Changes to Note

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

**New Concentrations**

<table>
<thead>
<tr>
<th>Medical Sciences (MS):</th>
<th>Anatomy</th>
<th>1/12/09</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Sciences (MS):</td>
<td>Metabolic and Nutritional Medicine</td>
<td>3/2/09</td>
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**New Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>GMS 6xxx</td>
<td>Clinical Intensives in Metabolic and Nutritional Medicine</td>
<td>3/2/09</td>
</tr>
<tr>
<td>GMS 6xxx</td>
<td>Functional Approach to Diabetes and Coronary Heart Disease</td>
<td>3/2/09</td>
</tr>
<tr>
<td>GMS 6xxx</td>
<td>Laboratory Fundamentals and Adjunct Cancer Therapies</td>
<td>3/2/09</td>
</tr>
<tr>
<td>GMS 6xxx</td>
<td>Clinical Nutrition</td>
<td>2/2/09</td>
</tr>
<tr>
<td>GMS 6xxx</td>
<td>Autoimmune Diseases and Cognitive Function</td>
<td>3/2/09</td>
</tr>
<tr>
<td>GMS 6xxx</td>
<td>Clinical Approaches to Endocrinology</td>
<td>3/2/09</td>
</tr>
<tr>
<td>GMS 6xxx</td>
<td>Functional Medicine and Infectious Disease</td>
<td>3/2/09</td>
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<tr>
<td>GMS 6xxx</td>
<td>Integrated Clinical Neurobiology</td>
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<tr>
<td>GMS 6xxx</td>
<td>Nutrition and Metabolism</td>
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<tr>
<td>GMS 6xxx</td>
<td>Medical Sciences Independent Study</td>
<td>2/2/09</td>
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<tr>
<td>GMS xxxx</td>
<td>History of Pathology and Cell Biology</td>
<td>10/19/09</td>
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**Course Changes**

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<tr>
<td>GMS 6111</td>
<td>Human Pathology <em>Chg title to Basic Medical Pathology</em></td>
<td>5/4/09</td>
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</table>
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 and Programs Offered:
Master of Science in Medical Sciences (M.S.M.S.)
Medical Sciences

Master of Arts in Bioethics and Medical Humanities (M.A.B.M.H.)
Bioethics and Medical Humanities
Master of Science in Bioinformatics and Computational Biology (M.S.B.C.B.)
Bioinformatics and Computational Biology

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

Doctor of Philosophy (Ph.D.)
Medical Sciences

Dual Programs:
Physical Therapy (D.P.T.) and Public Health (M.P.H.)
Biotechnology (MS) and Entrepreneurship in Applied Technologies (M.A.)
Combined M.D./Ph.D. Program

The College of Medicine also offers the Doctor of Medicine (MD) and Doctor of Physical Therapy (DPT). Contact the USF Medical School for information and requirements.

Concentrations available in:
- Aging and Neuroscience (M.S.M.S.)
- Allergy Immunology and Infectious Disease (Ph.D.)
- Anatomy (M.S.Ph.D.)
- Biochemistry and Molecular Biology (M.S.M.S., Ph.D.)
- Clinical and Translational Research (M.S.M.S., (Ph.D.)
- Health Sciences (M.S.M.S.)
- Interdisciplinary Medical Sciences (M.S.M.S.)
- Medical Microbiology and Immunology (M.S.M.S., Ph.D.)
- Metabolic and Nutritional Medicine (M.S.)
- Molecular Medicine (M.S.M.S.), (Ph.D.)
- Molecular Pharmacology and Physiology (Ph.D.)
- Neuroscience Ph.D.)
- Pathology and Cell Biology (Ph.D)
- Pathology & Laboratory Medicine (Ph.D.)
- Pharmacology & Therapeutics (Ph.D.)
- Physiology & Biophysics (Ph.D.)
- Women’s Health (M.S.M.S.)

Graduate Certificates Offered:
- Aging and Neuroscience
- Biochemistry & Molecular Biology
- Bioinformatics
- Biotechnology
- Cardiovascular Engineering
- Clinical Investigation
- Health Sciences
- Medical Biochemistry, Microbiology and Immunology
- Medicine and Gender
- 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.

