Carnegie Mellon University

Master's Student Handbook

Academic Year 2025 - 2026

Mellon College of Science &

School of Computer Science

Ray and Stephanie Lane

Computational Biology Department

Master's Student Handbook

Master in Science in Computational Biology

Last revision date: September 2, 2025

The information contained in this graduate handbook template focuses on the resources and locations available at the Carnegie Mellon Pittsburgh Campus.

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SECTION 1: Welcome & Introduction

The directors and assistant director of the Masters in Computational Biology program (MSCB), which is a joint offering from the Department of Biological Sciences and the Computational Biology Department, would like to welcome you to the program and to Carnegie Mellon University! This document explains the policies of the MSCB program.

While this handbook is specific to your academic experience in the MSCB program, it is just one element of the Graduate Student Handbook Suite. There are several other resources within the suit that you should consult when needed:

- University-Wide Graduate Student Handbook (Office of Graduate & Postdoctoral Affairs) (this is only for graduate students at CMU and covers academic and administrative policies at the university level)
- The Word Student Handbook (this is for all CMU students - undergraduates and graduates and focuses on university-wide policies that affect student life (student rights and responsibilities, community standards, and the student code of conduct, etc.)

The Department of Biological Sciences and the Computational Biology Department have prepared this statement of policies and procedures to help answer questions that students may have as they enter the M.S. in Computational Biology (MSCB) program. This document specifies requirements that must be achieved in order to be a student in good standing; failure to meet any of these requirements may result in dismissal from the program.

The MSCB Steering Committee and Graduate Programs Offices in both departments provide ongoing guidance and assistance to students throughout the course of their graduate career, and any questions or concerns may be discussed with either the faculty of the MSCB Steering Committee or the Department Heads at any time. The Word/Student Handbook which details university-wide policies, is available upon request from the Graduate Programs Office.

SECTION 2: Program Mission

The MSCB program seeks to train the world's best Computational Biologists at the Master's level. The curriculum provides both breadth and depth of training in Computational Biology and is built on a solid foundation of Biology, Computer Science, Statistics, and Machine Learning (Data Sciences). Interested students are also given opportunities to pursue research. Our graduates are prepared for rewarding jobs in industry or to pursue their doctoral degrees at top universities.

SECTION 3: Departmental Personnel

3.1 MSCB Steering Committee Faculty

Title & Responsibilities	Contact Information
Director, MSCB Ray and Stephanie Lane Computational Biology Department ***Overall Program Management, Academic Integrity Issues, Leave of Absence Approval***	*Min Xu, PhD* Gates Hillman Center, 7709 412-268-3562 mxu1@andrew.cmu.edu
Director, MSCB Department of Biological Sciences ***Overall Program Management; Academic Integrity Issues; Leave of Absence Approval***	*C. Joel McManus, PhD* Mellon Institute, 255 412-268-9407 mcmanus@andrew.cmu.edu
Assistant Director, MSCB Ray and Stephanie Lane Computational Biology Department ***Academic Advising and Course Selection, Periodic Academic Progress Checks, Change to P/F, Research for Credit, Graduation Certifications, Student Life Issues, International Student Issues, Oral Communication Skills, Alumni Networking, Professional Issues and Social Events, Career Center and Industry Liaison, Diploma Ceremony***	*Dan DeBlasio, PhD* Gates Hillman Center, 7707 412-268-4671 deblasio@andrew.cmu.edu

Assistant Director, MSCB Department of Biological Sciences ***Academic Advising and Course Selection, Periodic Academic Progress Checks, Change to P/F, Research for Credit, Graduation Certifications, Student Life Issues, International Student Issues, Oral Communication Skills, Alumni Networking, Professional Issues and Social Events, Career Center and Industry Liaison, Diploma Ceremony***	*DJ Brasier, PhD* Mellon Institute, 415A 412-268-1951 dbrasier@andrew.cmu.edu
PROGRAM FACULTY http://www.cbd.cmu.edu/directory/ faculty/voting-faculty/ https://www.cmu.edu/bio/ people/faculty/index.html	

