UNT | HEALTH SCIENCE CENTER

GRADUATE SCHOOL OF BIOMEDICAL SCIENCES

Department of Biomedical Sciences

Master of Science Degree Program

MEDICAL SCIENCES

HANDBOOK 2012-13

(available on-line http://www.hsc.unt.edu/departments/bmsc/Specialized%20Master's%20Programs.cfm)

Medical Science Master of Science Program

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Program Description

The Master of Science program in Medical Sciences is designed to provide additional opportunities to those individuals who would like to enhance their credentials for entry into medical school. This is achieved by offering a strong, challenging biomedical sciences curriculum in the environment of a health science center.

We recognize that there are bright, highly motivated students whose goal is to become a physician but an unexpected roadblock prevents their entry into medical school. This could be a high grade point average, but a borderline Medical College Admission Test (MCAT) score, or vice versa. This program is also designed for those students who would like a year in a medical school setting before deciding whether medicine is the career for them.

Our graduate-level science program is designed to enhance student's skills before they apply/reapply to medical school. Our program is specifically designed to maximize the chance of gaining entry into medical school.

The average time to complete the non-thesis M.S. degree in Medical Sciences is twelve months (mid-May through mid-May). Students are only admitted in the summer semester

Opportunities for Graduates in Medical Sciences

The M.S. in Medical Sciences program responds to the need for generalist graduate study in the medical sciences to provide students with the background required for the pursuit of a variety of careers in the health professions. It is a broad-based curriculum that can provide the student with requirements to pursue medical school, dental school, veterinary school, advanced graduate education, or enter a career in allied health sciences, such as public health and health care administration, or in non-research positions including managerial and biotechnology patent law.

Program Success

This program has been very successful in assisting students to better their chances for acceptance into medical school. In the class that graduated in 2009, 89% of students who matriculated graduated with a Masters of Science degree. Eighty-five percent of these were successful in matriculating into medical school at UNT Health Science Center, University of Texas Southwestern, University of Texas Medical Branch, University of Texas at Houston, Texas Tech University, Texas A&M University, Midwestern University in Arizona, University of Kansas at Kansas City, AT Still University in Arizona, and Ross University. Fifteen percent of the students chose to pursue graduate degrees in other fields at UNT Health Science Center or at other institutions.

Program Requirements

The admissions committee will review all applicants for acceptance into the program. A student must have a bachelor's degree and must meet the general requirements listed in the catalog in effect at the time of application. In addition, the Medical College Admissions Test (MCAT) is required for admission to this program and applicants must have completed the following prerequisites: general or inorganic chemistry (8 SCH), biology (14 SCH), physics (8 SCH), organic chemistry (8 SCH), English (6 SCH), and calculus or statistics (3 SCH).

All applications must be completed and received in accordance with the deadlines published in the academic calendar. Electronic application records will be updated before letters are mailed. Applicants may check their application records online at *http://my.hsc.unt.edu* for admissions decisions. No admissions decisions will be released by phone.

1. All applications must be completed and received into the Graduate School by the established deadline listed in the Academic Calendar. The Medical Science Admissions Committee will meet and decisions will be mailed in April. EIS application records will be updated before letters are mailed. Applicants may check their application records online at http://my.hsc.unt.edu for admissions decisions. No admissions decisions will be released by phone.
2. Applicants must hold either a B.A. or B.S. degree and must meet the general requirements of the Graduate School of Biomedical Sciences as described in the current graduate catalog
3. The Medical College Admissions Test (MCAT) is required. While not the only criterion considered in acceptance into medical school, the applicant should have a competitive MCAT score before the application deadline. In general, composite MCAT scores below 20 and individual subset scores below 6 are not competitive for medical school.

If the applicant has plans to retake the MCAT for future medical school admissions, he/she must sit for the exam no later than August during the first semester of the year he/she enters the program. The applicant must indicate in writing the actual date he/she will take the MCAT. This information must be filed with the Graduate School of Biomedical Sciences at the time of admission to the program.

4. For those individuals who are planning to qualify for consideration for medical school admission at TCOM as part of the program, the following are required:
    a. Successful completion of all undergraduate course requirements for TCOM as listed in the current catalog;
    b. Competitive undergraduate grade point average (In general, an overall undergraduate GPA below 3.0 is not considered competitive for medical school) and must have a competitive Medical Sciences GPA and be in good

academic standing in the Graduate School of Biomedical Sciences' Medical Sciences program;

c. Competitive MCAT score taken prior to the application deadline; and
d. Completed medical school application submitted to the Texas Medical and Dental Schools Application Service (TMDSAS) and a secondary application submitted to the TCOM Office of Medical Student Admissions according to the TMDSAS and TCOM application deadlines.

