### Packet Contents

| 1.1 | Summary |

### New Course

| 1.2 | MATH 3069/5069 Mathematics and Culture (3 credits) |

| 1.8 | Signatures |
BSU Curriculum Forms

Form 1

Curriculum Modification Summary

College: Arts and Sciences
Department: Mathematics and Computer Science
Proposer: Dr. Derek Webb
Proposer’s position: Chair, Department of Mathematics and Computer Science

Describe the modification(s) you propose, and how it (they) will work to students’ advantage. (This description and explanation will be included in Curriculum Report packets forwarded to the Faculty Senate.):

I propose the creation of a new course titled Mathematics and Culture. This course will introduce students to the relationships between mathematics and cultures and how an understanding of these relationships can increase learning and success in the mathematics classroom. The main focus of this course is on current cultures and their mathematics although some history of cultural mathematics will be covered. Cultures from around the world will be examined and students will also be given the opportunity to study cultures of particular interest to them or of particular relevance to their career as an educator. This course is designed for students studying to become and students who already are mathematics educators.

Modifications proposed (specify number of each):

_____Course Modification(s) (form 2)
___X_ New Course(s) (form 3)
____Course Drop(s) (form 4)
_____Program Modification(s) (form 5)
_____New Program(s) (form 6)
_____Program Drop(s) (form 7)

The modifications affect (check):

_____Liberal Education
___X__Undergraduate Curriculum
___X__Graduate Curriculum
_____Teacher Licensure Program(s)
BSU Curriculum Forms

Form 3

New Course Form

Course Number: MATH 3069/5069
  Undergraduate: MATH 3069
  Graduate: MATH 5069

Course Title: Mathematics and Culture

Course Description: This course will introduce students to the relationships between mathematics and cultures and how an understanding of these relationships can increase learning and success in the mathematics classroom. The main focus of this course is on current cultures and their mathematics although some history of cultural mathematics will be covered. Cultures from around the world will be examined and students will also be given the opportunity to study cultures of particular interest to them or of particular relevance to their career as an educator. This course is designed for students studying to become and students who already are mathematics educators. Prerequisite(s): Junior-level status, graduate status, or consent of instructor.

Credits: 3
Prerequisite(s): Junior-level status, graduate status, or consent of instructor

1. Reason(s) for creating this course:

Mathematics and culture is a growing area of research both nationally and internationally. This course will be of interest and value to in-service and pre-service teachers. There is a growing interest amongst educators as to how to better connect with students of various cultures and backgrounds.

Offering this course is timely and will be of interest to K-12 mathematics education students and teachers across MN. The Mathematical Association of America (The Mathematical Association of America is the largest professional society that focuses on mathematics accessible at the undergraduate level.) has a page dedicated to ethnomathematics literature and a recent feature story. There is also the Journal of Mathematics and Culture and the International Study Group on Ethnomathematics.

2. How often will this course be offered?

At most, once per year during the summer.

3. What are the student learning outcomes for the course (please precede each outcome with "Students will…")?

• Students will develop an understanding of the relationship between mathematical ideas and cultures.
• The idea that mathematics is value- and culture-free will be challenged and students will appreciate why this matters in mathematics education.
• Students will learn how to modify traditional mathematics education so it is culturally relevant.
• Students will discover that all cultures engage in mathematical activities.
• Students will learn how to alter currently used lesson plans or develop new lesson plans that incorporate cultural aspects that are relevant to their students.

4. What are the major content areas for the course?
   • Mathematics and cultures – examples from around the world with an emphasis on cultures indigenous to the north-central United States
   • Mathematics principles and standards – NCTM, Common Core, and other recommendations from the MAA and AMA
   • Culture-specific mathematics lessons and activities
   • Equity in the mathematics classroom
   • Bishop’s six
   • Designing culturally relevant lesson plans

5. Is this course repeatable for credit, and if so, what is the maximum number of credits that can be earned?

NO

6. If this course is intended primarily for off-campus delivery (not offered on campus), what delivery mechanism will be used?

The course will be delivered entirely online.