3.2 Primary Support Staff

Title & Responsibilities	Contact Information
Program Coordinator, MSAS and MSCB Ray and Stephanie Lane Computational Biology Department ***Pre and Post Admissions Procedures; Admissions; Course Registration; Office and building access; Orientation Coordination***	*Angelica Bondy* Gates Hillman Center, 7725 abondy@andrew.cmu.edu
Director of Graduate Operations (Biological Sciences Graduate Programs Office) ***Graduate Student Database Management, Pre- and Post- Admission Procedures through Graduation, Biological Sciences Graduate Ombudsperson, Graduation Certifications,***	*Ena Miceli* Mellon Institute, 415 emiceli@andrew.cmu.edu

Diploma Ceremony, Orientation Coordination	
Operations Manager Ray and Stephanie Lane Computational Biology Department ***Workforce; Coordinator Support; Departmental Supplies and Operations; Ray and Stephanie Lane Computational Biology Department Ombudsperson***	*Janet Garrand* Gates Hillman Center, 7721 412-268-5598 jgarrand@andrew.cmu.edu

Ombudsperson

Janet Garrand & Ena Miceli serve as ombudspersons for graduate students to assist with difficult academic or personal situations where a confidential sounding board and/or an intermediary can be helpful.

Examples of situations where students are encouraged to seek advice or assistance include:

- Difficulty in communications with the program co-directors, academic advisor, or faculty, particularly when those difficulties may lead to considering leaving the program.
- Conflict with other group members that is difficult to resolve within the group.
- Issues related to diversity or the departmental climate for those in groups who are historically underrepresented in science, or
- Personal concerns that interfere significantly with the ability to make timely progress in research or program requirements. These might be due to health, family, or financial challenges.

Upon the student's request, information shared will be kept in confidence, if no laws require otherwise. Should help be needed from additional sources, the student would be asked before sharing confidential information.

In the event that a difficulty cannot be resolved within the program or department, Janet Garrand can also assist with following the grievance procedures for resolving difficult matters, which are available here: www.cmu.edu/graduate/policies/appeal-grievance-procedures.html.

Additionally, students may confer with the university graduate student ombudsperson, Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213, telephone 412-268-1018, on issues of process or other concerns as they navigate conflicts.

3.3 Other Support Staff

Title & Responsibilities	Contact Information
Communications Manager (BSC)	*Matthew Salyers* MI 409D 412-268-6358 msalyers@andrew.cmu.edu
IT Support Consultant (BSC)	*Ryan Parrotte* MI 411J 412-268-4535 ryanpar@andrew.cmu.edu
Business Manager (BSC)	*Amy Kapp* MI 410 412-268-4182 dcasillas@andrew.cmu.edu

3.4 Department Level Contacts

Title & Responsibilities	Contact Information
Department Head Biological Sciences Department	*Gordon Rule, Ph.D.* MI 246 412-268-1839 rule@andrew.cmu.edu
Department Head Ray & Stephanie Lane Computational Biology Department	*Russell Schwartz, Ph.D.* GHC 7723 412-268-3971 russells@andrew.cmu.edu

3.5 College Level Contacts

Title & Responsibilities	Contact Information
SCS Associate Dean for Masters Programs, School of Computer Science	*David Garlan, Ph.D.* WH 4218 412-268-5056 garlan@cs.cmu.edu
Dean, Mellon College of Science	*Barb Shinn-Cunningham, Ph.D.* MI 432 412-268-1789 mcsdean@andrew.cmu.edu
MCS Associate Dean for Graduate Students, Mellon College of Science	*Dejan Slepčev, Ph.D.* WH 7123 412-268-2562 slepcev@math.cmu.edu

3.6 University Level Contacts

Title & Responsibilities	Contact Information
Graduate Student Ombudsperson ***Students may confer with the university graduate student ombudsman on issues of process or other concerns as they navigate conflicts.***	*Graduate Student Ombudsperson* 5000 Forbes Ave. 412-268-1018 ombudsperson@andrew.cmu.edu
Student Affairs Liaison ***Supporting students to manage mental and physical health and other personal issues including finding appropriate resources and help managing impact on coursework and***	*John Hannon, Ph.D.* Student Affairs Liaison Warner Hall 300 412-268-2139 jfhannon@andrew.cmu.edu

life outside of classes.	

PROGRAM INFORMATION

SECTION 4: Departmental Resources

There are student support and administrative staff members available Monday through Friday in person on the 7th floor of the Gates Hillman Center (rm 7721/7725) and the 4th floor of the Mellon Institute (rm 415).

The Computational Biology Department provides a study space for all CBD students in room 7412 GHC. There are no assigned desks in this room and you may use any unoccupied desk. This room will always remain unlocked. Do not leave personal or items of value in the room. There is also a student study room in the Mellon Institute (MI 370).

