

Master's in Biomedical Sciences

Brody School of Medicine

Program Manual

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\* Largely copied from ECU's 2017-2018 Graduate Catalog. The students should familiarize themselves and follow the catalog Graduate Catalog for the year they entered the program. The current and former ECU Graduate Catalog can be found at <http://www.ecu.edu/cs-acad/registrar/catalog.cfm>. The catalog also provides descriptions of graduate programs and a listing of the University's graduate courses.

## **1. Program Description**

The Brody School of Medicine at East Carolina University is committed to the education and development of professionals in the medical sciences. This commitment extends not only to training future physicians but also to educating graduate and post-graduate students.

The MS in Biomedical Sciences program involves faculty from the basic science departments at the School of Medicine as well as research faculty from the clinical departments. The goal of this degree program is to provide advanced training in biomedical research to learners at the graduate and levels. Through direct participation in ongoing research, students are instructed in the application of the scientific method and state-of-the-art experimental approaches to the investigation of biomedical problems. They will be provided the background and foundation in scientific exploration that will equip them to participate in and conduct further research. In addition to moving the university research agenda forward, it is anticipated that the graduates of this program will eventually enter the work force in the areas of medicine, biomedical research, or health education, which are areas of manpower shortages.

## **2. Administration**

The Master of Science Degree in Biomedical Sciences is an interdisciplinary degree program in the Office of Research and Graduate Studies of the Brody School of Medicine. The program is administered by a program director who reports to the Assistant Dean of Graduate Studies and the Associate Dean for Research and Graduate Studies for the Brody School of Medicine. The program director will work closely with the Graduate Studies Committee which includes representatives from all of the departments with graduate programs at the Brody School of Medicine, as well as, research active clinical faculty.

## **3. ECU Student Code of Conduct:**

The Office of Student Rights and Responsibilities (OSRR) fosters student growth by promoting students' awareness and understanding of their rights and responsibilities as community members, addressing student conduct and creating developmental learning opportunities, and engaging students in ethical decision-making.

OSRR administers the East Carolina University Student Code of Conduct, which governs students' on- and off-campus conduct. Office staff is also engaged in campus education on various issues, such as academic integrity, citizenship development, and conflict resolution.

OSRR staff is available to advise all campus community members on their rights under the Student Code of Conduct and the ECU conduct process as well as to clarify University policies pertaining to student conduct

All students should read and be familiar with the code of conduct ([www.ecu.edu/osrr/](http://www.ecu.edu/osrr/))

#### **4. Interim Advisor**

The MS in Biomedical Sciences Graduate Program Director will serve as Interim Advisor to the new students until they have selected a research laboratory. The faculty member of that laboratory then assumes the role of advisor along with the students' Graduate Advisory Committee. This Committee is typically formed during the second semester in the program by the mentor and student. The interim advisor/program director will aid the student in the selection of a beginning course of study and in the selection of laboratory rotations and a thesis advisor. The Graduate Program Director also helps the student determine if requirements are met and to ensure smooth progress of the student through the program. Elective courses in the program of study are typically determined by consultation of the student with his major professor and Graduate Advisory Committee.

#### **5. Transfer Credits**

With the support of the graduate program director, up to one third of the credit hours in a graduate certificate or degree program may be transferred from a regionally accredited college or university. No credit hours completed as part of a previously earned master's degree can be counted toward a second master's degree. A maximum of one third of credit from another institution may be counted toward the completion of a certificate program at East Carolina University. Exceptions may be made with the permission of the program director and the dean of the Graduate School, but in all cases students must earn at least one half of the credit hours in a graduate degree program at East Carolina University. Program directors and students should discuss transfer credit options. This is subject to revision with revision of the graduate catalog.

#### **6. Graduate Assistantships**

A small number of Graduate Research Assistantships (\$12,000/year) are available and these are awarded by the program director by the perceived merit of the student. These assistantships are typically awarded to students that are in the first year of study for a one year period. These funds are not used to support students in the second year of study. Many of the MS in Biomedical students are not provided stipend support. Tuition, fees, and health insurance are the responsibility of the student whether an assistantship is provided or not. Once an advisor is chosen, mentors *may* elect to provide stipend support to Biomedical Science MS students doing research in their laboratories. To be eligible for employment as a Graduate Assistant, a student must be in good standing in the Biomedical Science MS program and be considered a full-time student. Please note that the hours required for the assistantship are in addition to the hours required for academic credit.

