



**Master of Science in
Medical Sciences Program**
2021-2022 Handbook

Welcome to the MS in Medical Sciences program!

The mission of the MS in Medical Sciences program is to advance the knowledge of our students and facilitate efforts towards realizing their career goals. We are committed to your success and preparing you for today's job market in whatever path you choose.

The next 18-24 months are going to go by quickly! In this document, you will find everything you need to successfully navigate the University of Kentucky, including guidelines and policies. There are also direct links to forms and university websites where you can find additional information. As this information is constantly being updated, please also refer to the regulations and policies found in the [University of Kentucky Graduate School Bulletin](#), which inform our procedures. Of course, if something is not listed here, please do not hesitate to reach out directly to me (regarding academic questions) or Bridget Szczapinski in the Office of Biomedical Education (regarding administrative questions).

We look forward to working with you!

Sincerely,



Melinda E. Wilson, Ph.D.
Director of Graduate Studies

Note: *Students are asked to share this handbook with their research mentor/committee to inform them of expectations and procedures.*

Books and Materials

Any required booklists are provided by the faculty on or before the first day of each semester. Most textbooks will be on order at the [University of Kentucky Bookstore](#); however, many may be found at discounted sites such as Amazon.com. Faculty members who require pre-reading will communicate with students in advance so that materials are made available.

Calendar

The University of Kentucky academic calendar can be found on the Registrar's [website](#). Important deadlines regarding registration, tuition payments, and graduation paperwork are on this calendar. Any changes to individual class schedules will be communicated directly to you by your professors.

Communication & Email

While you are a student at University of Kentucky, you must maintain an active UK email account. Email is the university's mechanism for official communication with students, and UK expects that students will read official email in a timely fashion. All communication from students to university administration should be conducted with a UK email account. If a non-UK email account is your primary email, you may choose to forward your UK email to your primary email account. However, you will still need to maintain the UK account by periodically updating your password. For more information on UK email, you may visit the UK Information Technology Services [website](#).

Financial Aid

Students who require financial aid to pay tuition should apply before June 30 to secure loans in time for payment for the fall semester tuition. More information on financial aid is available from UK's [Student Financial Aid](#) office at (859) 257-3172.

Fitness Facilities

Any student considered full time by the Registrar may use UK's fitness facilities free of charge. The [Johnson Recreation Center](#) is the student fitness facility.

MSMS Office Hours

The Office of Biomedical Education is open from 8:00-4:30 Monday through Friday. Dr. Melinda Wilson holds office hours by appointment.

Parking

Parking permits are required to park on campus during class days. Students living off-campus who wish to drive to class may purchase a Stadium (K) permit. This costs \$272 for the full 2021-2022 school year. Passes may be purchased for single semesters as well. Information on rates and parking locations can be found [here](#).

Student Health Records/ Insurance

[University Health Services](#) provides medical treatment for full and part time students.

The university also has a student health insurance plan (voluntary) that provides benefits for illness and injury. The University of Kentucky requires all international students and their dependents to have health insurance.

Study Rooms

If you need to meet with a group outside of class, there are several options available. There are [study rooms](#) available on a first come, first serve, basis at the Young Library and the Science Library. There are 22 group study rooms in William T. Young Library and 6 study rooms at the Medical School Library that are available for use by UK affiliated groups only (some of which are limited to weekends and after 5:00 PM on weekdays). You may check out a study room at the Circulation Desk. You will need at least 2 of your group present and a valid UK student ID to sign out a room. Rooms at the Young Library can accommodate 8-10 people, and rooms at the Medical School Library can seat 4-6. Each space is equipped with data connections and a dry erase board. Some also have a Mediascape unit. Dry erase markers and erasers are available for checkout at the Circulation Desk.

Tuition Payments

The program tuition fee for the 2021-2022 academic year is \$13,674 for residents and \$33,548 for non-residents. Tuition includes two (2) semesters of instruction; additional fees may apply to specific courses. You can find more information [here](#).

Tuition payments are due at the start of each term on the 22nd of the month for which the charges were billed (typically August, January, and May). Students can pay tuition online through myUK. If you have issues, please contact UK IT. Students may also pay in person or by mail with a check or money order.

Unpaid Tuition

Students with unpaid tuition balances will be charged a late payment fee and the Office of Student Accounts will place a registration hold on myUK, preventing students from registering for future courses. Tuition must be paid directly to Student Accounts. OBE staff does not accept tuition or facilitate payment arrangements.

WildCards

MSMS students must have their identification photographs taken at the [WildCard ID Office](#) in the student center, suite 380. WildCards are required to use the library, obtain student rates at athletic events, plays, and concerts, as well as to use student facilities such as the fitness and aquatic center. Each student's initial WildCard costs \$17, and the replacement fee for lost IDs is \$30.

Students engaged in research may be required to access various restricted areas. In this case, they should contact the Administrator or DGS of the department or center in which the research is being conducted to obtain a Medical Center ID badge.

