

MUSC College of Graduate Studies

Master of Science in Medical Sciences Program



2019-2020

Student Handbook of Curriculum and Policies

Master of Science in Medical Science

| Introduction

The Master of Science in Medical Sciences (symbol: BSC) is a one-year program specifically designed to provide students with a structured opportunity to acquire knowledge and skills that will prepare them for the challenges of applying to and succeeding in medical, dental, and other professional schools. The program contains didactic coursework at the graduate professional level, professional skills development sessions, standardized test preparation, and clinical exposures to form a complementary skill set to those that have been acquired at the undergraduate level. Graduates of this program will also be academically prepared to enter industrial or academic technical positions requiring a biomedical sciences background.

We expect this program to enhance students' success at professional school acceptance, but please note that successful completion of this program is in no way a guarantee of an interview or acceptance into professional school at MUSC or anywhere else.

| Curriculum

The curriculum for the Master of Science in Medical Sciences requires a minimum of 33 credit hours over three consecutive semesters and does not require a thesis. The general plan for the coursework for the program is laid out below. In addition, optional coursework may be made available to students in the program depending on availability and interest.

Year	Semester	Course		Credit Hours
1	Summer	# Pending	Biochemistry	4
		BSC-706	Professional Development	1
		BSC-710	Clinical Exposures	1
		BSC-750	Caring for the Community	2
		MSC-789-08	Core Clinical Research Training	1
			Total Semester Hours	9
1	Fall	BSC-700	Histology	4
		BSC-702	Anatomy	4
		CGS-700	Biostatistics	4
			Total Semester Hours	12
1	Spring	BSC-710	Clinical Exposures	1
		BSC-714	Oral Immunobiology	4
		BSC-716	Medical Microbiology	4
		MCR-736	Clinical Epidemiology	3
		BSC-708	Grand Rounds	1
			Total Semester Hours	13
		Total Credit Hours	33	

| Academic Requirements

To receive the MS in Medical Sciences degree, the student must be enrolled as a full-time graduate student (minimum of nine credits per session), submit a portfolio at the end of spring semester (consisting of their CV, personal statement, and two Grand Rounds reports), **pass all pass-fail courses, and finish with a cumulative minimum grade point average of 3.0 in the required merit graded courses.** There is no remediation option for this program. The cumulative spring grade point average is final.

There are 6 required pass-fail courses:	There are 7 required merit graded courses
Clinical Exposures (summer/spring) Professional Development (summer) Caring for the Community (summer) Core Clinical Research Training (summer) Grand Rounds (spring)	Biochemistry (summer) Histology (fall) Anatomy (fall) Biostatistics (fall) Medical Microbiology (spring) Oral Immunology (spring) Clinical Epidemiology (spring)

| Elective Courses

MS in Medical Sciences students have the option of enrolling in additional courses offered at MUSC at no additional charge, with the course instructor's permission, and notification of the MS in Medical Sciences program directors. Grades from optional courses will be reported on the student's MUSC transcript, but they will not be included in the calculation of the final grade point average with regard to eligibility for the MS in Medical Sciences degree. Only grades in the required elements will count for the purposes of determining eligibility for the degree. Under unusual circumstances a student may be allowed to substitute an alternative MUSC course for one of the required elements.

| Standardized Test Guidance (MCAT/DAT)

During the summer term, the biochemistry course includes 4 test prep sessions focused on MCAT-style biochemistry questions. Students having an MCAT score below 509 or a DAT score below 20/20 are strongly encouraged to retake the respective exam at the end of the summer term in order to be competitive applicants at MUSC. If the resulting score is still below these benchmarks, students can register to take the exam again no later than January, and have the score considered for admission to MUSC College of Medicine in current cycle. Students with higher scores should consider retaking their respective exams if their scores are more than two years old.

| Grading Scale

Requirements for honors-pass-fail grades are specific for each course. For all other courses, merit grades are reported on the transcript as numbers between 0.0-4.0 in 0.1 increments according to the University Grading System shown below and published in the [MUSC Bulletin](#)

Faculty use either the raw score (the percentage of correct answers) or the T-score (a normalized score) to grade examinations. The grade average is calculated by multiplying the credit value of the course by the merit points earned in that course, summing the resultant total merit point value for the semester (or for the cumulative record) and then by dividing the total merit point value by the total credit hours carried. This calculation can be performed for either a specific semester or for the entire record of enrollment.