A copier/printer is located at 7604 GHC.

The department directories are located inside the Mellon Institute's Bellfield entrance and in the lobby of the Computation Biology Department.

The departments maintain several bulletin boards containing information of upcoming events and recent research and student spotlights.

The Department websites https://www.cmu.edu/bio/ and https://cbd.cmu.edu/ contain department calendars of events. Contact department administrative staff before purchasing items or booking travel that you may wish to have reimbursed. Protocols and procedures will be reviewed based on the request.

SECTION 5: Advising

5.1 Orientation

There are two orientations for incoming graduate students. Both events take place in the weeks preceding the beginning of the fall semester.

- The University-wide orientation organized by the Office of Graduate & Postdoctoral Student Affairs introduces the students to university resources and services.

- The Program Orientation introduces them to faculty, research, administration, policies and services. The MSCB Steering Committee in collaboration with the Biological Sciences Graduate Programs Office and the Graduate Office of the Computational Biology Department arrange for students to receive the necessary information for enrollment, registration and timelines.

5.2: Role of an Advisor and Advisor Assignments

ADVISING FOR COURSEWORK
Before each semester, each student must share their plan for the coming semester with the MSCB Steering Committee. All changes must be approved by an Assistant Director.

ADVISING FOR PROFESSIONAL DEVELOPMENT
As part of 02-602, students will have opportunities to develop their professional skills during their first semester. In subsequent semesters, students are encouraged to meet with an Assistant Director for advising on further professional development.

MONITORING PROGRESS
Students who have specific concerns about their progress are urged to speak with an Assistant Director as early as possible. An Assistant Director along with members of the MSCB Steering Committee meet with the student at least twice a year, providing guidance and monitoring the student's overall progress. In addition, an Assistant Director meets with the student as and when needed to discuss progress and resolve issues.

5.3: Review/Redress of Academic Conflicts

NOTIFICATION AND CONSEQUENCES OF INADEQUATE PROGRESS TOWARD THE DEGREE
If the MSCB Steering Committee determines that the student is making inadequate progress, it will notify the student in writing of the deficiencies and the consequences of failing to correct those deficiencies. Any student whose QPA is at or below 2.0 after one term or 2.5 after two or more terms is placed on academic probation. The terms of the probation, including conditions to be taken off of the probationary status and consequences for not meeting terms of probation, depend on the individual cases and will be stated and spelled out in the letter placing the student on probation. The committee and the student will then formulate a plan to address those deficiencies, including milestones. Consequences of continued failure to make satisfactory progress or not being in good academic standing will be determined by the Steering Committee.

STUDENT RIGHTS IN ACADEMIC CONFLICTS
A student wishing to appeal a departmental disciplinary decision should first speak with the

faculty member directly involved in the decision. A student who is uncomfortable approaching the faculty member may discuss the matter with the Director of Graduate Operations (Biological Sciences Graduate Programs Office), who serves as the Graduate Ombudsperson for Biological Sciences. Suppose the conflict cannot be resolved on this level. In that case, the student is referred to the Program Co-Directors or the relevant Department Head(s) who may, with the student's permission, meet with both the student and the faculty member involved. The student may also continue to meet with the Director of Graduate Operations (Biological Sciences Graduate Programs Office), who serves as the Graduate Ombudsperson for Biological Sciences.

The student may also meet with the MCS Ombudsperson. The Mellon College of Science Grievance Procedures are available at http://www.cmu.edu/mcs/policies/grievance.html.

A student not satisfied with the achieved resolution may file a formal written appeal to both the Associate Dean for Graduate Affairs and the Dean of the Mellon College of Science. The policies and procedures governing this process are explained in The Word/Student Handbook section entitled "Academic Standards and Actions."

SECTION 6: Master's Degree Requirements

6.1: Registration Process

In the first fall semester, students are pre-enrolled for the foundation courses. In subsequent semesters, students register online for their own classes. The 4 Easy Steps to Registration may be found at https://www.cmu.edu/hub/registrar/registration/index.html

- To be in good standing, students must be full-time, meaning they must take at least 36 units per semester.
- Requests for part-time status are only granted in rare, extenuating circumstances.
- Students are advised to take no more than 48 units in any semester.
- Requests to take more than 48 units require approval from an Assistant Director. Students need to meet all the following criteria: (1) have a QPA above 3.50, (2) justify the value of the added coursework to their goals, (3) show how they will balance the added work in their weekly schedule, and (4) justify the need to take the extra courses in the requested semester and not delay the class to a later semester.

