DEGREE PROGRAM REQUIREMENTS**CORE REQUIREMENTS**

Four required core courses 12 credit hours

Choose 4 of the available 6 options:

GMS6870	Medical Ethics & Humanities: Tools and Foundations	3
ANG6469	Foundations of Medical Anthropology	3
REL6938	Spirituality and Medicine	2-4
NGR6137	Bioethics in Contemporary Society	3
GMS7930	Biotechnology and Bioethics	1-3
GMS7930	Health and Social Justice	1-3

Electives (18 hours)

Six approved elective courses 18 hours

Internship and Independent/Directed study 6 credit hours

Total: 36 hours

COURSES

See <http://www.ugs.usf.edu/sab/sabs.cfm>

BIOINFORMATICS AND COMPUTATIONAL BIOLOGY PROGRAM

Master of Bioinformatics and Computational Biology (M.S.B.C.B.) Degree

DEGREE INFORMATION

Program Admission Deadlines:

Fall:	February 15
Spring:	October 15
Summer:	February 15

Minimum Total Hours:	42
Program Level:	Masters
CIP Code:	26.1103
Dept Code:	MED
Program (Major/College):	BCB MD

CONTACT INFORMATION

College:	Medicine
Department:	Molecular Medicine

Contact Information: www.grad.usf.edu

Other Resources:

http://health.usf.edu/medicine/graduatestudies/mcus/ms_bioinformatics.htm
<http://ww.usf4you>

PROGRAM INFORMATION

The Masters Program in Bioinformatics and Computational Biology at the University of South Florida represents a multi-college partnership and a truly interdisciplinary collaboration. Participating departments include the Departments of Biochemistry & Molecular Biology in the College of Medicine, Mathematics in the College of Arts and Sciences, Computer Sciences and Engineering and the Division of Biomedical Engineering in the College of Engineering, Epidemiology and Biostatistics in the College of Public Health and Information Systems and Decision Sciences in the College of Business Administration. The program is designed to meet the increasing demand for trained people in this emerging area, which crosses the traditional fields of biological, mathematical and computer sciences. The program, therefore, builds on and complements the current strengths of the university.

The goal of the Masters Program in Bioinformatics and Computational Biology is to provide students enrolled in the program with high quality training and education that will prepare them for careers in science, industry, health care and education. 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 Bioinformatics and Computational Biology.

The Masters Program in Bioinformatics & Computational Biology is designed for 40 credit hours to be obtained during two years of study. Nine core courses will provide the foundation and basics before advanced work, including four electives, and a Master's thesis or internship will be pursued. The curriculum is flexible and will be tailored to the individual student's background, interests and career goals. However, electives must be selected from at least two of the participating departments to assure breadth of training.

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

- A bachelor's degree or equivalent from a regionally accredited university
- Minimum overall grade-point average of 3.00 out of a possible 4.00 with a minimum grade-point average of 3.00 in the sciences
- Graduate Record Examination
- Completed pre-requisites in:

- Calculus I-III
- Linear algebra
- Biostatistics
- At least "C" and "Maple" or "Mathematica" or "MATH-CAD"
- General biology (1 year)
- Organic chemistry (1 year)

DEGREE PROGRAM REQUIREMENTS

Prerequisites:

Calculus I-III, linear algebra, biostatistics, at least "C" and "Maple" or "Mathematica" or "MATH-CAD", one year of general biology and one year of organic chemistry.

CORE REQUIREMENTS

Required courses:

GMS6200	Biochemistry, Molecular and Cellular Biology	3-5
BCH6888	Bioinformatics I	3
MAT5932	Selected Topics in Combinatorics and Graph Theory	3
BCH6411	Biomedical Genomics and Genetics	
GMS6889	Bioinformatics II	3
MAT5932	Selected Topics in Probability Theory	3
BCH6935	Scientific Writing and Ethics	2
CIS6930	Advanced Data Structures	3
MAT6932	Selected Topics in Bioinformatics and Computational Biology	2

Electives

12-16

Molecular Medicine/COM:

BCH 6135	Methods in Molecular Biology	4
BCH 6627	Molecular Basis of Disease	3
BCH 6746	Proteomics and Structural Biology	3
BCH 6876	Special Topics in Molecular Modeling and Drug Design	2
BCH 6876	Special Topics in Cell Signaling Pathways	2
BCH 6876	Special topics in Protein Structure/Function Analysis	2
GMS 6100	Medical Microbiology	3
GMS 6101	Molecular and Cellular Immunology	3
GMS 6114	Vaccines and Applied Immunology	2
GMS 7930	Biotechnology Forum – R&D in Florida's Biotech Companies	1
GMS 7930	Case Studies: Intellectual Property in Biotechnology	2

Management Information Systems/COBA:

ISM 6124	Advanced Systems Analysis and Design	3
ISM 6218	Advanced Database Management	3
ISM 6225	Distributed Information Systems	3
ISM 6930	Data Warehousing and Data Mining	3
ISM 6930	Information Technology in Medical Care	3

Computer Science and Engineering/Biomedical Engineering/CE:

COT 6405	Introduction to the Theory of Algorithms	3
CEN 6016	Software Engineering	3
CAP 5625	Introduction to Artificial Intelligence	3
CAP 6638	Pattern Recognition	3
CAP 5400	Digital Image Processing	3
ESB CIS 6930	Bioinformatics in Biomedical Engineering	3

Mathematics/CAS:

STA 5326	Mathematical Statistics	3
MAD 5305	Graph Theory	3
MAD 4504	Theory of Computation	3
STA 5166	Computational Statistics	3
MAT 6939	Graduate Seminar	2

Epidemiology & Biostatistics/CPH:

PHC 6051	Biostatistics II	3
PHC 6053	Categorical Data Analysis	3
PHC 6054	Design of Experimental Studies for Health Researchers	3
PHC 6057	Biostatistical Inference I	3

Thesis

Complete M.S. Thesis Project or Internship	4-6
--	-----

COURSES

See <http://www.ugs.usf.edu/sab/sabs.cfm>

BIOTECHNOLOGY PROGRAM

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

DEGREE INFORMATION

Program Admission Deadlines:

Fall:

Domestic	June 1
International in country	March 1
International out of country	January 2

Spring:

Domestic	October 1
International in-country	August 1
International out of country	June 1

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: www.grad.usf.edu
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 minimum GRE test score of at least 500 verbal and at least 600 quantitative
- 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 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 a Graduate Certificate in Biotechnology that is also offered by the Department of Molecular Medicine in the College of Medicine.