Raw Score	Merit Grade	T-score	Merit Grade
95	4.0	61	4.0
94	3.9	60	3.9
93	3.8	59	3.8
92	3.7	58	3.7
91	3.6	57	3.6
90	3.5	56	3.5
89	3.4	55	3.4
88	3.3	54	3.3
87	3.2	53	3.2
86	3.1	52	3.1
85	3.0	51	3.0
84	2.9	50	2.9
83	2.8	49	2.8
82	2.7	48	2.7
81	2.6	47	2.6
80	2.5	46	2.5
79	2.4	45	2.4
78	2.3	44	2.3
77	2.2	43	2.2
76	2.1	42	2.1
75	2.0	41	2.0
74	1.8	40	1.9
73	1.6	39	1.8
72	1.4	38	1.7
71	1.2	37	1.6
70	1.0	36	1.5
< or = 69	0.0	35	1.4
		34	1.3
		33	1.2
		32	1.1
		31	1.0
		< or = 30	0.0

Alphabetic equivalents to this continuous scale are as follows:

- A = 95 and above
- B = 85 - 94
- C = 75 - 84
- D = 70 - 74
- F = 69 and below

| Interim Progress Assessments

At the end of each semester, the progress of each student will be assessed by the Program Committee. If a student's performance in the summer or fall semester is such that future application for admission to a professional school is unlikely to be successful, the student may be advised to withdraw from the program or be dismissed if the program directors feel that it is in the student's best interest. The student may appeal this decision.

| Early decision and timing of application to professional schools

The MUSC College of Medicine Admissions Committee will give credit for participation in the MS in Medical Sciences program in their ranking of applicants after the end of the fall semester. Therefore, in general, MS in Medical Sciences students are advised against applying to MUSC for Early Decision. Timing of applications to other professional schools should be guided by each school's recommendations.

MS in Medical Sciences students are encouraged to apply to multiple professional schools and to request letters of recommendation from faculty in the MS in Medical Sciences program. A letter from the MS in Medical Sciences program directors describing the program curriculum, with or without an assessment of the requesting student's performance, is available to be included in all applications, or to be sent to MUSC only at a student's request.

| Professionalism

To prepare students for the behavioral expectations of a professional school, the MS in Medical Sciences program employs the feedback system in use for behavioral issues in the MUSC College of Medicine. To inform a student that his or her behavior has been unprofessional, a Physicianship Evaluation Form is completed by the student and program directors/faculty in a private meeting. This provides an opportunity for both parties to discuss perceived transgressions of professional behavior on the part of the student and provide formative feedback. The form is not intended to be punitive, but rather to encourage self-assessment and improvement where needed to ensure positive professional growth. Further information on professional expectations for trainee health care providers can be [found at this link](#).

| Honor code

The Honor Code is the foundation and bulwark of academic integrity at the Medical University of South Carolina. Students enter MUSC to become part of a noble profession. An important part of that development is a commitment to the integrity and ethical standards of that profession. The central purpose of the Honor Code is to sustain and protect an environment of mutual respect and trust in which students can enjoy the freedom to develop their intellectual and personal potential. The Honor Code depends upon the willingness of every individual to adhere to the basic principles of academic integrity and agree never to behave unfairly or dishonestly in academic work, or tolerate those who do. Only through a mutual commitment to maintaining this high standard can students at MUSC enjoy the benefits of a community that is marked by honesty and integrity. The Honor Code both promotes and requires an atmosphere of trust in which students tell the truth, live honestly, advance on individual merit, and demonstrate deep respect for others

in the academic, clinical, and research communities. The Honor Code is administered by and for the members of the MUSC community, and it depends on cooperation and support from each community member. Students are encouraged to read [the Honor Code policy in the MUSC Bulletin linked here](#). Information will also be provided at Orientation.

