

# Guidelines for the Graduate Program

## Master's Students

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## Requirements

1. Completed University of Illinois Graduate Application. The online application is the preferred method. To apply go to <https://admissions.uic.edu/graduate-professional/apply> and select MS Physiology and Biophysics to proceed.
2. Completed Application for Graduate Appointment, Research Interests Form, and Waiver.
3. Official report of the Graduate Record Examination (GRE) scores. Minimum scores required are: verbal  $\geq 153$ , quantitative  $\geq 146$ , and analytical  $\geq 4$ . An advanced test is optional. The Institution Code is R1851, and the Department Code is 0217 for this exam.
4. Test of English as a Foreign Language (TOEFL) for students whose native language is not English. A minimum score of 550 for the paper-based test or 213 for the computer-based test is required. The Institution Code is R1851, and the Department Code is 49 for this test.
5. Official transcripts of all previous undergraduate and graduate studies.
6. Three letters of recommendation.
7. Personal interview.

Interested students are strongly encouraged to complete these requirements by April 1<sup>st</sup> for admission to the Master program in the fall of the same year. Interviews will be scheduled and held in our department or conducted by telephone or video (Skype) conference.

## Rotations

During the first year, students must complete 3 laboratory rotations to gain familiarity with the research topics and experimental approaches of different laboratories and to facilitate the selection of a Thesis Advisor. Each rotation consists of ten (10) weeks of research related work. The student MUST spend as much time as possible in the lab during the rotations. A fourth rotation is possible during the summer between the first and second year if the student has not found a suitable laboratory by the end of the third rotation.

### *Setting up your rotations*

- Set up a meeting with potential advisors. Tell them about your interests in your introductory emails. This is not a simple text message to your friend; be professional.
- You will get the most out of your meetings if you read about the lab's research beforehand. You should have questions prepared and be ready to discuss your interests and what you find appealing about the lab's research. Enter meetings with an agenda or plan, but be flexible.
- Ask about what rotation projects you might work on, but also be prepared to propose possible projects in which you would like to participate.
- Be sure to ask the faculty member before you rotate in her/his lab if you ultimately would be able to join the lab. You do not want to spend time rotating in a lab that you cannot join. You should also inquire if the lab has the funds needed to support your research.
- Determine when you would like to rotate in that lab.
- Notify the Director of Graduate Studies about your choice of rotation labs.

**The head of the lab should provide a written evaluation of the student's rotation. As soon as the rotation is over, the student should provide the head of the lab the evaluation form and remind her/him to complete and submit the form to the Director of Graduate Studies.**

## Thesis Advisor

The Thesis Advisor is the faculty member in whose laboratory the student will perform her/his thesis research. It is expected that students will complete their rotations and identify their Thesis Advisor by the end of the first year. The duties of the thesis advisor are to supervise and support the student's research, and provide advice regarding course selection. The Thesis Advisor must be a Faculty or "Affiliate Member" of

the Department of Physiology and Biophysics. An "Affiliate Member" is a member of the Graduate College who has a joint appointment in the Department of Physiology and Biophysics.

The student must notify her/his choice for Thesis Advisor to the Director of Graduate Studies, in writing, by the end of Spring Semester of year 1. The prospective Advisor must also notify in writing the Director of Graduate Studies of her/his willingness to accept the student. The Director of Graduate Studies will seek approval by the Graduate Education Committee and then will notify the Department Head who will make the final appointment. It is not required to do a rotation in a lab to join that lab.

## Thesis Committee

This Committee will be selected by the student and the Thesis Advisor. The Committee shall include four (4) members of the Graduate College including the Thesis Advisor. At least two members of the Committee must be Tenured/Tenure-track Members of the Department of Physiology and Biophysics. One member of the Thesis Committee other than the advisor must serve as chair. **The chairperson must be from the Department of Physiology and Biophysics.** One member of the committee may be from outside the department, academic unit, or outside the University, in which case the member must demonstrate equivalent academic standards and her/his *curriculum vitae* must accompany the "Committee Recommendation Form".

**Selection Procedure:** The student should send the list of possible committee members to the Director of Graduate Studies **BEFORE** contacting the selected faculties. The Director of Graduate Studies will seek approval by the Graduate Education Committee and the Department Head. Then, the student is notified of the total or partial approval of the committee. If some of the prospective members are not approved the procedure should be repeated until the entire committee is approved.