Research mentors and students should discuss work schedule, duties, manner, method, and provide regular feedback to the student about both good and bad performance during the students' tenure in the laboratory.

## 7. Curriculum

The curriculum for students entering with a bachelor's degree consists of a minimum of 38 CH consisting of the core courses below and 9 CH of electives:

- BMSC 6113 - Introduction to Biomedical Research (3 CH)
- BMSC 6121 - Seminar in Biomedical Science (1 CH repeated 4 times for 4 CH)
- BMSC 6133 - Biomedical Research (3 CH)
- BMSC 7000 - Thesis (6 CH)
- BIOC 7301 - Biochemistry I (4 CH)
- 
- ANAT 7202 - Molecular Cell Biology or
- MCBI 7410 - Molecular Cell Biology (4 CH)
- 
- PHAR 7777 - Practical Problems in Biometry or
- BIOS 7021 - Biostatistics for Health Professionals I (3 CH)
- 
- HUMS 7004 - Ethics and Research: Humanities and Basic Medical Sciences (2 CH)

The curriculum of students enrolled in medical school or with MD degrees consists of 24 CH as follows:

- BMSC 6113 - Introduction to Biomedical Research (3 CH)
- BMSC 6121 - Seminar in Biomedical Science (1 CH repeated 2 times for 2 CH)
- BMSC 6133 - Biomedical Research (3 CH)
- BMSC 6136 - Biomedical Research (6 CH)
- BMSC 7000 - Thesis (6 CH)
- 
- ANAT 7202 - Molecular Cell Biology or
- MCBI 7410 - Molecular Cell Biology (4 CH)

## 9. Typical Program of Study

### Traditional MS students

#### Year 1

##### Fall Year 1

MCBI 7410/ANAT7202 - Molecular Cell Biology (4 CH)  
BIOC 7301 - Biochemistry I (4CH)

BMSC 6113 - Introduction to Biomedical Research (3 CH)  
BMSC 6121 - Seminar in Biomedical Science (1CH)

Spring Year 1

BMSC 6133 - Biomedical Research (3 CH)  
PHAR 7777 - Practical Problems in Biometry (3 CH)  
HUMS 7004 - Ethics and Research: Humanities and Basic Medical Sciences (2 CH)  
BMSC 6121 - Seminar in Biomedical Science (1CH)  
Elective?

Fall Year 2

BMSC 6121 - Seminar in Biomedical Science (1CH)  
BMSC 7000 - Thesis (3 CH)  
Elective?  
Elective?

Spring Year 2

BMSC 6121 - Seminar in Biomedical Science (1CH)  
BMSC 7000 - Thesis (3 CH)  
Elective?  
Elective?

Students with an MD or past the second year of medical school.

Fall Year 1

MCBI 7410/ANAT7202 - Molecular Cell Biology (4 CH)  
BMSC 6113 - Introduction to Biomedical Research (3 CH)  
BMSC 6133 – Biomedical Research (3 CH)  
BMSC 6121 - Seminar in Biomedical Science (1 CH)  
BMSC 7000 - Thesis (3 CH)

Spring Year 1

BMSC 6136 - Biomedical Research (6 CH)  
BMSC 6121 - Seminar in Biomedical Science (1 CH)  
BMSC 7000 - Thesis (3 CH)

Elective courses are chosen depending upon the research interest and goals of the student. In addition to the course work each student must write a research-based thesis, a seminar based on thesis research, and a thesis defense. The student should also present to the committee a thesis proposal.

**9. Selection of a Research Laboratory**

Selection of a research laboratory is an important decision in the student's successful progression through the program. The research mentor is responsible for choosing a thesis topic and directing the overall research related to the thesis. The mentor also has a role as the chair of the student's Graduate Advisory Committee and assisting the student in selecting electives.

