

## REQUIREMENTS FOR MASTER'S STUDENTS IN THE MOLECULAR AND CELL BIOLOGY PROGRAM

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### Summary of requirements for candidacy to the MCB Master's program:

All MCB Master's students must complete and pass six graduate level courses with a grade of B- or better, including one laboratory- or research-based course. In addition, students must register for and attend the following required non-graded courses/seminars: Responsible Conduct of Science, two semesters of the Molecular Genetics Journal Club, and two semesters of Graduate Student Research Seminar.

### COURSE REQUIREMENTS:

When the degree is to be completed in one year, this will be done at a rate of three courses per semester for two semesters. However, some students may instead elect to finish the degree in two years (e.g. when they introduce a heavy research component into the program or write an optional thesis). Students must pass each of the six courses with a grade of B- or better. Courses outside of the life sciences will be considered on a case-by-case basis by the Program Chair. In general, transfer credit is not accepted for the Master's Program.

**Courses:** A total of six graduate-level courses (passed with a grade of B- or better), along with the attendance of Journal Clubs and Graduate Student Research Seminar for two semesters, are required for the degree. The courses must include the following required courses: BIOL 101A (Molecular Biotechnology), BIOL 100B (Advanced Cell Biology), BIOL 205A (Master's Proseminar) and one laboratory or research based course. The two remaining must be agreed upon by the Program Chair. With permission of the Chair, BIOL 105B (Molecular Biology) may be taken in lieu of BIOL 101A, and/or BIOL 103B (Mechanisms of Cell Functions) may be taken in lieu of BIOL 100B. The laboratory or research requirement can be met by BIOL 296A/B (one semester Master's Research Lab), a Project Laboratory (Fall 2017: BIOL 156A - Project Laboratory in Biotechnology or BIOL 157A - Project Lab in Neurobiology and Behavior; Spring 2018: BIOL 159A Project Lab in Microbiology). All students are required to take CONT 300B (Responsible Conduct of Science), usually offered in the Spring.

If a required course is "closed" for registration, please email the course instructor indicating that you are a MCB Master's student; the instructor will usually email you a consent code so that you can still register online.

**Journal Clubs:** Students should register and attend two semesters of "Topics in Molecular Genetics and Development" Journal Club BIOL 305A/B. Students can register for Topics in Neurobiology (NBIO 306) or Systems/Computational Journal Club (NBIO 340) in addition to BIOL 305 with permission of the Program Chair.

**Graduate Student Research Seminar (BIOL 350A/B):** All students are required to register for and attend two semesters of the Graduate Student Research Seminar Pizza Talks, held on Fridays at 12:30 pm. Master's students are **not** required to present at the seminar.

**Responsible Conduct of Science:** Students must register for and attend Responsible Conduct of Science (CONT 300B), usually offered in the Spring semester.

**Tuesday Colloquia Series:** All students should attend the regular Joint Biology & Neuroscience Seminar on Tuesdays.

**English as a Second Language (ESL) Classes:**

If a student is required to take ESL classes, it is expected that the student will attend all classes and receive credit. A failing grade (no-credit), due to excessive absences or for any other reason, will be reflected on the student's final transcript.

**RESEARCH REQUIREMENT:**

There are two options for completion of the research requirement:

- 1) Completion of a permitted Project Laboratory with a grade of B- or better
- 2) One semester of Master's Research Lab (BIOL 296A/B) with a grade of B- or better

**Project Laboratory:** The project laboratory provides a semi-independent, guided research project experience. Options for the 2017-2018 academic year include: Fall 2017: BIOL 156A - Project Laboratory in Biotechnology or BIOL 157A - Project Lab in Neurobiology and Behavior; Spring 2018: BIOL 159A Project Lab in Microbiology.

