



Minnesota State University, Mankato HOLD and CLEAR buttons only compatible with Acrobat V. 4 and 5
Curriculum Proposal

07209
 Revised

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>269</u>						
College: <u>Science, Engineering and Technology</u>	<input checked="" type="checkbox"/> Undergraduate	Effective Date of Change:						
Department: <u>Mathematics and Statistics</u>	<input type="checkbox"/> Graduate	Academic Year <u>06-07</u>						
Program: <u>Mathematics and Statistics</u>	CIP # _____	(For Office Use Only)						
Type of Change: <u>PROGRAM PROPOSALS</u>		<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Course Designator and Number</th> <th>Number of Credits</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table> (if applicable)	Course Designator and Number	Number of Credits				
Course Designator and Number	Number of Credits							
Proposed: <u>Change in Requirements-Course(s) Added</u>								
Title Current: _____								
Title Proposed: _____								
24-Char. Abbrev: _____								
<p><i>Include a course or program description for the Bulletin (30-40 words maximum for courses, 100 for programs):</i></p> 								
<p><i>Rationale or Justification for change:</i></p> <p>Redesigned the core courses to accommodate Math 492 - Capstone Course suggested by Program Review. Impact on staffing-none.</p>								
For General Education or Cultural Diversity Courses Only								
General Education Course:		Cultural Diversity Course: (Please check one.)						
GE Category #	GE Category Name (Maximum of 3 Categories)							
<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.) <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>	_____							
<u>N/A</u>	_____							
<p>7 For Writing Intensive Courses, attach a description of the kind and quantity of writing. 7 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> <ol style="list-style-type: none"> Syllabus or course outline. Course's student learning outcomes associated with each GE competency or CD designation. List of strategies to be used to assess students' achievement of each GE competency or CD designation. 								
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> <ol style="list-style-type: none"> Syllabus or course outline. Course's student learning outcomes. A list of resources required to offer and support this course. A description of how teaching this course will affect department staffing. If 400/500 level course, an explanation of added expectations of graduate students. 								



Minnesota State University, Mankato
Curriculum Proposal

Signature Page

Department
 Recommended (Category/ies _____)
 Not Recommended (Category/ies _____)
 Comments: _____

Larry on Pearson 10/18/06
 Department Chair Date

College Curriculum Committee
 Recommended (Category/ies _____)
 Not Recommended (Category/ies _____)
 Comments: _____

Karen C. Chon 11/2/06
 Committee Chair Date

College Dean
 Recommended (Category/ies _____)
 Not Recommended (Category/ies _____)
 Comments: _____

[Signature] 11/4/06
 Dean Date

General Education Subcommittee
 Recommended (Category/ies _____)
 Not Recommended (Category/ies _____)
 Comments: _____

 General Education Subcommittee Chair Date

Undergraduate Curriculum and Academic Policy Committee
 Recommended (Category/ies _____)
 Not Recommended (Category/ies _____)
 Comments: _____

[Signature] 3/20/07
 UCAP Faculty Chair Date

Faculty Association Graduate Committee
 Recommended
 Not Recommended
 Comments: _____

 Faculty Association Graduate Chair Date

Graduate Dean
 Recommended
 Not Recommended
 Comments: _____

 Graduate Dean Date

Academic Affairs Council
 Recommended (Category/ies _____)
 Not Recommended (Category/ies _____)
 Comments: _____

Paul Flannery 3/28/07
 Assistant Vice President Date

Senior Vice President and Vice President for Academic Affairs
 Approved (Category/ies _____)
 Not Approved (Category/ies _____)
 Comments: _____

[Signature] 3/28/07
 Sr. Vice President / Vice Pres. Academic Affairs Date

Program Changes (*Italics*)

In summary, the BS, BA Mathematics option will gain a required course (MATH 492, 3 credits) and lose 3 hours of electives. The BS Mathematics Teaching option will gain a required course (MATH 492, 3 credits) and lose a required course (MATH 480, 3 credits). This is a net change of zero credits to all three options.

OLD

MATH BA, BS

Required for Major (Core, 27-28 credits)

MATH 121 Calculus I (4)
MATH 122 Calculus II (4)
MATH 223 Calculus III (4)
MATH 247 Linear Algebra I (4)
MATH 290 Foundations of Mathematics (4)

Choose two of the following:

MATH 316 Intermediate Analysis (3)
MATH 345 Abstract Algebra I (4)
MATH 375 Into to Discrete Mathematics (4)

Required for Major (*Electives, 15 credits*)

Choose a minimum of 15 credits from the following; at least three (3) credits must be at the 400 level:

MATH 316 MATH 321 MATH 332 MATH 345 MATH 354
MATH 375 MATH 392 MATH 411 MATH 417 MATH 418
MATH 422 MATH 425 MATH 435 MATH 442 MATH 446
MATH 447 MATH 455 MATH 456 MATH 470 MATH 471
MATH 480 MATH 492

Required for Bachelor of Arts (BA) degree ONLY:

Language (8).