| Laptop requirements

Exams in most of the merit-graded courses in the MS in Medical Science Program are computer-based using ExamSoft testing software. Therefore, all students are required to have a working laptop available for their use for taking exams. Instructions for downloading the testing software and ensuring that it runs on your machine will be provided well in advance of exams. In addition, all students are required to have a privacy filter that covers their screen to be used when taking all exams.

| Diplomas and Commencement

The MS in Medical Science Program is a degree granting program. Upon successful completion of the program, students will be awarded a diploma and a transcript stating that they have been awarded the Master of Science in Medical Sciences. MS in Medical Sciences 2020 graduates may participate in [MUSC Commencement exercises](#) to be held on May 16, 2020

| Tuition and fees

Tuition for the MS in Medical Science program is the same as charges for any master's degree student in the College of Graduate Studies and is posted in the summer for the next academic year in the [Schedule of Academic Charges](#). Full-time enrollment is required. **Please note** that the histology course has additional fees.

| Financial Aid

Students are eligible for federal financial aid. Contact the Medical University of South Carolina [Financial Aid Services Office](#) for information on how to apply. Private loans may also be available, but please be aware that unfavorable loan terms are likely. The choice of a private lender for your alternative student loans is yours. The Medical University of South Carolina Financial Aid Services Office will process alternative loans from any eligible lender you decide to use but are prohibited by federal law from providing advice regarding individual lenders.

| Housing

MUSC does not own or administer any on-campus housing. It does maintain an [online listing of rentals and people in search of roommates](#).

Master of Science in Medical Sciences | Course Descriptions

BSC 700 Histology:

Dr. Oglivie and Dr. Sawyer

This is an online course in histology that involves learning the microscopic architecture and function of cells, tissues and organs of the human body. The course content is presented via interactive lectures and virtual labs. A unique feature of this course is the use of virtual microscopy to examine specimens over the Internet using a browser interface instead of a microscope. Learning is facilitated by practice quizzes and assessed by both open- and closed-book examinations. (4 credit hours, merit graded)

BSC 702 Anatomy:

Dr. Thierry Bacro

This intensive gross anatomy course is designed to prepare students for entry in the field of health professions in general, with a focus and emphasis on medical and dental curricula in particular. The course provides students with detailed examination of all structural aspects of the human body with a special emphasis on the anatomy and anatomical relationships significant to the common clinical medicine topics and surgical procedures. It is presented by regions of the body through lectures and matching online laboratories. The material is organized in units and presented in a logical fashion, i.e. Superficial Back and Upper Limb, Thorax, Abdomen, and Pelvis, Lower Limb and finally Head and Neck. Throughout the course, imaging techniques including CT scans and x-ray radiography are used to introduce the student to the clinician's perspective. The course content is also designed to correlate with important clinical problems that students may encounter as practitioners, and additional reading assignments are included in the materials to be studied by the students. The students also have the opportunity to further their knowledge of anatomy by using online resources that will be made available to them through a course management system. (4 credit hours, merit graded)

BSC 706 Professional Development:

Dr. Wright and Dr. Kasman

Students attend weekly 1 hour workshops led by various faculty members on writing personal statement for applications, writing resume and CVs, interviewing skills, professional etiquette, and how to get the most out of clinical shadowing experiences. Mock interviews and critiques of draft resumes and personal statements will be provided. Students will develop a professional portfolio that can serve as the basis for applications to professional schools. Assessment will be based on attendance and participation. (1 credit hour, Pass/Fail/Honors)

BSC 708 Grand Rounds:

Dr. Halushka

Each student attends a minimum of 10 Grand Rounds seminars over the semester, from at least three different disciplines (e.g. Medicine, Surgery, Pediatrics, Psychiatry). For each Grand Rounds attended, the student must submit an original, one page report describing what they learned for credit. The reports and course are graded pass/fail/honors. (1 credit hour, Pass/Fail/Honors)