A student admitted to the Medical Sciences program must follow the lock-step curriculum. A minimum GPA of 3.0 must be maintained .

Each student is responsible for the completion of the requirements for the Medical Sciences program according to the procedures that follow. Each item must be completed in the sequence and time period indicated. Forms are subject to revision at any time and can be obtained from the GSBS Forms and Guidelines web site. (http://www.hsc.unt.edu/education/gsbs/forms.cfm)

Support

In general, master's students do not qualify for teaching assistantships. They are, however, eligible to apply for the Elena and Thomas Yorio Scholarship for First-Year Students and the Rachel Dauphin Memorial Scholarship.

Medical Science Curriculum

The following curriculum is required of all students enrolled in the Medical Sciences program:

Year 1
Summer

MOLB 5201.002	Introductory Biochemistry[1]	2 SCH
BMSC 5390.001	Short Course in Health Disparities	1 SCH
BMSC 5201.001	Clinical Practice Preceptorship	2 SCH
BMSC 5390.002-.005	MCAT Preparation[2]	
BMSC 5100.001	Applications Workshops [3]	1 SCH
BMSC 5400.002	Biostatistics for Biomedical Science	4 SCH

[1]Introductory Biochemistry is an *optional* course that MS in Medical Sciences students may elect to take to review basic biochemistry. The course will be graded Pass/Fail.

[2] MCAT Prep Workshop is required of all students in the Medical Sciences program. Students who have earned a score of 28 or higher may petition for a waiver of this requirement. To petition for a waiver, send an e-mail to Director of Admissions &

Services, GSBS@hsc.unt.edu. The course will be graded Pass/Fail.

[3] Application Workshops carry 1 SCH and participation in three workshops is mandatory. These workshops are designed to help students improve their non-academic qualifications such as interviewing skills and writing essays.

Fall		
BMSC 5301	Integrative Biomedical Sciences CORE I: Principles of Biochemistry	3 SCH
BMSC 5302	Integrative Biomedical Sciences CORE II: Molecular Cell Biology	3 SCH
BMSC 5303	Integrative Biomedical Sciences CORE III: Immunology and Microbiology	2 SCH
BMSC 5231	Introduction to Health Disparities Issues in the United States	2 SCH
BMSC 5350	Principles of Epidemiology and Evidence-based Medicine	3 SCH
CBAN 5400	Structural Anatomy 1	4 SCH
Spring		
BMSC 5304	Integrative Biomedical Sciences CORE IV: Physiology	5 SCH
BMSC 5305	Integrative Biomedical Sciences COREIV: Pharmacology	2 SCH
CBAN 5401	Structural Anatomy 2	3 SCH
BMSC 5312	Introduction to Clinical Research & Studies	3 SCH
BMSC 5121	Ethical, Legal and Social Issues for Responsible Clinical Research	2 SCH
	Total Course	40-**42SCH**

The health science center reserves the right to make changes at any time to reflect current board policies, administrative regulations and procedures, amendments by state law and fee changes. Information provided in this document is subject to change without notice and does not constitute a contract between the University of North Texas Health Science Center and a student or an applicant for admission. The institution is not responsible for any misrepresentation or provisions that might arise as a result of errors in preparation.

Course Descriptions

CORE Courses:

BMSC 5301. Integrative Biomedical Sciences I: Principles of Biochemistry.
3 hours. A broad introduction to the fundamentals of biochemistry, especially those relating to thermodynamics, molecular pathways and regulation. Discussion of important techniques that contribute to our present understanding of biochemistry. Offered each Fall. Course restricted to Medical Sciences and Clinical Research Management majors. Letter Grade.

BMSC 5302. Integrative Biomedical Sciences II: Molecular and Cell Biology.
3 hours. The fundamentals of cell and molecular biology, concentrating on understanding of the experimental basis of these disciplines as well as the current state of knowledge. Offered each Fall. Course restricted to Medical Sciences and Clinical Research Management majors. Letter Grade.

BMSC 5303. Integrative Biomedical Sciences III: Immunology and Microbiology.
2 hours. A general exploration of basic concepts of immunology, microbiology and virology including study of genomics, proteomics and gene therapy. Course restricted to Medical Sciences and Clinical Research Management majors. Offered each Fall. Prerequisites: BMSC 5301 and 5302 or consent of the department. Letter Grade.

BMSC 5304. Integrative Biomedical Sciences IV: Physiology.
4 hours. Emphasis on integrative physiology of human organ systems. Offered each Spring. Course restricted to Medical Sciences and Clinical Research Management majors. Prerequisites: BMSC 5301 and 5302 or consent of the department. Letter Grade.