Required Minor. Yes. Any.

NEW

MATH BA, BS

Required for Major (Core, 30-31 credits)

MATH 121 Calculus I (4)
MATH 122 Calculus II (4)
MATH 223 Calculus III (4)
MATH 247 Linear Algebra I (4)
MATH 290 Foundations of Mathematics (4)
MATH 492 Mathematics Capstone Experience (3)

Choose two of the following:

MATH 316 Intermediate Analysis (3)
MATH 345 Abstract Algebra I (4)
MATH 375 Into to Discrete Mathematics (4)

Required for Major (*Electives, 12 credits*)

Choose a minimum of 12 credits from the following; at least three (3) credits must be at the 400 level:

MATH 316 MATH 321 MATH 332 MATH 345 MATH 354
MATH 375 MATH 392 MATH 411 MATH 417 MATH 418
MATH 422 MATH 425 MATH 435 MATH 442 MATH 446
MATH 447 MATH 455 MATH 456 MATH 470 MATH 471
MATH 480 MATH 492

Required for Bachelor of Arts (BA) degree ONLY:

Language (8).

Required Minor. Yes. Any.

OLD

MATH BS TEACHING

Required for Major (Core, 50 credits)

- MATH 121 Calculus I (4)
- MATH 122 Calculus II (4)
- MATH 223 Calculus III (4)
- MATH 247 Linear Algebra (4)I
- MATH 290 Foundations of Mathematics (4)
- MATH 316 Intermediate Analysis (3)
- MATH 332 College Geometry (4)
- MATH 345 Abstract Algebra I (4)
- MATH 354 Concepts of Prob. and Stat (3)
- MATH 375 Intro to Discrete Mathematics (4)
- MATH 480 History of Mathematics* (3)
- MATH 483 Advanced Viewpoint of 5-8 School Mathematics (3)
- MATH 484 Technology in 5-12 School Mathematics (3)
- MATH 485 Teaching Secondary School Mathematics (3)

Required for Major (Professional Education, 30 credits):

See the SECONDARY EDUCATION section for admission requirements to Professional Education and a list of required professional education courses.

Required Minor. No.

NEW

MATH BS TEACHING

Required for Major (Core, 50 credits)

- MATH 121 Calculus I (4)
- MATH 122 Calculus II (4)
- MATH 223 Calculus III (4)
- MATH 247 Linear Algebra I (4)
- MATH 290 Foundations of Mathematics (4)
- MATH 316 Intermediate Analysis (3)
- MATH 332 College Geometry (4)
- MATH 345 Abstract Algebra I (4)
- MATH 354 Concepts of Prob. and Stat (3)
- MATH 375 Intro to Discrete Mathematics (4)
- MATH 483 Advanced Viewpoint of 5-8 School Mathematics (3)
- MATH 484 Technology in 5-12 School Mathematics (3)
- MATH 485 Teaching Secondary School Mathematics (3)
- MATH 492 Mathematics Capstone Experience* (3)

Required for Major (Professional Education, 30 credits):

See the SECONDARY EDUCATION section for admission requirements to Professional Education and a list of required professional education courses.

Required Minor. No.

Mathematics and Statistics Department
Meeting Minutes
Friday, August 22, 2006

Present: Boyd, Buch, Danielson, Guy, Haskins, Hermann, Kapplinger, Kim, Kitsul, B. Lee, N. Lee, Martensen, Pearson, Rahman, Rockswold, Sanjel, Singer, Smith, Van Veldhuizen, Waters, Wiest, Zuiker.

1. Minutes of the 05/11/06 meeting were approved by consensus.
2. Old and new faculty introductions were made.
3. 2006-2007 Department Committee Assignments were distributed and approved by consensus.

* 4. Boyd moved, and Zuiker seconded, that the Undergraduate Program Revisions be as follows:

1. BS Mathematics – change the elective requirements from 15 to 12 and then require the capstone course; and
2. BST degree – no longer require Math 480 History of Mathematics and replace with a requirement for the capstone course.

A vote was taken and the motion passed.

5. By consensus the faculty decided that at the present time there were sufficient funds (\$101.00) in the Bereavement and colloquial fund that further donations were not needed at this time. In the future if the faculty advancement committee decides that additional funds are needed, they will contact the faculty via department meeting or e-mail.

The meeting was adjourned.

MSU Assessment Plan Preparation Form

- 1. Student Learning Outcome:** Knowledge about theoretical and applied mathematics.