Attendance and Absences

Students are expected to attend all classes. Attendance is extremely important for learning, participating, and gaining the most value from your graduate experience. Faculty are responsible for monitoring attendance. Excessive absences are grounds for academic probation or dismissal from the program. Occasionally, work-related travel or an emergency makes absence from class necessary. Individual professors have their own policies regarding absences from their classes, and MSMS students should consult with the professor (not the program staff) prior to the absence to make arrangements for completing missed work. In most cases, grades are affected by participation and attendance.

Students are considered both trainees and employees. Most departments consider that students have approximately four (4) weeks total vacation time each calendar year, consistent with vacation allocations for other employees. Any vacation time taken during the holiday break for Christmas and New Year's, during spring break, and vacation days away from campus at other times are included in this four-week allocation. Generally, students are expected to keep a schedule similar to the UK staff calendar (and not the academic calendar) and to be on campus on a continuing basis during regular work hours throughout the year. Students should also be aware that the demands of research protocols or presentations might require work on holidays, weekends, or evenings.

Classroom Etiquette

While taking a class in the MSMS program, students must behave in a way that demonstrates respect for faculty and students, and that supports the learning environment of all students. Therefore, laptops should be used only for tasks directly related to the class. During class time, computers, cellular phones, and other internet-enabled devices may not be used to check email, browse the Internet, or conduct work for other classes. Such behavior distracts other students and interferes with the faculty member's ability to teach. At their discretion, faculty may issue additional restrictions on the use of laptops and other electronic devices.

Classroom Procedures

Instructors establish their own classroom protocols concerning grade requirements, including class participation and group projects, the use of computers and other technology in the classroom, and attendance.

Degree Completion Deadline

All students must complete all requirements for the master's degree within six years of the date of their initial registration in the MSMS Program and are subject to meeting new program requirements should they change after this deadline. Students may petition for an extension of up to four years in order to complete the master's degree requirements if they have legitimate cause for not completing the degree within the six-year limit. Extensions up to two years may be approved by the Dean of the Graduate School or designate. Requests for extensions longer than two years must be considered by the Graduate Council. Requests will be initiated by the Director of Graduate Studies at the petitioner's request and submitted to the Senior Associate Dean.

Grading

MSMS students are graded on an incremental system of A, B, C, and E. **The Graduate School does not allow students to earn a D grade in graduate level courses.**

Graduation

University of Kentucky hosts university wide commencement ceremonies each December and May for students who are interested in walking. MSMS students who will complete their degrees that semester are eligible to participate; however, students must purchase their own regalia. Because the commencement ceremony occurs before final grades are verified, students will not receive their diplomas at the ceremony. Diplomas are mailed to eligible graduates within two months of graduation to the student's permanent address so, prior to graduation, make sure all of your records are up to date and reflect your post-graduation address.

Grievance Procedures

Concerns regarding grades, performance, or workload should be brought to the attention of the faculty member leading the course, who makes the final determination regarding these matters. Concerns regarding any other matter should be brought to the attention of the Director of Graduate Studies.

Honor Code

MSMS students will operate under University of Kentucky's [Code of Student Conduct](#) that governs exams, papers, class assignments, and other coursework. University policy requires that all registered students be aware of these principles.

Incompletes

A grade of "I" may be assigned to a graduate student if a part of the work of a course remains undone and if there is a reasonable possibility that a passing grade will result from completion of the work. All "I" grades must be replaced by a regular final letter grade within 12 months of the end of the academic term in which the "I" grade was awarded or prior to the student's graduation, whichever occurs first. If an "I" grade has not been replaced within the allowable period, the University Registrar shall change the "I" grade to a grade of "E" on the student's permanent academic record and adjust the student's grade point average accordingly, unless otherwise approved because of exceptional circumstances by the Dean of the Graduate School on recommendation of the DGS in the student's program. In exceptional circumstances, the Dean of the Graduate School will consider one-semester extensions of "I" grades beyond the 12-month period only. In order to request the extension, the student must obtain the recommendation of both the course instructor and the DGS in the student's program and complete the required form. In addition, the instructor must specify the remaining work necessary for the satisfaction of the course requirements, and the time frame over which this work will be completed. All work must be completed, and the grade assigned by the last day of final exams for the semester in which the extension is granted.

Probation

The Graduate School will place a student on academic probation if their GPA average falls below 3.00 after completing 12 or more credit hours. A student must restore their GPA to 3.00 or above within the next 9 credit hours. Otherwise, they will be dismissed by the Graduate School but may apply for readmission at a later date. Students on academic probation are

ineligible for fellowships, tuition scholarships, and graduation.

The assignment of probation, which is notice that progress toward the degree is unsatisfactory, is noted on the student's transcript.

If you receive notice that you are on academic probation, be sure to schedule a meeting with the Director of Graduate Studies to explore reasons for your unsatisfactory performance and discuss what you might do differently in order to raise your performance level.

