Master of Science in biomedical science

Program information

College	Charles E. Schmidt College of Medicine		
Department or school	Department of Biomedical Science		
Degree abbreviation	M.S.	**CIP code**	26.0102
Program website	www.fau.edu/medicine/graduate/masters		

Our commitment to you

This Academic Learning Compact describes the program's mission, what students who complete the program will know and be able to do and how faculty assess that learning. Florida Atlantic University publishes a compact for every degree program and standalone certificate so students, families, employers and the community can see what each program commits to providing its graduates.

Program mission

The mission of the Charles E. Schmidt College of Medicine's MS Biomedical Science program is to provide students with the education and real world skills they need to pursue dynamic careers in the biomedical sciences, ranging from entry into professional programs to direct employment in industry. The Biomedical Science program is at the cornerstone of the mission of the Charles E. Schmidt College of Medicine that is to educate physicians and scientists to meet the healthcare needs of Florida, to conduct biomedical research to advance knowledge, to improve patient care, and to serve patients and communities with competence, compassion and respect.

Florida Atlantic University's mission

Florida Atlantic University is recognized as an opportunity university and R1 research institution dedicated to transforming lives through education, discovery, and innovation. We empower students to achieve economic mobility, advance knowledge that creates meaningful impact, and forge partnerships that drive prosperity and connection in the communities we serve.

How the program supports the university mission

The program supports the university's mission by preparing graduates for direct entry into the workforce or professional schools. Thesis students join faculty labs conducting state-of-the-art biomedical research.

About the program

The Master of Science in Biomedical Science program provides students with advanced training in biomedical sciences through coursework, research experiences, and faculty mentorship that prepares them for professional school entrance and careers in healthcare, biotechnology, research, and related fields. The program is distinctive because it combines rigorous scientific training with real world biomedical application. It is an excellent fit for individuals seeking to strengthen their scientific foundation for professional schools, research careers, or advanced graduate study.

Student learning outcomes

By graduation, students will be able to demonstrate outcomes in three core areas: content/discipline knowledge and skills (Outcome 1), communication skills (Outcome 2) and critical thinking skills (Outcome 3). Faculty assess all three core outcomes every year.

A. Content/Discipline Knowledge and Skills

What graduates will know and be able to do in their field

Areas this program addresses (check at least two)

- ☒ **Declarative knowledge:** key vocabulary, history, theories and concepts of the field
- ☒ **Research skills:** finding, gathering, analyzing and reporting information the way the field does
- ☐ **Technical skills:** hands-on tools and methods of the field, such as software, instruments, lesson plans or business reports

Outcome 1A: Content Knowledge (Declarative Knowledge)

Graduates will be able to explain and apply fundamental concepts in biomedical science, including biochemistry, molecular and cell biology, genetics, genomics, and precision medicine, to analyze and solve biomedical problems.

Students will develop this knowledge through the required core courses:

PCB 6665 Human Genetics
GMS 6860 Data Interpretation and Analysis in the Age of Precision Medicine
PCB 5532 Advanced Molecular and Cellular Biology

Student achievement of this outcome will be assessed through examinations, written assignments, presentations, and other course-based assessments. The quality and effectiveness of the curriculum will be monitored through periodic review of course syllabi, enrollment trends, student evaluations (SPOT scores), and oversight by the COM Graduate Program Committee and the COM Office of Graduate Programs using the SLO Rubric for Core Courses (attached to this ALC).

Outcome 1B: Research Skills

Graduates completing the thesis option will be able to critically evaluate scientific literature, develop research hypotheses, design and conduct experiments, analyze and interpret data, draw evidence-based conclusions, and communicate research findings through scientific writing and oral presentations.

Student work reviewed directly by faculty: Master's Thesis, thesis proposal, thesis defense presentation, literature reviews, and research reports/manuscripts.

How students show it

Students demonstrate achievement of this outcome through course examinations, written assignments, data analysis projects, research papers, oral presentations, and, for students in the thesis option, completion of a Master's Thesis and thesis defense. These assessments evaluate students' knowledge of biomedical science concepts, ability to critically evaluate scientific literature, formulate research questions, analyze and interpret data, and communicate scientific findings effectively in written and oral formats.

Where it is assessed
PCB 6665 Human Genetics; GMS 6860 Data Interpretation and Analysis in the Age of Precision Medicine; PCB 5532 Advanced Molecular and Cellular Biology; Master's thesis (thesis option)

B. Communication Skills

How graduates will share ideas and work with others

Areas this program addresses (check at least two)

- ☒ **Written communication:** clear, well-organized writing suited to the audience and purpose
- ☒ **Oral communication:** well-organized presentations that connect with an audience
- ☐ **Other forms of communication:** visual, media, performance or exhibit work
- ☐ **Team/collaborative communication:** contributing to group projects and shared goals

Students will demonstrate the ability to communicate effectively verbally and in writing. Students are required to complete the core course Data Interpretation and Analysis in the Age of Precision Medicine. This course is designed to enhance student writing, professional and organizational skills. Students will be instructed in basic writing skills, argument formulation, debate and presentation skills

How students show it
Writing assignments, scientific literature reviews, debates, presentations, and rubric-based evaluations of written and oral communication. Thesis students also write a master's thesis and present it during a public defense.

Where it is assessed
GMS 6860 Data Interpretation and Analysis in the Age of Precision Medicine; Master's thesis and public defense (thesis option)

C. Critical Thinking Skills

How graduates will analyze, create and solve problems

Areas this program addresses (check at least one)

- ☒ **Analytical skills:** weighing evidence, comparing ideas and judging arguments
- ☐ **Creative skills:** combining knowledge to create something new, such as a design, performance or proposal
- ☐ **Practical skills:** applying knowledge to real situations, such as a business proposal, lesson plan or grant

Students will employ critical thinking skills to succeed in the core required courses (Human Genetics, Data Interpretation and Analysis in the Age of Precision Medicine, and Advanced Molecular and Cellular Biology that all emphasize learning of broad-based critical thinking skills.

How students show it
Exams, scientific literature reviews, data interpretation assignments, presentations, and rubric-based assessments in the three required core courses. Thesis students also demonstrate critical thinking through analysis and interpretation of original research data in the master's thesis.

Where it is assessed
PCB 6665 Human Genetics; GMS 6860 Data Interpretation and Analysis in the Age of Precision Medicine; PCB 5532 Advanced Molecular and Cellular Biology; Master's thesis (thesis option)

Assessment approaches

Every year, faculty review samples of student work to see how well students are meeting all three outcomes, and they use what they learn to improve the program.

Course instructors assess student learning in each of the three required core courses using standardized rubrics aligned with the program's student learning outcomes. All three core courses assess students' content knowledge, communication skills, and critical thinking skills through examinations, written assignments, presentations, scientific literature reviews, data interpretation activities, and other course-based assessments. For students in the thesis track, learning is further assessed through the completion of original research, culminating in the presentation and defense of a master's thesis. Assessment data from these rubrics are reviewed regularly by the Graduate Program Committee and the Office of Graduate Programs to evaluate student achievement of program learning outcomes and support continuous program improvement.

Assessment methods may change over time.