The committee will meet twice: The first meeting is the presentation of master's project, which must be completed before September 1<sup>st</sup> of the second year. The next meeting is at the Thesis Defense.

## Presentation of Master's Project

During this meeting, the student should describe briefly the research project that will be performed during the second year of the program. The role of the Committee will be to evaluate and assist the student in developing her/his thesis project. The evaluation consists of two parts: Written Research Proposal and Oral Presentation of the proposal.

### **Written Research Proposal**

The student must prepare a written research proposal following the following outline.

- Title Page. This should include committee members and roles.
- Specific Aims. One page summarizing the problems and issues to be addressed followed by the hypothesis and a brief description of one or two specific aims that will test the hypothesis.
- Background and Significance. Describe the scientific background of the proposal. State concisely the importance of the research described in the proposal by relating the specific aims to broad and long-term objectives. The purpose of this section is to demonstrate your understanding of the field by critically analyzing the publications that provided the framework for the proposal.
  - Preliminary results
  - Experimental plan
    - a. Research design and methods
    - b. Possible outcomes
    - c. Statistical and power analyses
    - d. Limitations and alternatives
  - Future directions

## - References

**Format: Font:** Use black Arial, Palatino Linotype, or Georgia typeface fonts of 11 points or more. For figure legends, the font size should be no smaller than 9 points. **Paper Size and Page Margins:** Use standard size (8 ½" x 11") sheets of paper. Use at least one-half inch margins (top, bottom, left, and right) for all pages. **Page numbers should be included at the bottom right of each page.** **Length:** the background, significance, preliminary results, experimental plan and future directions sections combined **should not exceed six (6) pages.**

## **Oral Presentation**

The student must schedule a date and time that is agreeable to all committee members. Reserve a room for at least 1.5 hours. **Ten (10)** working days prior to the scheduled exam, the student must notify the date of the exam and provide a completed "Certificate of Approval for a Master's Project" form to the Graduate Program Coordinator. The Graduate Program Coordinator will add this certificate to the student's folder. See, <http://grad.uic.edu/sites/default/files/legacy/pdfs/CertificateofApprovalMAproject.pdf>

**At least one week prior to the exam, the student should send the proposal to each member of the Thesis Committee** and to the Director of Graduate Studies.

At the beginning of the meeting, the chair will ask the student to leave the room briefly. At this moment, the committee will evaluate the performance of the student in the courses taken with especial emphasis on the grades obtained in GCLS500 and PHYB552. The chair of the committee will comment on the evaluation reports provided by the faculty during rotations. The committee will also discuss the quality of the written proposal. If the committee agrees that all conditions are optimal, the evaluation continues; if not, the student is informed of the problems and fallacies and a second opportunity is given to present the exam.

If the evaluation continues, the student is invited to initiate the oral presentation. **The advisor should be present during the examination as an observer.** Students should present first a general background on the area of the thesis project by using no more than 10 minutes and including no **more than 5 slides**. The second part consists of a 20-min presentation of the background, hypothesis, specific aims, and approach of the project. **This part should include no more than 10 slides.**

After the student's presentation and questioning, the Committee will meet without the student to discuss the proposal and assess the student's overall performance. **During this meeting, the Thesis Advisor can express concerns regarding the evaluation.** When the student returns, the Committee reports its assessment and transmits specific advice, feedback, and recommendations to the student.

**Grading:** The committee assigns a grade of "SATISFACTORY" or "UNSATISFACTORY". The committee may require that specific conditions be met before the "SATISFACTORY" recommendation becomes effective. The exact conditions and time-frame to complete the conditions must be specified, and the Chairperson must notify the Director of Graduate Studies in writing as soon as the conditions have been completed. After a final decision has been reached, the all member must complete and sign the Certificate of Approval for a Master's Project provided by the student. The certificate should be returned to the Graduate Program Coordinator who will submit it to the Graduate College.

## **Course Requirements**

Thirty-two (32) credits are required to graduate. Nine (9) credits must be at the 500 level, in courses that give letter grades and not U/S grade e.g. excluding 506, 595, and 598.

### **First-year courses:**

#### *Fall Semester:*

PHYB 551 - Human Physiology I (5 credits)

PHYB 571 - Clinical Application of Physiology I (2 credits)

PHYB 591 - Departmental Seminar (1 credit). Students are required to attend 2/3 of the Seminars.

