

DEPARTMENT *of*
MEDICAL AND MOLECULAR SCIENCES

Doctor of Philosophy in Medical Sciences
Program Policies



February 2021

Mission Statement

The mission of the proposed PhD program is to provide advanced training to students in the field of **Medical Sciences** with the goal of preparing students for research-based careers. Areas of in-depth study are driven by faculty research and encompass such clinically-related fields as diabetes mellitus, obesity, immunology and infectious disease, oncology, and other chronic health conditions. The programmatic emphasis is on the pathogenesis of disease, the biomarkers which can aid in diagnosis and treatment, and the underlying mechanisms which characterize chronic illness versus health. New knowledge on health, aging, and chronic disease will be generated and disseminated. The mission of the proposed program is to provide high quality instruction through a core graduate curriculum, research, electives, and seminars.

Degree Offered

The degree awarded to those who complete this program will be a Doctor of Philosophy (Ph.D.) in Medical Sciences.

Admission to the PhD in Medical Sciences Program

A. University Policy on Admission

Admission to the graduate program is competitive. Those who meet stated minimum requirements are not guaranteed admission, nor are those who fail to meet all of those requirements necessarily precluded from admission if they offer appropriate strengths.

B. University Admission Procedures

Applicants must submit all of the following items directly to the University Office of Graduate Studies using the online admission process before admission can be considered:

1. A completed application should be submitted no later than February 1 for the fall semester, and October 1 for the spring semester to ensure consideration.
2. A nonrefundable application fee must be submitted with the application. Credit card payment is accepted with the online application. Checks must be payable to the University of Delaware. Applications received without the application fee will not be processed. International students paying by check must use a check drawn on a US bank or an International Postal Money Order.
3. Applicants must submit essays to specific questions asked on the application; a resume; and a statement of professional goals and objectives.
4. Applicants must submit at least three letters of recommendation. All letters of recommendation should be mailed collectively to the Office of Graduate Studies.
5. The Graduate Record Examination (GRE) admission test scores are required. Applicants should request Education Testing Services (ETS) to report official test scores directly to the University of Delaware. The University of Delaware's institutional code for ETS is 5811. Applicants are encouraged to submit student copies of test scores in the application packets.
6. One official transcript of all US colleges and universities attended must be sent directly from the institution to the Office of Graduate Studies or be provided in a sealed envelope with the application packet. Students who have attended the University of Delaware need not supply a transcript from Delaware.
7. One official transcript of all non-US based college and university records is required. The transcript must list all classes taken and grades earned. If the transcript does not state that the degree has

been awarded, send a degree certificate that states that the degree has been awarded. If the degree has not been awarded or the degree certificate has not been issued, evidence of the awarded degree must be provided prior to the first day of classes in the term of admission. For institutions that issue documents only in English, send the English original. For institutions that issue documents both in English and a foreign language, send both the English language original and the foreign language original. For institutions that issue documents only in a foreign language, send the foreign language original and a certified translation in English. The translation must be certified by an official of the issuing institution, a state- or court-appointed translator, or the Embassy of the issuing country in the United States. If it is necessary to send non-original documents:

- a. The documents must be original “attested copies”, officially attested to by the issuing institution or the Embassy of the using country in the United States, and
 - b. Certified translations must be originals, no copies will be accepted.
8. International student applicants must demonstrate a satisfactory level of proficiency in the English language if English is not the first language. The Test of English as a Foreign Language (TOEFL) is offered by the ETS in test centers throughout the world. The University requires an official paper-based TOEFL score of at least 570, or at least 90 on the Internet-based TOEFL for an applicant to be considered for admission. For the IELTS examination, the minimum score required is 6.5. In addition, departments may elect to require that the applicant provide a score from the Test of Spoken English (TSE). TOEFL scores and TSE/SPEAK scores more than two years old cannot be validated or considered official. A waiver of the TOEFL exam is only allowed when a degree has been earned in a country where English is the primary language.
 9. International students must be offered admission to the University and provide evidence of adequate financial resources before a student visa will be issued. The University has been authorized under federal law to enroll nonimmigrant alien students. International students are required to purchase the University-sponsored insurance plan or its equivalent.
 10. All first-time international students are required to attend the Orientation Day for new international students, which takes place before classes begin.
 11. It is a Delaware State Board of Health regulation and a University of Delaware mandate that all graduate students with a birth date after January 1, 1957, be immunized for measles, mumps and rubella (MMR). Also, students may be required to provide evidence of PPD (Mantoux) Tuberculosis Screening Test within 6 months prior to beginning classes. Students who are admitted beginning January 2002 are required to show proof of vaccination against meningococcal disease unless granted a waiver. Students should refer to and complete the Student Health Service Immunization Documentation form upon admission.