**Master's Research Lab (BIOL 296A/B):** The Master's Research Lab offers students an opportunity to engage in biological research by working in the laboratory of a faculty member for at least 15 hours/week for one semester. Program Chair approval is required. Students who choose to do a Master's Research Lab should register for BIOL 296A/B with the respective faculty. The choice of laboratory is made jointly by the student and the faculty member in whose lab the research is to take place. Students may choose from any faculty member in the Departments of Biology, Biochemistry, Chemistry and Physics who are listed as Life Sciences faculty on the following website: [http://www.bio.brandeis.edu/faculty/list\\_lastname.php](http://www.bio.brandeis.edu/faculty/list_lastname.php). To find a research advisor, define a list of potential advisors using the graduate bulletin and faculty listing as a starting point, and then email and speak with the professors you are most interested in. The Program Chair is available to give advice on research advisors. Students who wish to complete BIOL 296A in the Fall semester are encouraged to wait to contact faculty regarding potential lab work until they arrive on campus for orientation. They should attend the "Faculty Bazaar" held during orientation week to aid in lab selection for graduate students. It is the responsibility of the student to find a lab for their Master's Research Lab and Master's students are not guaranteed a spot in a lab. Students who wish to complete a BIOL 296B in the Spring semester are encouraged to reach out to faculty a few weeks before the start of the Spring semester to ensure that they secure a spot.

Only one semester of BIOL 296A/B can count towards program requirements. Additional semesters of BIOL 296A/B or BIOL 299A/B will be counted in GPA calculations and will be listed on transcripts.

All students will submit a written research lab report at the end of the semester and may also be asked by the research advisor to do deliver a research seminar. Research reports are due to the research advisor and the Graduate Affairs Office no later than one week before the first day of Final Exams.

**OPTIONAL MASTER'S THESIS:**

An optional Master's Thesis continues research initiated during a Project Lab (less common) OR following one or two semesters of Master's Research Lab BIOL 296 (more common). When a

student registers for Master's Research Project (BIOL 299) in their first year in the program, this will count as the research requirement, and the Project Lab (but not the Master's Research Lab) course will be counted as an elective.

**NOTE: Completing a thesis in one year is discouraged. The thesis should be more than can be reasonably accomplished within one year.**

The student will carry out a research project (lasting a minimum of one semester, but usually two semesters) in a single lab and submit a thesis. Students who register for a Master's Research Project (BIOL 299) will typically register for Master's Lab BIOL 296 and work in the same lab for one or more previous semesters and make substantial research progress. It is the responsibility of the student to find a research advisor for the thesis work. Submission of a Master's thesis requires mutual agreement between the student, advisor, and Program Chair. Students who wish to complete a Master's thesis should indicate their interest to their research advisor at the beginning of the semester that they register for the Master's Research Lab BIOL 296. The mutual agreement that a Thesis will be written is typically reached at the middle or end of the BIOL 296 research semester.

Note that students who complete a Master's thesis generally extend their total time in the program to 1.5 or 2 years, after first completing one or two semesters of Master's Research Laboratory (BIOL 296A/B). A student who plans to register for BIOL 299 in the Fall semester of the **second** year must notify the Program Chair and the Graduate Affairs Office of their intention no later than **March 1<sup>st</sup>** (same deadlines as application for graduation), so that the program may extend the student's time in the program as necessary. A student who plans to register for BIOL 299 in the Spring semester of the **first or second** year must notify the Program Chair and the Graduate Affairs Office of their intention no later than **Nov. 1<sup>st</sup>**. Deadlines and guidelines for submission and acceptance of the Master's thesis are set by the Graduate School and the Registrar. The completed thesis is due to the research advisor and the Program Chair no later than two weeks before the end of the semester. NOTE: BIOL 299 can only be taken ONCE.

## **TIMELINE:**

### **Fall matriculation:**

#### **Meeting with Program Chair:**

All students should meet with the Program Chair (Maria Miara) to discuss their plan for the year. These meeting will typically take place during the week of Orientation through the first week of classes.

#### **Non-Thesis Track:**

Students in their **first semester** (Fall 2017) will register for the Genetics Journal Club (BIOL 305), the Graduate Student Research Seminar (BIOL 350A), and three lecture courses: BIOL 101A (Molecular Biotechnology), BIOL 205A (Master's Proseminar) and one course to be agreed upon by the Program Chair.

