



08-89

✓

HOLD and CLEAR buttons only compatible with Acrobat V. 4 and 5.

Minnesota State University, Mankato Curriculum Proposal

Please type or select the requested information. Print completed forms, add appropriate paper attachments, and route through MSU's curricular process for recommendations and decisions.

(Check all that apply):		Proposal # <u>302</u>
College: <u>Science, Engineering and Technology</u>	<input checked="" type="checkbox"/> Undergraduate	Effective Date of Change:
Department: <u>Biological Sciences</u>	<input type="checkbox"/> Graduate	Academic Year <u>07-08</u>
Program: <u>Biotechnology</u>	CIP # _____	(For Office Use Only)
Type of Change: <u>PROGRAM PROPOSALS</u>		Course Designator Number of and Number Credits
Proposed: <u>Redesign--Change in Total Program Credits</u>		
Title Current: _____		
Title Proposed: _____		
24-Char. Abbrev: _____		(if applicable)

Include a course or program description for the Bulletin (30-40 words maximum for courses, 100 for programs):

Bulletin description remains the same.

Rationale or Justification for change:

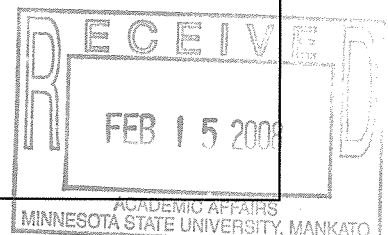
A proposal was submitted to change the credits for Biology 451 Plant Biotechnology from 3 credits to 4 credits due to the addition of a lab component. This course is required for the Biotechnology major so I was told to submit this form to indicate that I was aware of the change and to show how the catalog copy would change. Accompanying this proposal are a copy of the current catalog and a copy of the catalog with the needed revisions.

*****For General Education or Cultural Diversity Courses Only*****

General Education Course:		Cultural Diversity Course:
GE Category #	GE Category Name (Maximum of 3 Categories)	(Please check one.)
<u>N/A</u>		<input type="checkbox"/> Core (At least 75% devoted to topics of race, gender, sexual orientation, age, class, and disabilities as they occur in United States Society.)
<u>N/A</u>		<input type="checkbox"/> Related (At least 25% devoted to the above topics or to a global perspective on topics related to African American, Asian, Hispanic, and Native American inhabitants of the United States.)
<u>N/A</u>		
<p>? For Writing Intensive Courses, attach a description of the kind and quantity of writing.</p> <p>? For Upper Division Courses, include a description of the respects in which it is broad and general rather than narrow and specific, and so suitable as GE.</p>		
<p>Attach paper copies of the following:</p> <p>a. Syllabus or course outline.</p> <p>b. Course's student learning outcomes associated with each GE competency or CD designation.</p> <p>c. List of strategies to be used to assess students' achievement of each GE competency or CD designation.</p>		

*****For New Courses*****

(Check all that apply):	Instructional Type: <u>Lecture</u>	Course will be offered:
<input type="checkbox"/> Course is an elective.	Grading Format: <input type="checkbox"/> Grade <input type="checkbox"/> P/N	<input type="checkbox"/> Fall Semester
<input type="checkbox"/> Course is required for program		<input type="checkbox"/> Spring Semester
<input type="checkbox"/> Pre- or Co-requisites:		<input type="checkbox"/> Summer Session
<input type="checkbox"/> Other courses are being changed or eliminated. (Explain.) _____		
<p><input type="checkbox"/> Course content or title is similar to courses in other departments. (Attach copy of letter of agreement with other program(s) contacted. Indicate the nature of the discussions and/or resolution of differences or potential conflicts.)</p>		
<p>Attach paper copies of the following:</p> <p>a. Syllabus or course outline.</p> <p>b. Course's student learning outcomes.</p> <p>c. A list of resources required to offer and support this course.</p> <p>d. A description of how teaching this course will affect department staffing.</p> <p>e. If 400/500 level course, an explanation of added expectations of graduate students.</p>		