In early August, all graduate faculty at Brody School of Medicine with an active research program are invited to give presentations to the entering MS students if they have an interest in mentoring one of these students. These are 10 minute presentations with 5 minutes for questions that typically occur the week of or the week before the semester starts. Students are encouraged to meet with faculty whose research they have an interest in. In these meetings students can find out additional information about the proposed research project and about the potential of the investigator to provide a Research Assistantship. Both the potential mentor and student have to agree to this rotation. The student and potential mentor are required to inform the Graduate Program Director about the planned rotations. The laboratory rotation is 8 weeks of research experience with a faculty member. This is approximately half of the semester. Neither a student or faculty member have an obligation to the other for permanent placement after the rotation. If both the faculty and student are content with continuing this mentor/student relationship the student is permanently placed in that lab. If either is not, a second rotation will be necessary. Selection of the Major Professor should be done after careful deliberation.

#### **10. Graduate Advisory Committee**

The student's Thesis Advisor will normally serve as the Chair of the student's Graduate Advisory Committee. This Committee is composed of at least three graduate faculty members but in most cases, they are composed of four faculty members. At least one of these should be from a department separate from the mentor's home department. The student's Graduate Advisory Committee is responsible for establishment of the student's program of study in final detail, approval of the research program, counseling the student, monitoring the student's progress, and administration and evaluation of the thesis and defense. Upon selection of a thesis advisory the student should obtain a Pre-Thesis Research Approval form, available on the Graduate School website, must be completed, appropriate signatures obtained, and submitted to the Graduate School (usually the beginning of the second semester in the program).

#### **11. Thesis Proposal\***

Thesis must be approved by the thesis advisory committee. Students whose research involves human subjects, animals, biohazards, or radiation must have their research proposals approved by the appropriate compliance committee BEFORE beginning their research. A copy of the appropriate committee approval must be included in the appendixes of the final thesis or dissertation. Research involving human subjects must be approved by the University and Medical Center Institutional Review Board (UMCIRB). Students whose research involves animals must have their proposals approved by the Institutional Animal Care and Use Committee (IACUC). Research involving radiation/biohazards must be reviewed by the Office of Prospective Health to insure compliance.

#### **12. Thesis\***

The student must comply with the general thesis requirements of the Graduate School. These requirements are specified in the Manual of Basic Requirements for Theses and Dissertations which is approved by the Graduate School and available on the Graduate School's Web site, [www.ecu.edu/gradschool/](http://www.ecu.edu/gradschool/). The manual contains details on the form, preparation, and electronic submission of theses and dissertations.

### **13. Thesis Defense**

Copies of the thesis/dissertation must be presented by the student to his or her Graduate Advisory Committee for the use of the examination. Upon approval, the Graduate Advisory Committee members schedule a public presentation with a one week notice. This should be done after the committee member's sign the permission to defend form. Following the public presentation and at this oral defense of the thesis, the examining committee may ask the student questions regarding the subject matter in the major field. A student may attempt to defend the thesis or dissertation no more than twice.

### **14. Thesis Submission\***

After the thesis or dissertation has been successfully defended, and any modification in the written document requested by the Graduate Advisory Committee made, the student must submit the approved thesis/dissertation electronically via the Vireo Electronic Submission Process according to directions found on the Graduate School website. It must be submitted at least ten days prior to the last day of classes of the student's intended semester of graduation.

Prior to or at the time of electronic submission, the student must complete and sign the ECU ETD Non-Exclusive Distribution Agreement granting ECU a limited, nonexclusive, royalty-free, license to reproduce the thesis or dissertation in electronic form and make available according to the embargo choice/publishing restrictions selected by the student. This form should be uploaded through the Vireo submission process along with a scanned copy of the signature page bearing the signatures of the committee members, committee chair, department chair and/or dean of the college/school (if appropriate), but not the signature of the dean of the Graduate School, and the thesis or dissertation. The thesis or dissertation will be checked for formatting and reviewed by the Graduate School. Once revisions requested by the Graduate School are completed and resubmitted by the student and the final document is approved by the dean of the Graduate School, the Graduate School will notify the registrar and the department of completion. Upon verification of student's graduation, the Graduate School will submit the final approved document to Joyner Library for inclusion in the ECU Institutional Repository, The ScholarShip. The library will also submit the thesis or dissertation to the ProQuest Database, for greater availability, dependent upon embargo choices. Students wishing to order bound copies of the thesis or dissertation should contact commercial binderies.