C. Expected Minimum Requirements for Admission into the Medical Sciences Program

Admissions decisions are made by the Medical Sciences Program Committee. Students will be admitted to the program based on enrollment availability and their ability to meet the following minimum recommended entrance requirements:

- BS, MS or equivalent degree from an accredited college or university,
- GRE scores of at least 148 on quantitative reasoning and at least 150 on verbal reasoning
- An undergraduate GPA of 3.0 or higher
- Written statement of goals and objectives (the personal statement) that clearly identifies the applicant’s research and curriculum interests and explains how admission to the program will facilitate his/her professional objectives
- Current résumé and three letters of recommendation

All students will be expected to be sufficiently conversant in English and knowledgeable in the written word to convey clear, logical and complex written expressions.

D. Admission Application Processing

Applications will be processed as they are submitted. The admission process is completed as follows: First, completed applications consisting of the application form, undergraduate/graduate transcripts, official GRE scores, letters of recommendations, resume, statement of purpose, and written statement of goals and objectives are reviewed by the Program Committee of the Medical Sciences Program. Pending a successful review of the initial application materials, the application is circulated to the entire Medical Sciences faculty in an effort to match the student with an advisor. Faculty members advise students whose background, goals and objectives are compatible with their own research and funding. The Program Committee arrives at an admission decision after reviewing the completed application. To be admitted, a student must have an advisor. The applicant may be invited for an interview with the Program Coordinator and/or the faculty advisor.

E. Admission Status

Students admitted to the Medical Sciences Program may be admitted into one of two categories:

1. Regular status is offered to students who meet all of the established entrance requirements, who have a record of high scholarship in their fields of specialization, and who have the ability, interest, and maturity necessary for successful study at the graduate level in a degree program.
2. Provisional status is offered to students who are seeking admission to the degree program but lack one or more of the specified prerequisites. All provisional requirements must be met within the deadline given before regular status can be granted. Students admitted with provisional status are generally not eligible for assistantships or fellowships. Students who file an application during the final year of undergraduate or current graduate work and are unable to supply complete official transcripts showing the conferral of the degree will be admitted pending conferral of the degree if their records are otherwise satisfactory and complete.

Degree Requirements for the Doctor of Philosophy in Medical Sciences

The degree requirements are the same, whether a student is entering the program with a bachelor's degree or a master's degree.

A. Course Requirements

The Doctor of Philosophy in Medical Sciences **requires a minimum of 43 credits** including 9 credits of dissertation. The program is designed to be completed in 4 years. The 43 required credits are specified in the student's plan of study and normally include:

Required courses (37 credits):

- MMSC800 Preparing Research Proposals (2)
- MMSC 650 Medical Biochemistry (4)
- MMSC 691 Human Medical Genetics (3)
- Research (MMSC868) (12)
- MMSC603 Research Design (3)
- Dissertation (MMSC969) (9)
- Seminar (MMSC803/804) (4)
(taken 8 semesters, including 4 semesters for 1 credit [803]
and 4 semesters for 0 credit [804])

Science Core Elective Courses (6 credits): (Examples are listed in Appendix A.)

Students who have had substantially similar courses to one or more of those required prior to entering the Medical Sciences Program may substitute other appropriate courses with the approval of the advisor and the Program Committee.

