

**Minnesota State University Moorhead
2006-2007 Assessment Plan Cover Sheet**

(An electronic version of this form can be accessed at <http://www.mnstate.edu/assess>)

Note: All programs will complete this form.

Degree Program: B.A.'s and B.S.'s in Mathematics

Department: Mathematics

College: Social and Natural Sciences

Date: October 12, 2006

Is this assessment plan your existing plan, a new assessment plan or a revision of an existing plan?

Existing New Revision

1. Name(s) of Department Assessment Coordinator and/or Assessment Committee Members

Ellen Hill, Chair of Committee
James Hatzenbuhler
Kristine Montis
Ari Wijetunga

2. List of All Student Learning Outcomes. (List and number all outcomes, placing an asterisk (*) by the outcomes you are assessing this year.)

- *1. Students should understand the theory and applications of calculus and linear algebra.
- *2. Students should develop the capacity for rigorous analytical thought and the ability to communicate ideas in a precise manner.
- *3. Students should possess an awareness of the abstract nature of theoretical mathematics and the ability to write proofs.
- *4. Students should possess an understanding of the breadth of the mathematical sciences and their deep interconnecting principles.
- *5. Students should be able to solve multi-step problems and perform complex tasks.
- *6. Students should develop the ability to detect basic mathematical structures (patterns) and make generalizations from them.

3. Explain how the student learning outcomes are appropriate to department or program goals, as identified in your most recent Quality Improvement Plan. Please note if the program is accredited by an external agency.

The Program Objectives from the Mathematics Department's 1998-2004 Self-Study are listed below. Following that, the relationships between the learning outcomes and the Program Objectives are shown.

PROGRAM OBJECTIVES

1. To offer programs leading to B.A. or B.S. degrees in mathematics.
2. To maintain, update or develop emphases leading to a B.S. degree in mathematics which prepare students for a profession involving mathematics.
3. To prepare and encourage talented mathematics students to seek advanced degrees or credentials.
4. To assist other departments and programs by developing and offering appropriate courses containing mathematics and statistics taught in an interdisciplinary manner.
5. To provide courses in mathematics learning theory and in mathematics teaching methods in the areas of elementary, secondary, and special education.
6. To assist students who enter college and are underprepared to succeed in a college level mathematics course.
7. To promote the continued professional development of faculty members as teacher-scholars.
8. To help students master the learning outcomes in the department's assessment plan.
9. To provide students with an opportunity to appreciate and to understand the beauty of mathematics.
10. To encourage student research or other creative work which involves mathematics or statistics.

LEARNING OUTCOME

- 1
- 2
- 3
- 4
- 5
- 6

DEPARTMENT OBJECTIVE

- 1, 2, 3, 4, 8, 9, 10
- 1, 2, 3, 4, 8, 9, 10
- 1, 2, 3, 8, 9, 10
- 1, 2, 3, 5, 8, 9, 10
- 1, 2, 3, 4, 6, 8, 10
- 1, 2, 3, 4, 5, 6, 8, 10

4. Signatures

Department Chair or Program Director

Dean or Director

Required Attachments:

1. Assessment Planning Forms
2. Records of department meetings when Assessment Plan was discussed and approved.

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2006-2007 Assessment Planning Form**

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Academic Program: B.A.'s and B.S.'s in Mathematics

1. Identify Student Learning Outcome in the box below and note its number (to correspond with the list on the cover sheet):

1. Students should understand the theory and applications of calculus and linear algebra.

2. Which MSUM mission goals are addressed by this learning outcome? (check all that apply)

<input checked="" type="checkbox"/> Knowledge/content	<input type="checkbox"/> Information literacy
<input checked="" type="checkbox"/> Intellectual development	<input type="checkbox"/> Lifelong learning
<input type="checkbox"/> Talents	<input type="checkbox"/> Service
<input checked="" type="checkbox"/> Critical thinking	<input type="checkbox"/> Citizenship
<input type="checkbox"/> Oral communication	<input type="checkbox"/> Responsibility and ethics
<input type="checkbox"/> Written communication	<input type="checkbox"/> Global understanding
<input checked="" type="checkbox"/> Mathematics	<input type="checkbox"/> Other:
<input type="checkbox"/> Multiculturalism/diversity	<input type="checkbox"/> Other:

3. How is this learning outcome achieved through the program's curriculum? Identify the courses or extra-curricular opportunities that address this outcome.