GCLS 506 - One rotation (2 credits)

### *Spring Semester:*

- PHYB 552 – Human Physiology II (5 credits)
- PHYB 572 - Clinical Application of Physiology II (2 credits)
- PHYB 591 - Departmental Seminar (1 credit)
- GCLS 506 - Two rotations (4 credits)

Students should work full-time in a laboratory during the summer semester between the first and second years. They should register for PHYB 598 with at least 8 credits hours.

### **Second Year**

- PHYB 591 - Departmental Seminar (fall and spring semesters)
- PHYB 598 - Thesis Research (12 credits for the fall and winter semester and 8 credits for the summer semester). Register with the Thesis Advisor for fall and spring semesters.
- PHYB 595 - Journal Club and Seminar in Physiology (Required for the term of graduation).

### **Additional courses**

The student could take any of the following courses to complete their credit hours.

- PHYB 586 - Cell Physiology (3 credits)
- PHYB 530 - Stem Cells (2 credits)
- GCLS 501 – Biochemistry (3 credits)
- GCLS 502 - Molecular Biology (3 credits)
- GCLS 503 - Cell Biology (3 credits)
- GCLS 401 - Scientific Integrity and Responsible Research
- GCLS 470 - Essentials of Animal Research. If the Master research project involves animals, the student should take this course at the Biological Resources Laboratory.
- GCLS 504 - Research Methods I (1-2 modules, 1-2 credits). This is a modular course that allows students to take the modules that seem most appropriate for their research interests. Discuss this with your first-year or Thesis Advisor
- Radiation Safety - If the research project uses radioactive materials, the student is required to take classes offered by the Radiation Protection Office.

## **Thesis Defense or Dissertation**

### *Thesis Format*

The student should follow the instruction provided by the Graduate College for the formal preparation of the thesis document. Please, consult the website of the graduate college and download the last version of the “Thesis Manual” at [grad.uic.edu/thesis](http://grad.uic.edu/thesis)”.

### *Intent to Graduate*

The Intent to Graduate must be submitted for the term you intend to graduate. Follow the instructions provided by the Graduate College at <http://grad.uic.edu/graduation-deadlines>. If you complete an “Intent to Graduate” form for one term and do not graduate that term, you must complete another “Intent to Graduate” form for the new term in which you are attempting to graduate. The thesis submission process is separate from declaring intent to graduate.

### *Committee Recommendation Form*

The student should submit the “Committee Recommendation Form” to the departmental Graduate Support Staff one month **BEFORE** the Thesis Defense. The Graduate College will review the Committee Recommendation form and, if the recommended faculties meet Graduate College guidelines, approval is given

by the Dean. In addition, the academic status of the student is checked to ensure that s/he is in good academic standing. Then the Graduate College sends a letter to each recommended committee member asking to serve on the Thesis Committee. The Graduate College also sends an "Examination Report" to the Graduate Program Support person. This form is added to the student's folder, so it is available during the examination. The "Examination Report Form" cannot be duplicated, and changes cannot be made without prior approval of the Graduate College.

### *iThenticate Review Procedures*

To help graduate students from inadvertently including previously published work in their theses or dissertations without proper citation, paraphrasing, or quoting, the Graduate College requires students to screen their theses and dissertations using iThenticate, prior to their defense. Access to iThenticate will be given to the student by the Graduate College upon submission of the Committee Recommendation Form for the final defense. See <http://grad.uic.edu/ithenticate-review-procedures>. It is responsibility of the student to obtain the iThenticate Report and bring to the defense.

### **Oral Defense**

The Oral Thesis Defense takes place after the written part has been read by the Thesis Committee. The oral presentation is scheduled as a Departmental Seminar and is open to the public. The advisor of the thesis normally acts as host presenting the student and welcoming the Thesis Committee as well as the faculty and students. All members of the department are invited and encouraged to attend. The student must schedule a date and time that is agreeable to the committee and reserve a room for the oral presentation (1 hour) and a room for the post-presentation discussion (at least 2 hours).