Only those courses in the 600, 800, 900 levels will apply towards the doctoral degree. Independent study courses will be accepted based on approval of the advisor and the Department Chair. A maximum of 9 independent study credits may be included in the program of study.

Students may use a maximum of nine (9) graduate credits earned prior to admission according to the university graduate school policy found at <http://www.udel.edu/gradoffice/polproc/registration.html> ("transfer credit" link). The courses must be less than 5 years old.

B. Suggested Planned Program of Study and Revisions

Students are required to develop a plan for a program of study with their advisor during the first semester of study. Depending on the student's background and interests, the program of study may include courses beyond the minimum number required for the degree. The planned program of study must first be approved by the advisor and then the Program Committee by the end of the first semester. A potential plan for the program of study (**showing only the minimum requirements for the degree**) is shown below.

Fall - Year 1

MMSC 650 Med Bio	(4)
Research I (MMSC868)	(3)
Science Core Elective	(3)
Seminar (MMSC803)	(1)

Spring – Year 1

MMSC 691 Hum Genetics	(3)
Research II (MMSC868)	(3)
Science Core Elective	(3)
Seminar (MMSC803)	(1)

Preliminary Exam at end of year 1

Fall – Year 2

MMSC 603 Res Design	(3)
Research III (MMSC 868)	(3)
Seminar (MMSC 803)	(1)

Spring – Year 2

MMSC 800	(2)
Research IV (MMSC 868)	(3)
Seminar (MMSC 803)	(1)

Candidacy Exam at end of year 2

Fall – Year 3

Seminar (MMSC804)	(0)
Dissertation (MMSC969)	(1-9)

Spring – Year 3

Seminar (MMSC804)	(0)
Dissertation (MMSC969) or UNIV999	(1-9) (0)

Fall – Year 4

Seminar (MMSC804)	(0)
Dissertation (MMSC969) or UNIV999 (0)	(1-9)

Spring – Year 4

Seminar (MMSC804)	(0)
Dissertation (MMSC969) or UNIV999 (0)	(1-9)

Students may need to alter their approved program of study due to scheduling conflicts, creation of new courses, or change of research focus. Students who wish to make changes to their program of study should first obtain permission from their advisor. The revised program of study must be approved by the Program Committee.

Students must have a minimum overall cumulative grade point average of 3.0 to be eligible for entering candidacy and for completing the degree. Grades in all courses required for the degree must be a minimum of B- . All graduate numbered courses taken with graduate student classification at the University of Delaware are applied to the cumulative index. Students may retake one course in which a grade below a B- was received. Receiving a grade below a B- in a second course will result in dismissal from the program.

Candidates should ensure that all grades have been submitted by their professors. Any student receiving a grade of less than B- for Research or Dissertation will be given written conditions which must be met for improving and continuing in the program by the student's advisor and the Program Committee. Failure to meet these conditions will result in recommendation for dismissal from the program.

C. Residency Requirement

At least 4 academic years of graduate work are required for the PhD degree. At least one continuous academic year must be devoted exclusively to full-time study (9 credit hours per semester) in Medical Sciences in residence at the University of Delaware. This residency requirement may be fulfilled using a fall and spring semester combination or a spring and fall semester combination, but summer and winter sessions do not meet the qualifications.

D. Preliminary Examination Requirement

Students must pass a preliminary examination that tests their general knowledge base in Medical Sciences and their ability to critically evaluate scientific literature. The preliminary examination includes a written component followed by an oral component on a separate day. Content of the exam is usually based on: 1) course work taken during the student's first year of the academic program and 2) an area of study that is consistent with the student's planned dissertation work. The preliminary examination must be completed by the end of the student's first year of enrollment. The results of this examination will be one of the following:

1. Pass. The student may proceed to the next stage of his/her degree training.
2. Conditional pass. In the event that the examination committee feels the student's performance was generally acceptable but with a specific deficiency, condition(s) will be specified that the student must satisfy to achieve a Pass and remain in the Program. These conditions may include a re-examination on one or more question areas.
3. Re-examination. This result is appropriate for a student whose performance was unsatisfactory, but displayed evidence of the potential to complete graduate degree training. Re-examination must be completed within one semester. The possible outcomes of the re-examination are pass or failure. The student may not take the exam a third time.
4. Failure. This outcome would indicate that examination committee considers the student incapable of completing degree training and the student would be recommended for dismissal from the program.

