

REQUIREMENTS FOR THE MOLECULAR AND CELL BIOLOGY MASTER'S PROGRAM

****Important Note Regarding COVID-19:** Due to the uncertain direction of the COVID-19 situation, please note that the contents in this handbook are subject to change. If there are any changes, we will notify you as soon as possible by email. Please make sure you check your Brandeis email regularly, at least once a day. For GSAS COVID-19 updates, please consult their website.**

Program Chair: Dr. Maria Miara, mmiara@brandeis.edu
for appointments: [schedule an appointment with Dr. Miara](#)

Program Administrator, Graduate Affairs Office: Anne Lazerson, lazerson@brandeis.edu

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

All MCB Master's students must complete and pass the following six graduate level courses with a grade of B- or better:

- **BIOL 101A: Molecular Biotechnology (BIOL 105B may be completed instead, with Program Chair permission)**
- **BIOL 100B: Advanced Cell Biology (BIOL103B may be completed instead, with Program Chair permission)**
- **BIOL 205A: Masters Proseminar**
- **One laboratory- or research-based course (see below)**
- **Two life-science electives, numbered 100 or above.**

In addition, students must register for and attend the following required non-graded courses/seminars:

- **Responsible Conduct of Science Minicourse, typically held in January**
- **Two semesters of BIOL 350A/B**
- **Two semesters of Journal Club (see below)**

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 completing a thesis may, with the permission of their research advisor and Maria Miara, take classes in their second year. In all cases, readmission into the second year is not guaranteed and is based on research and class performance. Students must pass each of the six courses with a grade of B- or better. Elective courses outside of the life sciences will be considered on a case-by-case basis by the Program Chair. Transfer credit is not accepted for the Master's Program to reduce course load.

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 electives 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 BIOL103B (Mechanisms of Cell Functions) may be taken in lieu of BIOL100B.

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.

Laboratory- or Research-Based Course 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

See page 4 for more information

Additional Requirements

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), 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 the Responsible Conduct of Science Minicourse, typically held in January each year.

Tuesday Colloquia Series: All students should attend the regular Joint Biology & Neuroscience Seminar on Tuesdays at 12:30pm.

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. In some cases a student may complete a project lab and also complete BIOL 296A/B. In this case, BIOL 296A/B will fulfill the research requirement and the project lab will fulfill an elective. Project Lab courses for the 2020-2021 academic year include:

Fall 2020:

- BIOL 152B - Virus Hunter Lab
- BIOL 156A - Project Laboratory in Biotechnology

Spring 2021:

- BIOL 151B – Project Laboratory in Biochemistry
- BIOL 159B 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. Research Faculty and 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 member.

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 listed as [Life Science faculty](#). 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 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 will be counted toward program requirements. Additional semesters of BIOL 296A/B or BIOL 299A/B will be counted in GPA calculations and will be listed on transcripts but will not count towards the six courses required for graduation.

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 by 5pm to the research advisor, Program Chair 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 296A/B in the same lab (more common). **It is up to the discretion of the research faculty advisor and Program Chair whether a student may continue in the lab to complete a thesis. To be readmitted into the MS program as an extended MS student and complete a thesis, students must perform satisfactorily in research and coursework.**

NOTE: Completing a thesis in one year is discouraged. The thesis should be more than can be reasonably accomplished within one year. **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), all within the same lab.**

The student will continue a research project lasting a minimum of one semester, but usually two or more semesters following one semester of BIOL 296A/B in a single lab and submit a thesis. Students who register for a Master's Research Project (BIOL 299A/B) will typically register for Master's Lab BIOL 296A/B 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.

NOTE: BIOL 299 can only be taken ONCE.

Thesis Intent Form

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 296A/B. A student who plans to register for BIOL 299 in the fall semester of the second year must submit a **thesis intent form** to the Program Chair and the Graduate Affairs Office no later than **March 1st** of their first year. A student who plans to register for BIOL 299A/B in the spring semester of the first or second year must submit a thesis intent form to the Program Chair and the Graduate Affairs Office no later than **November 2nd** of the previous fall semester. Note: The intent to complete a thesis does not guarantee the ability to do so. Readmission into the second year will be determined based on research performance in the semester in which the thesis intent form is filed and performance in coursework.

Thesis Format and Deadlines

Deadlines and guidelines for submission and acceptance of the Master's thesis are set by the Graduate School and the Registrar. Please see the Graduate School website for details.

A complete draft of the thesis is due by 5pm to the research advisor, the Program Chair and the Graduate Affairs Office no later than two weeks before the deadline to submit the Certification of Master's Thesis Acceptance Form - December 29th for Fall submission and April 6th for Spring submission. Students should ask their research advisor if they would like to see drafts ahead of this deadline.

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 meetings will typically take place during the week of Orientation through the first week of classes.

