BACTERIOLOGY, M.S.

The primary goal of the master of science (M.S.) degree program is to give students a solid understanding of the scientific process and to provide the opportunity to obtain advanced training in microbiology. The master’s degree is the terminal degree in this program, and completion of this degree does not allow automatic admission to a Ph.D. program.

This program provides the opportunity to tailor a curriculum of advanced coursework and research to fit the needs of each student, with two different tracks (coursework or research tracks, see below). Students may acquire a general overview of microbiology or may focus on a specialized subject area in microbiology such as bacterial physiology, molecular/cell biology, food or environmental microbiology, biotechnology or medical microbiology. The self-tailored program must meet the requirements of the Department of Bacteriology and the Graduate School for the M.S. degree, as outlined below. Full-time students can expect to complete the M.S. degree in about two years. The M.S. program also can accommodate part-time students with consequent increased time to degree.

The coursework track serves students who want to acquire knowledge about current topics in microbiology primarily in a classwork setting. Examples of students who benefit from this track are those currently employed in research, clinical, or biotechnology labs seeking an advanced degree; lawyers and law students who wish to specialize in biotechnology or environmental law; and students preparing for health professions.

The research track serves students who seek to develop scientific research skills. This track is chosen by laboratory technicians who want advanced technical training; students seeking laboratory skills for employment; and students who desire laboratory experience and advanced coursework before applying to Ph.D. programs.

FUNDING

Financial aid for students in the M.S. program is not available from the department. Some M.S. students in the research track are supported through their research advisor, but such support is available on a very limited basis.

REQUIREMENTS

GENERAL PROGRAM REQUIREMENTS

The following courses are required for completion of the M.S. degree for either coursework or research tracks, and may be fulfilled by courses taken prior to entrance to the M.S. program or as part of the master’s program.

- General Microbiology (MICROBIO 303 Biology of Microorganisms or equivalent)
- Microbial Physiology (MICROBIO 526 Physiology of Microorganisms or equivalent)
- Microbial Genetics (MICROBIO 470 Microbial Genetics & Molecular Machines or equivalent)
- General Biochemistry (BIOCHEM 501 Introduction to Biochemistry, BIOCHEM 507 General Biochemistry I—BIOCHEM 508 General Biochemistry II, or equivalent)

In addition, students desiring the research track should have prior research experience.

MINIMUM DEGREE REQUIREMENTS AND SATISFACTORY PROGRESS

To make progress toward a graduate degree, students must meet the Graduate School Minimum Degree Requirements and Satisfactory Progress (http://guide.wisc.edu/graduate/#policiesandrequirementstext) in addition to the requirements of the program.

MASTER’S DEGREES

M.S., with available tracks in coursework, and research

MINIMUM GRADUATE DEGREE CREDIT REQUIREMENT

30 credits

MINIMUM GRADUATE RESIDENCE CREDIT REQUIREMENT

22 credits

MINIMUM GRADUATE COURSEWORK (50%) REQUIREMENT

At least 15 credits must be completed in graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university’s Course Guide (http://my.wisc.edu/CourseGuideRedirect/BrowseByTitle).

PRIOR COURSEWORK REQUIREMENTS: GRADUATE WORK FROM OTHER INSTITUTIONS

With permission of the program advisor, up to 8 graduate course credits from another university may be applied toward the credit requirements.

PRIOR COURSEWORK REQUIREMENTS: UW–MADISON UNDERGRADUATE

No credits from the UW–Madison Undergraduate degree may count toward the credit requirements.

PRIOR COURSEWORK REQUIREMENTS: UW–MADISON UNIVERSITY SPECIAL

No credits from the UW–Madison University Special student career may count toward the credit requirements.

CREDITS PER TERM ALLOWED

15 credits

PROGRAM-SPECIFIC COURSES REQUIRED

Contact the program for information on any additional required courses.

Overall Graduate GPA Requirement

3.00

OTHER GRADE REQUIREMENTS

The Graduate School requires an average grade of B or better in all coursework (300 or above, not including research credits) taken as a graduate student unless conditions for probationary status require higher
grades. Grades of Incomplete are considered to be unsatisfactory if they are not removed during the next enrolled semester.

**PROBATION POLICY**

The Graduate School regularly reviews the record of any student who earned grades of BC, C, D, F, or Incomplete in a graduate course (300 or above), or grade of U in research credits. This review could result in academic probation with a hold on future enrollment or in being suspended from the Graduate School.

**ADVISOR / COMMITTEE**

Every graduate student is required to have an advisor. To ensure that students are making satisfactory progress toward a degree, the Graduate School expects them to meet with their advisor on a regular basis.

An advisor generally serves as the thesis advisor. In many cases, an advisor is assigned to incoming students. Students can be suspended from the Graduate School if they do not have an advisor. An advisor is a faculty member, or sometimes a committee, from the major department responsible for providing advice regarding graduate studies.

A committee often accomplishes advising for the students in the early stages of their studies.

**ASSESSMENT AND EXAMINATIONS**

Contact the program for information on required assessments and examinations.

**TIME CONSTRAINTS**

Master’s degree students who have been absent for five or more consecutive years lose all credits that they have earned before their absence. Individual programs may count the coursework students completed prior to their absence for meeting program requirements; that coursework may not count toward Graduate School credit requirements.

**LANGUAGE REQUIREMENTS**

Contact the program for information on any language requirements.

**ADMISSIONS**

Students accepted to the program should have taken some or all of these courses prior to admission to the program for either coursework or research tracks. Students may correct deficiencies (up to six credits) after admission, but these credits do not apply toward the credits of coursework required for the degree, and all deficiencies must be absolved before completion of the master’s degree.

- Biology: two semesters
- Chemistry: four semesters of chemistry including two organic with lab component
- Math: one course in math beyond algebra/trigonometry such as calculus, statistics, or computer science.

The Graduate Record Examination (GRE) is not required for admission to the M.S. program, but scores may be submitted. International students whose undergraduate instruction was not in English must provide evidence of English proficiency by taking the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS).

---

**LEARNING OUTCOMES**

**KNOWLEDGE AND SKILLS**

- The department’s goal is to ensure that every student demonstrates understanding of the central principles of microbiology and the necessary skills for a professional career in microbiology.
- The department’s goal is to ensure that every student demonstrates the ability to articulate and critique the approaches and findings in the microbiology literature.
- The department’s goal is to ensure that every student demonstrates capability to identify sources, generate, and assemble data or evidence pertaining to questions in microbiology.
- The department’s goal is to ensure that every student demonstrates effective writing and speaking skills.

**PROFESSIONAL CONDUCT**

- The department’s goal is to ensure that every student demonstrates personal and professional ethics.

**PEOPLE**

**Faculty:** Professors Kaspar (chair), Ané, Currie, Donohue, Filutowicz, Forest, Gourse, Johnson, Keller, Landick, Mansfield, McMahon, Thomas, Wassarman, Yu; Associate Professors Pringle, Wang. In addition, many faculty members from other departments supervise training of graduate students.