



Twin Cities Campus

Plant & Microbial Biology M.S.

Plant and Microbial Biology

College of Biological Sciences

Link to a [list of faculty](#) for this program.

Contact Information:

Plant and Microbial Biology Graduate Program, 1479 Gortner Avenue, Suite 140, St. Paul, MN 55108 (612-625-4222; fax: 612-625-1738)

Email: pmb@umn.edu

Website: <https://cbs.umn.edu/academics/departments/pmb/graduate-education>

- Program Type: Master's
- Requirements for this program are current for Spring 2018
- Length of program in credits: 30
- This program does not require summer semesters for timely completion.
- Degree: Master of Science

Along with the program-specific requirements listed below, please read the [General Information](#) section of the catalog website for requirements that apply to all major fields.

Plant and microbial biology encompasses all aspects of plant and microbial life, from molecular biology to genomics to ecosystem science. Students study plants from the subcellular and molecular to the whole plant and community levels of biological organization. They also have opportunities for laboratory and field research at state, national, and international levels. Each student's program is planned to meet individual requirements within the framework of a multidisciplinary core of coursework.

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission

The preferred undergraduate GPA for admittance to the program is 3.00.

Special Application Requirements:

Students are admitted to the M.S. program only under special arrangement with a faculty advisor. The deadline to apply is December 1. Refer to the Plant and Microbial Biology website for full details on application requirements and procedures:

<https://cbs.umn.edu/academics/departments/pmb/graduate-education>.

Applicants must submit their test score(s) from the following:

- GRE

International applicants must submit score(s) from one of the following tests:

- TOEFL
 - Internet Based - Total Score: 79
 - Internet Based - Writing Score: 21
 - Internet Based - Reading Score: 19
- IELTS
 - Total Score: 6.5
- MELAB
 - Final score: 80

Key to [test abbreviations](#) (GRE, TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the [General Information](#) section of the catalog website.

Program Requirements

Plan A: Plan A requires 14 major credits, 6 credits outside the major, and 10 thesis credits. The final exam is oral.



Plan B: Plan B requires 24 major credits and 6 credits outside the major. The final exam is oral.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.00 is required for students to remain in good standing.

At least 1 semesters must be completed before filing a Degree Program Form.

The MS is offered under both Plan A (with thesis) and Plan B (without thesis). Plan A requires 20 course credits in the major and 10 thesis credits. Plan B requires 30 course credits in the major and one to three research papers, which may be written in conjunction with graduate courses. Significant field or laboratory experience and competence in statistics, to include hypothesis testing, regression, and correlation are required. Degree programs are planned by the student and an advisory committee of three faculty members to meet the student's interests and needs.

Core Coursework

All students take the following required courses, for a total of 6.5 credits. [Note: Take PMB 8900 three times (1 credit each time, for a total of 3 credits): section 001 (PMB colloquium), section 002 (Itasca orientation seminar), and section 003 (PMB graduate students seminar).]

[PMB 8081](#) - Succeeding in Graduate School: Skills, Ethics, and Beyond (3.0 cr)

[PMB 8123](#) - Research Ethics in the Plant and Environmental Sciences (0.5 cr)

[PMB 8900](#) - Seminar (1.0 cr)

Plan A and Plan B course options

Plan A

Take at least 13.5 credits of additional coursework, in consultation with the academic advisor and advisory committee, and with approval from the PMB Director of Graduate Studies (DGS), to complete the 20 course credits total (6.5 credits of required core coursework and 13.5 credits of electives/supporting courses) required for the Plan A master's degree. A maximum of 9 credits of 4000-level coursework is allowed.

Take 14 or more credit(s) from the following:

- PBS 8xxx
- PMB 4xxx
- PMB 5xxx
- AGRO 5xxx
- AGRO 8xxx
- [BIOC 4331](#) - Biochemistry I: Structure, Catalysis, and Metabolism in Biological Systems (4.0 cr)
- [BIOC 4332](#) - Biochemistry II: Molecular Mechanisms of Signal Transduction and Gene Expression (4.0 cr)
- [BIOC 4521](#) - Introduction to Physical Biochemistry (3.0 cr)
- BIOC 5xxx
- [BIOL 4003](#) - Genetics (3.0 cr)
- [BIOL 4004](#) - Cell Biology (3.0 cr)
- [PMB 4121](#) - Microbial Ecology and Applied Microbiology (3.0 cr)
- BIOL 5xxx
- [BIOL 8100](#) - Improvisation for Scientists (1.0 cr)
- CSCI 5xxx
- EEB 5xxx
- EEB 8xxx
- FNRM 5xxx
- FNRM 8xxx
- GCD 5xxx
- GCD 8xxx
- GRAD 5xxx
- GRAD 8xxx
- HORT 5xxx
- HORT 8xxx
- MICB 4xxx
- PLPA 5xxx
- PLPA 8xxx
- STAT 5xxx
- STAT 8xxx

Thesis Credits

Take 10 master's thesis credits.

[PMB 8777](#) - Thesis Credits: Master's (1.0 - 18.0 cr)



-OR-

Plan B

Take at least 23.5 credits of additional coursework, in consultation with the academic advisor and advisory committee, and with approval from the PMB Director of Graduate Studies (DGS), to complete the 30 course credits total (6.5 credits of required core coursework and 23.5 credits of electives/supporting courses) required for the Plan B master's degree. A maximum of 9 credits of 4000-level coursework is allowed.

Take 24 or more credit(s) from the following:

- PBS 8xxx
- PMB 4xxx
- PMB 5xxx
- AGRO 5xxx
- AGRO 8xxx
- [BIOC 4331](#) - Biochemistry I: Structure, Catalysis, and Metabolism in Biological Systems (4.0 cr)
- [BIOC 4332](#) - Biochemistry II: Molecular Mechanisms of Signal Transduction and Gene Expression (4.0 cr)
- [BIOC 4521](#) - Introduction to Physical Biochemistry (3.0 cr)
- BIOC 5xxx
- [BIOL 4003](#) - Genetics (3.0 cr)
- [BIOL 4004](#) - Cell Biology (3.0 cr)
- [PMB 4121](#) - Microbial Ecology and Applied Microbiology (3.0 cr)
- BIOL 5xxx
- [BIOL 8100](#) - Improvisation for Scientists (1.0 cr)
- CSCI 5xxx
- EEB 5xxx
- EEB 8xxx
- FNRM 5xxx
- FNRM 8xxx
- GCD 5xxx
- GCD 8xxx
- GRAD 5xxx
- GRAD 8xxx
- HORT 5xxx
- HORT 8xxx
- MICB 4xxx
- PLPA 5xxx
- PLPA 8xxx
- STAT 5xxx
- STAT 8xxx