Non-Thesis Track:

Students in their first semester (Fall 2020) 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 2021) will register for the Genetics Journal Club (BIOL 305), the Graduate Student Research Seminar (BIOL 350B), the **Responsible Conduct of Scientific Research Minicourse**, BIOL100A (Advanced Cell Biology), and two courses to be agreed upon by the Program Chair.

Thesis track:

First Year:

Students in their **first semester** (Fall 2020) 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 296A). 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 2nd.

Students in their **second semester** (Spring 2021) will register for the Genetics Journal Club (BIOL 305), the Graduate Student Research Seminar (BIOL 350B), BIOL100B (Advanced Cell Biology), the Responsible Conduct of Science Minicourse, 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 (BIOL 296B) but should be aware that only one semester of this course can count toward degree requirements. A second semester of BIOL 296A/B 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 1st.

Summer:

Students have three options for the summer between years (relevant to students completing a thesis) – 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.

Second Year:

Students who have been readmitted with the intention of completing a Master's Thesis following one or two semesters of Master's Research Lab BIOL 296A/B 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 (along with BIOL 350 and BIOL 305). The thesis must be completed in the semester that the student registers for BIOL 299.

Spring Matriculation:**Meeting with Program Chair:**

All students should meet with the Program Chair (Maria Miara) to discuss their plan for the year before the end of the registration period.

Non-Thesis Track:

Students in their first semester (Spring 2021) will register for the Genetics Journal Club (BIOL 305), the Graduate Student Research Seminar (BIOL 350A), BIOL100 (Advanced Cell Biology), the Responsible Conduct of Science Minicourse, and two courses to be agreed upon by the Program Chair.

Students in their second semester (Fall 2020) 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 2021) will register for the Genetics Journal Club (BIOL 305), the Graduate Student Research Seminar (BIOL 350A), BIOL100B (Advanced Cell Biology), the Responsible Conduct of Science Minicourse, and two courses to be agreed upon by the Program Chair (BIOL 103 recommended). If the student hopes to complete a thesis, they should consider enrolling in either a Project Lab or Master's Research Lab (BIOL 296A/B). 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 1st.

Students in their second semester (Fall 2020) 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 296A/B but should be aware that only one semester of this course can count toward degree requirements. A second semester of BIOL 296A/B 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 2nd.

Second Year:

Students who have been readmitted with the intention of completing a Master's Thesis following one or two semesters of Master's Research Lab BIOL 296A/B 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 (along with BIOL 350 and BIOL 305). 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 296A/B 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.

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 withdrawn from the program 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. Intent to complete a thesis will be reassessed at the time of readmission.

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 the 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 2nd if completing the thesis in the spring semester and by March 1st if completing the thesis in the fall semester).

Important Dates and Deadlines

July 27- September 9	Registration period for Fall 2020 Term
Wednesday, September 9	Last day to add classes Fall 2020 Term
Monday, November 2	Last day for Master's students to submit thesis intent form to Program Chair and Grad Affairs Office to pursue a thesis in Spring 2021
Monday, November 2	Last day for February graduate degree candidates to file Application for Degree.
November 4 - November 9	Early Registration Period for Spring 2021 Term
Thursday, November 5	Last day to drop a Fall 2020 course OR change grading option to audit (instructor's permission required).
Thursday, December 3	Deadline for submission of Research Report for 296 courses to Research Advisor, Program Chair and Grad Affairs Office.
December 4 – February 12	Registration period for Spring 2021 Term
Tuesday, December 29	Deadline for submission of Master's Thesis to Thesis Advisor, Program Chair and Grad Affairs Office.
January (Date TBD)	Responsible Conduct of Science Minicourse
Tuesday, January 12	Deadline for submission of Certification of Master's Thesis Acceptance Form.
Wednesday, January 13	Final day for February graduate degree candidates to electronically deposit their dissertations or theses: 4pm deadline.
Friday, February 12	Last day to add classes Spring 2021 Term
Monday, February 1	February degrees conferred.
Monday, February 1	First Day of Classes
Monday, March 1	Last day for Master's students to submit thesis intent form to Program Chair and Grad Affairs Office to pursue a thesis in Fall 2021
Monday, March 1	Last day for May graduate degree candidates to file Application for Degree.
Tuesday, April 6	Deadline for submission of Master's Thesis to Thesis Advisor, Program Chair and Grad Affairs Office.
Thursday, April 15	Last day to drop a Spring 2021 course OR change grading option to audit (instructor's permission required).
Tuesday, April 20	Deadline for submission of Certification of Master's Thesis Acceptance Form.
Wednesday, April 21	Final day for May graduate degree candidates to electronically deposit their dissertations or theses: 4pm deadline.
Friday, April 30	Deadline for submission of Research Report for 296 courses to Research Advisor, Program Chair and Grad Affairs Office.
Sunday, May 23	May degrees conferred at Commencement.