### **15. Academic Eligibility Standards\***

To meet the requirements for graduation or awarding of a graduate certificate and to remain in good academic standing, a student must demonstrate acceptable performance in course work after being admitted to a graduate degree or certificate program. This requires a cumulative 3.0 GPA in all course work related to the student's program of study.



For the purpose of meeting the minimum GPA requirement of 3.0 for graduation, students who are readmitted to a different graduate program after a full year's absence resulting from withdrawal or dismissal from a prior ECU graduate program may request that only the courses taken since readmission to the new graduate program be counted towards the minimum required GPA. The request with written justification must be made by the student's graduate program director for approval by the dean of the Graduate School or his/her designee. If approved, the student will have nine credit hours attempted to establish a GPA of 3.0 and courses taken prior to readmission will not be counted towards the completion of the new graduate degree. Failure to establish a GPA of 3.0 after nine credits attempted after readmission will result in immediate dismissal from the new graduate program and the university.

Students who are readmitted to a graduate program three years after withdrawal or dismissal from the same graduate program and who agree not to have any prior credit earned count toward their initial degree may request that only the courses taken since readmission to the new graduate program be counted towards the minimum required GPA. The request with written justification must be made by the student's graduate program director for approval by the dean of the Graduate School or his/her designee. If approved, the student will have nine credit hours attempted to establish a GPA of 3.0 and courses taken prior to readmission will not be counted towards the completion of the new graduate degree. Failure to establish a GPA of 3.0 after nine credits attempted after readmission will result in immediate dismissal from the new graduate program and the university.

In addition to the expectations for successful performance of course work described in the previous paragraph, good academic standing requires satisfactory progress in the overall graduate program. The students' advisor or graduate advisory committees may render judgments as to whether satisfactory progress is being made toward the degree, taking into account all aspects of academic performance and promise, not necessarily course work alone. A positive judgment is required to remain in good academic standing. For students involved in research-oriented programs, the student's department and individual advisory committee are responsible for evaluating the student's skills with respect to performing quality research. Failure to meet programmatic/departmental standards may result in program termination.

## **16. Probation and Termination Policy\***

In order to remain in good academic standing, graduate students must maintain a minimum cumulative GPA of 3.0 in all coursework related to their program of study once they have a total of 9 credit hours attempted and any additional or higher academic standards established by their program of study. Students who fail to meet their program's criteria may be placed on probation or dismissed from the program.

Students who fail to remain in good academic standing in accordance with the paragraph above, will be automatically placed on academic probation by the Graduate School, during which time they will have an opportunity to correct their academic deficiencies. The probationary period will last for the term(s) in which the next nine credit hours are attempted. Enrollment in the Graduate School will be automatically terminated for students who fail to correct their academic deficiencies by the end of the probationary period. Graduate students will not be allowed to take classes and subject to immediate dismissal once it becomes

mathematically impossible to achieve a cumulative GPA of 3.0 in all coursework related to their program of study by the end of the remaining probationary period.

### **17. Removal of Incompletes\***

The grade of “I” is given for a deficiency in the quantity of work done in a course. “I” grades must be resolved within one calendar year or a grade of “F” will be automatically assigned. No exceptions to this policy will be allowed. No student will be allowed to graduate with an incomplete on his or her record.

### **18. Graduate Student Grade Appeals\***

The goal of this grade appeal policy is to establish a clear, fair process by which graduate students can contest a course grade that they believe has been awarded in a manner inconsistent with university policies or that has resulted from calculation errors on the part of the instructor. Recognizing, however, that the evaluation of student performance is based upon the professional judgment of instructors, and notwithstanding the exceptions noted at the end of this policy, appeals will not be considered unless based upon one or more of the following factors:

1. An error was made in grade computation.
2. Standards different from those established in written department, school or college policies, if specific policies exist, were used in assigning the grade.
3. The instructor departed substantially from previously articulated, written standards, in determining the grade, without notifying students.