6.2: Required Units for Degree Attainment

To receive the M.S. degree, students must successfully complete these requirements:

- 144-153 units of coursework toward the degree, which includes courses in specific categories as listed in the below sections (6.3-6.7),
- Average grade of B or above (GPA = 3.0) in those 144-153 units counted toward degree certification,
- Full-time course registration (at least 36 units) for each semester in the program.

6.3: Foundation Courses

Foundation Courses (up to 69 units):
A minimum grade of B- is required in each course taken.

All must be completed in first year:

- 02-601 Programming for Scientists (12 units, Fall)
- 02-613 Algorithms and Advanced Data Structures (12 units, Fall or Spring)
- 02-680 Mathematics and Statistics for Scientists (9 units, Fall)
- 03-604 Professional Issues (3 units, Fall)
- 03-709 Applied Cell and Molecular Biology (12 units, Fall)
- 03-621 Genomes, Evolution, and Disease: Introduction to Quantitative Genetic Analysis (9 units, Spring)
- 02-620 Machine Learning for Scientists (12 units, Spring)

Notes
The first 5 **foundation courses** (02-601, 02-602, 02-613, 02-680, and 03-709) should be taken during the first semester of the program, although they can be repeated if a grade lower than B- is achieved. 03-621 is taken in the student's second semester.

The Professional Issues in Computational Biology course is a Pass/Fail course and must be passed to complete the MSCB degree.

The MSCB Advising committee may waive the following foundation courses if the student demonstrates proficiency through a placement exam for: 02-601, 02-680, and 03-621; or a project for 03-709. Placement exams & projects are completed before the start of the fall semester. If a student misses the placement exams because of illness or immigration delays, then s/he must contact the committee before the start of classes, in some special cases an alternate time to take the exam(s) may be possible (though this is not guaranteed).

If more than 9 units of a foundation coursework is waived, a corresponding number of required depth course units (see below) will be added. For example, a student who waives 12 units of foundation coursework will have to take an additional 3 units of depth

coursework.

Thus, the minimum degree requirement is 144 units. Students who place out of a foundation courses should discuss alternative courses with the steering committee to ensure they are taking courses that fit with their background and preparation.
Breadth Courses (36 units)

6.4: Breadth Courses

Breadth Courses (12 units each)
Minimum C grade in each course counted toward graduation.

Students must take each of the following **breadth courses (12 units each).**

- 03-711 (Computational Molecular Biology and Genomics), offered every Fall; or 02-710 (Computational Genomics), offered every Spring.
- 02-712 (Computational Methods for Biological Modeling and Simulation), taken in Fall of second year.
- 02-750 (Automation of Biological Research), offered every Spring, can be taken concurrently with 02- 620 or can be taken in Spring of second year.

IMPORTANT NOTE: The program is designed as a 4-semester program, but can be completed in 3 (very few students do this successfully). If you wish to attempt to complete your degree in 3 semesters, then you MUST complete 02-750 in your second semester as it

6.5: Depth Courses

Depth Courses (minimum 48 units)
Minimum C grade in each course counted toward graduation

Includes graduate electives in the Computational Biology Department (02-XXX) and Biological Sciences Department (03-XXX).

- At least 24 units of depth courses must be taken from Biological Sciences, 03-XXX listed courses.
- At least 24 units of depth courses must be taken from Computational Biology, 02-XXX listed courses. Students may take 15-686 (Neural Computation) in place of 12 units of 02-xxx graduate courses.

NOTE: the following courses are not open to students in the MSCB program: 02-701, 02-762, 02-763, 02-801, 02-900, 03-744, 03-747, 03-755, 03-900, and 10-601. Also, the following courses have limited space and require special permission: 02-730, 02-760,