Research

All students are encouraged to have at least one semester of biomedical research experience with a faculty member in one of the Departments/Centers affiliated with the MSMS program. Students should identify an area of interest and then explore opportunities with faculty members in that area. This can be accomplished by examining the research programs of the different faculty in the Departments/Centers of interest. Students in the Plan B option (see below) should take 3 hours of research for credit. Typically, a 3 credit hour research course would require approximately 9 hours of dedicated time per week when working on a Plan B literature based research report (see below and FAQ pages). However, students wishing to participate in "hands on" research projects should expect to spend more time working on their project, and may take up to a total of 6 hours of research credits. The time commitment will be based on the type of project and expectations of the research mentor. It is possible to conduct research projects during the summer session.

All students will be expected to submit the name of their research mentor by the end of the third full week of the semester in which they register for research credit. The students should share the Faculty Mentor Handbook with their mentors and turn in the signed last page. Any changes in research mentors must be approved by the MSMS DGS in writing and in advance of the change taking place.

Course Registration

Students will register for all courses using myUK, UK's web-based student enterprise system. All students should consult the Academic Calendar in the registrar's office to determine their specific [registration window](#). Students enrolling in MSMS classes should be able to select the courses they wish to take without issues. Failure to register during the priority registration window will require late registration and a late fee. Students are encouraged to consult with Dr. Wilson once a year to determine if their courses and/or performance are appropriate for their desired career goals.

Learning Management System

The University's Course Management System (CMS), powered by [Canvas](#), is a web-based course environment that allows students to view course materials, submit assignments and tests, view grades, and share documents, calendars, and sites.

Most, but not all faculty will use Canvas. Please check with your faculty member or teaching assistant for questions about your course Canvas site. If you do not see your course listed, this means your instructor has not yet made the course site available or is not using Canvas for the course.

Library

The University of Kentucky has several [libraries](#) on campus designed to meet students' varying needs. As a UK student, you have access to all libraries and to electronic resources available remotely using your LinkBlue ID. Materials may also be accessed through interlibrary loan, which provides a daily delivery of books and materials to UK's campus and allows MSMS students who work in that area to pick up materials at their convenience.

myUK

myUK provides student web access to UK's Student Services. Through myUK, students can register for classes, pay tuition, order transcripts, print enrollment verifications and grade reports, see financial aid and student account information, update address and telephone numbers, check course enrollment levels, and more. If you need assistance with myUK, call (859) 218-HELP.

Safety and Research Training

MSMS students who participate in laboratory research must complete the basic safety training required for biomedical research at UK. Students and faculty research mentors must review any additional safety or research training requirements prior to engaging in specific lab activities.

Laboratory accidents should be reported immediately to the faculty mentor or appropriate lab personnel to determine a course of action. Non life threatening accidents requiring medical attention need to be reported first to Worker's Care (1-800-440-6285). The injured employee (including graduate students) must go to UK Employee Health (part of University Health Services on Limestone) in the Kentucky Clinic for medical treatment.

Services for Students with Disabilities

University of Kentucky and the [Disability Resource Center](#) are committed to providing a

supportive and challenging environment for all students with disabilities who attend the University. Additionally, the University and the Disability Resource Center work to provide students with disabilities a learning and community environment that affords them full participation, equal access, and reasonable accommodation of their disabilities.

The University is obligated to make a reasonable accommodation only for known limitations of otherwise qualified students with disabilities. In other words, students with disabilities must register with the Disability Resource Center in order to qualify for reasonable accommodations.

Study Groups

The MSMS program fosters a collaborative learning environment. Students are encouraged to form small study groups when it would be helpful to do so. Study groups are voluntary in nature.

Technical Help

The MSMS Program requires that students use the University of Kentucky LinkBlue IDs and email addresses that are assigned to them. Should you have questions or problems with your LinkBlue ID or email, you may contact UK IT Support Center: (859) 218-HELP (4357) or at 218help@uky.edu.

Alumni Services

As an alumnus/a of University of Kentucky, you will be eligible to join the university's Alumni Association by applying [here](#). This membership grants you exclusive benefits such as access to local UK alumni clubs and events and discounted access to athletic facilities. Other benefits of a UK Alumni Association card include discounts on insurance, testing services, merchandise, and travel.

Career Services

The [James W. Stuckert Career Center](#) offers free career counseling catered specifically to graduate students. Career counseling is a confidential and supportive process through which you and your counselor work together to explore career options and make career decisions. You will work at your own pace on the parts of the career planning process appropriate to your needs. Career counseling can include discussing your strengths, areas of growth, and challenges.

Facebook

The Office of Biomedical Education maintains a Facebook page for all students and alumni. Throughout the year, OBE staff and other members of the group will post information about jobs and events at the university. To follow these posts, like the [University of Kentucky Office of Biomedical Education](#) on Facebook.

How do I apply for my degree?

Early in the semester in which you intend to graduate log on to [myUK](#), navigate through Student Services to myRecords, and then select Graduate Degree Application. Applications are due 30 days after the beginning of the semester.

