

Biotechnology

College of Science, Engineering & Technology
Department of Biological Sciences
 242 Trafton Science Center S • 507-389-5731
 Web site: www.mnsu.edu/dept/biology

Director: Gregg Marg, Ph.D.

Biotechnology is the application of recent developments in technology to manipulate the genetic and biochemical characteristics of an organism so that the organism or its metabolites can be economically produced for our benefit. In practice it requires the selection and genetic improvement of an organism for a specific purpose. Organisms may be used to synthesize a desirable product or degrade unwanted materials. The industrialization of this technology is dependent on the development of methods for scaling up processes developed in the laboratory.

Students interested in biotechnology could find careers in a wide variety of industrial applications. Examples of industries that use biotechnology are antibiotic and pharmaceutical; food; energy; agricultural pesticides; herbicides; fertilizers; growth chemicals and breeding programs; industrial chemicals, biocatalysts and diagnostics.

The biotechnologist works with research scientists on the development of processes in the laboratory and with engineers to transfer and scale up laboratory processes for large scale production required by industry. Because of the interdisciplinary nature of biotechnology, biotechnologists must have a strong background in the analytical and quantitative areas of science. In addition, the biotechnologist must be familiar with the theory and practice of genetic engineering and biochemical processes.

Admission to Major is granted by the department. Admission requirements are 32 earned semester credit hours including BIOL 105 and 106, with a grade of a "C" or better in both BIOL 105 and 106; and a minimum cumulative GPA of 2.0.

BIOTECHNOLOGY BS

Required General Education (13 credits):

MATH	121	Calculus I (4)
PHYS	211	Principles of Physics I (4)
CHEM	201	General Chemistry I (5)

Required Support Courses (25 credits):

MATH	122	Calculus II (4)
PHYS	212	Principles of Physics II (4)
CHEM	202	General Chemistry II (5)
CHEM	305	Analytical Chemistry (4)
CHEM	320	Organic Chemistry I (4)
CHEM	460	Biochemistry I (3)
CHEM	465	Biochemical Techniques I (1)

Recommended Support Courses:

CHEM	461	Biochemistry II (3)
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CHEM	466	Biochemical Techniques II (2)
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Required for Major (Core, 52 credits):

BIOL	105	General Biology I (4)
BIOL	106	General Biology II (4)
BIOL	211	Genetics (3)
BIOL	270	Microbiology (4)
BIOL	320	Cell Biology (4)
BIOL	451	Plant Biotechnology (3)
BIOL	452	Biological Instrumentation (3)
BIOL	453	Biological Engineering Analysis I (4)
BIOL	454	Biological Engineering Analysis II (4)
BIOL	474	Immunology (4)
BIOL	476	Microbial Physiology and Genetics (5)
BIOL	479	Molecular Biology (4)

The biotechnology major requires a 6 credit project. This may be taken as:

BIOL	456	Biotechnology Project I (3)
BIOL	457	Biotechnology Project II (3) OR
BIOL	497	Internship (6)

Required Minor: None.

POLICIES/INFORMATION

P/N Grading Policy. All courses must be taken for letter grades. Any exception to this policy must be approved by the chairperson of the department.

Refer to the College regarding required advising for students on academic probation.

GPA Policy. A minimum GPA of 2.0 must be maintained in biological sciences.

Several biology scholarships are available for entering freshmen and currently enrolled MSU students who meet the requirements. Application deadline is March 31 of each year.

The Department of Biological Sciences offers a well-balanced summer school program. For details concerning the courses being offered consult the summer bulletin.

Business Administration

College of Business
 150 Morris Hall • 507-389-2965

Coordinator: P. Schwinghammer, Ph.D.

BUSINESS ADMINISTRATION MINOR

Required for Minor (Core, 31 credits):

MGMT	200	Introduction to MIS (3)
MGMT	330	Principles of Management (3)
ACCT	200	Financial Accounting (3)
ACCT	210	Managerial Accounting (3)
ECON	201	Principles of Macroeconomics (3)
ECON	202	Principles of Microeconomics (3)

ECON	207	Business Statistics (4)
BLAW	200	Legal, Political and Regulatory Environment of Business (3)
MRKT	310	Principles of Marketing (3)
FINA	362	Business Finance (3)

POLICIES/INFORMATION

GPA Policy. Students must earn a minimum grade point average of 2.0 (C) on all the courses taken to earn the minor.

Students who are business minors, non-business majors, or those who are not seeking a four year degree may not complete more than 30 credits from the College of Business.

Residency. Transfer students pursuing a minor in the College of Business must complete 50% (one half) of their minor coursework through Minnesota State University, Mankato.

Information Technology Initiative. Students with a major or minor in the College of Business are required to acquire a notebook computer with a standard set of applications from the Campus Computer Store at Minnesota State University. Students who are majoring in other colleges will be able to enroll in non-notebook classes offered once per year. For further information see the College of Business section at the front of this bulletin.

Assessment Policy. The College of Business believes that the ongoing assessment of its programs makes a vital contribution to the quality of these programs and to student learning. Student participation in as important and expected part of the assessment process.

In addition to the Business Administration Minor, the College of Business offers other majors and minors in the areas of accounting, finance, international business, management, marketing, and business law.