02-761, 03-730, 03-740, 03-741, 03-751, 03-762.,

- Any additional units needed to reach the minimum of 144 (due to more than 9 waived foundation units) can be taken as graduate-level coursework from either 02-XXX or 03-XXX courses.
- Summer Internship (03-601, 3 units) can be counted as depth in either 02- or 03- categories, except for students in the Applied Studies degree (see section E) for whom the course is required.
- Note: Courses that are cross-listed with the same number in the 02- and 03- departments may be substituted for one another.
- Up to 12 units of research (02-700 or 03-699) with a faculty advisor may be counted toward the depth credits. Research should be approved by an Assistant Director. Students may take more than 12 units of research, but without a thesis, only 12 units may count toward graduation.
- Research taken as 02-700 will count toward the CBD (02-XXX) requirement in the depth category; research taken as 03-699 will count as computational biology 03-7XX depth coursework.
- Students who do more than 12 units of research are encouraged to write an honors thesis (see "Graduation Honors and Awards"), in this case 03-700 will be taken as the second group of 12 units, as part of passing this course a submitted thesis following the instructions below is required. Written approval from the full MSCB Steering Committee in the form of a thesis proposal document (also approved by the thesis advisor) is needed to count more than 12 units of thesis research toward degree completion.
- Any course not listed above will need written approval of an Assistant Director.
- Note: Courses that are cross-listed with the same number in the 02- and 03- departments may be substituted for one another.
- CMU undergraduate students enrolling for a continuing M.S. can use relevant courses from their undergraduate years to count toward M.S. degree. The courses used toward M.S. degree CANNOT be counted toward undergraduate degree certification. Undergraduate degree advisors need to verify and sign the Declaration of Carry-Over Credit form confirming no double counting.

6.6: Important Rules on Coursework

- All student course selections are subject to the approval of the MSCB Steering Committee.
- Students who place out of a foundation course should verify that they have the appropriate knowledge required for any elective
- Undergraduate courses listed by the Computer Science Department (15-XXX) are closed to MSCB students unless the course has a graduate number (15-6xx or higher)

- During the first two semesters, all coursework must count toward degree completion. Any exceptions require written permission from an Assistant Director.
- In the third semester, 36 units of coursework must be taken, but the student may take additional courses that don't count toward the degree. Exceptions require approval of an Assistant Director. Every course requires written permission from an Assistant Director.
- All course requirements must be fulfilled by the end of the students fourth semester. In addition to completing all remaining degree requirements, students may take other courses that don't count toward their degree with permission from an Assistant Director.
- Students must maintain full-time enrollment in the program (minimum 36 units per semester - the only exception that is allowed is if CMU Student Affairs and/or a medical provider request that a student be allowed to take a reduced course load).
- If a student completes a computational biology internship, then they may receive three units of depth credit for each term for (03-601A fall/spring; 03-601R summer).

Summer Courses
Students registering for summer courses must pay summer tuition (including Computational Biology Internship; *03-601*). Before registering for these summer courses, students should check with Assistant Directors about tuition.

6.7: Changing Programs

If an MSCB student accepts another program's offer to begin before matriculation in the the MSCB program, the MSCB committee reserves the right to nullify the MSCB offer.

6.8: Protocol for Evaluation of Transfer Credit

The MSCB program does not accept transfer credits.

CMU undergraduate degree holders, please refer to carry-over course credit details.

6.9: Teaching Requirements/Opportunities

Graduate students are required to have a certain level of fluency in English before they can instruct in Pennsylvania, as required by the English Fluency in Higher Education Act of 1990. Through this Act, all institutions of higher education in the state are required to evaluate and certify the English fluency of all instructional personnel, including teaching assistants (TAs) and interns. The full University policy can be reviewed at:

https://www.cmu.edu/policies/faculty/evaluation-certification-english-fluency-instructors.html

The fluency of all instructional personnel will be rated by Language Support in the Student Academic Success Center to determine at what level of responsibility the student can serve as a TA. In addition to administering the International Teaching Assistant (ITA) Test (a mandatory screening test for any non-native speaker of English), Language Support in the Student Academic Success Center helps teaching assistants who are non-native English speakers develop fluency and cultural understanding to teach successfully at Carnegie Mellon. Visit the Student Academic Success Center website for additional information: www.cmu.edu/student-success

Because the Department of Biological Sciences believes that excellent English skills are essential, we strongly recommend that students whose native language is not English achieve a PASS by the end of their second year.

6.10: Research Requirements/Opportunities

PROFESSIONAL ISSUES COURSE

Professional Issues in Computational Biology (02-602) meets weekly. This course presents an opportunity for students to learn about resources available to them on campus and outside, share knowledge, hone their professional skills, and network with other students, employers and alumni. The primary goal of this course is to position students for an on-time graduation and to empower students with the important tools necessary to find an internship, secure a job, or to further pursue a Ph.D.