BMSC 5305. Integrative Biomedical Sciences V: Pharmacology.
2 hours. Emphasis on fundamental principles of pharmacology that include pharmacodynamics, pharmacokinetics, ligand-receptor interactions and their consequent biological effects. Course restricted to Medical Sciences and Clinical Research Management majors. Offered each Spring. Prerequisites: BMSC 5301 and 5302 or consent of the department. Letter Grade.

CBAN 5400. Structural Anatomy 1. 4 hours. A study of the gross morphological and histological structures of the human body (excluding those areas taught in CGEN 5000 and 6000). Lecture material and dissections in examines the Musculskeletal System, Head and Neck, and Cardiorespiratory System. Students will explore the embryology, histology, and anatomy of these particular systems in full. Laboratory activities will require students to participate in gross dissections of the thorax, abdomen, pelvis, and perineum. In addition, both lecture and laboratory sessions will emphasize clinical significance. Offered each Fall. Letter Grade.

CBAN 5401. Structural Anatomy 2. 3 hours. A study of the gross morphological and histological structures of the human body (excluding those areas taught in CGEN 5000 and 6000). Lecture material and dissections in the gross anatomy laboratory are organized by systems. The course examines the Digestive system and the Genitourinary system. Students will explore the embryology, histology, and anatomy of these particular systems in full. Laboratory activities will require students to participate in gross dissections of the thorax, abdomen, pelvis, and perineum. In addition, both lecture and laboratory sessions will emphasize clinical significance. Offered each Spring. Letter Grade.

Additional Courses:

BIOC 5201.002. Introductory Biochemistry. This optional introductory course in biochemistry is intended to provide undergraduate and graduate students with a foundation and in-depth knowledge of biochemistry. This course will cover many aspects of biochemistry including biomolecules and metabolism. The course consists of lectures Letter Grade.

BMSC 5121. Ethical, Legal, and Social Issues for Responsible Clinical Research.
2 hour. Regulations involved with human subject research will be discussed both from an historical and contemporary perspective. Case studies will be presented and students will attend an Institutional Review Board meeting. Offered each Spring. Letter Grade.

BMSC 5100.001. Application Workshops.
1 hour. Participation in three workshops is mandatory. These workshops are designed to help students improve their non-academic qualifications such as interviewing skills, application process, and writing essays. Offered each summer. Pass/Fail.

BMSC 5201.001. Clinical Practice Preceptorship.
2 hours. The goal of this course is to provide exposure to clinical practice conducted by osteopathic physicians and educational experiences within the private sector emphasizing the totality of community-based family practice. A preceptor will be assigned to each student. This course is open only to students in the medical science discipline. Offered each Summer. Pass/Fail.

BMSC 5231. Introduction to Health Disparities Issues in the United States
2 hours. An examination of the disparities and issues surrounding the treatment of several health problems in the United States, particularly as related to minority populations. Each health condition is approached from the clinical, cultural and scientific aspect so that the student will understand the etiology and treatment of the disease, the cultural characteristics of various populations that may contribute to the disproportionate presence of the disorder in a particular population, and the underlying science involved with each health problem. The latter understanding will aid the student

to better approach research, both in the clinical and basic science venues, directed towards better management of the health problems. Offered each Fall. Letter Grade.

BMSC 5312. Introduction to Clinical Research and Studies.
3 hours. Course covers drug development process, ethical and scientific principles of clinical research, clinical trial preparation, study design, informed consent forms, clinical coordinator responsibility and regulatory considerations, and conducting clinical trials from initiation to implementation. Offered each Spring. Letter Grade.

BMSC 5350. Principles of Epidemiology and Evidence-based Medicine.
3 hours. This course is intended to introduce students to the fundamental elements of epidemiology, with relevant emphasis on clinical applications and evidence-based medicine. The course consists of lectures, biomedical journal article discussions, student presentations, and other activities as assigned. Lectures emphasize the basic concepts of epidemiology and clinical research design, and their applications to clinical medicine and public health. Biomedical journal articles emphasize the practical application of concepts covered in lectures. Group presentations provide students an opportunity to enhance their communication skills, while also demonstrating mastery of course content. Offered each Fall. Letter Grade.

BMSC 5400.002. Biostatistics for Biomedical Sciences.
4 hours. Statistical methods and experimental design; descriptive statistics; data presentation; parametric and non-parametric methods of hypothesis testing including two-sample tests, analysis of variance, regression and correlation analyses; introduction to multivariate statistics. Competency with computer statistical packages is developed. Offered each Summer. Letter Grade.