Programs, Policies, Requirements and Philosophy

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1. GENERAL DESCRIPTION

The Cell and Molecular Physiology Department offers a M.S. degree program that is available for a wide variety of intellectual interests and professional goals that include a career in laboratory research in academia and industry (research staff, laboratory technician, manager, etc.), patent law, or further study in health fields, such as P.A. or medicine (M.D., D.O., M.D.-Ph.D).

In addition to acquisition of knowledge, students obtain problem-solving skills and develop into critical thinkers who can logically approach and solve difficult scientific questions. The mastery of the scientific method is the foundation of the student’s research training and the program seeks to provide students with the necessary tools to become future medical/science educators. The goal of the Cell and Molecular Physiology graduate program is to produce high quality graduate students who have attained, 1) a broad background knowledge of cellular, molecular, and systems-level physiology, 2) a concentrated and in depth understanding of their particular research area, 3) an inquiring, critical, scholarly and ethical approach to the advancement of scientific knowledge and, 4) an ability and desire to impart knowledge and experience to future generations of scientists.

2. MASTER OF SCIENCE PROGRAM REQUIREMENTS

First Semester:

(Didactic credits – 11; Total credits – 11)

- Molecular Biochemistry (BMSC 410; 4 credits)
- Cell Biology (BMSC 412; 4 credits)
- Introduction to Research (PIOL 410; 2 credits)
- Ethics in Biomedical Sciences (BMSC 405, 1 credit)
Second Semester:

(Didactic credits – 3; Total credits – 7)

*Physiology (PIOL 401; 4 credits)*

*Research (PIOL 412, 3 credits)*

Third Semester:

(Didactic credits – 2; Total credits – 7)

*Methods/Techniques in Physiological Research (PIOL 420, 2 credits)*

*Research (PIOL 412, 5 credits)*

*Thesis Supervision (PIOL 595)*

Fourth Semester:

(Total credits – 5)

Research (PIOL 412, 5 credits)

Thesis Supervision (PIOL 595)

**MS Total credits: 30**

Students are required to participate in the Student Journal Club during their time in the program, and also required to participate in all departmental activities, such as research seminars, journal clubs, research retreats and dissertation and thesis defenses. Attendance at these functions is mandatory, and thus the student is expected to schedule research or other activities accordingly.
The student will select a preceptor/advisor for their M.S. research as soon as possible, and no later than the end of the first semester. Within the first few weeks upon entering the program, and no later than the end of the semester, students will select a preceptor for their M.S. research. This selection process will be made based on the advice of the Graduate Program Director, the student’s area of research interest and consultation with faculty during the Introduction to Research course. Students will begin limited research work soon after selection of their advisor.

Students will develop their research project with significant guidance from their advisor and will choose two other Graduate Faculty to form their Thesis Committee. Students will formulate a Thesis Proposal and become knowledgeable with appropriate basic background information relevant to their research. See below for more information.

**Research in Progress**

MS students will present a Departmental seminar during their second semester on their research in progress.

**Selection of a Thesis Committee**

The student should form a MS Thesis Committee as soon as possible and no later than by the end of the second semester in the program. The student will select at least two more members for his/her Thesis Committee in addition to, and in consultation with the advisor. The student's advisor and at least one other member of the committee must be primary faculty members at the Cell and Molecular Physiology Department. The committee membership must be approved by the Graduate Program Director and communicated to the Associate Dean of the Graduate School, who will have the responsibility of officially appointing the Committee.

In the first meeting the Committee members will select a Committee Chair different from the student's advisor. It is recommended the student schedules meetings with the Thesis Committee at least twice during the program to discuss progress or changes of direction in his/her thesis work. Once approved, the student will initiate the Thesis Committee form by
logging into the Graduate Student Progress System (GSPS) at https://gsps.luc.edu. Once committee members are entered, the form will be approved (electronically) by the Director of the Thesis Committee and the Graduate School. (On the GSPS form, the term “Director” refers to the Committee Chair, which is different from the student’s advisor, which should be designated as “Principal Investigator”). Electronic approval from readers on the Committee is not required at this time, but all Committee members will be required to approve the subsequent Thesis Proposal form and sign the Thesis Defense form. In rare circumstances, it may be necessary to change the composition of the Committee. Because the committee is an official body appointed by the Associate Dean of the Graduate School, a student must make a formal request to the Associate Dean in writing, to add or replace any member of the Thesis Committee. It will then be necessary to create a new committee in the GSPS, and have it approved.

**Presentation of the Thesis proposal**

Spring semester of Year 1, students will present and defend the Thesis Proposal to their Thesis Committee; upon approval by the committee, students will submit their Thesis Proposal to the Graduate School and proceed with their research. At least two committee members must be primary faculty at the Cell and Molecular Physiology Department. Students should complete their research by February/March of Year 2 to be able to write and defend their thesis by April/May, providing time for revisions to be made by the end of the semester in mid-May or June. All required documents for completing the M.S. degree must be completed before July of Year 2.

The student will send to the Thesis Committee a short, written Thesis Proposal which outlines the dissertation, including: Background, Specific Aims, Experimental Plan, and Bibliography. The proposal should be formulated as soon as possible after putting together the Thesis Committee. The experimental plan in the Proposal is not binding and can be modified after consultation with the Thesis Committee. A meeting of the Committee should be scheduled at least two weeks, but not more than a month, after submission of the document. At that meeting, the student will defend the Thesis Proposal during an oral presentation, demonstrating adequate factual knowledge and competent understanding of appropriate background
information. The Thesis Committee must approve the Proposal with or without modifications by written vote of the members and submit the written document to the relevant program administration office.