Math 261, 262, 323, 335, 336, 361, 362, 366, 421, 435

4. What methods of assessment will be used for this outcome? (Specify instrument and submit electronically with plan.)

ETS Major Field Test in Mathematics
Success on the Society of Actuaries Exam I

5. Who is assessed? When are they assessed?

All mathematics majors take the ETS exam as seniors
Majors pursuing a career in actuarial science take the actuarial exam as juniors, seniors or alumni

6. Who is responsible in the department for collecting data? How and when will the results be discussed by members of the program?

Chairperson. Results are available for review by department members and are discussed at department meetings and assessment committee meetings.

7. What is level of student performance is expected for this outcome?

None is prescribed. We study the results for trends and react accordingly.

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Academic Program: B.A.'s and B.S.'s in Mathematics

1. Identify Student Learning Outcome in the box below and note its number (to correspond with the list on the cover sheet):

2. Students should develop the capacity for rigorous analytical thought and the ability to communicate ideas in a precise manner.

2. Which MSUM mission goals are addressed by this learning outcome? (check all that apply)

<input checked="" type="checkbox"/> Knowledge/content	<input type="checkbox"/> Information literacy
<input checked="" type="checkbox"/> Intellectual development	<input type="checkbox"/> Lifelong learning
<input type="checkbox"/> Talents	<input type="checkbox"/> Service
<input checked="" type="checkbox"/> Critical thinking	<input type="checkbox"/> Citizenship
<input type="checkbox"/> Oral communication	<input type="checkbox"/> Responsibility and ethics
<input checked="" type="checkbox"/> Written communication	<input type="checkbox"/> Global understanding
<input checked="" type="checkbox"/> Mathematics	<input type="checkbox"/> Other:
<input type="checkbox"/> Multiculturalism/diversity	<input type="checkbox"/> Other:

3. How is this learning outcome achieved through the program's curriculum? Identify the courses or extra-curricular opportunities that address this outcome.

Math 261, 262, 323, 327, 335, 336, 355, 361, 362, 416, 450, 476, 487

4. What methods of assessment will be used for this outcome? (Specify instrument and submit electronically with plan.)

Survey in capstone courses and ETS Major Field Test in Mathematics
Success on the Society of Actuaries Exam I

5. Who is assessed? When are they assessed?

All majors take ETS exam as seniors and all majors complete surveys when enrolled in capstone courses.

Majors pursuing a career in actuarial science take the actuarial exam as juniors, seniors or alumni

6. Who is responsible in the department for collecting data? How and when will the results be discussed by members of the program?

Chairperson. Results are available for review by department members and are discussed at department meetings and assessment committee meetings.

7. What is level of student performance is expected for this outcome?

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Academic Program: B.A.'s and B.S.'s in Mathematics

1. Identify Student Learning Outcome in the box below and note its number (to correspond with the list on the cover sheet):

3. Students should possess an awareness of the abstract nature of theoretical mathematics and the ability to write proofs.

2. Which MSUM mission goals are addressed by this learning outcome? (check all that apply)

<input checked="" type="checkbox"/> Knowledge/content	<input type="checkbox"/> Information literacy
<input checked="" type="checkbox"/> Intellectual development	<input type="checkbox"/> Lifelong learning
<input type="checkbox"/> Talents	<input type="checkbox"/> Service
<input checked="" type="checkbox"/> Critical thinking	<input type="checkbox"/> Citizenship
<input type="checkbox"/> Oral communication	<input type="checkbox"/> Responsibility and ethics
<input checked="" type="checkbox"/> Written communication	<input type="checkbox"/> Global understanding
<input checked="" type="checkbox"/> Mathematics	<input type="checkbox"/> Other:
<input type="checkbox"/> Multiculturalism/diversity	<input type="checkbox"/> Other:

3. How is this learning outcome achieved through the program's curriculum? Identify the courses or extra-curricular opportunities that address this outcome.

Math 327, 361, 362, 435, 450, 476, 487

4. What methods of assessment will be used for this outcome? (Specify instrument and submit electronically with plan.)

Survey in capstone courses

5. Who is assessed? When are they assessed?

All majors when enrolled in capstone courses

6. Who is responsible in the department for collecting data? How and when will the results be discussed by members of the program?

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7. What is level of student performance is expected for this outcome?