<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. Seven 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, molecular and cellular biology, introduction to biotechnology, bioinformatics, biotechnology and bioethics, Translational Biotechnology and a seminar on current topics in biotechnology. Most of these courses are part of the current graduate curricula in the involved colleges. Student will have the option to choose four electives out of a total of 22 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.

Core Requirements

Required Courses	36 hrs
Fall Semester	11 hrs
GMS6200: Biochemistry and Molecular and Cellular Biology	5
BSC6436 Introduction to Biotechnology	3
BCH6888: Bioinformatics	3
Spring Semester	13 hrs
GMS 6847: Translational Biotechnology	3
BSC 6437: Biotechnology and Bioethics	3
GMS7930: Graduate Seminar	1
Elective:	3
Elective:	3
Fall Semester	12 hrs
EIN6106: Technology and Law	3
Elective:	3
Elective:	3
GMS6943: Biotechnology Internship	3

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

Electives

Science:

BCH6411	Biomedical Genomics and Genetics	4
BCH6746	Proteomics and Structural Biology	3
BCH6135	Methods in Molecular Biology	4
GMS6889	Advanced Bioinformatics	3
GMS7930	Stem Cells in Brain Repair	3
BCH6627	Metabolic and Genetic Basis of Human Diseases	3
GMS6513	Principles of Pharmacology and Therapeutics	3
GMS7930	Aging and Neuroscience	3
GMS 6100	Medical Microbiology	3
GMS 6101	Molecular and Cellular Immunology	3
GMS 6114	Vaccines and applied Immunology	2
GMS 7930	Biotechnology Forum – R&D in Florida's Biotech Companies	1

Engineering:

BME6107	Biomaterials I: Material Properties	3
BME6108	Biomaterials II: Biocompatibility	3
BME6034	Biotransport Phenomena	3
ECH6417	Bioseparations	3
ECH5740	Theory and Design of Bioprocesses	3
BME5040	Pharmaceutical Engineering	2
ENV6667	Environmental Biotechnology	3

Public Health:

PHC6310	Environmental Occupational Toxicology	3
PHC6050	Biostatistics I	3
PCH6051	Biostatistics II	3
PHC6000	Epidemiology	3
PHC6017	Design and Conduct of Clinical Trials	3

Business/Law:

GEB6930/EIN 6935	Strategic Market Assessment for New Technologies	3
GEB6115	New Venture Formation	3
GEB6116	Business Plan Development	3
6EB6930	Fundamentals of Venture Capital and Private Equity in Entrepreneurship	3
GMS6095	Principles of Intellectual Property	3
GMS 7930	Case Studies: Intellectual Property in Biotechnology	2

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

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

BIOTECHNOLOGY AND ENTREPRENEURSHIP IN APPLIED TECHNOLOGIES DUAL DEGREE PROGRAM

Master of Science in Biotechnology (M.S.B.) Degree and Master of Science in Entrepreneurship in Applied Technologies (M.S.)

DEGREE INFORMATION

Program Admission Deadlines:

Fall:

Domestic	June 1
International in country	January 2

Spring:

Domestic	October 1
International in-country	February 1
International out of country	June 1

Minimum Total Hours:	57
Program Level:	Masters
CIP Code:	26.1201
Dept Code:	MED
Program (Major/College):	MSB MD

CONTACT INFORMATION

Colleges:	Business and Medicine
Department:	Center for Entrepreneurship and Molecular Medicine

Contact Information: www.grad.usf.edu

Other Resources: www.usf4you

PROGRAM INFORMATION

The Dual Degree Program in Biotechnology and Entrepreneurship is the combination of two existing programs that allows students to obtain two Master's degrees in a concurrent rather than sequential effort. The time commitment will be about three years with a total of 57 credit hours. The combination of a Master's in Biotechnology with a Master's in Entrepreneurship educates students to understand the scientific process and its challenges and at the same time provides the training that will enable them to facilitate the translation of scientific data from mind to market. This combination makes graduate students outstandingly versatile and thereby lays an essential step-stone for their future success.

Accreditation:

Accredited by the Commission on Colleges of the Southern Association of College and Schools. The Biotechnology Program has also been recognized as a "Professional Science Master's Program" by the U.S. Council of Graduate Schools.

ADMISSION INFORMATION

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

Program Admission Requirements

Students will have to apply individually to each program. Admission to one program does not automatically grant admission to the other program. Once the student has been admitted to both programs, he/she seeks permission from the program directors of both programs for dual crediting of 9 credit hours; the USF Graduate School provides a form sheet for this process. For admission students must have:

- A bachelor's degree with a minimum undergraduate GPA of 3.0 on a 4.0 scale
- A minimum GRE test score of at least 500 verbal and at least 600 quantitative, can be waived in some cases

DEGREE PROGRAM REQUIREMENTS

A total of 57 credits is required for graduation with a Dual Master's in Biotechnology and Entrepreneurship. Beyond the dual crediting of 9 credit hours, all graduation requirements of the individual programs apply.