Students must initiate the “Ballot for Approval of a Thesis Proposal” by logging into the GSPS (https://gsps.luc.edu). Committee members, the Graduate Program Director and the Associate Dean will approve by electronic signature.

**Thesis Defense**

The candidate must be registered for the term in which he/she takes the final oral examination, the Thesis Defense. The candidate must send each Thesis Committee member a complete written document of the Thesis at least 4 weeks prior to the defense. All Thesis Committee members must be present at the defense, unless the Dean of the Graduate School approves the absence. The final revised document must be approved by all Thesis Committee members prior to degree conferral.

At least one week before the defense, a public invitation must be made to the Associate Dean of the Graduate School at the Health Sciences Division, the Dean of the Medical School, and the Health Science Division faculty and students, announcing the oral presentation of the candidate's research and its defense. This invitation can be printed as a brochure including the candidate’s curriculum vitae, publications, thesis abstract, and the constitution of the Thesis Committee. A 45-minute public oral presentation will be followed by a question-and-answer period, after which a closed examination with the candidate and the Thesis Committee members will be held. The candidate must successfully defend his/her document and must demonstrate solid background knowledge of the corresponding field of inquiry. Successful completion of the oral examination requires approval by the Chair of the Committee, and at least one of the other voting Committee members. The student will make any modifications requested by the Committee and submit the final copy of the Thesis to the Associate Dean of the Graduate School at the Health Sciences Division within a month following the oral defense. In case of failure to get approval of the Thesis by the Committee at the oral examination, the student may request to schedule a second examination, which must be approved by the Dean of the Graduate School, with input from the Associate Dean of the Graduate School at the Health Sciences Division.
The Graduate Program Director will initiate the Thesis/Thesis Defense form by logging into GSPS at https://gsps.luc.edu and will be instructed to submit a pdf of the approved (paper) Thesis Defense Form. Electronic approvals of the Graduate School will follow.

3. EXPECTATIONS FOR ALL STUDENTS

A. Academic Standards

To assure that students receive a high-quality graduate education, the Physiology program rigorously maintains the following academic standards. Students are expected to maintain a graduate grade point average (GPA) of 3.0 or greater to be in good academic standing. Students who fail to maintain a GPA of 3.0 will be on probationary academic status. Students will be notified in writing by the Dean of Graduate School and the Graduate Program Director when placed on academic probation. The Physiology graduate program will provide students on academic probation one semester to raise their GPA above the 3.0 minimum. Failure to meet this academic standard will result in loss of graduate stipend support and dismissal from the graduate program.

Physiology students are expected to do exceptionally well (grade of A or B) in their core courses. Students who receive a grade of “C” in any of the required core courses may be required to take that course over or prove proficiency in a remediation exam. The graduate program committee will decide which course of action the student will pursue. The Graduate School will not waive tuition for a course that needs to be retaken. Thus, the student will be responsible for the tuition for retaken courses.

B. Academic Honesty

The graduate school promotes the concept of academic honesty for students and faculty alike and a statement to this effect is incorporated into the LUC Graduate School Statement on Academic Honesty. This policy states:
“Academic honesty is an expression of the ethic of interpersonal justice, responsibility and care, applicable to Loyola University faculty, students and staff, which demands that the pursuit of knowledge in the university community be carried out with sincerity and integrity. Academic dishonesty is characterized by the failure to apply this ethic, i.e., any action whereby faculty, student or staff misrepresents the ownership of academic work submitted in his or her name”.

Student failure to practice academic honesty will, depending on the seriousness of the misconduct, result in a sanction ranging from up to a grade of “F” for the assignment to expulsion from the university. Channels for resolution of questions regarding such behavior will originate with the faculty (the course director or mentor) and the student and will extend to the department and graduate school if deemed necessary. The academic grievance procedure is detailed in the Graduate School Handbook (available at the LUC Graduate School office).

C. Departmental Seminars and Student Journal Clubs

The Physiology program requires its students to attend physiology seminars on a regular basis. Attendance at scheduled departmental seminars is required for all students.

During the second semester of the first-year students will register and participate in the Student Journal Club and this participation will continue in semester 3. Students will meet with a selected faculty mentor (not necessarily their Thesis mentor) to prepare, review the literature, and discuss the paper selected for presentation by the student.

D. Annual Progress Report

Graduate students will be required to fill out an annual progress report that will reflect coursework, research rotations, presentations (at LUC or scientific meetings) as well as teaching activities in the prior academic year. In addition, the student will provide the composition of their Thesis Committee, date of Thesis proposal, anticipated date of Thesis defense, information concerning any applications for pre-doctoral fellowships, publications and a detailed research
activity report. This information will be requested from each graduate student in the program at the end of each academic year by the Graduate Program Committee.

E. Vacations and Time Off

We support a healthy work ethic and encourage students to make time for the mental and physical well-being. However, we also stress that the highly competitive nature of foundational scientific research means that hard working and highly motivated individuals achieve their goals. Furthermore, timely completion of the M.S. program requires substantial commitment, time, and effort. Thus, students owe it to themselves not to procrastinate and prolong their graduate careers.

Vacations and time off must be scheduled so that it does not conflict with required coursework or program progress. Students should notify their thesis research advisor of their plans and seek his/her approval.

F. Conflict Resolution

As in any community of individuals, interpersonal conflicts and/or disagreements may arise and must be resolved in an efficient and predictable fashion. Students should seek conflict-disagreement resolution in the following order. Student should first attempt to resolve the problem with the help of their thesis advisor. If the problem is not resolved satisfactorily, the student should seek resolution with the help of the graduate program director, his/her Thesis committee, and then the Departmental chairperson. If a satisfactory resolution is still not attained, then the student may appeal to Dean of the Graduate School to resolve the conflict.