Related College Goal: Providing degree programs that give students in-depth knowledge, inspire critical thinking skills, problem solving skills, oral and written communication skills and laboratory skills.

Related University Goal: The university will prepare students for careers and for life-long learning by providing focused undergraduate pre-professional programs.

Method of Assessment: Students will participate in an undergraduate research project. The instructor supervising these projects will assess a student's knowledge of calculus, linear algebra, abstract algebra, real analysis and/or discrete mathematics during the background study required to prepare for the research project. The instructor will report to the departmental assessment committee this assessment on a scale from 1 (lacking basic knowledge) to 5 (very knowledgeable).

Who assessed: All students majoring in mathematics or mathematics education will be required to take Math 492, Mathematics Capstone Experience. The assessment will be completed in that course.

When assessed: The assessment report will be completed at the end of the semester every time the course Math 492 is offered.

Standard of Mastery: The standard of mastery for this outcome is a score of 3 or better. The departmental goal will be to have all students score 4 or 5.

What's to be Learned: The outcome of this assessment will determine whether or not students have retained the basic knowledge from the courses Math 121, 122, 247, 290, 316, 345 and/or 375. If there is a high percentage of students failing the standard of mastery, then the department will need to re-evaluate the scope of the prerequisite courses.
- 2. Student Learning Outcome:** Basic skills in applying mathematical definitions and theorems to solve new problems.

Related College Goal: Providing degree programs that give students in-depth knowledge, inspire critical thinking skills, problem solving skills, oral and written communication skills and laboratory skills.

Related University Goal: The university will prepare students for careers and for life-long learning by providing focused undergraduate pre-professional programs.

Method of Assessment: Students will participate in an undergraduate research project. The instructor supervising these projects will assess a student's ability to apply mathematical techniques used in the methodology section of the research project and to interpret them in the results section of the research project. The instructor will report to the departmental assessment committee this assessment on a scale from 1 (unable to perform basic techniques) to 5 (very capable).

Who assessed: All seniors majoring in mathematics or mathematics education will be required to take Math 492, Mathematics Capstone Experience. The assessment will be completed in that course.

When assessed: The assessment report will be completed at the end of the semester every time the course Math 492 is offered.

Standard of Mastery: The standard of mastery for this outcome is a score of 3 or better. The departmental goal will be to have all students score 4 or 5.

What's to be Learned: The outcome of this assessment will determine whether or not students can apply mathematical techniques in a research project. If there is a high percentage of students failing the standard of mastery, then the department will need to re-evaluate the scope of Math 290, 316, 345 and 375.
- 3. Student Learning Outcome:** A working knowledge of how to construct mathematical definitions, theorems and proofs.

- Related College Goal:** Providing degree programs that give students in-depth knowledge, inspire critical thinking skills, problem solving skills, oral and written communication skills and laboratory skills.
- Related University Goal:** The university will prepare students for careers and for life-long learning by providing focused undergraduate pre-professional programs.
- Method of Assessment:** Students will participate in an undergraduate research project. The instructor supervising these projects will assess a student's ability to construct mathematical definitions, theorems and proofs in the methodology section of the research project. The instructor will report to the departmental assessment committee this assessment on a scale from 1 (not skilled in constructing definitions, theorems and proofs) to 5 (very capable).
- Who assessed:** All seniors majoring in mathematics or mathematics education will be required to take Math 492, Mathematics Capstone Experience. The assessment will be completed in that course.
- When assessed:** The assessment report will be completed at the end of the semester every time the course Math 492 is offered.
- Standard of Mastery:** The standard of mastery for this outcome is a score of 3 or better. The departmental goal will be to have all students score 4 or 5.
- What's to be Learned:** The outcome of this assessment will determine whether or not students can construct mathematical definitions, theorems and proofs. If there is a high percentage of students failing the standard of mastery, then the department will need to consider creating a second course in mathematical foundations.
4. **Student Learning Outcome:** Ability to write a professional mathematical report.
- Related College Goal:** Providing degree programs that give students in-depth knowledge, inspire critical thinking skills, problem solving skills, oral and written communication skills and laboratory skills.
- Related University Goal:** The university will prepare students for careers and for life-long learning by providing focused undergraduate pre-professional programs.
- Method of Assessment:** Students will participate in an undergraduate research project. Each student will be required to present a written report on the project. The instructor will report to the departmental assessment committee this assessment on a scale from 1 (poorly written) to 5 (very well written).
- Who assessed:** All seniors majoring in mathematics or mathematics education will be required to take Math 492, Mathematics Capstone Experience. The assessment will be completed in that course.
- When assessed:** The assessment report will be completed at the end of the semester every time the course Math 492 is offered.
- Standard of Mastery:** The standard of mastery for this outcome is a score of 3 or better. The departmental goal will be to have all students score 4 or 5.
- What's to be Learned:** The outcome of this assessment will determine whether or not students can write a professional mathematical report. If there is a high percentage of students failing the standard of mastery, then the department will need to consider how to require more technical writing in our courses.
5. **Student Learning Outcome:** Ability to communicate a professional mathematical report orally.
- Related College Goal:** Providing degree programs that give students in-depth knowledge, inspire critical thinking skills, problem solving skills, oral and written communication skills and laboratory skills.
- Related University Goal:** The university will prepare students for careers and for life-long learning by providing focused undergraduate pre-professional programs.
- Method of Assessment:** Students will participate in an undergraduate research project. Each student will be required to present a seminar talk on the project. The instructor will report to the departmental assessment committee this assessment on a scale from 1 (poorly presented) to 5 (very well presented).