All students will need to register for 02-602 (or 03-604 if the particular circumstances require it), a 3-unit course, and successfully complete the course with a pass grade during their first semester. This course contributes toward the units for graduation certification as well as the 36 units required for a student to be considered full-time. As a pass/fail course, it is not factored into a student's QPA. NOTE: this is the only course that a student may count toward graduation with a "pass" grade aside from 3 more units of seminar (next section) which may count toward depth.

SEMINARS, INVITED TALKS, AND JOURNAL CLUB

Each semester, all students may register for and attend the weekly seminars (Graduate Seminar 03- 750, 1 unit; Graduate Research Seminar 03-755, 3 units; and/or Graduate Seminar 02-702, 3 units). Graduate students are strongly urged to meet the speakers to broaden their knowledge of cutting- edge science and to make useful contacts; the faculty host can arrange individual or small group meetings for interested students. All MSCB students are invited to attend any BSC or CBD seminar or journal club even if not enrolled officially that semester.

- https://www.cmu.edu/bio/events/seminar/
- https://www.cmu.edu/bio/events/research_club/
- https://www.compbio.cmu.edu/seminar-series/

Note: The above seminar courses are pass/fail; however, students may apply up to three units of seminars toward the graduation units. These courses are very beneficial in keeping abreast with current research and in networking, so we encourage students to enroll for these courses, particularly if they are interested in pursuing a Ph.D. or other advanced degree.

Additional invited talks from outside speakers and alumni in both industry and academia are arranged throughout the year. They will be announced via e-mail.

RESEARCH

Students who are interested in conducting research for academic credit as described above, and have the option to write a thesis (see below).

Typically, students contact faculty directly to learn about available research opportunities. To register for this class, please contact an Assistant Director who will assist with registration.

It is strongly advised that students wait until their second semester to begin research.

Some faculty members may be willing to pay research assistantships. You should receive either research credit or pay for research in a given semester, but not both. This includes summer semesters.

F-2 and J-1 students may work on the CMU campus part-time or full-time during vacation terms or any official school breaks, including summer. What that means is that summer research in a lab does not need CPT authorization. For more information, see: https://www.cmu.edu/oie/foreign- students/employment.html

6.11: Internship/Co-op Requirements and Opportunities

Students often secure internships in industry or academia during the summer between their first and second years and less often during the academic year. The internship must be relevant to Computational Biology. Students must contact an Assistant Director (Internships and Job Placement) in late fall to plan an internship.

REGISTRATION FOR INTERNSHIPS

- **Summer off-campus internships**: Register for **03- 600R** (3 units, no tuition).
- **Fall or spring internships**: Register for **03-600A** (3 units, tuition charged).
- **Paid on-campus summer research**: Also register for **03-600R** after discussing with an Assistant Director.

Important: **Written approval** is required from an Assistant Director before registering for 03-600R or 03-600A.

International students
If doing a **paid summer internship off-campus**, you must apply for:

- **CPT** (Curricular Practical Training) or
- **Pre-Completion OPT** (Optional Practical Training)— through the **Office of International Education (OIE)**.
- You are **not eligible for CPT** until the summer after your **first full academic year**.
- The internship must be relevant to your program.

For **CPT**, you'll need:

- An **offer letter** with dates, hours, and pay
- **Approval from an Assistant Director**
- **CPT is faster** to process. **OPT can take up to 90 days to process.**
- Do **not accept or sign an offer** until you have checked with **OIE** and an **Assistant Director.**

Career and Professional Development Center

6.12: Thesis & Honors

The directors of the MSCB program confer awards for academic achievement, research honors, professional honors, and outstanding leadership at graduation. Students maintaining a GPA of 4.0, or higher will receive an award for academic achievement. Students with substantial research accomplishments, such as a publication, will receive an award for research achievement. Students who have completed internships and received an endorsement from their internship supervisor may request professional honors. Students that make substantial contributions to the MSCB community, such as serving as a GSA representative or organizing social events will receive an award for leadership.

Research Honors and Professional Honors signify that a student has excelled in their training for one of these two career paths. NOTE: students who are eligible for multiple of these three awards (“Research Excellence”, “Research Excellence with Honors”, and “Professional Honors”) will have to choose one of those three awards to receive.