EXAMPLE OF PROGRAM PAGE

MEDICAL SCIENCES PROGRAM

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

DEGREE INFORMATION

EXAMPLE OF CONCENTRATION PAGE

ADULT EDUCATION CONCENTRATION

Doctor of Philosophy (Ph.D.) Degree in the Curriculum and Instruction Program
With a concentration in Adult Education

DEGREE INFORMATION

The name of the program and/or concentration does not appear on the diploma – only the name of the degree (i.e., Master of Arts) is listed. The program and concentration information is listed on the official transcript. Other areas, such as application track, are not listed on the transcript.
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](http://www.grad.usf.edu)

Other Resources: [www.usf4you](http://www.usf4you)

[http://hsc.usf.edu/medicine/internalmedicine/bioethics/index.htm](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, bioterrorism, 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):

- GMS 6870 Medical Ethics & Humanities: Tools and Foundations (3)
- ANG 6469 Foundations of Medical Anthropology (3)
- REL 6938 Spirituality and Medicine (2-4)
- NGR 6137 Bioethics in Contemporary Society (3)
- GMS 7930 Biotechnology and Bioethics (1-3)
- GMS 7930 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/mscus/ms_bioinformatics.htm
www.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:
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:
GMS 6200  Biochemistry, Molecular and Cellular Biology 3-5
BCH 6888  Bioinformatics I 3
MAT 5932  Selected Topics in Combinatorics and Graph Theory 3
BCH 6411  Biomedical Genomics and Genetics
GMS 6889  Bioinformatics II 3
MAT 5932  Selected Topics in Probability Theory 3
BCH 6935  Scientific Writing and Ethics 2
CIS 6930  Advanced Data Structures 3
MAT 6932  Selected Topics in Bioinformatics and Computational Biology 2

Electives 12-16

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: January 2
  - International out of country: January 2
- **Spring:**
  - Domestic: October 1
  - International in-country: February 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](http://www.grad.usf.edu), [biotech@health.usf.edu](mailto:biotech@health.usf.edu)
Other Resources: [http://health.usf.edu/medicine/graduatestudies/mscus/ms_biotechnology.htm](http://health.usf.edu/medicine/graduatestudies/mscus/ms_biotechnology.htm)
Website: [www.usf4you](http://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. It therefore builds on and complements the current strengths of the university. 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.

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 [http://web.usf.edu/iac/admissions/transcript.html](http://web.usf.edu/iac/admissions/transcript.html)
- A completed USF Application to Graduate Studies
Program Pre Requirements:
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 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:

a) it will provide the students with a certificate of advanced studies independent of prospective additional studies in the Biotechnology Master’s Program,
b) it will serve as a complete package of fulfilled pre requirements for admission into the Biotechnology Master’s Program,
c) 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
GMS 6200: Biochemistry and Molecular and Cellular Biology 5 cr
BSC 6436 Introduction to Biotechnology 3 cr
BCH 6888: Bioinformatics 3 cr

Spring Semester 13 hrs
BCH 7930: Translational Biotechnology 3 cr
BCH 6070: Biotechnology and Bioethics 3 cr
GMS 7930: Graduate Seminar - 1 cr
Elective: 3 cr
Elective: 3 cr

Fall Semester 12 hrs
EIN 6106: Technology and Law 3 cr
Elective: 3 cr
Elective: 3 cr
GMS 7930: Internship (140 contact hrs minimum) 3 cr with internship report & literature review

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

http://health.usf.edu/medicine/
Electives

Science:
- BCH 6411 Biomedical Genomics and Genetics 4
- BCH 6746 Proteomics And Structural Biology 3
- BCH 6135 Methods In Molecular Biology 4
- GMS 6889 Advanced Bioinformatics 3
- GMS 7930 Stem Cells In Brain Repair 3
- BCH 6627 Metabolic and Genetic Basis of Human Diseases 3
- GMS 6513 Principles of Pharmacology and Therapeutics 3
- GMS 7930 Aging and Neuroscience 3

Engineering:
- BME 6107 Biomaterials I: Material Properties 3
- BME 6108 Biomaterials II: Biocompatibility 3
- BME 6034 Biotransport Phenomena 3
- ECH 6417 Bioseparations 3
- ECH 5740 Theory and Design of Bioprocesses 3
- BME 5040 Pharmaceutical Engineering 2
- ENV 6667 Environmental Biotechnology 3

Public Health:
- PHC 6310 Environmental Occupational Toxicology 3
- PHC 6050 Biostatistics I 3
- PCH 6051 Biostatistics II 3
- PHC 6000 Epidemiology 3
- PHC 6017 Design and Conduct of Clinical Trials 3