I'm a Plan A student and ready to defend my thesis. Now what?

Plan A requires defense of a written formal master's thesis according to the guidelines established by the Graduate School. The complete thesis must be provided to the committee at least two weeks prior to the defense date. The defense follows an oral presentation of the thesis research and is conducted by a committee of at least three faculty members. Typically, the student's advisor chairs the committee.

At least two weeks prior to the examination date that has been approved by your committee, submit a final copy of the thesis to your committee and the DGS of the MSMS program.

The final, accepted thesis document must be submitted to the Graduate School no later than 60 days following the date of your defense. You will not have the entire 60 days if you defend late in the semester and need to graduate that semester. Prior to the final submission, you must have your thesis reviewed by the Graduate School to check for correct formatting. This process takes about 48 hours and may take longer during peak periods, especially towards the end of the semester. For more information on preparation and formatting of electronic theses, follow [this link](#).

You should submit a [request](#) for a Final Master's Examination no later than 2 weeks prior to the last day of classes. Conduct a review of your transcript to ensure you do not have any missing or "I" grades and your GPA is 3.00 or higher. Graduate School policy will not allow you to sit for the exam if you have unresolved academic issues.

The defense of your thesis must take place no later than eight days prior to the last day of classes of the semester in which the student expects to graduate. Final examinations may not be scheduled during the period between semesters. Consult the [Academic Calendar](#) for specific deadlines.

I'm a Plan B student and ready to schedule my final examination. Now what?

Plan B does not have a formal written thesis but does require a final master's exam that involves a written document covering a research project or, if no research is conducted, a research paper based on a student's area of specialization. The report should be at least 12-15 double-spaced pages in length (not including title page, figures, and references).

The general format of the actual Plan B final master's exam is up to the student's advisory committee. Students generate a PowerPoint presentation that will serve as the basis for questioning about the research report. The research report must be provided to the committee at least two weeks prior to the date of the exam. The presentation would include the hypothesis to be tested, the methodology used, the results of the study, interpretation of the results, and future directions. Students who do not conduct any research would be asked to write a literature review in an area of interest and their final exam would follow the same guidelines and format as above.

At least 2 weeks prior to the examination date that has been approved by your committee, submit a final draft of your report to each committee member and to the DGS of the MSMS program. You should submit a [request](#) for a Final Master's Examination. Conduct a review of your transcript to insure you do not have any missing or "I" grades and your GPA is 3.00 or higher. Graduate School policy will not allow you to sit for the exam if you have unresolved academic issues.

The final examination must be scheduled no later than 2 weeks prior to the last day of classes and take place no later than eight days prior to the last day of classes of the semester in which the student expects to graduate. Final examinations may not be scheduled during the period between semesters. Consult the [Academic Calendar](#) for deadlines.

How should I set up my thesis defense/final exam committee?

The make-up of your committee is based, in part, on the research area of interest. You need a minimum of three (3) faculty members on your committee and should consult with your research mentor to identify at least two additional faculty. At least two of the three committee members (including the chair or co-chair) must be members of the graduate faculty, and at least one must have [full member status](#). Although faculty outside of the College of Medicine are able to serve on your committee (when appropriate), at least two committee members must be from the College of Medicine.

Can I do research in the laboratory where I am employed as a technician?

Yes, but to receive 3 hours of research credit, you are expected to be in the lab approximately 9 hours per week. You may conduct your research project in a lab that you are being paid to work in as a technician only if the project is separate from your regular work duties. You can only be paid for hours above and beyond those counted toward research credit.

What happens if I complete the required 30 credit hours but did not take my final exam?

You are not required to be currently enrolled in the semester in which you take your final exam. For example, you may schedule your final exam during the semester following completion of your 30 credit hours. This requires that you contact the DGS to ensure your application for a degree is carried forward and that you fill out a hard copy request to schedule a master's final exam.

I am on the Plan B option. How do I go about finding a research mentor to complete the 3 credit hour research requirement?

Typically, the research mentor serves as the chair of your master's final exam committee. The best approach is to look for a faculty member who has research/teaching expertise in an area of your interest. You should set up a meeting to talk with the faculty member and discuss their potential role as a mentor for your research project.

All students will be expected to submit the name of their research mentor by the end of the third full week of the semester in which they register for research credit. Any changes in research mentors must be approved by the MSMS DGS in writing and in advance of the change taking place.

How do I remove an advisor hold on my account so I can register?

You should contact the Office of Biomedical Education with your issue and student ID number.

Curriculum

The plan of study for the MSMS program consists of a ten (10) credit hour core curriculum. Additional coursework to fulfill the MSMS degree requirement is selected from courses offered in the basic and biomedical science programs in the College of Medicine and other colleges. Students will work with their mentor to design a career-focused curriculum along discipline specific tracks that target the needs, training, and career goals of each student (e.g., medical school, dental school, doctoral, pharmaceutical industry, laboratory technician, etc.).