Course Requirements:

GMS 6200	Biochemistry and Molecular and Cellular Biology	5
BSC 6436	Intro to Biotechnology	3
BCH 6888	Bioinformatics	3
GMS 6095	Principles of Intellectual Property	3
GMS 6847	Translational Biotechnology	3
BCH 6070	Biotechnology and Bioethics	3
	Elective from Biotechnology Program	3
GMS 7939	Graduate Seminar	1
EIN 6106	Technology and Law	3
GEB 6115	New Venture Formation	3
GEB 6930	Fund of Venture Cap Priv Equity	3
EIN 6930	New Product Development	3
GMS 6943	Biotechnology Internship (140 contact hrs minimum)	3
GEB 6930	Strategies in Entrepreneurship	3
EIN 6430	Overview of Regulated Industries	3
GEB 6930	Strategies in Market Assessment	3
GEB 645	Social, Ethical, Legal Systems	3
GEB 6116	Business Plan Development	3
GEB 6930	Adv Topics in Entrepreneurship/Internship	3
GEM 7930	Biomedical Ethics	3

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

MEDICAL SCIENCES PROGRAM

Master of Science in Medical Sciences (M.S.M.S.) Degree

DEGREE INFORMATION

Program Admission Deadlines:

Fall: June 1

Minimum Total Hours: 30
Program Level: Masters
CIP Code: 26.9999
Dept Code: MED
Program (Major/College): MSG MD

Concentrations:

Aging and Neuroscience (ANS)
 Anatomy (ANA)
 Athletic Training (ATL)
 Biochemistry and Molecular Biology (BMB)*
 Clinical and Translational Research (CTR)
 Health Science (HSC)
 Health Informatics (HIN)
 Interdisciplinary Medical Sciences (IMS)
 Medical Microbiology and Immunology*
 Metabolic and Nutritional Medicine
 Molecular Medicine (MLM)
 Women's Health (WSH)

Concentrations noted with () are closed for admissions; not accepting applications

CONTACT INFORMATION

College: Medicine
Department: Medical Sciences

Contact Information: www.grad.usf.edu
Other Resources: www.usf4you
Website: <http://health.usf.edu/medicine/graduatestudies/index.htm>

PROGRAM INFORMATION

The program is designed to provide students with advanced training in either Anatomy, Biochemistry, Medical Microbiology, or Pharmacology. Students successfully completing the program will have a foundation that will prepare them for a professional degree in biomedical science such as a M.D. or Ph.D. or qualify them to work as teachers or research assistants in academia or in the private sector. The program will provide a solid core of training in the latest findings, concepts, and experimental techniques. Students will be allowed to individualize their training through elective courses and will have the opportunity to conduct laboratory research. The program is intended for students who wish training beyond a baccalaureate degree but do not wish to commit to a Ph.D. program or do not meet the qualifications required for admissions into a M.D. or Ph.D. program.

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

- A bachelor's degree or equivalent from a regionally accredited university
- Minimum overall grade-point average of 3.0 out of a possible 4.0 with a minimum grade-point average of 3.0 in the sciences*
- GRE or MCAT

- Completed pre-requisites in:
 - General biology (1 year)
 - General chemistry (1 year)
 - General physics (1 year)
 - Organic chemistry (1 year)
 - Quantitative analysis (1 course)
 - Mathematics including integral and differential calculus

APPLICATION PROCEDURES

Please refer to http://health.usf.edu/medicine/graduatestudies/mscus/apply_domestic.htm?wbc_purpose=Basic

DEGREE PROGRAM REQUIREMENTS

Degree requirements are individualized according to the educational and research interests and goals.

Total Minimum hours **30**

Core Requirements

Core Course: (2 hours minimum)

GMS 7930	Health Sciences Ethics	2
----------	------------------------	---

Students select either the Pre-professional track or one of the Concentrations.

Pre-Professional Track: (30 hours minimum in addition to core requirement)

Students are required to complete the following, chosen in consultation with Program Advisor.

GMS 6605	Basic Medical Anatomy	3
GMS 6630	Basic Medical Histology	3
GMS 6201	Basic Medical Biochemistry	3
GMS 6706	Basic Medical Neuroscience	3
GMS 6012	Basic Medical Genetics	3
GMS 6141	Basic Medical Immunology & Microbiology	3
GMS 6433	Clinical Correlations in Molecular Medicine	3
GMS 6440	Basic Medical Physiology	3
GMS 6111	Basic Medical Pathology	3
GMS 6505	Basic Medical Pharmacology	3

Concentration Options:

Students who prefer to take a Concentration instead of the Pre-Professional Track may choose from the following concentrations. Requirements for each are listed on the following pages:

- Aging and Neuroscience (ANS)
- Anatomy (ANA)
- Athletic Training (ATL)
- Clinical and Translational Research (CTR)
- Health Informatics (HIN)
- Health Science (HSC)
- Interdisciplinary Medical Sciences (IMS)
- Metabolic and Nutritional Medicine
- Molecular Medicine (MLM)
- Women's Health (WSH)

AGING AND NEUROSCIENCE (ANS)

Neuroscience is one the fastest growing fields of biomedical sciences. There is an increasing demand for health care professionals and research scientists to meet the needs of the increasing number of the aging population affected with neurodegenerative diseases such as Alzheimer's disease. The Aging and Neuroscience concentration within the masters program in Medical Sciences has been developed in collaboration with the School of Aging Studies to integrate neuroscience as well as biomedical aging in one-year curriculum. The program is targeted for students interested in pursuing a medical, professional degree or further graduate education in biomedical sciences and in aging studies. The core curriculum focuses on basic and applied neuroscience, with emphasis on neurodegenerative diseases. Classes on research methods, stem cell biology, neuropharmacology and other basic biomedical sciences, as well as several classes offered by the school of Aging Studies are offered as electives. The students can elect to engage in a research component where they will be supervised by mentors from the USF research faculty or affiliated institutes. Program graduates can pursue further professional training in medicine and allied health sciences, continue their graduate education in neuroscience or aging studies, or work in the diverse health care fields, especially those catered to the aging population.

Coursework:

Core: GMS6020 Neuroscience (Interdisciplinary) 4-6

Required Courses:

GMS7930	Aging and Neuroscience (Neurosurgery)	3
GMS7930	Neuroscience Seminar Series (Neurosurgery)	1
GEY 6613	Physical Change and Aging (Aging Studies)	3
GMS7910	Aging and Neuroscience Directed Research (neurosurgery)	3-12

All students are required to have a minimum of 20 hours of didactic lectures, and a minimum of 6 hours of directed research. Only students who opt for a research paper must and can accumulate a minimum of 15 hours of directed research and laboratory rotations in their mentor/mentors' laboratories.

Electives

A minimum of 10 credit hours must be fulfilled by COM elective courses.