Business/Law:
- GEB 6930/EIN 6935 Strategic Market Assessment for New Technologies 3
- GEB 6115 New Venture Formation 3
- GEB 6116 Business Plan Development 3
- 6EB 6930 Fundamentals of Venture Capital and Private Equity in Entrepreneurship 3
- GMS 7930 Principles of Intellectual Property 3

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](http://www.ugs.usf.edu/sab/sabs.cfm)
For more information on individual courses, please see [http://www.ugs.usf.edu/sab/sabs.cfm](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

<table>
<thead>
<tr>
<th>Program Admission Deadlines:</th>
<th>CONTACT INFORMATION</th>
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</thead>
<tbody>
<tr>
<td>Fall:</td>
<td>Colleges: Business and Medicine</td>
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<tr>
<td>Domestic</td>
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<tr>
<td>June 1</td>
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<td>January 2</td>
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<tr>
<td>Spring:</td>
<td>Department: Center for Entrepreneurship and Molecular Medicine</td>
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<tr>
<td>Domestic</td>
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<tr>
<td>October 1</td>
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<tr>
<td>International in-country</td>
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<tr>
<td>February 1</td>
<td></td>
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<tr>
<td>International out of country</td>
<td></td>
</tr>
<tr>
<td>June 1</td>
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</table>

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

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](http://www.ugs.usf.edu/sab/sabs.cfm)

For more information on individual courses, please see [http://www.ugs.usf.edu/sab/sabs.cfm](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
- Biochemistry and Molecular Biology (BMB)
- Clinical and Translational Research (CTR)
- Health Science (HSC)
- Interdisciplinary Medical Sciences (IMS)
- Medical Microbiology and Immunology
- Metabolic and Nutritional Medicine
- Molecular Medicine (MLM)
- Women’s Health (WSH)

CONTACT INFORMATION

College: Medicine
Department: Medical Sciences

Contact Information: [www.grad.usf.edu](http://www.grad.usf.edu)
Other Resources: [www.usf4you](http://www.usf4you)
Website: [http://health.usf.edu/medicine/graduatetudies/index.htm](http://health.usf.edu/medicine/graduatetudies/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)
Aging
Concentration

DEGREE PROGRAM REQUIREMENTS

Degree requirements are individualized according to research interests and goals. Thirty credit hours minimum.

Core Courses:
One or more of the following (Check with Program Advisor):

<table>
<thead>
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<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>GMS 6001</td>
<td>Foundation in Biomedical Sciences</td>
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</tr>
<tr>
<td>GMS 6200C</td>
<td>Success Skills in Biomedical Sciences</td>
<td>1</td>
</tr>
<tr>
<td>GMS 6020</td>
<td>Neuroscience</td>
<td>3</td>
</tr>
<tr>
<td>GMS 6066</td>
<td>Molecular Medicine</td>
<td>11</td>
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<tr>
<td>GMS 6614</td>
<td></td>
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</tr>
<tr>
<td>GMS 6100</td>
<td>Medical Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>BCH 6935</td>
<td>Scientific Writing and Ethics</td>
<td>2</td>
</tr>
</tbody>
</table>

Concentration Requirements

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: GMS 6020 Neuroscience (Interdisciplinary) 4-6 hours

Required Courses:
GMS 7930 Aging and Neuroscience (Neurosurgery) 3 hours
GMS 7930 Neuroscience Seminar Series (Neurosurgery) 1 hour
GEY 6613 Physical Change and Aging (Aging Studies) 3 hours
GMS 7910 Aging and Neuroscience Directed Research (neurosurgery) 3-12 hours

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**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMS 6091</td>
<td>Ethics and Skills in Research (Interdisciplinary)</td>
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<tr>
<td>GMS 6404</td>
<td>Systems Neurophysiology (Physiology)</td>
<td>4 hrs</td>
</tr>
<tr>
<td>GMS 6602</td>
<td>Neural Correlates of Behavior (Pathology and Cell Biology)</td>
<td>3 hrs</td>
</tr>
<tr>
<td>GMS 6610</td>
<td>Advanced Neuroanatomy (Pathology and Cell Biology)</td>
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<tr>
<td>GMS 6200</td>
<td>Biochemistry, Molecular &amp; Cellular Biology (Molecular Medicine)</td>
<td>5 hrs</td>
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<tr>
<td>GMS 7930</td>
<td>Aging/Neuroscience Lab Rotations (Neurosurgery)</td>
<td>3 hrs</td>
</tr>
<tr>
<td>GMS 6735</td>
<td>Neuropharmacology (Pharmacology)</td>
<td>3 hrs</td>
</tr>
<tr>
<td>GMS 7930</td>
<td>Stem Cells in Brain Repair (Neurosurgery)</td>
<td>3 hrs</td>
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<tr>
<td>NUR 6931</td>
<td>Psychoneuroimmunology (Nursing)</td>
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<tr>
<td>PCH 6050</td>
<td>Biostatistics (Public Health)</td>
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**School of Aging Elective Courses**