The advisor and Preliminary Examination Committee will determine on a case by case basis the composition of re-examinations.

E. Candidacy Examination Requirement

Each student in the Medical Sciences Program will prepare a written and oral proposal for dissertation research to be completed prior to the beginning of the third year of the program. These proposals should demonstrate competency in oral and written communication skills.

The written proposal will meet the requirements for length, quality, and format required for an external grant proposal, with the funding agency to be specified by the student's faculty advisor. The written proposal will normally be completed and approved by the faculty advisor prior to the beginning of the student's third year of study, although the proposal may be submitted to the funding agency at a later date, in accordance with published timelines.

The oral proposal presentation will be made to the student's committee in a public forum, with all Medical Sciences students and faculty also invited. Prior to the presentation, proposals normally should have received approval from the Human Subjects Review Board (HSRB) and/or the Institutional Animal Care and Use Committee (IACUC). The written dissertation proposal will be made available to all members of the Medical Sciences faculty at least two weeks prior to the oral meeting date. The oral proposal meeting will include both a defense of the student's proposed dissertation research and an in-depth examination of the student's knowledge of their research specialization.

The possible outcomes of the candidacy examination are pass, conditional pass, or failure. The outcome will be presented to the student, along with any conditions or requirements for proposal revisions. For conditional pass, requirements must be addressed within six months of the original exam date. Once the candidacy examination has been successfully completed, the student must apply to the graduate school for admission into candidacy. Please see the Recommendation for Candidacy for Doctoral Degree form (PDF) for details.

F. Dissertation and Dissertation Defense Requirements

A draft of the written dissertation will be made available to all members of the Medical Sciences faculty at least two weeks prior to the date for oral presentation of the completed dissertation research. All Medical Sciences faculty and students will be invited to attend the oral dissertation defense meetings. Following the oral presentation and questions from faculty in attendance the Dissertation Committee will meet separately and vote on the outcome. The possible outcomes of the oral defense are pass, conditional pass, or failure. The outcome will be presented to the student, along with any conditions or requirements for proposal or dissertation revisions. For conditional pass, requirements must be addressed within six months of the original exam date.

G. Faculty Advisors and Committees for Preliminary Exams and Dissertation.

- 1. Faculty Advisors.** During the application process, each student must identify a faculty advisor from among the faculty holding appointments in the program. The faculty member must be willing to serve as advisor and to accept responsibility for oversight of the student's academic progress in the program.

If, during the course of a student's academic program, the advisor is unable or unwilling to continue as advisor, it is the student's responsibility to identify a faculty member willing to be the new advisor. The new advisor must be identified within 6 months in order for the student to be considered making satisfactory progress toward the degree.

Students may also elect to switch to a different advisor at any time with the approval of the Program Committee and with the consent of the new faculty advisor. Switching advisors does not change the deadlines for completing the requirements for a degree.

- 2. Preliminary Exam Committee.** The Program Committee will identify, each year, at least three faculty members who, in consultation with each student's advisor, will have responsibility for writing and assessing the written and oral components of the preliminary exams for those students ready to take this exam. The student's advisor will be an automatic member of this committee. All members of the

Medical Sciences faculty are encouraged to participate in the oral portion of the exam. However, responsibility for determining the final outcome of the exam (pass, re-examination, failure) will lie with the named members of the Preliminary Exam Committee. In the event of a re-examination, the same committee members will have responsibility for composing the exam and assessing the outcome.