Students entering the MSMS program may choose either a thesis option (Plan A, see [Addendum 1](#)) requiring 30 hours of graduate level coursework, including at least six hours of research, or a non-thesis option (Plan B, see [Addendum 2](#)) requiring 30 hours of graduate level coursework, including three hours of research. For both Plan A and Plan B, **50% of the coursework must be at the 600 level or above and two-thirds of the coursework must be in formally organized courses.**

Worksheets describing the Graduate School and MSMS program degree requirements, as well as steps for each plan are provided to all students and copies are included as attachments to this handbook. Each student is responsible for ensuring they adhere to the guidelines, timetables, and submission deadlines related to their specific plan option as described in the worksheets.

The Plan A thesis option generally serves a limited and well-defined population. Often students in Plan A are either lab technicians who are already engaged in research, students interested in applying for PhD programs, or doctoral students who have completed part of their dissertation research before transferring to the MSMS degree program.

Plan A requires defense of a written formal master's thesis according to the guidelines established by the Graduate School (typically 25-50 pages). The complete thesis must be provided to the committee at least two weeks prior to the defense date. The defense follows an oral presentation of the thesis research and is conducted by a committee of at least three faculty members. The student's advisor chairs the committee.

The final, accepted thesis document must be submitted to the Graduate School no later than 60 days following the date of your defense. You will not have the entire 60 days if you defend late in the semester and need to graduate that semester (check the Academic Calendar for deadlines). Prior to the final submission, you must have your thesis reviewed by the Graduate School to check for correct formatting. This process takes about 48 hours and may take longer during peak periods, especially towards the end of the semester.

Students opting to take the Plan B non-thesis route should register for no more than 3 credit hours of research. The actual course number depends on the Department designation (for example, Research in Anatomy is ANA 790, while Research in Biochemistry is BCH 640).

However, students on the Plan B option should not sign up for XXX 768 Research Credit Master's Degree as this is for Plan A students only. Additional hours of research may be taken with DGS approval.

Plan B does not have a formal written thesis but does require a final master's exam that involves a written document covering their research project or, if no research is conducted, a research paper based on a student's area of specialization. The report should be at least 12-15 double-spaced pages in length (not including title page, figures, and references). The student's final exam committee will require the student to prepare a PowerPoint presentation that will serve as the basis for questioning about the research report. The research report (or paper/proposal- see below) must be provided to the committee at least two weeks prior to the date of the exam. The presentation would include the hypothesis to be tested, the methodology used, the results of the study, interpretation of the results, and future directions. Students who do not conduct any research would be asked to write a literature review in an area of interest and their final exam would follow the same guidelines and format as above.

Graduate School policy states that students will not be allowed to sit for a thesis defense or final exam if there are unresolved academic issues. Therefore, you need to check your transcript to ensure there are no missing grades or coursework in which you received a grade of "I". In addition, you must be in good academic standing (your GPA is 3.00 or higher).

Faculty Advisor, Research Mentor, and Committee

All MSMS students will be required to have an advisor who works with the student to develop their individualized curriculum and overall plan. The DGS of the MSMS program may fulfill this obligation or students may elect to identify a faculty/DGS in the student's area of interest/specialization (the vast majority of students continue to rely on the MSMS program DGS).

Students participating in the Plan A thesis option will work very closely with their research mentor throughout their entire time in the program. Students pursuing the Plan B non-thesis option will identify a research mentor based on their area of interest. In both cases, the research mentor will help establish the student's committee that will oversee the student's progress (in the case of the Plan A thesis option) and serve on the thesis (Plan A) or non-thesis (Plan B) final examination committee. A worksheet and checklist for either Plan A or Plan B may be found at the end of this handbook.

Note: Students are asked to share this handbook with their research mentor/committee to inform them of expectations and procedures.

Core Courses

IBS 602: Molecular Biology and Genetics (3)

An introductory graduate level biochemistry course focused on the cellular mechanisms that underlie the regulated expression of genes, including transcription and translation, as well as basic mechanisms of DNA replication/repair and recombination. Genetic engineering and other experimental approaches critical to molecular biology research will be reviewed. **Prerequisites:** CHE 105, 107, 230, 232; BIO 150, 152 or equivalents.

OR

IBS 603: Cell Biology & Signaling (3)

An introductory graduate level course that is focused on a number of topics related to cell biology including cell types and cell architecture/organization, membrane structure, cytoskeleton, nucleus, and mitochondria. Aspects of development, cell division, cell cycle, and apoptosis will also be discussed with an emphasis on signaling pathways controlling these processes. **Prerequisites:** CHE 105 and 107, CHE 230 and 232, BIO 150 and 152, or equivalents.