<table>
<thead>
<tr>
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<tr>
<td>GY 6600</td>
<td>Human Development</td>
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<tr>
<td>GY 5620</td>
<td>Sociological Aspects of Aging</td>
<td>3 hrs</td>
</tr>
<tr>
<td>GY 6450</td>
<td>Gerontological Research and Planning</td>
<td>3 hrs</td>
</tr>
<tr>
<td>GY 6614</td>
<td>Psychopathology and Aging I</td>
<td>3 hrs</td>
</tr>
<tr>
<td>GY 6934</td>
<td>Alzheimer’s Diseases management</td>
<td>3 hrs</td>
</tr>
<tr>
<td>GY 6616</td>
<td>Mental Health assessment in Older Adults</td>
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</table>

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

**Anatomy**

**Total Minimum Hours**

<table>
<thead>
<tr>
<th>Category</th>
<th>Courses</th>
<th>Hours</th>
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<tbody>
<tr>
<td>Core Requirements:</td>
<td>GMS 6610 Advanced Neuroanatomy</td>
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<tr>
<td></td>
<td>GMS 6604 Human Embryology</td>
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<tr>
<td></td>
<td>GMS 6608 Advanced Microscopic Anatomy</td>
<td>4</td>
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<td>GMS 6609 Advanced Gross Anatomy</td>
<td>6</td>
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<tr>
<td>Required Courses:</td>
<td>GMS 6001 Foundations in Biomedical Science</td>
<td>6</td>
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<tr>
<td>Electives (8 credit hours):</td>
<td>GMS 6091 Responsible Conduct in Research</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>GMS 6210 Basic Medical Biochemistry (on-line course)</td>
<td>3</td>
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<tr>
<td></td>
<td>GMS 6334 Pathobiology of Human Cancer</td>
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<tr>
<td></td>
<td>GMS 6601 Methods in Microscopy</td>
<td>3</td>
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<tr>
<td></td>
<td>GMS 6870 Medical Ethics and Humanities</td>
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<td></td>
<td>GMS 7910 Directed Research</td>
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<td>GMS Directed Research</td>
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<tr>
<td></td>
<td>GMS 7930 History of Pathology and Cell Biology</td>
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<td></td>
<td>GMS 7930 Theory of Cell Culture</td>
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<tr>
<td></td>
<td>PHC 6050 Biostatistics (on-line course)</td>
<td>3</td>
</tr>
</tbody>
</table>

http://health.usf.edu/medicine/
Biochemistry and Molecular Biology

Contact program for information

Clinical and Translational Research (CTR)

Admission Criteria
This is a 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 (MD, DO, PhD, DDS, PharmD, DrPT, Doctorate of Nursing Practice, PhD 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 38 hours of credit, (26 hours core coursework, 6 hours directed research, and remaining 6 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:

<table>
<thead>
<tr>
<th>Coursework</th>
<th>26 hrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMS 7930 Special Topics: Research and Professional Ethics</td>
<td>3 credits</td>
</tr>
<tr>
<td>GMS 7930 Special Topics: Cultural Influences &amp; Diversity Issues in Clinical Research</td>
<td>2 credits</td>
</tr>
<tr>
<td>GMS 7930 Special Topics: Principles of Patient-Oriented Research</td>
<td>1 credit</td>
</tr>
<tr>
<td>PHC 6050 Biostatistics I</td>
<td>3 credits</td>
</tr>
<tr>
<td>PHC 6000 Epidemiology</td>
<td>3 credits</td>
</tr>
<tr>
<td>GMS 7930 Special Topics: Fundamentals of Translational Research</td>
<td>1 credit</td>
</tr>
<tr>
<td>GMS 7930 Special Topics: Scientific Communication</td>
<td>2 credits</td>
</tr>
<tr>
<td>BCH 6627 Metabolic and Genetic Basis of Disease</td>
<td>3 credits</td>
</tr>
<tr>
<td>GMS 7930 Grantsmanship</td>
<td>3 credits</td>
</tr>
<tr>
<td>PHC 6017 Design and Conduct of Clinical Trials</td>
<td>3 credits</td>
</tr>
<tr>
<td>GMS 7930 Colloquium on Building a Successful Patient-Oriented Research Career</td>
<td>2 credits</td>
</tr>
<tr>
<td>Directed Research</td>
<td>6 hrs</td>
</tr>
<tr>
<td>Electives/Directed Research</td>
<td>6 hrs</td>
</tr>
</tbody>
</table>