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Academic Program: B.A.'s and B.S.'s in Mathematics

1. Identify Student Learning Outcome in the box below and note its number (to correspond with the list on the cover sheet):

4. Students should possess an understanding of the breadth of the mathematical sciences and their deep interconnecting principles.

2. Which MSUM mission goals are addressed by this learning outcome? (check all that apply)

<input checked="" type="checkbox"/> Knowledge/content	<input type="checkbox"/> Information literacy
<input checked="" type="checkbox"/> Intellectual development	<input checked="" type="checkbox"/> Lifelong learning
<input type="checkbox"/> Talents	<input type="checkbox"/> Service
<input checked="" type="checkbox"/> Critical thinking	<input type="checkbox"/> Citizenship
<input type="checkbox"/> Oral communication	<input type="checkbox"/> Responsibility and ethics
<input type="checkbox"/> Written communication	<input type="checkbox"/> Global understanding
<input checked="" type="checkbox"/> Mathematics	<input type="checkbox"/> Other:
<input type="checkbox"/> Multiculturalism/diversity	<input type="checkbox"/> Other:

3. How is this learning outcome achieved through the program's curriculum? Identify the courses or extra-curricular opportunities that address this outcome.

Math 327, 335, 336, 355, 366, 486, 487, 491

4. What methods of assessment will be used for this outcome? (Specify instrument and submit electronically with plan.)

Survey in capstone courses

5. Who is assessed? When are they assessed?

All majors when enrolled in capstone courses

6. Who is responsible in the department for collecting data? How and when will the results be discussed by members of the program?

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5. Students should be able to solve multi-step problems and perform complex tasks.

2. Which MSUM mission goals are addressed by this learning outcome? (check all that apply)

<input checked="" type="checkbox"/> Knowledge/content	<input type="checkbox"/> Information literacy
<input checked="" type="checkbox"/> Intellectual development	<input type="checkbox"/> Lifelong learning
<input type="checkbox"/> Talents	<input type="checkbox"/> Service
<input checked="" type="checkbox"/> Critical thinking	<input type="checkbox"/> Citizenship
<input type="checkbox"/> Oral communication	<input type="checkbox"/> Responsibility and ethics
<input type="checkbox"/> Written communication	<input type="checkbox"/> Global understanding
<input checked="" type="checkbox"/> Mathematics	<input type="checkbox"/> Other:
<input type="checkbox"/> Multiculturalism/diversity	<input type="checkbox"/> Other:

3. How is this learning outcome achieved through the program's curriculum? Identify the courses or extra-curricular opportunities that address this outcome.

Math 261, 262, 323, 327, 335, 336, 355, 366, 421, 435, 450

4. What methods of assessment will be used for this outcome? (Specify instrument and submit electronically with plan.)

ETS Major Field Exam in Mathematics, survey in capstone courses
Success on the Society of Actuaries Exam I

5. Who is assessed? When are they assessed?

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1. Identify Student Learning Outcome in the box below and note its number (to correspond with the list on the cover sheet):

6. Students should develop the ability to detect basic mathematical structures (patterns) and make generalizations from them.

2. Which MSUM mission goals are addressed by this learning outcome? (check all that apply)

<input checked="" type="checkbox"/> Knowledge/content	<input type="checkbox"/> Information literacy
<input checked="" type="checkbox"/> Intellectual development	<input checked="" type="checkbox"/> Lifelong learning
<input type="checkbox"/> Talents	<input type="checkbox"/> Service
<input checked="" type="checkbox"/> Critical thinking	<input type="checkbox"/> Citizenship
<input type="checkbox"/> Oral communication	<input type="checkbox"/> Responsibility and ethics
<input type="checkbox"/> Written communication	<input type="checkbox"/> Global understanding
<input checked="" type="checkbox"/> Mathematics	<input type="checkbox"/> Other:
<input type="checkbox"/> Multiculturalism/diversity	<input type="checkbox"/> Other:

3. How is this learning outcome achieved through the program's curriculum? Identify the courses or extra-curricular opportunities that address this outcome.

Math 361, 362, 476

4. What methods of assessment will be used for this outcome? (Specify instrument and submit electronically with plan.)

ETS Major Field Exam in Mathematics. Survey in capstone courses

5. Who is assessed? When are they assessed?

All majors take the ETS exam during their senior year and complete surveys when enrolled in capstone courses

6. Who is responsible in the department for collecting data? How and when will the results be discussed by members of the program?

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