AND

IBS 606: Physiological Communications (3)

An introductory graduate level course that considers the function of the mammalian organism from a perspective ranging from cells to organs, with an emphasis on physiological communication between organ systems. The course is organized into 3 sections that include: (a) overview of basic physiological mechanisms maintaining homeostasis and mechanisms of endocrine communication via the bloodstream, (b) mechanisms of cell to cell communication by the immune system, and (c) mechanisms of neural communication.

Prerequisites: BCH 401G; IBS 602

IBS 611: Practical Statistics (2)

An introductory graduate level course that will introduce students to basic statistical concepts and applications that are used in a majority of biomedical and translational research studies. The emphasis will be on “how” and “why” certain basic statistical applications are used rather than the theory behind various statistical methods. **Prerequisites:** Have taken or concurrently taking IBS601 and IBS602.

Seminar – Please select one from the following list:

- MI 772 – Seminar in Microbiology – (1)
- ANA 600 – Seminar in Anatomy (1)
- TOX 770 – Toxicology Seminar (2)
- PHA 770 – Seminar in Pharmacology (1)
- PGY 774 – Seminar in Physiology (1)

TOX 600: Ethics in Scientific Research (1)

Overview of good laboratory practices as the basis of good scientific research, and overview of quality assurance and appropriate practices in data analysis and data interpretation. Ethics of human and animal experimentation; the concepts of data and intellectual property, their ownership and access to them.

Elective Courses

Examples of recommended courses that provide advanced scientific training are listed below and based on prerequisites that are consistent with different professional degree programs and areas of specialization.

For example, students planning to pursue an advanced degree in biomedical research, such as the IBS program at UK, would benefit from taking IBS 601/BCH 607 Biomolecules and Metabolism. The Fundamentals of Biochemistry course (BCH 401G) would provide sufficient exposure and background material for students wishing to pursue a non-research based health-

related professional degree program. Many, if not all, dental schools are now requiring microbiology as a prerequisite and students wishing to pursue this career path should consider taking MI 495G Bacterial Pathogens or MI 494G Immunobiology. A student pursuing a career in the pharmaceutical industry would want to consider taking Principles of Drug Action (PHA 621) and Molecular Targets and Therapeutics (PHA 622).

Courses Available to Students in the MS in Medical Sciences (6/2021)

-Fall Semester Listing-

Behavioral Sciences:

BSC 790 Research in Medical Behavioral Sciences

Biochemistry:

BCH 401G Fundamentals of Biochemistry

BCH 604 Structural Biology

BCH 610 Structure and Function of Biomembranes

BCH 611 Advanced Nucleic Acids

BCH 612 Structure and Function of Proteins/Enzyme

BCH 640 Research in Biochemistry

Integrated Biomedical Sciences:

IBS 601 Biomolecules and Metabolism

IBS 602 Molecular Biology and Genetics

Microbiology:

MI 494G Immunobiology (cross-listed with BIO 494G)

MI 582 Virology

MI 720 Microbial Structure and Function (cross-listed with BIO 720)

MI 772 Seminar in Microbiology

MI 798 Research in Microbiology

Neuroscience:

ANA 512 Microscopy and Ultrastructure

ANA 600 Seminar in Anatomy

ANA 605 Neurobiology of CNS Injury and Repair

ANA 612 Biology of Aging

ANA 636 Advanced Neuroscience (5 credit hours)

ANA 638 Developmental Neurobiology (cross-listed with PGY)

ANA 780 Special Topics in Neurobiology (Neurobiology of Brain Disorders – 3 credit hours)

ANA 790 Research in Anatomy

Nutritional Sciences:

NS 550 Drug and Nutrient Interactions (2 credit hours; cross-listed with PHA 550)

NS 601 – Integrated Nutritional Sciences I

NS 603 - Integrated Nutritional Sciences III

NS 605 - Wellness and Sports Nutrition

NS 606 - Molecular Biology Applications in Nutrition (2 credit hours)

NS 609 - Ethics in Clinical Research

NS 771 - Graduate Seminar in Nutritional Sciences

Pharmacology:

PHA 421G Pharmacology: Principles of Drug Action

PHA 422G Pharmacology of Treating Human Disease

PHA 424G Pharmacology of Human Endocrinology and Reproduction

PHA 550 Drug and Nutrient Interactions (2 credit hours; cross-listed with NS 550)
PHA 621 Principles of Drug Action
PHA 750 Research in Pharmacology
PHA 770 Seminar in Pharmacology

Physiology:

PGY 401G Human Reproduction, Technology and Society
PGY 412G Principles of Human Physiology
PGY 413G Critical Thinking
PGY 502 Systems, Cellular and Molecular Physiology
PGY 612 Biology of Aging
PGY 615 Teaching of Medical Science
PGY 630 Advanced Topics in Physiology
PGY 638 Developmental Neurobiology (cross-listed with ANA)
PGY 774 Seminar in Physiology
PGY 791 Research in Physiology

Toxicology:

TOX 509 Environmental and Regulatory Toxicology
TOX 663 Drug Metabolism and Disposition
TOX 770 Toxicology Seminar (Students should sign up for 1 credit hour each for section 001 and section 002)
TOX 780 Special Problems in Toxicology
TOX 790 Research in Toxicology