Minnesota State University, Mankato
Curriculum Proposal

Signature Page

Department			
<input checked="" type="checkbox"/> Recommended	(Category/ies _____)	<u>Angie A. Mang</u>	<u>1/15/08</u>
<input type="checkbox"/> Not Recommended	(Category/ies _____)	Department Chair	Date
Comments:			
College Curriculum Committee			
<input checked="" type="checkbox"/> Recommended	(Category/ies _____)	<u>[Signature]</u>	<u>2/11/08</u>
<input type="checkbox"/> Not Recommended	(Category/ies _____)	Committee Chair	Date
Comments:			
College Dean			
<input checked="" type="checkbox"/> Recommended	(Category/ies _____)	<u>[Signature]</u>	<u>2/13/08</u>
<input type="checkbox"/> Not Recommended	(Category/ies _____)	Dean	Date
Comments:			
General Education Subcommittee			
<input type="checkbox"/> Recommended	(Category/ies _____)		
<input type="checkbox"/> Not Recommended	(Category/ies _____)	General Education Subcommittee Chair	Date
Comments:			
Undergraduate Curriculum and Academic Policy Committee			
<input checked="" type="checkbox"/> Recommended	(Category/ies _____)	<u>[Signature]</u>	<u>3/4/08</u>
<input type="checkbox"/> Not Recommended	(Category/ies _____)	UCAP Faculty Chair	Date
Comments:			
Faculty Association Graduate Committee			
<input type="checkbox"/> Recommended			
<input type="checkbox"/> Not Recommended		Faculty Association Graduate Chair	Date
Comments:			
Graduate Dean			
<input type="checkbox"/> Recommended			
<input type="checkbox"/> Not Recommended		Graduate Dean	Date
Comments:			
Academic Affairs Council			
<input checked="" type="checkbox"/> Recommended	(Category/ies _____)	<u>[Signature]</u>	<u>4/28/08</u>
<input type="checkbox"/> Not Recommended	(Category/ies _____)	Assistant Vice President	Date
Comments:			
Senior Vice President and Vice President for Academic Affairs			
<input checked="" type="checkbox"/> Approved	(Category/ies _____)	<u>[Signature]</u>	<u>4/28/08</u>
<input type="checkbox"/> Not Approved	(Category/ies _____)	Sr. Vice President / Vice Pres. Academic Affairs	Date
Comments:			

BIOTECHNOLOGY

Biotechnology

College of Science, Engineering & Technology
 Department of Biological Sciences
 242 Trafton Science Center S • 507-389-5731
 Web site: www.cset.mnsu.edu/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 105W and BIOL 106, with a grade of a "C" or better in both BIOL 105W and BIOL 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 (26 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 (5)
 CHEM 460 Biochemistry I (3)
 CHEM 465 Biochemical Techniques I (1)

Recommended Support Courses (5 credits):

CHEM 461 Biochemistry II (3)
 CHEM 466 Biochemical Techniques II (2)

Required for Major (Core, 52 credits):

BIOL 105W General Biology I (4)
 BIOL 106 General Biology II (4)
 BIOL 211 Genetics (4)
 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/Laboratory I (3)
 BIOL 457 Biotechnology Project/Laboratory 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 Minnesota State Mankato 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.

Proposed

BIOTECHNOLOGY

Biotechnology

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

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.

Admission to Major is granted by the department. Admission requirements are 32 earned semester credit hours including BIOL 105W and BIOL 106, with a grade of a "C" or better in both BIOL 105W and BIOL 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 (26 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 (5)
CHEM 460 Biochemistry I (3)
CHEM 465 Biochemical Techniques I (1)

Recommended Support Courses (5 credits):

- CHEM 461 Biochemistry II (3)
CHEM 466 Biochemical Techniques II (2)

Required for Major (Core, 53 credits):

- BIOL 105W General Biology I (4)
BIOL 106 General Biology II (4)
BIOL 211 Genetics (4)
BIOL 270 Microbiology (4)
BIOL 320 Cell Biology (4)
BIOL 451 Plant Biotechnology (4)
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/Laboratory I (3)
BIOL 457 Biotechnology Project/Laboratory 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 Minnesota State Mankato 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.