Who assessed:	All seniors majoring in mathematics or mathematics education will be required to take Math 492, Mathematics Capstone Experience. The assessment will be completed in that course.
When assessed:	The assessment report will be completed at the end of the semester every time the course Math 492 is offered.
Standard of Mastery:	The standard of mastery for this outcome is a score of 3 or better. The departmental goal will be to have all students score 4 or 5.
What's to be Learned:	The outcome of this assessment will determine whether or not students can present a professional mathematical talk. If there is a high percentage of students failing the standard of mastery, then the department will need to consider how to include more oral presentations in our courses.
6. Student Learning Outcome:	Professional attitude for graduate work in mathematics, teaching mathematics or employment in business or industry.
Related College Goal:	Providing degree programs that give students in-depth knowledge, inspire critical thinking skills, problem solving skills, oral and written communication skills and laboratory skills.
Related University Goal:	The university will prepare students for careers and for life-long learning by providing focused undergraduate pre-professional programs.
Method of Assessment:	Students will participate in an undergraduate research project. Each student will complete a survey asking him/her to express his/her attitude towards doing the project. The survey will include questions to determine a level of confidence in his/her abilities to apply mathematical methods, confidence in presenting the results both orally and in writing, and confidence that he/she is well prepared to enter graduate school in mathematics, teach mathematics or use mathematics in business or industry.
Who assessed:	All seniors majoring in mathematics or mathematics education will be required to take Math 492, Mathematics Capstone Experience. The survey will be completed in that course and forwarded directly to the departmental assessment committee.
When assessed:	The assessment report will be completed at the end of the semester every time the course Math 492 is offered.
Standard of Mastery:	The standard of mastery for this outcome is to have a student express positive attitudes toward the projects and confidence in his/her abilities. The departmental goal will be to have all students express positive attitudes toward the projects and confidence in their abilities
What's to be Learned:	The outcome of this assessment will determine whether or not students have the attitudes and confidence to use mathematics in their careers. If there is a high percentage of students failing the standard of mastery, then the department will need to consider how to engage students more completely within the community of mathematicians.

College of Science, Engineering and Technology
Curriculum Committee Meeting Minutes
WA 303, Tuesday, October 31, 2006

Present: Harry Petersen (AMET), Beth Lavoie (Biology), Jim Rife (Chemistry/Geology), Gregg Asher (CIS), Julio Mandojana (ECET), Brian Wasserman (IDCM), Dan Singer (Math/Statistics), Karen Chou (ME/CivE), Youwen Xu (Physics/Astronomy), Mahbubur Syed (UCAP Representative for CSET).

Guests: David Haglin (CIS), Bill Hudson (ECET)

1. The meeting was called to order at 8:06 AM.
2. The minutes of 10-24-2006 meeting was approved as written.
3. Karen Chou thanked Jim Rife and Gregg Asher for chairing the 10-24-06 meeting.
4. David Haglin and Bill Hudson attended in order to clarify any confusion in the proposal CIS and ECET submitted. Bill Hudson also brought some of the previously required documentation to the committee for reviewing.
5. The committee reviewed 165 proposals. 164 proposals were approved contingent upon the required materials submitted in proper format. Please see attached spreadsheet for details. Proposal 07168 was tabled for insufficient of information.
3. Jim Rife left at 9 AM, and Beth Lavoie left at 9:20 AM, due to prior commitment.
4. Several members of the committee suggested UCAP to allow "Class action" for simple proposals such as change of designators or change of prerequisites. It would save the related parties a lot of work.
5. Two proposals were delivered to us yesterday (10-30-06) afternoon at 4 PM. Many committee members did not have a chance to review the proposal. They are general education proposals. We may vote on these proposals using email if possible.

Meeting adjourned at 9:50 am.

Respectfully submitted,

Youwen Xu, Secretary