BSC 710 Clinical Exposures:

Dr. Halushka

Students will have the opportunity to shadow a physician working in the MUSC Emergency Department and/or the autopsy service. The students will attend the clinic during the semester and write up the history of the patient and the diagnosis and treatment plan. (1 credit hour, Pass/Fail/Honors)

BSC Biochemistry:

Dr. Bullesbach and Dr. Hsu

This course presents fundamental concepts of biochemistry and molecular biology to pre-medical and pre-dental students enrolled in the Master of Biomedical Sciences Program. The course is divided into four separate modules. Each module consists of 7-8 didactic lectures, a review session, and a module exam. In the first module, basic principles of biochemistry will be introduced. In the second and third modules, a number of key metabolic pathways will be presented. Finally, the fourth module will cover essential aspects of molecular biology and advances in biotechnology. The major goal of this course is to assist students in acquiring the fundamental knowledge of biochemistry and molecular biology as applicable to the field of clinical and dental medicine. The review session at the end of each module also serves to prepare students for the biochemistry portion of MCAT and DAT. In terms of requirements, prior exposure to basics of biochemistry is highly recommended. (4 credit hours, merit graded)

BSC 714 Oral Immunobiology (OHS 624):

Dr. Westwater

This course introduces the basic and clinical concepts of immunology, with an emphasis on oral biology. Students who pass this course will understand how the immune system works in health, and how its dysfunction causes or contributes to disease. Topics covered in this course include fundamentals of adaptive and innate immunity, immune regulation, immunization, and transplantation biology and tumor immunology. Disorders such as hypersensitivity, graft rejection, graft-versus-host disease, and autoimmunity are introduced as well as the drugs used to treat these diseases. The impact of the human microbiome on health and disease is also discussed. The course grade is based on four written exams and evidence-based medicine assignment. (4 credit hours, merit graded)

BSC 716 Medical Microbiology (MBIM 623):

Dr. Schmidt and Dr. Kasman

This course will foster a knowledge base and understanding of the fundamentals of bacterial physiology and genetics; clinical bacteriology, virology, parasitology and mycology; antimicrobial therapy; and infection control. The primary goals of the course are to explore the relationship between the physiology of medically important microbes to the pathobiological sequelae of human-microbial interactions, with particular reference to the role of microbes in human disease. In addition to lecture, instruction includes problem based, small group exercises in microbiology with clinical case scenarios. The course grade will be based on 3 multiple choice question exams, in-class quizzes, and small group case-based problem-solving write-ups. (4 credit hours, merit graded)

BSC 750 Caring for the Community (IP 712):

Dr. Ramsetty

Caring for the Community is an interprofessional course (cross-listed as IP-712) aimed at exposing students to the social and financial resources available within the Charleston area to our patients, in particular those who are uninsured or under-insured. Discussions, debates, panels and small group activities will serve to increase our knowledge as providers, and to better serve our patient population in regard to addressing all of their needs, beyond medical needs only. Topics addressed will include health disparities, population health and cultural factors affecting delivery of healthcare, social determinants of health and community resources. All students enrolled in IP-700 will preferentially be afforded opportunities to rotate through the CARES medical clinic as well as shadowing opportunities in the CARES PT/OT clinic, the ECCO Dental clinics and joint Low Country Food bank-CARES clinic events. (2 credit hours, Honors/Pass/Fail)

CGS-700 Introduction to Biostatistics:

Dept. of Public Health Sciences Faculty

This course provides a descriptive and inferential statistics commonly used in biomedical research. Topics include elementary probability theory, and introduction to statistical distributions, point and interval estimation, hypothesis testing, regression and correlations. The course is intended for graduate students in the basic and clinical sciences, clinical residents/fellows, and medical and dental students who seek a working knowledge of biostatistical methods and their applications. 4 credit hours. (4 credit hours, merit graded)

MCR 736 Clinical Epidemiology:

Dr. Lackland

This course is intended to focus on issues unique to the clinical and translational research arena. The emphasis of this course will be patient oriented populations. By the conclusion of the course, students will be able to: 1) Understand the characteristics associated with different study methods. 2) Understand the components of the scientific process model and apply it to their clinical and translational studies. 3) Design and develop a study of protocol and study proposal. 4) Develop comprehensive analytic plans to address an array of clinical and translational studies. (3 credit hours, merit graded)

MCR 789 Core Clinical Research Training:

This course is taken online and prepares participants to coordinate cost-effective health care research which protects the rights and safety of human subjects, achieves recruitment and retention outcomes and contributes to the science of health care. Participants completing the training will be prepared to coordinate research studies in compliance with the Good Clinical Practice Guidelines and federal regulations concerning human subject research. All participants of this course are required to take the CITI MIAMI Good Clinical Practice and ICH Basic Course as a pre-requisite. (1 credit hour. Pass/Fail)

Example elective courses:

HAP 704 Health Policy

Dr. Jones

This course is designed to provide students with a conceptual and analytical understanding of health policymaking and politics. Political and policymaking institutions and processes that affect the structure and functioning of the U. S. health care system will be examined. Fundamental concepts and issues associated with political decision making and the delivery of health services will be explored, including the impact of constitutional and other legal provisions, the activities of political parties and interest groups, the involvement of health professional associations and client organizations, and the relationships between economic factors and evolving health policymaking patterns. Available face-to-face and web-based. (Fall, 3 credit hours)

IP 710 Transforming Health Care

This interprofessional core course provides health professions students with an opportunity to learn with, from, and about other health profession students. The course introduces students to the complexities of the health care system and the role of interprofessional collaboration to improve the quality and safety of research and patient care. Through an interprofessional context, students will explore the art and science of teamwork and communication skills, cultural competency, ethics, evidence-based practice, healthcare disparities and social determinants of health. (2 credit hours, Pass/Fail)

IP 770 Culinary Health and Wellness

Students from multiple disciplines will study how the art of cooking and the science of food intersect to promote health and wellness. Students will become familiar with the science behind the role of nutrition in chronic disease prevention and management and will develop skills on how to select, prepare, cook and present foods that promote health and wellness. The class will combine independent reading and discussion and with hands-on experience in the kitchen. (spring, 1 credit hour, Pass/Fail)

| Requirements to apply

Prerequisites for the program include obtaining at least a baccalaureate degree with coursework appropriate for admission to the desired professional school. Applicants must have a Medical College Admission Test (MCAT) or Dental Admission Test (DAT) score dated no more than two years before the date of matriculation into the MS in Medical Science program to apply. Successful applicants will have test scores at or above the 50th percentile.

How to Apply

All applications to the College of Graduate Studies must be submitted online. The [application link](#) is open from Dec 1 – April 15. A filing fee of \$95 applies.

Option 1 (For applicants who have previously applied to the MUSC College of Medicine or Dental Medicine within the past year) If you have applied to MUSC professional schools via AMCAS or AADSAS for the most recent application cycle, you DO NOT need to resend transcripts, test scores, or reference letters. These will be obtained from your most recent AMCAS or AADSAS. You only need to write the personal statement explaining why you are applying to the MS in Medical Sciences, send updated unofficial test scores if any, and have official transcripts sent for any coursework completed *after* the AMCAS or AADSAS was submitted to MUSC. If your AMCAS or AADSAS was submitted to MUSC for the prior year's application cycle, you will need to send updated letters, but all other information will be available to us (letters are only maintained on file for 1 year)

Option 2 (all other applicants): You need to fill in the application completely and arrange to have three letters of reference, official transcripts from all prior institutions, and unofficial MCAT or DAT scores sent to MUSC Enrollment Management before an application will be considered complete. Unofficial scores can usually be obtained as a screen-shot or download from the testing company website, and can be emailed to Enrollment Management directly at oem@musc.edu.

Please note that successful completion of this program is in no way a guarantee of an interview or acceptance into a professional school at MUSC or any other institution. If you have any questions about the program or application process, please contact any of the program directors below.

| Program Directors



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