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:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMS 6605</td>
<td>Basic Medical Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>GMS 6630</td>
<td>Basic Medical Histology</td>
<td>3</td>
</tr>
<tr>
<td>GMS 6201</td>
<td>Basic Medical Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>GMS 6706</td>
<td>Basic Medical Neuroscience</td>
<td>3</td>
</tr>
<tr>
<td>GMS 6012</td>
<td>Basic Medical Genetics</td>
<td>3</td>
</tr>
<tr>
<td>GMS 6141</td>
<td>Basic Medical Immunology &amp; Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>MCB 6433</td>
<td>Clinical Correlations in Molecular Medicine</td>
<td>3</td>
</tr>
<tr>
<td>GMS 6871</td>
<td>Health Sciences Ethics</td>
<td>2</td>
</tr>
<tr>
<td>GMS 6440</td>
<td>Basic Medical Physiology</td>
<td>3</td>
</tr>
<tr>
<td>GMS 6111</td>
<td>Basic Medical Pathology</td>
<td>3</td>
</tr>
<tr>
<td>GMS 6505</td>
<td>Basic Medical Pharmacology</td>
<td>3</td>
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</table>

**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:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMS 6066</td>
<td>Molecular Medicine</td>
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**Required Courses**

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<tr>
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<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>GMS 6XXX</td>
<td>Medical Science Learning Skills</td>
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<tr>
<td>GMS 6600c</td>
<td>Human Anatomy</td>
<td>8</td>
</tr>
<tr>
<td>GMS 6400c</td>
<td>Core Physiology</td>
<td>6</td>
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</tbody>
</table>
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
- GMS 6020 Neuroscience, 6 credits.
- GMS 6xxx Behavioral Medicine, 4 credits.

Research Track
- NGR 6804 Foundations of Clinical Research for Health Professionals, 3 credits
- PHC 6050 Biostatistics, 3 credits
- PHC 6000 Epidemiology, 3 credits

Pharmacology Track
- GMS 6513 Principles of Pharmacology and Therapeutics, 3 credits
- GMS 5735 Neuropharmacology, 3 credits
- GMS 6541 Pharmacology for Health Care Professionals, 4 credits

Total minimum hours: 34

Medical Microbiology and Immunology

Core Course
- GMS 6200C Biochemistry, Cell & Molecular Biology (5)

Required Courses
- GMS 6100C Medical Microbiology (3)
- GMS 7930 Medical Parasitology and Mycology (2)
- GMS 6101 Molecular and Cell Immunology (3)
- GMS 6107 Adv in Virology (2)
- GMS 6110 Microbial Pathogenesis and Host-parasite Interactions (2)
- BCH 6411 Biomedical Genomics and Genetics (4)

Total minimum hours: 16

Electives
- Select one course of the following (2 hrs minimum)
  - BCH 6935 Scientific Writing and Ethics (2)
  - BSC 6436 Intro to Biotech (3)
  - GMS 6876 Current Topics in Molecular Medicine (1)

- Select one or more from the following (9 hrs minimum):
  - GMS 7910 Directed Research (3-9)
  - GMS 6114 Vaccines and Applied Immunology (2)
  - BCH 6135C Methods in Molecular Biology (4)
  - BCH 6420 Clinical Correlations in Molecular Medicine (3)

Total minimum hours: 32

Metabolic and Nutritional Medicine

Total Minimum Hours

Core Requirements:
- GMS 6xxx Clinical Intensives in Metabolic and Nutritional Medicine 3
### Required Courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>GMS 6xxx</td>
<td>Clinical Approach to Endocrinology</td>
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</tr>
<tr>
<td>GMS 6xxx</td>
<td>Diabetes and Coronary Heart Disease</td>
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</tr>
<tr>
<td>GMS 6xxx</td>
<td>Integrated Clinical Neurobiology</td>
<td>3</td>
</tr>
<tr>
<td>GMS 6xxx</td>
<td>Nutrition and Metabolism</td>
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</tr>
<tr>
<td>GMS 6xxx</td>
<td>Functional Medicine and Infectious Disease</td>
<td>3</td>
</tr>
<tr>
<td>GMS 6xxx</td>
<td>Autoimmune Diseases and Cognitive Function</td>
<td>3</td>
</tr>
<tr>
<td>GMS 6xxx</td>
<td>Laboratory Fundamentals and Adjunct Cancer Therapies</td>
<td>3</td>
</tr>
<tr>
<td>GMS 6871</td>
<td>Health Sciences Ethics</td>
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### Electives:

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<tr>
<td>GMS 7930</td>
<td>Biomedical Aging</td>
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<tr>
<td>GMS 6xxx</td>
<td>Clinical Nutrition</td>
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<tr>
<td>GMS 7930</td>
<td>Aging and Neuroscience</td>
<td>3</td>
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<tr>
<td>GMS 6xxx</td>
<td>Medical Sciences Independent Study</td>
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<tr>
<td>GMS 7910</td>
<td>Directed Research</td>
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### 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:

<table>
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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>GMS 6200C</td>
<td>Biochemistry, Molecular and Cellular Biology</td>
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<tr>
<td>BCH 6935</td>
<td>Scientific Writing and Ethics</td>
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<td>GMS 6100</td>
<td>Medical Microbiology</td>
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#### Course Requirements:

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<th>Course Title</th>
<th>Hours</th>
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<tr>
<td>BCH 6411</td>
<td>Biomedical Genomics and Genetics</td>
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<tr>
<td>GMS 6101</td>
<td>Molecular and Cellular Immunology</td>
<td>3-4</td>
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<tr>
<td>GMS 6110</td>
<td>Host-Parasite Interactions</td>
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<tr>
<td>GMS 7930</td>
<td>Clinical Correlations in Molecular Medicine</td>
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<tr>
<td>BCH 6627</td>
<td>Metabolic and Genetic Basis of Human Diseases</td>
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<tr>
<td>GMS 6114</td>
<td>Vaccines and Applied Immunology</td>
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#### Electives (3)

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<td>Methods in Molecular Biology</td>
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<td>GMS 6104</td>
<td>Cellular Immunology</td>
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<tr>
<td>GMS 6107</td>
<td>Advances in Virology</td>
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<td>BCH 6746</td>
<td>Proteomics and Structural Biology</td>
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<tr>
<td>BCH 6888</td>
<td>Bioinformatics</td>
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<td>PHC 6050</td>
<td>Biostatistics I</td>
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<tr>
<td>BCH 6876</td>
<td>Current Topics in Molecular Medicine</td>
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</tr>
</tbody>
</table>

**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

1. A bachelor’s degree or equivalent from a regionally accredited university in the biological or chemical sciences.
2. 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
3. Graduate Record Examination (MCAT scores can be submitted in lieu of the GRE)

Courses

Core Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCH 6935</td>
<td>Scientific Writing and Ethics (2)</td>
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<tr>
<td>GMS 7930</td>
<td>Women and Diabetes (3)</td>
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<tr>
<td>GMS 7930</td>
<td>Current Topics in Women’s Health (3)</td>
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<tr>
<td>GMS 7930</td>
<td>Women’s Health Lab (1-2 Interd.) (2-3)</td>
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<tr>
<td>Elective</td>
<td>(2-3 hrs)</td>
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<tr>
<td>GMS 6334</td>
<td>Pathobiology of Human Cancer (3)</td>
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<td>GMS 7930</td>
<td>Why do we live longer (3)</td>
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<td>PHC 6532</td>
<td>Women’s Health Issues (3)</td>
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<td>GMS 7910</td>
<td>Directed Research (Women’s Health) (3-6 hrs Interdisciplinary)</td>
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<td>GMS 7910</td>
<td>Directed Research (Women’s Health) (3-6 hrs Interdisciplinary)</td>
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<tr>
<td>Elective</td>
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COURSES

See [http://www.ugs.usf.edu/sab/sabs.cfm](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)

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
- 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. Ninety credit hours minimum 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

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
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

COURSES
See http://www.ugs.usf.edu/sab/sabs.cfm
MEDICINE/MEDICAL SCIENCES DUAL PROGRAM

Doctor of Medicine (MD) / 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)

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:
  o General biology (1 year)
  o General chemistry (1 year)
  o General physics (1 year)
  o Organic chemistry (1 year)
  o Quantitative analysis (1 course)
  o 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

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<thead>
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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