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## Introduction

Welcome to the University of Pittsburgh Computational Biomedicine and Biotechnology (CoBB) Master's of Science program. This program offers comprehensive interdisciplinary training for successful biomedical data science and biotechnology careers in industry, government, and academia.

This handbook provides details on several aspects of the CoBB program, such as coursework and policies, and it lists additional resources that students may find useful as they progress through their studies. Students should familiarize themselves with its contents.

## Contacts

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### Executive Committee

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## Committees

### Executive Committee

The Executive Committee oversees the successful operation of the program, evaluates its progress, implements improvements, manages budgets and public relations, and negotiates space allocation. The Executive Committee consists of the Executive and Academic Directors of the Program, the DCSB Chair and Vice Chairs, and the Chairs of the Curriculum and Admission Committees.

### Curriculum Committee

The Curriculum Committee oversees the design and development of courses, in coordination with selected faculty members. The Curriculum Committee has 6-8 members, including the Executive Director and Academic Co-directors of the program and 2-4 additional faculty members directly involved in teaching.

### Admissions Committee

The Admissions Committee reviews applications to the program and makes admissions decisions. The committee comprises the Executive Director, one Academic Director (on a yearly rotating basis), 2-4 additional faculty members, and 1-2 doctoral students from the CMU/Pitt Computational Biology PhD Program.

### Mentoring Committee

The Mentoring Committee consists of at least 4 faculty members who act as initial academic advisors to incoming students. The Committee helps identify research advisors, assists the students in formulating career plans, helps prepare job and/or medical school applications, and fosters the development of interview skills. The Mentoring Committee supervises all mentoring activities and organizes program-wide activities such as biomedical career exploration workshops.

### Experiential Training and Internships Advising Committee

This committee provides the necessary guidance for facilitating the experiential training and summer internships. Committee members serve as liaisons with industrial and governmental labs as well as R&D start-up companies in biotechnology and biomedicine. The committee includes current faculty members as well as one or more alumni currently holding leadership positions in such industrial, academic and governmental institutions. More details on the experiential training and mentoring plans are presented below.

## Coursework

To receive the CoBB MS, all students are required to complete a minimum of 30 credits of masters-level coursework and to maintain an overall GPA of 3.0 or greater. Students enrolled full-time can expect to complete the degree in 12-20 months.

All students are required to take the 3-credit Foundations of Computational Biology course in their first semester. This course establishes the concepts and methods that are essential to successful practice of computational biology, including fundamental mathematics, programming and data analysis. To count toward graduation, the Foundations course must be passed with a minimum “B” grade. In addition, all students are required to take the 1-credit Professional Development course for each of their first two semesters. This course provides a forum for students to hone skills necessary for a successful professional life.

The core curriculum consists of four areas:

1. Computational Structural Biology
2. Computational Systems Biology
3. Computational Genomics
4. Computer Science

Students are required to pass at least one course each from each core area with a minimum grade of “B”. Courses that satisfy these requirements and sample schedules can be found on the CoBB web page (<http://www.csb.pitt.edu/cobb>). The courses offered in each core area vary by semester.

Students with prior training who demonstrate proficiency in one of these areas may petition the Curriculum committee for a course waiver, which may be granted based on a proficiency exam. Any student waiving a course in a core area will need to take additional elective courses to meet the required 30 credits for graduation. Details on the current course offerings can be found in the Graduate and Professional Studies Catalog (<http://catalog.upp.pitt.edu>).

CoBB does not require students to be enrolled full-time; however, the program was designed for full-time students and carries a heavy course load. There are currently no evening classes to accommodate students who wish to work daytime jobs. Many of the courses, both required and elective, are offered only once per academic year, so it is important for students to plan their schedules carefully. It is recommended that students consult their faculty advisors or research mentors for help in selecting courses.

