

Microbiology

The Graduate Group in Microbiology is composed of faculty from diverse departments, colleges, and schools (Plant and Microbial Biology; Molecular and Cell Biology; Public Health; Civil and Environmental Engineering; Chemical and Biomolecular Engineering; Environmental Science, Policy, and Management; Nutritional Sciences and Toxicology; Optometry; Integrative Biology). It is administered by the Department of Plant and Microbial Biology. The group awards the PhD degree in Microbiology. Students in the group have access to diverse disciplines through an integrated program of study that allows each student to pursue specialized interests. Students gain a breadth of understanding of microbiology from the molecular to the cellular levels of organization, as well as the interactions of microbes — beneficial and pathogenic — with other organisms.

Faculty in the Graduate Group in Microbiology have research interests in four broad areas: ecology and evolution, genetics and development, physiology and biochemistry, and host-microbe interactions. The research of many faculty spans more than one of these categories. In addition, the research goals vary from addressing fundamental questions in biology to applied studies in the control or use of microbes. Some faculty conduct research on both fundamental and applied topics.

Admission to the University

Applying for Graduate Admission

Thank you for considering UC Berkeley for graduate study! UC Berkeley offers more than 120 graduate programs representing the breadth and depth of interdisciplinary scholarship. The Graduate Division hosts a complete list (<https://grad.berkeley.edu/admissions/choosing-your-program/list/>) of graduate academic programs, departments, degrees offered, and application deadlines can be found on the Graduate Division website.

Prospective students must submit an online application to be considered for admission, in addition to any supplemental materials specific to the program for which they are applying. The online application and steps to take to apply can be found on the Graduate Division website (<https://grad.berkeley.edu/admissions/steps-to-apply/>).

Admission Requirements

The minimum graduate admission requirements are:

1. A bachelor's degree or recognized equivalent from an accredited institution;
2. A satisfactory scholastic average, usually a minimum grade-point average (GPA) of 3.0 (B) on a 4.0 scale; and
3. Enough undergraduate training to do graduate work in your chosen field.

For a list of requirements to complete your graduate application, please see the Graduate Division's Admissions Requirements page (<https://grad.berkeley.edu/admissions/steps-to-apply/requirements/>). It is also important to check with the program or department of interest, as they may have additional requirements specific to their program of study and degree. Department contact information can be found here (<https://guide.berkeley.edu/archive/2024-25/graduate/degree-programs/>).

Where to apply?

Visit the Berkeley Graduate Division application page (<http://grad.berkeley.edu/admissions/apply/>).

Admission to the Program

Students admitted to the Graduate Group in Microbiology program are expected to demonstrate academic excellence and potential for independent scientific research and to have satisfied, or satisfy through additional coursework, the curriculum required of an undergraduate major in microbial biology. Students are expected to have a background in chemistry, physics, mathematics, and biology. An admissions committee composed of nine faculty members and one graduate student will review applications and make recommendations to the full faculty on admissions matters. Recommendations for admission will be based on grades in university-level undergraduate and graduate courses, letters of recommendation, written statements of academic and professional goals, and other evidence of academic accomplishment.

Normative Time Requirements

Normative Time to Advancement

Normative time to advancement to PhD candidacy is two years.

Year 1

Students perform three laboratory rotations in order to explore areas of research interest and identify a faculty mentor, dissertation project, and laboratory. Students undertake required core classes and attend seminars of interest.

Year 2

Students attend seminars, enroll in core courses, perform their first teaching assignment, and prepare for the PhD qualifying exam which consists of two research proposals and an oral examination. With the successful passing of the qualifying exam, students select a dissertation committee and advance to candidacy for the PhD degree prior to the start of the fifth semester.

Normative Time in Candidacy

Years 3–5/5.5

Students attend seminars of interest and perform their second teaching assignment. Students conduct original laboratory research for the PhD dissertation with the guidance of their faculty mentor and a self-selected three to four-person dissertation committee. Students are required to meet annually with the dissertation committee. Students write the dissertation based on the results of their research. Upon approval of the dissertation by the dissertation committee and Graduate Division, students are awarded the doctorate. There is no formal defense of the completed dissertation; however, students are required to publicly present a talk about their research in the final year.

Total Normative Time

Total normative time to degree is 5–5.5 years.

Time to Advancement

Curriculum

PLANTBI 202	Faculty Research Review	2
PLANTBI 205A	Introduction to Research	2-12
PLANTBI 205B	Introduction to Research	2-12
PLANTBI 210	Scientific Reasoning and Logic	1

PLANTBI 220A	Microbial Genetics	1.5
PLANTBI 220B	Genomics and Computational Biology	1.5
PLANTBI 220C	Microbial Diversity and Evolution	1.5
PLANTBI 220D	Cell Structure and Function	1.5
PLANTBI 220E	Microbial Physiology	1.5
PLANTBI 220F	Microbial Ecology	1.5
PLANTBI 290	Seminar (or equivalent)	2
PLANTBI 292	Research Review in Plant and Microbial Biology	1
PLANTBI 298	Plant Biology Group Studies (department colloquium)	1-6
PLANTBI 299	Graduate Research	1-12
PLANTBI 375	Workshop on Teaching	2
PLANTBI 602	Individual Study for Graduate Students	1-2
Total Units		24-61

Professional Development

Research Presentations

All microbiology graduate students are strongly encouraged to present their research annually from the third year and beyond in a public forum. Graduate students attend the Plant & Microbial Biology (PMB) Department retreat at least once during their graduate studies. Students are encouraged to attend both the Plant & Microbial Biology Department retreat and the Graduate Group in Microbiology retreat and present their research. Students are highly encouraged to present during the PMB Department student/post-doc seminar series. They are also encouraged to attend national and international conferences to present research.

Teaching

Microbiology graduate students are required to teach two semesters. Students are required to teach in two distinctly different classroom settings; specifically, teaching in a large enrollment course (100+) and a small upper division, lab, or low enrollment (< 100) course.

Grant Writing

Students are encouraged to take PLANTBI 297, Grant Writing and Research Presentation.