College of Medicine Courses

GMS6091	Ethics and Skills in Research (Interdisciplinary)	2
GMS6404	Systems Neurophysiology (Physiology)	4
GMS6602	Neural Correlates of Behavior (Pathology and Cell Biology)	3
GMS6610	Advanced Neuroanatomy (Pathology and Cell Biology)	4
GMS6200	Biochemistry, Molecular & Cellular Biology (Molecular Medicine)	5
GMS7930	Aging/Neuroscience Lab Rotations (Neurosurgery)	3
GMS6735	Neuropharmacology (Pharmacology)	3
GMS7930	Stem Cells in Brain Repair (Neurosurgery)	3
GMS7930	Spec Topics in Alzheimer's Disease (Neurosurgery)	1
NUR6931	Psychoneuroimmunology (Nursing)	3
PCH6050	Biostatistics (Public Health)	3

School of Aging Elective Courses

GEY6600	Human Development	3
GEY620	Sociological Aspects of Aging	3
GEY6450	Gerontological Research and Planning	3
GEY6614	Psychopathology and Aging I	3
GEY6934	Alzheimer's Diseases Management	3
GEY6616	Mental Health assessment in Older Adults	3

Graduate students must maintain an overall average of 3.0 (B) in all courses.

ANATOMY

Total Minimum Hours		31
Core Requirements:		
GMS6610	Advanced Neuroanatomy	4
GMS6604	Human Embryology	3
GMS6608	Advanced Microscopic Anatomy	4
GMS6609	Advanced Gross Anatomy	6
Required Courses:		
GMS6001	Foundations in Biomedical Science	6
Electives (8 credit hours):		
GMS6091	Responsible Conduct in Research	1
GMS6210	Basic Medical Biochemistry (on-line course)	3
GMS6334	Pathobiology of Human Cancer	3
GMS6601	Methods in Microscopy	3
GMS6870	Medical Ethics and Humanities	3
GMS7910	Directed Research	1-2
GMS	Directed Research	1-5
GMS7910	Directed Research	2
GMS7930	History of Pathology and Cell Biology	2
GMS7930	Theory of Cell Culture	3
PHC6050	Biostatistics (on-line course)	3

ATHLETIC TRAINING (ATL) – 33 hours minimum**Concentration Requirements**

Concentration Core Requirements:	3 hours
ATR 6236 Pediatric Sports Medicine	3

Concentration Requirements	30 hours:
ATR 5605 Youth Injury Epidemiology	3
ATR 5515 Administration of Injury Prevention Programs	3
ATR 5x508 Contemporary Issues in Athletic Training	3
ATR 5319 Rehabilitation Considerations for Children	3
ATR 6615 Evidence Based Research & Writing	3
ATR 6920 Athletic Training Professional Colloquium (Includes 5 days on campus in Tampa)	3
ATR 6446 Medical Conditions of Adolescents	3
ATR 6516 Ethical and Legal Issues in Healthcare [c1]	3
ATR 6617 Capstone Project I	3
ATR 6618 Capstone Project II	3

BIOCHEMISTRY AND MOLECULAR BIOLOGY

Contact program for information - **Closed for admissions; not accepting applications**

CLINICAL AND TRANSLATIONAL RESEARCH (CTR)

Admission Criteria

This is a one-and-a-half to two-year program of both didactic coursework and mentored research. Admission criteria will be to the Scholars in Patient-Oriented Research (SPOR) Program and include the following:

- Must have a doctoral or first professional degree (M.D., D.O., Ph.D., D.D.S., Pharm.D., Dr.P.T., Doctorate of Nursing Practice, Ph.D. in Nursing, or equivalent degrees)
- GRE score will be waived and replaced by a requirement for documentation of a professional doctorate degree.
- NIH eligibility for the SPOR Program requires U.S. citizenship or status as a non-citizen national or lawfully admitted permanent resident of the U.S.
- Applicants will be required to complete a 2-step application process.
 - For Step 1 to enter the SPOR Program there is an online application.
 - Upon acceptance into the SPOR Program, Step 2 of the application process will consist of completing the standard application procedures to become a graduate degree-seeking student in the Master of Science in Medical Sciences degree program.

Concentration Degree Requirements

Minimum of 32 hours of credit, (23 hours core coursework, 6 hours directed research, and remaining 3 required hours in any combination of directed research and/or elective courses, as needed for each SPOR scholar's particular research focus. In addition, each SPOR scholar will be required to submit a first author manuscript based on his/her research project (not a review article) to a peer-reviewed journal, and that manuscript must be judged by an appointed sub-panel of the SPOR Program Executive Committee and Key Faculty to be potentially acceptable for publication. This latter requirement is in lieu of a thesis requirement.

Coursework:

	23 hrs
GMS6875 Ethical & Regulatory Aspects of Clinical Research	2
GMS6840 Cultural Influences & Diversity Issues in Clinical Research	2
GMS6844 Special Topics: Principles of Patient-Oriented Research	1
PHC6050 Biostatistics I	3
PHC6000 Epidemiology	3
GMS6841 Fundamentals of Translational and Team Research	1
GMS6843 Scientific Communication	2
BCH6627 Metabolic and Genetic Basis of Disease or another Basic Science course for 3 credits with approval	3
GMS6905 Grantsmanship I	1
GMS6906 Grantsmanship II	1
PHC6020 Design and Conduct of Clinical Trials	3
GMS6921 Colloquium on Building a Successful Academic Patient-Oriented Research Career	1
Mentored Clinical and Translational Research/Directed Research	6
Electives/Mentored Clinical and Translational Research/Directed Research	3

HEALTH INFORMATICS (HIN)

Core Course:

GMS 7930 Health Sciences Ethics	2
---------------------------------	---

Required Courses: (24 credits)

HIM 6XXX Foundation in Management Information Systems	3
HIM 6118 Introduction to Health Informatics	3
HIM 6350 E-Medicine Business Models	3

HIM 6114	Integrated Electronic Medical Records	3
HIM 6320	Managerial Communications	3
HIM 6012	Legal Aspects of Health Information Systems	3
HIM 6XXX	Case Studies in Health Information Management	3
ISM 6127	Decision Support Systems Analysis & Design	3

Electives: (2 or more required, can be taken in any semester offered)

