

Twin Cities Campus Bioproducts and Biosystems Science, Eng and Mgmt M.S. Bioproducts and Biosystems Engineering

College of Food, Agricultural and Natural Resource Sciences

Link to a list of faculty for this program.

Contact Information:

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- Program Type: Master's
- Requirements for this program are current for Fall 2020
- 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 <u>General Information</u> section of the catalog website for requirements that apply to all major fields.

The Bioproducts and Biosystems Science Engineering and Management (BBSEM) graduate program provides a strong foundation in the basic sciences, engineering, and management in support of the renewable bio-resources utilization, environmental quality, and national security, while improving our global competitiveness. The areas of specialization include bioproducts science and engineering, biosystems science and engineering, and bioproducts marketing and management.

Bioproducts science and engineering specialization focuses on the fundamental science and engineering of the various manufacturing processes used in sustainable conversion of biomass into bio-based industrial and consumer products, and their effective end-use applications. Bioproducts include "green" materials, chemicals and energy derived from bio-resources, including biofuels, bioenergy, biocomposites, bio-based plastics, adhesives, pulp and paper, building materials, and more.

Biosystems science and engineering specialization is designed for students who seek to develop a strong foundation in physical sciences and engineering principles, which are applied to important problems involving biological systems. Potential areas of interest include water and soil management and protection; livestock environment; food engineering and value-added processing; machinery systems design; grain quality; safety, health, and risk management; renewable energy systems; and waste management.

Bioproducts marketing and management specialization is designed for graduate students who seek to build on a strong diverse background encompassing liberal arts, basic sciences, communications and product development, and marketing and management of bioproducts.

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.

Other requirements to be completed before admission:

A bachelor's degree in engineering, mathematics, the physical or biological sciences, or a related field from a recognized U.S. or international university, is preferred. Applicants should have a performance level of at least a 3.0 GPA (on a 4.0 grading scale) on previous academic work required for a degree.

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
- Paper Based Total Score: 550
- 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 <u>General Information</u> section of the catalog website.

Program Requirements

Plan A: Plan A requires 20 major credits, up to null credits outside the major, and 10 thesis credits. The final exam is oral.

Plan B: Plan B requires 30 major credits and up to null credits outside the major. The final exam is oral. A capstone project is required. **Capstone Project:** Students complete a project that involves a total of about 120 hours of work, and write a Plan B paper on their project.

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 2.80 is required for students to remain in good standing.

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

A maximum of 4 special- or advanced-problems credits can be applied to degree requirements. Exception requests must be in writing, specify the circumstances that argue for an exception, and be supported by the students advisor(s). Final approval for the exception is the responsibility of the director of graduate studies.

Required Courses (5 credits)

Take the following courses. BBE 8013 is required; however, under special circumstances, and with approval of the BBE 8013 instructor, an alternative statistics course can be applied to the statistics requirement. BBE 8001 - Seminar I (1.0 cr)

BBE 8002 - Seminar II (1.0 cr)

BBE 8013 - Parameter Estimation in Biosystems and Agricultural Engineering (3.0 cr)

Electives (15 to 25 credits)

Plan A students select 15 credits, and Plan B students select 25 credits in consultation with their graduate advisor to meet academic and career goals.

Plan Options

Plan A

Take 10 master's thesis credits. BBE 8777 - Thesis Credits: Master's (1.0 - 18.0 cr)

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Plan B

Program Sub-plans

A sub-plan is not required for this program. Students may not complete the program with more than one sub-plan.

Integrated B.S.-Bioproducts & Biosystems Eng/M.S.-Bioproducts & Biosystems Sci, Eng & Mgmt

The College of Food, Agricultural and Natural Resource Sciences and the College of Science and Engineering offer an BS-Bioproducts and Biosystems Engineering/MS-Bioproducts & Biosystems Science, Engineering, and Management (BS-BBE/MS-BBSEM) program. This program allows students to complete their undergraduate and graduate degrees in five years. Applicants must be enrolled students in the University of Minnesota Twin Cities BS-BBE program. Applicants must be within 32 credits of completing the



undergraduate degree, have a minimum GPA of 3.30, and have a strong recommendation from a BBE faculty member or instructor. Full application instructions can be found at: bbe.umn.edu/integrated

Students admitted to BS-BBE/MS-BBSEM will complete and be awarded an undergraduate degree within 4 years, with a fifth year as a graduate student to complete the masters degree. At least 14 credit hours need to be taken after the completion of the undergraduate degree. Please refer to bbe.umn.edu/integrated for additional information.

Integrated B.S.- Sustainable Systems Management /M.S. -Bioproducts & Biosystems Sci, Eng, & Mgmt

The College of Food, Agricultural and Natural Resource Sciences offers an BS-Sustainable Systems Management/MS-Bioproducts & Biosystems Science, Engineering, and Management (BS-SSM/MS-BBSEM) program. This program allows students to complete their undergraduate and graduate degrees in five years. Applicants must be enrolled students in the University of Minnesota Twin Cities BS-SSM program. Applicants must be within 32 credits of completing the undergraduate degree, have a minimum GPA of 3.30, and have a strong recommendation from an SSM faculty member or instructor. Full application instructions can be found at: bbe.umn.edu/integrated.

Students admitted to BS-SSM/MS-BBSEM will complete and be awarded an undergraduate degree within 4 years, with a fifth year as a graduate student to complete the masters degree. At least 14 credit hours need to be taken after the completion of the undergraduate degree. Please refer to bbe.umn.edu/integrated for additional information.