-Spring Semester Listing-

Behavioral Sciences:

BSC 750 History of Medicine Among Blacks in the U.S.: Implications for Health Disparities
BSC 773 Psychosocial Oncology
BSC 790 Research in Medical Behavioral Sciences

Biochemistry:

BCH 401G Fundamentals of Biochemistry
BCH 419G Molecular Basis of Human Disease
BCH 615 Molecular Biology (cross-listed with BIO 615, MI 615)
BCH 625 Scientific Communications
BCH 640 Research in Biochemistry

Integrated Biomedical Sciences:

IBS 603 Cell Biology and Signaling
IBS 606 Physiological Communication
IBS 611 Practical Statistics

Microbiology:

MI 494G Immunobiology (cross-listed with BIO 494G)
MI 495G Bacterial Pathogenesis (cross-listed with BIO 495G)
MI 598 Clinical Microbiology

MI 615 Molecular Biology (cross-listed with BCH 615, BIO 615)
MI 616 Biology & Therapy of Cancer
MI 725 Mechanisms of Microbial Pathogenesis
MI 772 Seminar in Microbiology
MI 798 Research in Microbiology

Neuroscience:

ANA 417G Functional Human Neuroanatomy
ANA 609 Educational Strategies in the Anatomical Sciences
ANA 611 Regional Human Anatomy
ANA 780 Special Topics in Neurobiology (Neurobiology of Brain Disorders – 3 credit hours)
ANA 790 Research in Anatomy

Nutritional Sciences:

NS 550 Drug and Nutrient Interactions (2 credit hours; cross-listed with PHA 550)
NS 602 – Integrated Nutritional Sciences II
NS 689 Nutrition and Chronic Disease
NS 704 - Current Topics in Nutrition
NS 771 - Graduate Seminar in Nutritional Sciences
CNU 501 – Nutraceuticals and Functional Foods
CNU 502 – Obesity: Cell to Community

Pharmacology:

PHA 550 Drug and Nutrient Interactions (2 credit hours; cross-listed with NS 550)
PHA 622 Molecular Drug Targets and Therapeutics (4 sections)
 Section 001-Cardiovascular Pharmacology
 Section 002-Neuropharmacology
 Section 003-Chemotherapeutic & Toxicologic Agents
 Section 004-Immunopharmacology and Endocrine Pharmacology
PHA 750 Research in Pharmacology
PHA 770 Seminar in Pharmacology

Physiology:

PGY 401G Human Reproduction, Technology and Society
PGY 412G Principles of Human Physiology
PGY 413G Critical Thinking
PGY 512 Evolutionary Medicine
PGY 535 Comparative Neurobiology and Behavior
PGY 560 Pathophysiology
PGY 630 Advanced Topics in Physiology
PGY 774 Seminar in Physiology
PGY 791 Research in Physiology

Toxicology:

TOX 600 Ethics in Scientific Research

TOX 680 Molecular Mechanisms in Toxicology

Last revised 6/2021

Please note: requests to take EXP 650 must be approved by the MSMS DGS in writing and in advance of course registration. In addition, students may only receive one hour of academic credit for EXP 650.

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Student Checklist for Masters of Science in Medical Sciences -Plan A Option-

Addendum 1:

Requirements, Curriculum, and Checklist for the Thesis (Plan A) Option

1. Be sure to enroll in the semester for which you were accepted.
2. Establish a course curriculum with your advisor, advisory committee, or DGS of the MSMS program.
3. Identify, design, and conduct a research project with your research advisor.
4. Identify a research advisory/examination committee at least one (1) year before you plan to graduate.
5. Complete your thesis based on the format described by the Graduate School and in consultation with your research advisor.
6. Successfully pass your Master's examination (thesis defense).

-Please follow the guidelines below during the semester that you intend to graduate-

Forms: Be sure check the "[Forms](#)" page on the Graduate School web site under "Students in Master's/Specialist Programs" for accessing, filling out, and submitting important forms.

Application for Degree: The application for a degree is due within 30 days after the beginning of the semester. Go to "myuk" and click on "Student Services" then "myRecords" and then "Graduate Degree Application". You need to check the [Academic Calendar](#) in the registrar's office for specific deadlines related to the semester you intend to graduate.

Request for Final Master's Examination (Thesis Defense): You must submit the Request for Final Master's Examination form at least 2 weeks prior to examination. You may access and submit the form [here](#).

Date of examination: The thesis defense must take place no later than eight days prior to the last day of classes during the semester in which you intend to graduate. The defense may not be scheduled during the period between semesters. Check the [Academic Calendar](#) for deadlines to schedule your thesis defense.