HIM 6XXX	Pharmacy Informatics	3
HIM 6XXX	Health Informatics Internship	3
GMS 6908	Medical Sciences Independent Study	3
MHS 6645	Mental Health Informatics	3
PHC 6934	Medical Terminology	3
ISM 6123	Systems Analysis & Design	3
ISM 7120	Information Requirements Management	3
PHC 6050	Biostatistics	3
BCH 6888	Bioinformatics	3

HEALTH SCIENCE (HSC)

100% ONLINE. Health sciences, the study and research of the human body and health-related issues, are critical to our understanding of how humans function. The knowledge gained from these studies is vital to today's mission of improving health and preventing and curing diseases. In the new millennium, in which science truly complements the art of medicine, advances in the health sciences contribute to our understanding of the structure and function of molecules key to normal body function and the pathogenesis of disease and to design new approaches for diagnosis, treatment and prevention. Recent changes in research and scholarship in the biomedical sciences has directed attention to the development and training of students who are able cross the barriers of traditional disciplines and embrace the concepts of interdisciplinary approaches to biomedical problems. The Health Sciences concentration, within the Master's Program in Medical Sciences, has been developed to provide a new interdisciplinary and concentrated program of study that is designed for students interested in either future doctoral professional programs in the biomedical sciences. The program integrates an array of disciplines, including anatomy, biochemistry, histology, physiology, genetics, microbiology, immunology, pathology, pharmacology and ethics to provide a solid medically-relevant foundation. The rigorous program allows students to demonstrate their full academic ability for future graduate programs or medical school. The interdisciplinary program promotes the broad intellectual focus required of future graduate or professional students in the biomedical sciences or health-care related fields. The courses integrate modern distance teaching methods and are designed to improve their academic skills that are critical to their future professional development.

Curriculum

Course Requirements:		32 hrs
GMS6605	Basic Medical Anatomy	3
GMS6630	Basic Medical Histology	3
GMS6201	Basic Medical Biochemistry	3
GMS6706	Basic Medical Neuroscience	3
GMS6012	Basic Medical Genetics	3
GMS6141	Basic Medical Immunology & Microbiology	3
MCB6433	Clinical Correlations in Molecular Medicine	3
GMS6871	Health Sciences Ethics	2
GMS6440	Basic Medical Physiology	3
GMS6111	Basic Human Medical Pathology	3
GMS6505	Basic Medical Pharmacology	3

INTERDISCIPLINARY MEDICAL SCIENCES (IMS)

This concentration within the Master's degree in Medical Sciences program is designed to provide qualified students with advanced training in the sciences basic to the practice of medicine. Students successfully completing the program will have a foundation that fosters opportunities in the private sector, teaching, or the pursuit of further advanced degrees. A goal of this concentration is to provide promising medical school applicants an opportunity to develop the knowledge, skills, and attitudes that would enable them to have a career in the medical sciences. Students who perform well during this program could be considered for admission to medical, graduate, or other health professions programs. This concentration provides an opportunity for students interested in graduate work that has a broad medical base. Students will take courses that will provide the same level of depth, breadth and intensity as those taken by a first year medical student. This will allow successful participants to demonstrate their readiness for the rigors of a medical school curriculum. Alternatively, appropriate selection of elective courses will allow any student who completes the program to tailor their educational experience to best suit their future plans and aspirations.

Admission Information:

Applicants must hold a Bachelor's degree from an accredited institution at the time of entrance into the program. They must have completed at least 1 year each of General Chemistry, Organic Chemistry, General Biology and General Physics and have achieved a total score of at least 22 on the MCAT. Applicants who are deficient in one or more of these requirements, but otherwise meet the College-wide requirements for admission to the Master's Program may be considered on a case by case basis.

Core Courses:

GMS6066	Molecular Medicine	11 credits
---------	--------------------	------------

Required Courses

GMS6XXX	Medical Science Learning Skills	3 credits
GMS6600c	Human Anatomy	8 credits
GMS6400c	Core Physiology	6 credits

Elective Courses

Students must select a minimum of two courses within one of the following elective tracks. Alternative "themed" elective tracks may also be developed with the approval of the Program Director (for example, education or laboratory management).

Medical Track

GMS6020	Neuroscience	6 credits
GMS6xxx	Behavioral Medicine	4 credits

Research Track

NGR6804	Foundations of Clinical Research for Health Professionals	3 credits
PHC6050	Biostatistics	3 credits
PHC6000	Epidemiology	3 credits

Pharmacology Track

GMS6513	Principles of Pharmacology and Therapeutics	3 credits
GMS5735	Neuropharmacology	3 credits
GMS6541	Pharmacology for Health Care Professionals	4 credits

Total minimum hours: 34

MEDICAL MICROBIOLOGY AND IMMUNOLOGY - Closed for admissions; not accepting applications

Core Course

GMS6200C	Biochemistry, Cell & Molecular Biolog	5
----------	---------------------------------------	---

Required Courses	16 hrs
GMS6100C Medical Microbiology	3
GMS7930 Medical Parasitology and Mycology	2
GMS6101 Molecular and Cell Immunology	3
GMS6107 Adv in Virology	2
GMS6110 Microbial Pathogenesis and Host-parasite Interactions	2
BCH6411 Biomedical Genomics and Genetics	4
Electives	11 hrs
Select one course of the following (2 hrs minimum)	
BCH6935 Scientific Writing and Ethics	2
BSC6436 Intro to Biotech	3
GMS6876 Current Topics in Molecular Medicine	1
Select one or more from the following (9 hrs minimum):	
GMS7910 Directed Research	3-9
GMS6114 Vaccines and Applied Immunology	2
BCH6135C Methods in Molecular Biology	4
BCH6420 Clinical Correlations in Molecular Medicine	3
Total minimum hours:	32

METABOLIC AND NUTRITIONAL MEDICINE

Total Minimum Hours	32
Core Requirements:	
GMS6xxx Clinical Intensives in Metabolic and Nutritional Medicine	3
Required Courses:	
GMS6xxx Clinical Approach to Endocrinology	3
GMS6xxx Diabetes and Coronary Heart Disease	3
GMS6xxx Integrated Clinical Neurobiology	3
GMS6xxx Nutrition and Metabolism	3
GMS6xxx Functional Medicine and Infectious Disease	3
GMS6xxx Autoimmune Diseases and Cognitive Function	3
GMS6xxx Laboratory Fundamentals and Adjunct Cancer Therapies	3
GMS6871 Health Sciences Ethics	2
Electives:	
GMS7930 Biomedical Aging	3
GMS6xxx Clinical Nutrition	3
GMS7930 Aging and Neuroscience	3
GMS 6xxx Medical Sciences Independent Study	3
GMS7910 Directed Research	3