RESEARCH EXCELLENCE WITH HONORS (Thesis Option)

If you are interested in completing a research-based thesis, you are required to

1. complete 12 or more units of independent research study (03-700) with a faculty advisor (with MSCB Advising committee approval),
2. write and defend a master's thesis.

If you satisfy the above requirements, you qualify for Research Excellence with Honors. Students who register for 03-700 will be required to complete a thesis document as a portion of passing this course regardless of the advisor's provided course grade, students will receive an I pending submission of the document. In this case students will only be allowed to graduate if they have an extra 12 units of other coursework that can replace 03-700 in reaching 144 units.

Full research honors requirements are outlined here: (https://www.cmu.edu/ms-compbio/current- students/forms-policies/research-thesis.html).

The final thesis should have the following sections:

1. Title page & Dedication/Acknowledgements
2. Abstract (1 page)
3. Introduction chapter (4 or more pages). Separate from introduction sections in other chapters, this is a place for the student to put the entire thesis in context.
4. 1 or more additional chapter (20 or more pages each). Chapter format should be consistent and may match the format of any journal article in the field of study.
5. Bibliography (pages are enumerated but do not count toward page total). This may be a standalone bibliography for the whole thesis or each chapter may have its own bibliography.

RESEARCH EXCELLENCE (Non-Thesis Option)

Students who complete two semesters or more of research with grades of A or higher can earn "Research Excellence". (Without the thesis option above, only 12 units count toward degree completion). As stated above, under "Research": "Students may take more than 12 units of credit, but only 12 units will count toward graduation."

PROFESSIONAL HONORS

If you complete an external internship (03-601, typically over the summer) and earn an A grade, you qualify for Professional Honors (Industry Track).

6.13: Requirements for Application/Consideration for Entry into PhD Program

MSCB students who have successfully completed their first year may apply for early admission to the Ph.D. programs in Computational Biology and/or Biological Sciences.

Application process
Early admission applications will consist of the same materials as a normal application and must be submitted by the due date (early September). Decision about the early application will be made by **October 1st.** Decisions will be a) to offer early admission, b) not to offer early admission but to consider the applicant again during the regular admissions cycle, or c) to reject the application. If a student is rejected, they cannot apply again during the regular admission cycle.

Students admitted early would need to decide whether to accept the offer by **November 1st.** Students admitted early who do not accept the offer by November 1st will not be considered for regular admission. Students who accept the early offer would not be allowed to apply to other PhD programs at CMU or elsewhere.

Limited Number of Early Admissions Offers
The Computational Biology Ph.D. expects to offer early admission to a maximum of 2 students per year combined from both MSAS and MSCB programs. The Biological Science Ph.D. program expects to make offers of early admission of no more than 20% of its expected incoming class size.

Adjusted Curriculum
The curriculum for students who accept an early admission offer may be adjusted for the spring semester to allow inclusion of one or more courses that are required by the Ph.D. program. Such courses would be counted as part of required units for the M.S. program and not for the Ph.D. program, although the requirement for those courses would be waived by the Ph.D. program if a satisfactory grade is received.

Minimum unit requirements for the Ph.D. program would still need to be met.

6.14 Graduation Ceremonies

MSCB students are certified for graduation by the Department of Biological Sciences in the Mellon College of Science.

Carnegie Mellon University holds graduation ceremonies in May only. Because there are no August or December commencement ceremonies, we encourage students to participate in

the May events. Students who graduate in December should stay in contact with the Biological Sciences Graduate Programs Office for details.

There are two May graduation ceremonies that pertain to M.S. Computational Biology students. The Department of Biological Sciences Diploma Ceremony and Reception are usually held on the Friday morning before the university-wide Sunday Commencement. Students who have graduated the previous December, as well as those receiving their degrees in May or upcoming August, are eligible and strongly encouraged to participate.

SECTION 7: Department Policies & Protocols

7.1: Department Policy for Withdrawing from a Course

Dropping a Course
Students may withdraw from a course online. The university has a Drop deadline, after which the course appears on the student's transcript as withdrawn (W).
Complete the Retroactive Add/Drop Petition form after the Drop deadline obtaining permission of **both**: 1) the teaching department head **and** 2) the academic advisor.

Drop/Add/Withdraw Procedures
Students taking undergraduate and Master's level courses must follow the procedures and deadlines for adding, dropping, or withdrawing from courses as identified on the academic calendar. Information can be found at https://www.cmu.edu/hub/registrar/course-changes/index.html. There is a separate calendar for master's level courses.