Students in their **second semester** (Spring 2018) will register for the Genetics Journal Club (BIOL 305), the Graduate Student Research Seminar (BIOL 350B), Responsible Conduct of Science (CONT 300B), BIOL 100B (Advanced Cell Biology), and two courses to be agreed upon by the Program Chair.

## **Thesis track:**

### **First Year:**

Students in their **first semester** (Fall 2017) will register for the Genetics Journal Club (BIOL 305), the Graduate Student Research Seminar (BIOL 350A), and three lecture courses: BIOL 101A (Molecular Biotechnology), BIOL 205A (Master's Proseminar) and one course to be agreed upon by the Program Chair. If the student hopes to complete a thesis, they should consider enrolling in either a Project Lab or Master's Research Lab (BIOL 296). Any student with an interest in extending their degree into a thesis should discuss this with the Program Chair. The intent to write a thesis in the Spring semester needs to be declared by November 1<sup>st</sup>.

Students in their **second semester** (Spring 2018) will register for the Genetics Journal Club (BIOL 305), the Graduate Student Research Seminar (BIOL 350B), Responsible Conduct of Science (CONT 300B), BIOL 100B (Advanced Cell Biology), and two courses to be agreed upon by the Program Chair. Students may wish to enroll in a second semester of Master's Research Lab, BIOL296 but should be aware that only one semester of this course can count toward degree requirements. A second semester of BIOL 296 will be recorded on the student's transcript and will be included in GPA calculations. If the student progressed far enough in one semester of Master's Research Lab work to complete a thesis (not common, discouraged), they will register for Master's Research Project BIOL 299. The intent to write a thesis in the following Fall semester needs to be declared by March 1<sup>st</sup>.

### **Second Year:**

Students who have chosen to write a Master's Thesis following one or two semesters of Master's Research Lab BIOL 296 will typically register for the Master's Research Project (BIOL 299) course in the Fall semester of the following year. A tuition credit is applied for students who *only* register for BIOL 299. The thesis must be completed in the semester that the student registers for BIOL 299.

## **Spring Matriculation:**

### **First Year:**

#### **Non-Thesis Track:**

Students in their **first semester** (Spring 2018) will register for the Genetics Journal Club (BIOL 305), the Graduate Student Research Seminar (BIOL 350A), Responsible Conduct of Science (CONT 300B, a not-for-credit course), BIOL 100B (Advanced Cell Biology), and two courses to be agreed upon by the Program Chair.

Students in their **second semester** (Fall 2018) will register for the Genetics Journal Club (BIOL 305), the Graduate Student Research Seminar (BIOL 350B), and three lecture courses: BIOL 101A (Molecular Biotechnology), BIOL 205A (Master's Proseminar) and one course to be agreed upon by the Program Chair.

## **Thesis track:**

### **First Year:**

Students in their **first semester** (Spring 2018) will register for the Genetics Journal Club (BIOL 305), the Graduate Student Research Seminar (BIOL 350A), Responsible Conduct of Science (CONT 300B, a not-for-credit course), BIOL 100B (Advanced Cell Biology), and two courses to be agreed upon by the Program Chair. If the student hopes to complete a thesis, they should consider enrolling in either a Project Lab or Master's Research Lab (BIOL 296). Any student with an interest in extending their degree into a thesis should discuss this with the Program Chair. The intent to

write a thesis in the following Fall semester needs to be declared by March 1<sup>st</sup>.

Students in their **second semester** (Fall 2018) will register for the Genetics Journal Club (BIOL 305), the Graduate Student Research Seminar (BIOL 350B), BIOL 101A (Molecular Biotechnology), BIOL 205A (Master's Proseminar) and one course to be agreed upon by the Program Chair. Students may wish to enroll in a second semester of Master's Research Lab, BIOL 296 but should be aware that only one semester of this course can count toward degree requirements. A second semester of BIOL 296 will be recorded on the student's transcript and will be included in GPA calculations. If the student progressed far enough in one semester of Master's Research Lab work to complete a thesis (not common, discouraged), they will register for Master's Research Project BIOL 299. The intent to write a thesis in the following Spring semester needs to be declared by November 1<sup>st</sup>.