Thesis: The final, accepted thesis document must be submitted to the Graduate School no later than 60 days following the date of your defense. You will not have the entire 60 days if you defend late in the semester that you intend to graduate (check the [Academic Calendar](#) for submission deadlines). Prior to the final submission, you must have your thesis reviewed by the Graduate School to check for correct formatting. This process takes about 48 hours but may take longer during peak periods, especially during the end of the semester.

Note: The Graduate School policy states that you will not be allowed to sit for the exam if you have unresolved academic issues. Therefore, you need to check your transcript to ensure there are no missing grades or coursework in which you received a grade of "I". In addition, you must be in good academic standing (your GPA is 3.00 or higher).

Master of Science in Medical Sciences

Requirements, Curriculum, and Checklist for the Thesis (Plan A) Option

Student Name _____ **Date** _____

The Master of Science degree in Medical Sciences Plan A option requires:

- successful completion of the MSMS core curriculum
- at least 30 credit hours of graduate level course work with at least 2/3 of the course work in a traditional classroom setting (no special project, independent study, etc.) and at least 15 hours must be at the 600 or 700 level (excluding thesis credit)
- at least 6 hours of Master's Thesis Research
- a minimum 3.0 grade point average for all course work
- successful completion of a Seminar course
- successful completion defense of thesis*
- submission of an approved written thesis to the Graduate School

The student should work with their mentor and/or the MSMS DGS to identify appropriate coursework beyond the required Core Curriculum.

MSMS Core Curriculum (10 credits)

COURSE PREFIX-NUMBER	COURSE TITLE	CREDIT HR
IBS 602	Molecular Biology and Genetics (Fall) OR	3
IBS 603	Cell Biology & Signaling (Spring)	Or 3
IBS 606	Physiological Communications (Spring)	3
IBS 611	Practical Statistics (Spring)	2
TOX 600	Ethics (Spring)	1
	Seminar Requirement	1 - 3
Minimum Total:		10

Remaining Coursework (20 credits)

COURSE PREFIX-NUMBER	COURSE TITLE	CREDIT HR
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Total Credits for the M.S. in Medical Sciences Plan A Option: 30

Student Checklist for Masters of Science in Medical Sciences -Plan B Option-

1. Be sure to enroll in the semester for which you were accepted.
2. Establish a course curriculum with your advisor, advisory committee, or DGS of the MSMS program.
3. Outline and conduct research or compose a literature review on a topic of interest.
4. Identify an examination committee one semester before you graduate.
5. Successfully pass your Master's examination.

-Please follow the guidelines below during the semester that you intend to graduate-

Forms: Be sure check the "[Forms](#)" page on the Graduate School web site under "Students in Master's/Specialist Programs" for accessing, filling out, and submitting important forms.

Application for Degree: The application for a degree is due within 30 days after the beginning of the semester. Go to "myuk" and click on "Student Services" then "myRecords" and then "Graduate Degree Application". You need to check the [Academic Calendar](#) in the registrar's office for specific deadlines related to the semester you intend to graduate.

Request for Final Master's Examination: You must submit the Request for Final Master's Examination form at least 2 weeks prior to examination. You may access and submit the form [here](#).

Date of examination: The final examination must take place no later than eight days prior to the last day of classes during the semester in which you intend to graduate. Final examinations may not be scheduled during the period between semesters. Check the [Academic Calendar](#) for deadlines to schedule your final examination.

Note: The Graduate School policy states that you will not be allowed to sit for the exam if you have unresolved academic issues. Therefore, you need to check your transcript to ensure there are no missing grades or coursework in which you received a grade of "I". In addition, you must be in good academic standing (your GPA is 3.00 or higher).

Master of Science in Medical Sciences

Requirements, Curriculum, and Checklist for the Non-Thesis (Plan B) Option

Student Name _____ **Date** _____

The Master of Science degree in Medical Sciences Plan B option requires:

- successful completion of the MSMS core curriculum
- at least 30 credit hours of graduate level course work with at least 2/3 of the course work in a traditional classroom setting (no special project, independent study, etc.) and at least 15 hours must be at the 600 or 700 level
- three (3) hours of credits in a non-thesis research course
- a minimum 3.0 grade point average for all course work
- successful completion of a Seminar course
- successful completion of a final exam*

The student should work with their major advisor and/or the MSMS DGS to identify appropriate coursework beyond the required Core Curriculum.

MSMS Core Curriculum (10 credits)

COURSE PREFIX-NUMBER	COURSE TITLE	CREDIT HR
IBS 602	Molecular Biology and Genetics (Fall) OR	3
IBS 603	Cell Biology & Signaling (Spring)	Or 3
IBS 606	Physiological Communications (Spring)	3
IBS 611	Practical Statistics (Spring)	2
TOX 600	Ethics (Spring)	1
	Seminar Requirement	1 - 3
Minimum Total:		10

Remaining Coursework (20 credits)

COURSE PREFIX-NUMBER	COURSE TITLE	CREDIT HR
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	Non-thesis/non-resident research (XXX 790, NOT XXX 768)	3

Total Credits for the M.S. in Medical Sciences Plan B Option: 30