3. **Dissertation Committee.** The student and his/her advisor will identify members of a Dissertation Committee within one semester of successful completion of the preliminary examination. Ph.D. dissertation committees must consist of a minimum of four members and a maximum of six members, including the advisor. At least two of the members should be University faculty. At least one member is to be selected from outside of the Medical Sciences Program and/or from outside of the University. These outside committee members should be chosen based on their expertise in the area of study related to the dissertation, and in consultation with the advisor and other committee members. Outside committee members will normally hold a doctoral degree. An outside committee member not holding a doctoral degree must be approved by the Program Committee. It is the responsibility of the advisor to replace members who withdraw from the committee during the dissertation process.

Students must convene their dissertation committees at least once every six months. Upon completion of the meeting, the student's advisor must complete a meeting report and submit it to the graduate coordinator. The deadlines for submission of these meeting reports are October 1 and March 1 of each year. Students who do not have committee meetings in a timely manner will be considered as failing to progress and will be required to meet with the Program Committee to determine whether a recommendation for dismissal from the program is warranted.

H. **Requirements for Satisfactory Progress towards the Degree**

1. **Time Limit for Completing the Degree.** The time limit for completion of degree requirements begins with the date of matriculation and is specifically detailed in the student's letter of admission. Students entering the program are given 10 consecutive semesters to complete the program requirements. An extension of time limit may be granted for circumstances beyond the student's control. Requests for time extensions must be made in writing and approved by the student's dissertation committee and the director of the Medical Sciences Program. The director will forward the request to the Office of Graduate Studies.

Leave of Absence. Matriculated students who seek a leave of absence from the program for personal, medical, or professional reasons must first obtain written approval from the graduate program coordinator. The request and the recommendation from the department should be sent to the Office of Graduate and Professional Education for approval. The length of time needed for the leave should be indicated. Upon approval, the student's academic transcript will record the approved leave in the appropriate semesters. The period of absence will not affect the limitation of time for completion of the degree requirements as given in the student's official letter of admission. The Office of Graduate and Professional Education will send written notification of the approval or denial of the requested leave. If the student does not complete their program by the original deadline after being on leave, he/she may request a time extension.

2. **Submission of Required University Forms.** When a student has met the requirements for admission to candidacy as previously explained, the department should submit a Recommendation for Candidacy for Doctoral Degree form to the Office of Graduate Studies. The student's classification will change to post-candidacy upon admission to candidacy status. The deadline for admission to candidacy for the fall semester is August 31. The deadline for admission to candidacy for the spring

semester is January 31. The deadline for admission to candidacy for the summer is April 30. Responsibility for seeing that admission to candidacy is secured at the proper time rests with the student.

To initiate the process for degree conferral, candidates must submit an “Application for Advanced Degree” to the Office of Graduate Studies. The application deadlines are February 15 for Spring candidates, January 15 for Winter candidates, May 15 for Summer candidates, and September 15 for Fall candidates. The application must be signed by the candidate’s adviser and department chair. There is an application fee for doctoral degree candidates that is published by the university. Payment is required when the application is submitted. Upon completion of the audit, the Office of Graduate Studies notifies students in writing when they have met all degree requirements.

3. Grade Requirements for Satisfactory Progress. Failure to satisfactorily progress in the program will be based on the University Graduate Policy as noted below:

The Office of Graduate Studies monitors the academic progress of all graduate students and notifies students in writing of all academic deficiencies. The cumulative GPA after each 9-hour increment determines academic standing.

The University’s Academic Probation Policy is expressed in the following chart:

If student is on:	And earns a GPA of:	The status becomes:
Any status	3.0 or above	Clear
Clear	2.99-2.5	Warning
Clear	2.49-2.0	Probation
Probation	Below 3.0	Dismissal
Warning	Below 3.0	Probation
Any status	Below 2.0	Dismissal

4. Reasons for Dismissal from the Program. The Office of Graduate Studies notifies students when they are dismissed from graduate programs without completing a degree. Dismissals usually take place at the end of a term. Students may be dismissed for the following reasons:

- Upon the expiration of the five-year time limit for those students in a doctoral program who were admitted with a master’s degree. Upon the expiration of the seven-year time limit for doctoral students who were admitted with a bachelor’s degree.
- Upon the failure to meet the grade point average requirements as stated in the policy on Academic Deficiency and Probation.
- Upon written notice to the Office of Graduate Studies of voluntary withdrawal from the program.
- Upon failure to pass the preliminary, language, or comprehensive/ candidacy examination(s), a dissertation/ proposal defense, or a dissertation defense.
- Upon the failure to achieve a cumulative grade point average of 3.0 upon the completion of the stated number of required credits for a degree.
- Upon the failure to meet the stated minima in specific course requirements as identified by individual programs when a department has a policy that such failure leads to dismissal from the program.
- Upon failure to satisfactorily conduct research required for the degree.
- Upon the determination by the faculty of the student’s department that the student has failed to meet or has failed to make satisfactory progress towards meeting academic standards required of

the student's program other than the failure to achieve a cumulative grade point average of 3.0 upon the completion of the stated number of required credits for a degree.

- Upon violation of University of Delaware regulations regarding academic honesty. All graduate students are subject to University of Delaware regulations regarding academic honesty. Violations of these regulations or other forms of gross misconduct may result in immediate dismissal from the Program.

In the case of dismissal, the graduate coordinator is required to send a report to the Office of Graduate Studies that states the faculty vote on the decision causing dismissal and the justification for this action. The Office of Graduate Studies will notify a student in writing when the student is being dismissed for failure to make satisfactory progress in the program.

- 5. Procedures for Student Appeals.** Students who receive what they perceive as an unfair evaluation by a faculty member or faculty committee may file grievances in accordance with University of Delaware policies. Students are encouraged to contact the faculty advisor and then the department chair prior to filing a formal grievance in an effort to resolve the situation informally.

In the case of academic dismissal, the student may appeal the termination by writing to the Office of Graduate Studies. This appeal must be made within ten class days from the date on which the student has been notified of academic dismissal. If the Vice Provost for Academic Affairs grants reinstatement, the student must meet the conditions of the reinstatement. Failure to meet these conditions will result in dismissal from the program. A graduate student may be reinstated only once to a given major. The student's academic transcript will reflect the reinstatement with academic probation status.

Students wishing to review their program file must submit a written request to the graduate coordinator at least 24 hours in advance. Students must review the file in the presence of program staff or faculty and are not permitted to remove a file but may photocopy documents from their folder. All access to student records is in accordance with the Family Educational Rights and Privacy Act.

- 6. Laboratory Safety and Research Regulations and Standards of Student Conduct.** Graduate students performing laboratory research are subject to all University regulations regarding safety, human subjects, animal use, and hazardous and radioactive material use and disposal. These guidelines may be found in the University of Delaware Policies and Procedures Manual. Additional information can be obtained from the UD Research and Graduate Studies website: <http://www.udel.edu/research/> All training and regulatory authorizations must be updated at the time of proposal submission

Part IV. Financial Aid and Assistantships

A. Financial Awards

- 1. Types of Awards, policy for granting financial awards, summer appointments, and number of years of support**

Funding for PhD students within the Medical Sciences program will primarily come from faculty advisor grant support and department teaching assistantships. Research Assistant awards will be made on a competitive basis for students that best fit the needs of the sponsoring faculty member.

Teaching Assistant awards will be made on a competitive basis for students prepared to teach and otherwise assist with undergraduate instruction. Our college will not provide funding support for any student pursuing a degree in another unit.

Students can also apply for internal funding. For example, students can apply for any of the competitive awards offered through the UD Research and Graduate Studies Office. This includes the University Graduate Fellow Award, the University Graduate Scholar Award, and the University Dissertation Award. Note that for some awards, the Program Committee will determine which Medical Sciences student application is the best to be sent forward.

Students can also apply for pre-doctoral support from funding agencies such as the American Heart Association. All students will be encouraged to apply for these external awards. The sponsoring faculty member will work with the student to develop the proposal.