## Independent Study

Gaining hands-on experience in solving problems in computational biology is an essential part of CoBB training. Each student is therefore required to take a minimum of 4 credits of independent study with a University of Pittsburgh faculty member. Students are expected to select a research mentor for the independent study in their first semester, and to complete the research requirement in the second and/or third semesters. A current list of faculty members who are associated with CoBB can be found

on the program web site. Students wishing to fulfill the Independent Study requirement with a faculty member who is not affiliated with CoBB may do so at the discretion of the Program Director.

## Internship

To gain experience in the professional application of computational biology, students are required to participate in a 2- to 3-month summer internship at a company of their choice. Acceptable internship sites include industrial labs, biotech/pharma companies, and governmental organizations. CoBB will provide students with a list of corporate partners and potential internship sites, but it is the student's responsibility to contact the company and secure the internship. Students wishing to perform the internship in a semester other than summer may petition the Executive Committee for an exception, but must still complete all required coursework. Students who are unable to secure internships may be permitted to substitute additional Independent Study research credit to fulfill the internship requirement, upon approval by the Executive Committee.

Upon completion of the internship, each student will submit a written report summarizing the experience and the skills acquired. Students will additionally make an oral presentation to share their experience with others. Supervisors at the internship sites will be asked to provide a written evaluation of the students' performance.

## Advising and Evaluation

At orientation, each student will be assigned an Academic Advisor who is a member of the Mentoring committee. The Academic Advisor is particularly helpful in the first semester, before most students have identified research advisors. Trainees are expected to work with their Academic Advisors to plan their schedules and identify potential Research Advisors. Students are encouraged to consult their Academic Advisors throughout their training for advice on coursework, internship opportunities and professional development.

Each student is expected to identify a Research Advisor by the end of the first semester. The Research Advisor oversees the student's Independent Study and serves as the student's primary mentor, providing advice on academic progress, career paths, written and oral presentation skills, navigating the job market, applying to graduate school, and other aspects of the student's academic and professional development. The Research Advisor does not replace, but complements the Academic Advisor, and it is the students' responsibility to seek the advice of their Academic and Research Advisors.

Students are welcome to suggest potential Research Advisors at the time of application, and admitted students may be invited to either rotate in or join a faculty member's lab prior to orientation. If an admitted student and a faculty member agree to work together, the Independent Study may start as early as the first semester. Upon approval by the Director, the faculty member will be assigned as the student's Research Advisor. Such cases must be brought to the attention of and approved by CoBB.

Any changes in mentoring plan, whether initiated through the student or the Research Advisor, will be mediated through the Mentoring Committee.



## Conduct and Academic Integrity

### Guidelines on Academic Integrity

These guidelines contain a set of principles that shall be applicable to each of the academic units throughout the Universities. A student desiring information about the program's specific procedures and makeup of its academic integrity hearing board may obtain a copy of the procedures and other necessary information from the Program Directors. Additional information or guidance may be obtained from the Offices of the Provosts. It is also available at the following web address:

[www.pitt.edu/~provost/ai1.html](http://www.pitt.edu/~provost/ai1.html)

### Guidelines for Ethical Practice in Research

Guidelines for Ethical Practice in Research can be found at <http://www.pitt.edu/~provost/ethresearch.html>

### Research Integrity Policy

These guidelines cover policies for reporting research findings and data collection, to name a few.

Policies for Research Integrity can be found at <http://www.bc.pitt.edu/policies/policy/11/11-01-01.html>

## International Students

Students arriving from other countries should familiarize themselves with the University's Office of International Services (OIS). The main job of OIS is to make sure all immigration issues are handled smoothly, quickly and correctly. It is the responsibility of the individual student to adhere to the University's policies for international students.

Many additional resources can be found at <http://www.ois.pitt.edu/>

## Grievances

Students may at times encounter situations where they believe they have been treated unfairly or out of accordance with the program rules. We encourage students to raise such concerns with their advisors, the Mentoring Committee or the program Director when possible. When an issue cannot be resolved informally, students have the right to pursue a formal grievance process in accordance with the rules of the University. Students can access the current grievance policies at

<http://www.hr.pitt.edu/sites/default/files/uploads/ADA%20Grievance%206-2012.pdf>