The general format of the defense is as follows:

- An initial presentation by the student providing an overview of the research and the findings. The presentation (and thesis) needs to address the following: What is the problem you are studying? Why does it matter? What results have you achieved? Which are the main conclusions? Are there any limitations? The student should tailor the presentation to the committee members and not to the lay persons in the audience. No more than 20 slides, plus "backup" slides with additional material in case of questions.
- At the end of the presentation, the Thesis Advisor opens questions from the audience. At this point in the defense, both the committee and non-committee members can ask questions. There is no set time limit for questions; it is up to the thesis advisor, as host, to end this section of the defense. Some guidelines for when to stop this part of the defense are: when the committee begins to monopolize the discussion; when the non-committee audience members appear to be out of questions; or when the audience starts asking questions that seem to be off track from the student's research. At the end of the seminar, each faculty present will be asked to complete an evaluation form judging the quality of the presentation, the novelty and completeness of the research findings, and the ability of the student to respond questions.
- After questioning, the committee should meet in private. The chair will ask the student to step out, and the committee will discuss the student's performance. At this point, the committee chair will also summarize the comments and concerns of the faculty that attended the seminar. The chair should ask each member of the committee for feedback, comments, and concerns about the Thesis and the presentation. The chair leads this discussion and takes notes on the perceived strengths and weaknesses of the project. These notes should be used when the advisor writes up the report of the defense.
- Once the committee has completed the evaluation, the chair invites the student back into the room. Each member of the committee asks the students about the thesis, the methodology used, the conclusions drawn, etc. All members should participate. This should take as long as required. The student should take notes on any scientific and editorial improvements.
- At the end of this individual questioning, the chair dismisses the student again. The panel decides the appropriate grade for the thesis. The committee vote is "pass" or "fail." A candidate cannot be passed with more than one "fail" vote. If the overall vote is "fail," the committee may recommend a second defense. This second examination must be initiated by submission of a new Committee Recommendation form, even if there is no change in membership. A third defense will not be permitted. A committee may recommend "pass - with specified conditions." If this occurs, the conditions must be indicated in the "Examination Report

Form” along with the name of a committee member, usually the thesis advisor, who will monitor the fulfillment of any such conditions. This committee member must then report to the Graduate College when conditions have been satisfied. The Thesis will be approved after all the concerns and conditions of the Thesis Committee are addressed by the student.

- The student is asked to join the panel. The Chair informs the student of the outcome of the defense.
- The “Examination Report Form” must be signed by all members of the committee and submitted to the Graduate College within 48 hours, even if conditions are listed on the form. The program should retain a copy and give the student copy to the student.

### ***Electronic Thesis and Dissertation (ETD) Procedures***

After successfully defending the thesis and making all necessary revisions, the dissertation must be submitted electronically. For more information, see the University ETD website at “grad.uic.edu/electronic-thesisdissertation”. **It is highly recommended that students review the information on the University’s ETD website prior to beginning to write the thesis.**

### **Supplemental information**

Stipends and Waiver of Tuition: There is **NO** Departmental funding for Master’s Students. Students may be able to arrange financial aid in the form of teaching and research assistantships from individual faculty members.

Participation in National Meetings and Intramural Forums: Graduate students are encouraged to participate in national meetings in their area of specialization and in intramural forums (Sigma Xi Research Forum, Medical Student Research Forum). Departmental funds are available to assist graduate students to attend national meetings if they are presenting a paper. The student should request such support in writing to the Department Head.

Publications: Although the department does not require that Master students publish their research findings, **the student should strive to produce a thesis that contains publishable material.** If any publication results from the research, the publication must cite the Physiology and Biophysics as the department (or one of the departments) from which the research emanated. The citation should be read: "Department of Physiology and Biophysics (M/C 901), University of Illinois at Chicago, 835 S. Wolcott, Chicago, IL 60612-7342." This is also applicable to students working with affiliated faculty.

### **Graduate student checklist**

#### **THESIS ADVISOR**

- \_\_\_\_\_ Letter to Graduate Education Committee of student's choice of advisor.
- \_\_\_\_\_ Letter to Graduate Education Committee from prospective advisor accepting the student.

#### **THESIS COMMITTEE**

- \_\_\_\_\_ Obtain approval of thesis committee from the Graduate Education Committee

#### **THESIS DEFENSE**

- \_\_\_\_\_ Complete "Committee Recommendation Form" four (4) weeks prior to defense.
- \_\_\_\_\_ Consult with Seminar Chairperson to set up a date for the Defense.
- \_\_\_\_\_ Up-to-date transcript. Request the Graduate Program Coordinator to obtain this.
- \_\_\_\_\_ Have the Graduate Program Coordinator prepare "Supplemental Grade Report" forms for each DF, INC, or missing grade on your transcript.