MOLECULAR MEDICINE (MLM)

Considered the vanguard of the new millennium in which science truly complements the art of medicine, molecular medicine strives to understand the molecules key to normal body function and the pathogenesis of disease and to design molecular tools for diagnosis, treatment and prevention. Recent changes in research and scholarship in the biomedical sciences has directed attention to the development and training of students who

are able to cross the barriers of traditional disciplines and embrace the concepts of interdisciplinary approaches to biomedical problems. The Molecular Medicine concentration, within the Master's Program in Medical Sciences, has been developed to provide a novel interdisciplinary and concentrated program of study that is designed for students interested in either future doctoral or professional programs in the biomedical sciences. The program integrates several disciplines, including biochemistry, molecular biology, genetics, genomics, microbiology, immunology, virology and biomedical ethics to provide a solid medically-relevant foundation. The rigorous program allows students to demonstrate their full academic ability for future graduate programs or medical school. The interdisciplinary program promotes the broad intellectual focus required of future graduate students in the biomedical sciences or health-care profession. The courses integrate modern teaching methods with extensive student participation designed to improve their oral and presentation skills that are critical to their future professional development.

Core requirements:		6 hrs
GMS6200C	Biochemistry, Molecular and Cellular Biology	1
BCH6935	Scientific Writing and Ethics	2
GMS6100	Medical Microbiology	3
Course Requirements:		
BCH6411	Biomedical Genomics and Genetics	4
GMS6101	Molecular and Cellular Immunology	3-4
GMS6110	Host-Parasite Interactions	
GMS7930	Clinical Correlations in Molecular Medicine	
BCH6627	Metabolic and Genetic Basis of Human Diseases	3
GMS6114	Vaccines and Applied Immunology	
Electives		3
BCH6135C	Methods in Molecular Biology	3
GMS6104	Cellular Immunology	3
GMS6107	Advances in Virology	3
BCH6746	Proteomics and Structural Biology	3
BCH6888	Bioinformatics	3
PHC6050	Biostatistics I	3
BCH6876	Current Topics in Molecular Medicine	3
Total Minimum Hours:		32

WOMEN'S HEALTH (WSH)

This innovative, interdisciplinary program, the first in Florida to provide an integrated approach to the subject area of holistic women's health, is designed to develop leaders in the field of women's health. The program, which has been constructed to prepare students for future educational or research endeavors in graduate or medical schools or health practice institutions, is designed to fulfill the M.S. M.S. Women's Health Concentration increasing demand for trained individuals in this emerging area, which focuses on gender-specific issues. The program is founded on the premise that future health-care providers, researchers and educators will require extensive interdisciplinary training in order to develop novel solutions to current biomedical problems in women's health. The interdisciplinary curriculum has been designed to provide the background training that will equip students with the essential tools for a successful career in the field of women's health.

The program requires a minimum of 32 credit hours, which can be completed in one year of accelerated and intense study. Core courses provide both foundation and advanced training while electives in such topics as reproductive women's cancers, endocrine mechanisms, feminism and women's health, and biostatistics, provide students with additional educational opportunities.

Program Admission Requirements

- A bachelor's degree or equivalent from a regionally accredited university in the biological or chemical sciences

- Minimum overall grade-point average of 3.0 out of a possible 4.0 with a minimum grade point average of 3.0 in the sciences
- Graduate Record Examination (MCAT scores can be submitted in lieu of the GRE)

Courses

Core Courses:

BCH6935	Scientific Writing and Ethics	2
GMS7930	Women and Diabetes	3
GMS7930	Current Topics in Women's Health	3
GMS7930	Women's Health Lab (1-2 Interd.)	2-3
Elective		2-3 hrs
GMS6334	Pathobiology of Human Cancer	3
GMS7930	Why Do We Live Longer	3
PHC6532	Women's Health Issues	3
GMS7910	Directed Research (Women's Health)	3-6 hrs Interdisciplinary
Elective		3
GMS7910	Directed Research (Women's Health)	3-6 hrs Interdisciplinary
Elective		5-6 hrs

COURSES

See <http://www.ugs.usf.edu/sab/sabs.cfm>

MEDICAL SCIENCES PROGRAM

Doctor of Philosophy (Ph.D.) Degree

DEGREE INFORMATION

Program Admission Deadlines:

Fall: February 15

Minimum Total Hours: 90
Program Level: Doctoral
CIP Code: 26.9999
Dept Code: MED
Program (Major/College): MSG MD

Concentrations:

Allergy Immunology & Infectious Disease (All)
 Anatomy (ANA)
 Biochemistry and Molecular Biology (BMB) *
 Clinical and Translational Research (CTR)
 Microbiology and Immunology (MMI) *
 Molecular Medicine (MLM)
 Molecular Pharmacology and Physiology (MPY)
 Neuroscience (NEU)
 Pathology and Cell Biology ((PCB)
 Pathology and Laboratory Medicine (PLM)
 Pharmacology and Therapeutics (PAT)
 Physiology and Biophysics (PAB)
 *Closed for admissions; not accepting applications

CONTACT INFORMATION

College: Medicine
Department: Medical Sciences

Contact Information: www.grad.usf.edu

Website:
<http://health.usf.edu/medicine/graduatestudies/index.htm>

PROGRAM INFORMATION

The program is designed to provide students with a broad knowledge in the basic medical sciences, while preparing them for careers as effective and knowledgeable teachers, as well as productive and versatile researchers. To meet these objectives, students take courses in the medical sciences and related areas, participate in seminars, and receive individual research training. Departmental advisory committees counsel the entering students in planning their first year curriculum. In addition to course work and participation in seminars, first year students are expected to become familiar with ongoing research in their chosen department; when possible, they are encouraged to work on a part-time basis as research assistants in their department. Once the student selects a major professor, a formal dissertation committee is appointed. The dissertation committee assists the student in planning the research and course of study, evaluates the student's progress, supervises the comprehensive examination, and conducts the final dissertation defense.