### **Second Year:**

Students who have chosen to write a Master's Thesis following one or two semesters of Master's Research Lab BIOL 296 will typically register for the Master's Research Project (BIOL 299) course in the Spring semester of the following year. A tuition credit is applied for students who *only* register for BIOL 299. The thesis must be completed in the semester that the student registers for BIOL 299.

### **Summer (between years/semesters):**

Students have three options for the summer between semesters (relevant to students completing a thesis, or students who matriculate in the Spring) – they may:

- 1) Leave Brandeis (to go home, work, etc.).
- 2) Stay at Brandeis and continue to work in their thesis lab as a volunteer.
- 3) Stay at Brandeis and register for BIOL 296 in the summer. NOTE: this may not be possible for all labs or students, this option should be discussed with and approved by the Program Chair. There will be a tuition cost for the Summer.

It is not allowed for a student to be paid during the summer to work in their thesis lab on their thesis research.

### **PROGRESS:**

Students' progress will be reviewed by the Program Chair at the end of each semester. Students must complete all courses, including the research requirement, with a grade of B- or better and may be terminated at the end of a semester if the student's record is unsatisfactory. Students wishing to be admitted to a second year of study must demonstrate adequate progress.

### **RESIDENCY:**

The minimum residence requirement is one year. Students may take an additional one or two semesters to complete the MS degree as an Extended Master's student with approval of Program Chair. International students may extend their time one semester if they are still completing required coursework. International students who have completed all required coursework and wish to complete the optional Master's Thesis may stay an extra semester with advanced approval from the advising faculty, the Program Chair, and ISSO (by November 1st if completing the thesis in the Spring semester and by March 1st if completing the thesis in the Fall semester).

## MCB and Neuroscience Master's Student Important Dates and Deadlines

Wednesday, July 19- Wednesday, September 13	Registration period for Fall 2017 Term
Wednesday, September 13	Last day to add classes Fall 2017 Term
Wednesday, November 1	Last day for Master's students to inform Program Chair and Graduate office of intent to pursue a thesis in Spring 2018
Wednesday, November 1	Last day for February graduate degree candidates to file Application for Degree.
Wednesday, November 1 - Monday, November 6	Early Registration Period for Spring 2018 Term
Tuesday, November 14	Last day to drop a Fall 2017 course OR change grading option to audit (instructor's permission required).
Tuesday, December 5	Deadline for submission of Research Report for 296 courses to Research Advisor, Program Chair and Graduate office.
Wednesday, November 29- Wednesday, January 24	Registration period for Spring 2018 Term
Tuesday, January 2	Deadline for submission of Master's Thesis to Thesis Advisor, Program Chair and Graduate office.
Tuesday, January 16	Deadline for submission of Certification of Master's Thesis Acceptance Form.
Wednesday, January 18	Final day for February graduate degree candidates to electronically deposit their dissertations or theses: 4pm deadline.
Wednesday, January 24	Last day to add classes Spring 2018 Term
Thursday, February 1	February degrees conferred.
Thursday, March 1	Last day for Master's students to inform Program Chair and Graduate office of intent to pursue a thesis in Fall 2018
Thursday, March 1	Last day for May graduate degree candidates to file Application for Degree.
Wednesday, March 28	Last day to drop a Spring 2018 course OR change grading option to audit (instructor's permission required).
Friday, March 30	Deadline for submission of Master's Thesis to Thesis Advisor, Program Chair and Graduate office.
Friday, April 13	Deadline for submission of Certification of Master's Thesis Acceptance Form.
Monday, April 16	Final day for May graduate degree candidates to electronically deposit their dissertations or theses: 4pm deadline.
Monday, April 23	Deadline for submission of Research Report for 296 courses

	to Research Advisor, Program Chair and Graduate office.
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