Summer appointments will be made on an individual basis. If funds are available, it is expected that students will work full-time in the sponsoring faculty's laboratory during the summer months (with a reasonable amount of time for vacation).

Support for a student enrolled in the Ph.D. program normally will not be provided for more than 5 years.

The Student Health Services Fee is mandatory for all full-time graduate students.

2. Responsibilities and Evaluation of Students on Assistantships

Students are expected to maintain full-time status during their graduate studies. While time devoted to classes vs. laboratory work will vary each semester, students are expected to devote 20 hours per week to laboratory work early in the program (when course work is high), progressing to full-time in the lab upon completion of course work.

Specific teaching related responsibilities for TAs will be assigned by the Department Chair/School Director of the faculty advisor's department/school. The chair/director will review student evaluations of teaching and possibly use other means of evaluating teaching effectiveness. Maintaining a TA position is contingent on satisfactory teaching performance, as well as the student making satisfactory performance toward the degree.

Specific responsibilities for RAs will be assigned by the faculty member supplying the funding for the RA position. Continuation or termination of the RA position will be at the discretion of that faculty member.

As outlined in the assistantship contract, outside employment (on or off campus) is not allowed while on contract.

If a student is a US citizen, he/she can work off campus during summer if not funded by UD. He/She does not need to be registered in the summer.

If the student is an international student, he/she has to sign up for Curricular Practical Training (CPT) to work off campus. On CPT, the student has to be registered as the work is to be related to the degree per immigration rules. See <https://www1.udel.edu/oiss/forms/cpt.pdf>

Part V. Program Governance

A. Medical Sciences Faculty

1. **Affiliated Faculty.** Faculty from across the university who have training and interest in the broad field of Medical Sciences may affiliate with the program by expressing interest and submitting a CV for review by existing program faculty. Responsibilities of program faculty include oversight of program policies and curriculum. Faculty currently affiliating with the program include:

Mona Batish	Medical Laboratory Sciences
Vijay Parashar	Medical Laboratory Sciences
Sam Biswas	Medical Laboratory Sciences
Esther Biswas-Fiss	Medical Laboratory Sciences
Kathy Schell	Nursing
Kathleen Brewer-Smyth	Nursing
Marie Kuczmariski	Behavioral Health and Nutrition
Jillian Trabulsi	Behavioral Health and Nutrition
Sheau Ching Chai	Behavioral Health and Nutrition
Michell Provost-Craig	Kinesiology and Applied Physiology
William Rose	Kinesiology and Applied Physiology
Christopher Modlesky	Kinesiology and Applied Physiology
William Farquhar	Kinesiology and Applied Physiology
Thomas Buckley	Kinesiology and Applied Physiology
Kathleen Matt	Dean, CHS, Kinesiology and Applied Physiology
Melissa Melby	Anthropology
Kenneth van Golen	Biological Sciences
Eric Kmiec	Helen Graham Cancer Center Gene Editing Institute

2. **Graduate Coordinator.** The CHS dean will appoint a graduate coordinator for the Medical Sciences Program from among the affiliated faculty. The term of service for the graduate coordinator is three years, with no limit on the number of consecutive terms that may be served. The graduate coordinator serves as the program representative and point person and is responsible for the following:

- Corresponding with prospective students,
- Maintaining program records,
- Holding elections for members of the Program Committee,
- Chairing Program Committee meetings,
- Admitting students to the program following approval of the Program Committee,
- Chairing meetings of the Medical Sciences faculty as necessary for review/revision of program policies and curriculum, and
- Final approval of degree granting.

3. **Program Committee.** The Medical Sciences Program Committee will consist of an affiliated faculty member from each of the involved academic units within the College of Health Sciences, serving in staggered, three-year terms. The graduate coordinator will serve as chair of the Program Committee and will also be the representative from her/his academic unit. Responsibilities of the Program Committee shall include:

- Admission of students into the program,
- Approval of student programs of study,
- Approval of student selection of a new faculty advisor after admission to the program,
- Selection of a panel of four faculty to serve as the Preliminary Exam Committee during each academic year,
- Oversight of student progress in the program, including dismissal of students who fail to make satisfactory progress, and
- Approval of dissertation committees.