By the end of the second year, a student has usually completed sufficient course work and met the other research requirements to take the comprehensive qualifying examination. Successful completion of this examination leads to formal admission to candidacy for the Ph.D. degree. The final phase of the program emphasizes research and independent study and leads to a written dissertation. The Ph.D. degree is awarded upon successful completion and oral defense of the dissertation. Departments within the College of Medicine may have additional requirements that pertain to their respective training program. Contact the department for information.

Accreditation:

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

Major Research Areas:

Allergy, Immunology and Infectious Diseases Cancer Biology, Cardiovascular Research, Neuroscience Research

ADMISSION INFORMATION

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

Program Admission Requirements

- A bachelor's degree or equivalent from a regionally accredited university
- Minimum overall grade-point average of 3.0 out of a possible 4.0 with a minimum grade-point average of 3.0 in the sciences
- GRE- Graduate Record Examination (minimum 600Q)
- Completed pre-requisites in:
 - General biology (1 year)
 - General chemistry (1 year)
 - General physics (1 year)
 - Organic chemistry (1 year)
 - Quantitative analysis (1 course)
 - Mathematics including integral and differential calculus
- Three (3) letters of recommendation
- Personal Interview
- One-two page personal statement

Application Procedures

Please refer to http://health.usf.edu/medicine/graduatestudies/phd/apply_phd.htm

DEGREE PROGRAM REQUIREMENTS

Degree requirements are individualized according to research interests and goals.

Total Minimum Hours:

90 hours

(including 24 minimum directed research hours)

Concentrations:**ALLERGY, IMMUNOLOGY & INFECTIOUS DISEASE**

Research and education in the Ph.D. in Medical Sciences Program, concentration in Allergy, Immunology & Infectious Disease is focused on interdisciplinary approaches to the study of how the immune system functions properly to rid the body of foreign pathogens and how the immune system can go awry in autoimmunity. The process by which microbes interact with the host to cause disease is also a focus of this program.

ANATOMY**BIOCHEMISTRY AND MOLECULAR BIOLOGY - Closed for admissions; not accepting applications****CLINICAL AND TRANSLATIONAL RESEARCH**

Cardiovascular disease is the leading cause of death, in the United States Atherosclerotic coronary artery disease, valvular heart disease, diseases of the heart muscle, electrical disturbances of the heart rhythm, high blood pressure, stroke, and peripheral vascular disease all contribute to this morbidity. According to current estimates, coronary heart disease, high blood pressure, congestive heart failure and stroke affect nearly 58 million Americans. The USF Signature Interdisciplinary Program in Cardiovascular Research is a comprehensive program that brings together resources in heart care, research and education to fight against cardiovascular disease. Clinicians and researchers at USF are working to improve our knowledge of cardiovascular disease in order to develop new

methods of prevention and treatment that will make a difference in the lives of patients with cardiovascular disorders.

MEDICAL MICROBIOLOGY AND IMMUNOLOGY - Closed for admissions; not accepting applications

MOLECULAR MEDICINE

Research and education in the Ph.D. in Medical Sciences Program, concentration in Molecular Medicine is focused on interdisciplinary approaches to the study of bacteriology, biochemistry, immunology, molecular biology and virology as it relates to human health and disease such as allergy and immune dysfunction, cancer, cardiovascular disorders, infectious diseases and inheritable defects. Training will include a unique interdisciplinary blend of didactic coursework, journal clubs, seminar series, as well as significant research experience.

MOLECULAR PHARMACOLOGY & PHYSIOLOGY

Research and education in the Ph.D. in Medical Sciences Program, concentration in Molecular Pharmacology and Physiology is focused on interdisciplinary approaches to the study of the nervous and cardiovascular systems and related disorders, including Alzheimer's disease and other neurodegenerative disorders, cardiovascular disease and stroke, diabetes, and neuropsychiatric disorders such as depression and drug addiction. Training will include a unique interdisciplinary blend of didactic coursework, journal clubs, seminar series, as well as significant research experience.

NEUROSCIENCE

Research and education in the Ph.D. in Medical Sciences Program, concentration in Neuroscience is focused on interdisciplinary approaches to the study of the nervous systems and related disorders, including Alzheimer's disease and other neurodegenerative disorders, stroke, and neuropsychiatric disorders such as depression and drug addiction. Areas of expertise include biochemistry and cellular and molecular neuroscience, neural systems and computational neuroscience, behavioral neuroscience, developmental neuroscience, neuroimmunology, and neuropsychopharmacology, among others. Students are encouraged to carry out research during their entire period of study. Training will include a unique interdisciplinary blend of didactic coursework, journal clubs, seminar series, as well as significant research experience. The interdisciplinary structure permits considerable flexibility in training; each student's training is tailored to meet individual requirements.

PATHOLOGY & CELL BIOLOGY

Research and education in the Ph.D. in Medical Sciences Program, concentration in Pathology & Cell Biology is focused on interdisciplinary approaches to the study of cancer, reproductive pathobiology, neurological disease & injury and related diseases, including cancer biology, angiogenesis and morphogenesis, gene discovery, neurobiology, cell biology and new educational technologies.