Remember that you must maintain full-time status in the program, which requires you to be registered for 36 units.

7.2: Environmental Health & Safety Training

Department of Biological Sciences, Computational Biology graduate students may be asked to complete Laboratory Safety, Hazardous Waste Management, and Biological Safety training presented by Environmental Health & Safety during the Departmental Graduate Student Orientation. Graduate students must receive training before beginning regular coursework. Radiological Safety Training, Compressed Gas Cylinder Training, and Bloodborne Pathogen Training may be required.

7.3 Animal Training

Animal training is required for any individual listed on an animal protocol. Currently, training is offered through the University of Pittsburgh Animal Research Protection Office and all necessary approvals must be completed before research studies involving laboratory animals can begin.

For more information on training, please get in touch with the IACUC at 412-383-2008 or IACUC-review@andrew.cmu.edu.

7.4: New Policies / "Grandfather" Policy

Any changes in department policies or degree requirements will not take effect until the new handbook is signed. No student will be required to sign changes in degree requirements after the initial start of their respective program.

7.5: Time Away from Academic Responsibilities

Leave of Absence
Students who need to delay their studies for personal, medical or academic reasons may do so with a Leave of Absence (LOA; leaving the university temporarily with a commitment to return). Students must contact the program co-directors to discuss their plans and fill out the appropriate Leave of Absence form. Final approval of LOA is pending approval of the MSAS co-directors. The student's place in the program will be held until a mutually determined time. For more information refer to https://www.cmu.edu/hub/registrar/leaves-and-returns/index.html

SECTION 8: Grading & Evaluation

8.1: Grading Scale/System

The university policy on grades may be found at: www.cmu.edu/policies/student-and-student-life/grading.html. This policy offers details concerning university grading principles for students taking courses and covers the specifics of assigning and changing grades, grading options, drop/withdrawals and course repeats. It also defines the undergraduate and graduate grading standards.

8.2: Department Policy on Pass/Fail, Satisfactory/Unsatisfactory

Pass/Fail courses are strongly discouraged unless it is a course that is not counted toward the degree to the student's program of study or if there is a medical hardship in completing a course. Taking a course for credit indicates an intellectual commitment to the material and may be viewed more positively by other professors and potential employers than a Pass. Potential employers gain more information about a student's ability from seeing a letter grade on a transcript than from a P. Except for 02-602 Professional Issues in Computational Biology, Pass/Fail courses cannot be used to satisfy any MSCB program requirements or to satisfy any prerequisites.

With petition to and approval from an Assistant Director, students may elect to take a course Pass/ Fail. Such a petition must give a compelling reason for taking a course Pass/Fail and must argue why that will not impact the student's program of study. Within the registration ADD period during the first two weeks of each semester, the student must fill out the Pass/Fail Approval Form and receive permission from an Assistant Director and the Department Head (Biological Sciences). Switching a course to Pass/Fail mid-semester will generally only be approved under special circumstances.

- Prerequisites may not be taken Pass/Fail.
- Classes taken Pass/Fail may not be used to fulfill graduation requirements, except for seminar courses and 02-602.
- Pass/Fail status is irrevocable.

8.3: Satisfactory Academic Standing

GRADES & ACADEMIC STANDING

To be in good academic standing, a student is expected to maintain a B average (GPA = 3.0) in the coursework that will be counted towards the degree. No grade lower than B- in foundation course(s) and no grade lower than C in other course categories shall be used for completion of degree requirements.

PROGRAM ACADEMIC PROBATION

If the MSCB Steering Committee determines that a student is making inadequate progress, it will notify the student in writing of the deficiencies and the consequences of failing to correct those deficiencies. Any student whose cumulative QPA is at or below 3.0 after one term or who is otherwise not making satisfactory progress toward their degree will receive a letter from the program placing them on academic probation. Under most circumstances,

the student will be given one semester to earn a B average in the courses to be counted towards the degree.

Additionally, students who drop foundation courses or who don't earn minimum required grades in any classes (B- or higher in foundation classes or C or higher in other classes counting toward the degree) will also be placed on academic probation. Academic probation will end only when the student returns to a B average and fulfills the other requirements laid out in the terms of their probation. Failure to return to good academic standing after one semester dismissal from the program or other actions as decided upon by the administration of the program.

Summary of Graduate Student Appeal and Grievance Procedures