B. Medical Sciences Students

- 1. Student Organization.** Students in the program will be encouraged to periodically meet as a group so that the student representative can pass on any pertinent information from program meetings and so the group can discuss any issues or concerns they might have. Concerns can be brought to the attention of the program faculty by the elected student representative.

Part VI. Assessment

Three Learning Outcomes have been identified for the program. Upon completion of the program, all students will:

1. Employ research methods to assess a problem in the field of medical science in an ethical manner.
Course Assessed: MMSC989 Dissertation
2. Communicate research findings in an effective manner.
Course Assessed: MMSC800 Preparing Research Proposals
3. Demonstrate the ability to quantitatively analyze data using several different statistical procedures.
Course Assessed: KAAP602 or BISC643 or MMSC 603

APPENDIX A
SCIENCE CORE ELECTIVE COURSES

Given the interdisciplinary nature of the program, please note that this list is meant to be representative and not all-inclusive.

KAAP616	Advanced Mammalian Physiology II	4
KAAP655	Advanced Physiology of Exercise	3
KAAP680	Exercise, Nutrition and Bone Health	3
KAAP802	Human Cardiovascular Control	3
KAAP840	Advanced Human Anatomy	3
MMSC805	Biomarker Development	3
MMSC810	Evidence Based Practice	3
NTDT610	Overweight/Obesity Prevention and Management	3
NTDT611	Advanced Nutrition	3
NTDT630	Trace Minerals & Vitamins	3
NTDT640	Nutrition and Aging	3
NTDT655	Issues in International Nutrition	3
NURS621	Advanced Pathophysiology	3
NURS812	Responsible Conduct of Research	1 (online, fall)
ANSF671	Paradigms in Cell Signaling	3
ANFS640	Comparative Histopathology	4
ANFS644	Bioinformatics	3
BINF644	Bioinformatics	3
CISC636	Bioinformatics	3
BISC601	Immunochemistry	4
BISC602	Molecular Biology of Animal Cells	3
BISC604	Nucleic Acids Laboratory	4
BISC612	Advanced Cell Biology	3
BISC615	Vertebrate Developmental Biology	3
BISC619	Gene Expression Laboratory	4
BISC625	Cancer Biology	3
BISC626	Neuroscience I	4
BISC627	Neuroscience II	3
BISC639	Developmental Neurobiology	4
BISC645	Bacterial Evolution	3
BISC654	Biochemical Genetics	3
BISC656	Evolutionary Genetics	3
BISC660	Environmental Physiology	3
BISC665	Advanced Molecular Biology & Genetics	3
BISC671	Cellular and Molecular immunology	4
BISC675	Cardiovascular Physiology	3
BISC679	Virology	3
BISC693	Human Genetics	3
BISC806	Advances in Cell and Organ Systems	3
CHEM641	Biochemistry	3
CHEM642	Biochemistry	3
ELEG649	Nanomaterials and Applications	3
ELEG678	Intro to Nano and Biophotonics	3
MEEG613	Nanomaterials and Nanotechnology	3
MEEG684	Biomaterials and Tissue Engineering	3
PSYC809	Research Design	3
MMSC625	Basic Molecular Techniques	3
MMSC624	Introduction to Genomics, Proteomics and Bioinformatics	3
MMSC650	Cell and Tissue Culture Techniques (lab/lect)	3

MMSC608	Molecular Prep Techniques	2
MMSC692	Molecular Diagnostic Techniques (lab/lect)	3
MMSC627	Protein Purification and Characterization (lab/lect)	3
MMSC690	Clinical and Molecular Cell Biology	3
MMSC691	Human Molecular Genetics	3
MMSC427	Flow Cytometry (lab/lect)	2
UAPP800	Research Design and Data Analysis	4
HDFS815	Research Issues and Design	3
EDUC856	Introduction to Statistical Inference	3