PATHOLOGY AND LABORATORY MEDICINE

PHARMACOLOGY AND THERAPEUTICS

PHYSIOLOGY AND BIOPHYSICS

Electives

Some of the electives include:

BCH 6746 Proteomics and Structural Biology	3
GMS 6115 Medical Parasitology & Mycology	3

COURSES

See <http://www.ugs.usf.edu/sab/sabs.cfm>

MEDICINE / MEDICAL SCIENCES DUAL PROGRAM

Doctor of Medicine (M.D.) / Doctor of Philosophy (Ph.D.) Dual Degree

DEGREE INFORMATION

Program Admission Deadlines:

Contact the College of Medicine

Minimum Total Hours: 90
Program Level: Doctoral
CIP Code: 26.9999
Dept Code: MED
Program (Major/College): MED MD / MSG MD

Concentrations:

Allergy Immunology & Infectious Disease (All)
 Anatomy (ANA)
 Biochemistry and Molecular Biology (BMB)*
 Clinical and Translational Research (CTR)
 Microbiology and Immunology (MMI)*
 Molecular Medicine (MLM)
 Molecular Pharmacology and Physiology (MPY)
 Neuroscience (NEU)
 Pathology and Cell Biology ((PCB)
 Pathology and Laboratory Medicine (PLM)
 Pharmacology and Therapeutics (PAT)
 Physiology and Biophysics (PAB)

* **Closed for admissions; not accepting applications**

CONTACT INFORMATION

College: Medicine
Department: Medicine/Medical Sciences

Contact Information: www.grad.usf.edu

PROGRAM INFORMATION

The combined MD/PhD program is designed to provide well-qualified students who are interested in careers in translational medicine with a broad knowledge in the basic biomedical and clinical sciences that is integrated with the advanced experimental training that is critical for their development as productive and versatile researchers. To meet these objectives, student's complete courses in both the basic and clinical sciences, participate in patient-care activities and seminars, and receive individual research training in one of the many research concentrations available within the College. Program advisory committees counsel the entering students on planning their curriculum and selecting a research mentor. During the first two years, students complete the basic science course work and participation in research rotations that assist in the selection of a dissertation mentor. Following the successful completion of the second year of medical training and the selection of a major professor, a formal dissertation committee is appointed which assists the student in planning the research and course of study, evaluates the student's progress and supervises the comprehensive examination.

The successful completion of this examination leads to formal admission to candidacy for the PhD degree. The remainder of this phase of the program emphasizes research and independent study and leads to a written dissertation and its oral defense. Following the completion and defense of their PhD dissertation, students embark on the final two years of their medical training. The program culminates in the award of both MD and PhD degrees. Departments within the College of Medicine may have additional requirements that pertain to their respective portions of the training program. Contact the department for information.

Accreditation:

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

Major Research Areas:

See College of Medicine website.

ADMISSION INFORMATION

Must meet University requirements (see Graduate Admissions) as well as requirements listed below. as well as requirements of the College of Medicine MD and PhD programs, listed below. Student applications must be submitted through AMCAS.

Program Admission Requirements

- A bachelor's degree or equivalent from a regionally accredited university
- Minimum overall grade-point average of 3.70 out of a possible 4.00 with a minimum grade-point average of 3.7 in the sciences
- Medical College Admissions Test score of 30 (The MCAT substitutes for the GRE).
- Completed pre-requisites in:
 - General biology (1 year)
 - General chemistry (1 year)
 - General physics (1 year)
 - Organic chemistry (1 year)
 - Quantitative analysis (1 course)
 - Mathematics including integral and differential calculus
- Three (3) letters of recommendation
- Interview
- One-two page personal essay

DEGREE PROGRAM REQUIREMENTS

Contact programs for complete information. Degree requirements are individualized according to research interests and goals. Ninety credit hours minimum including 24 minimum directed research hours.

COURSES

See <http://www.ugs.usf.edu/sab/sabs.cfm>

PHYSICAL THERAPY AND PUBLIC HEALTH PROGRAM

Dual Degree Program

Doctor of Physical Therapy (D.P.T.) and Master of Public Health (M.P.H.) Degree

DEGREE INFORMATION

Program Admission Deadlines:
Rolling Admissions. One class admitted each August.
Contact program for details.

Minimum Total Hours: Contact Programs
Program Level: Professional/Masters
Program Status: Active
CIP Codes: 51.2308/
Dept Code: PHT/
Program (Major/College): MPT MD

CONTACT INFORMATION

Colleges: Medicine and Public Health
Departments: School of Physical Therapy and
Rehabilitation Sciences and
Public Health

Contact Information: www.grad.usf.edu

PROGRAM INFORMATION

Physical therapists are health professionals with special expertise in the science of movement. They use this knowledge to provide preventive and therapeutic services and psychological support to people of all ages with movement dysfunction. Professional education includes study of basic sciences and the professional skills needed for client examination, evaluation, diagnosis, prognosis, intervention and outcomes. Students will participate in comprehensive clinical internships throughout the program. The School of Physical Therapy and Rehabilitation Sciences is a component of the College of Medicine and is a limited access first professional degree program with an annual enrollment of up to 36 students per year. Students complete the majority of their first year studies on a parallel path with the first year curriculum in medicine.

The Doctor of Physical Therapy is offered through the USF Medical School in the College of Medicine. For information regarding the DPT contact the School of Physical Therapy and Rehabilitation Sciences.

The Master of Public Health is offered through the USF College of Public Health. For information regarding the MPH contact the College of Public Health Graduate Studies office.

Accreditation:

Accredited by the Commission on Accreditation in Physical Therapy Education.

ADMISSION INFORMATION

Must meet University requirements (see Graduate Admissions) as well as requirements listed below.
Contact programs for complete information.

Program Admission Requirements

- Have a bachelor's degree or equivalent from a regionally accredited university, and completion of prerequisite courses.
- Have earned a "B" (3.0 on a 4.0 scale) average or better in all work attempted while registered as an upper division student working for a baccalaureate degree; overall GPA of 3.0 and on all prerequisite coursework.
- Interview upon request of the School of Physical Therapy and Rehabilitation Sciences.

- Have at least 20 total hours of documented, observational, volunteer or other work experience in both hospital outpatient and inpatient physical therapy settings
- English competency. Applicants who have completed a degree in which English is not the primary language of instruction must present evidence of competency to pursue studies in the English language prior to being extended an offer of admission. Acceptable English language proficiency tests for applicants to the Doctor of Physical Therapy program are: TOEFL (Test of English as a Foreign Language) a minimum score of 600 (paper version); 230 (computer version).
- Have a written autobiographical statement of personal values and purpose for attending USF's DPT Degree Program.

DEGREE PROGRAM REQUIREMENTS

Contact programs for complete information.

Students must complete 107 credit hours of professional coursework and meet the general graduate requirements of the School of Physical Therapy and Rehabilitation Sciences and the College of Medicine for admission and graduation.

COURSES

See <http://www.ugs.usf.edu/sab/sabs.cfm>