7. What is the projected maximum class size (cap)?

25

8. What qualified faculty will be available to teach this course?

Dr. Derek Webb
NOTE WELL: Department and dean, in approving this proposal, attest both to the adequacy of the qualifications of faculty here named, and to their availability to teach the course at the frequency specified above, without excessive overload or disruption to other curriculum.

9. What additional library and other resources need or should be provided for this course, that are not already available?

None

10. What special personal property or service fee(s) would be charged to students taking this course? These charges would be for 1) items that are retained by the student and have an educational or personal value beyond the classroom, or 2) services that are on the student’s behalf (see MnSCU Board Policy 5.11).

None

11. Attach a sample syllabus for the course. Note: if this course is double-numbered (u-grad/grad), the syllabus must include an additional component for graduate students.
Mathematics and Cultures  
MATH 3069/5069  
Bemidji State University

Instructor Contact Information
Name: Dr. Derek Webb  
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Phone: 218-755-2846  
Website: http://faculty.bemidjiSTATE.edu/dwebb/  
Office Hours: Email me anytime

Overview of the Course / Course Description
This course will introduce students to the relationships between mathematics and cultures and how an understanding of these relationships can increase learning and success in the mathematics classroom. The main focus of this course is on current cultures and their mathematics although some history of cultural mathematics will be covered. Cultures from around the world will be examined and students will also be given the opportunity to study cultures of particular interest to them or of particular relevance to their career as an educator. This course is designed for students studying to become and students who already are mathematics educators.

Required text, materials, and software
- Math is a Verb – Activities and Lessons from Cultures Around the World by Jim Barta, Ron Eglash, and Cathy Barkley
  - Please order this book in advance of the class to ensure delivery.
- All other materials to be used in the class are freely available and students will be able to access them online or through D2L.

Technology Requirements and Expectations
- Reliable internet access and access to Desire to Learn (D2L): https://bemidjiSTATE.ims.mncsu.edu/ The content of this course is housed in Desire to Learn.
- Students are expected to be comfortable with using the Internet to access online resources
• The preferred format for submission of assignments is electronically using Microsoft Word or a PDF file. If you do not have access to Microsoft Word or cannot create PDF files, contact me and we will make alternative arrangements.

**Learning Objectives / Course Objectives**

• Students will develop and understanding of the relationship between mathematical ideas and cultures.
• The idea that mathematics is value- and culture-free will be challenged and students will appreciate why this matters in mathematics education.
• Students will learn how to modify traditional mathematics education so it is culturally relevant.
• Students will discover that all cultures engage in mathematical activities.
• Students will learn how to alter currently used lesson plans or develop new lesson plans that incorporate cultural aspects that are relevant to their students.

The following topics will be covered in the course:
• Mathematics and cultures
• Mathematics principles and standards
• Culture-specific mathematics lessons and activities
• Equity in the mathematics classroom
• Bishop’s six
• Designing culturally relevant lesson plans

**Course Requirements and Values**

All course requirements must be completed on time. A schedule of due dates for all required materials will be posted at the beginning of the class in D2L.

• **Class Assignments** – All students are expected to complete class assignments by the due dates posted on the schedule. Assignments include readings and students are expected to read each assigned reading.

• **Class discussions** – All students are expected to engage in class discussions through D2L throughout the class. Discussion topics will be created and discussions will be moderated by the instructor. All discussion postings made by students should be professional and relevant to the topic. All discussions will be public to the entire class. Students will be graded on level of involvement and depth of thought. Students will not be graded on particular viewpoints expressed or on anything else that is deemed subjective in nature. Students are encouraged to express their own ideas and thoughts and to help maintain stimulating and intellectual discussions.

• **Capstone Paper** – A capstone research paper on a particular culture and it’s mathematics is required for this course. Capstone paper details and expectations can be found in the file titled “Capstone Paper” in D2L. The due date for the capstone paper is posed on the schedule.
**Graduate Student Expectations** – All graduate students in the course are expected to complete the graduate student version of the capstone paper which is explained in the capstone paper file in D2L. Graduate students are also expected to engage in class discussions at a level and sophistication appropriate for graduate study. It is likely that all graduate students in this class are in-service teachers and graduate student expectations for the capstone paper will reflect this. If you are a graduate student and you are not an in-service teacher, please contact me regarding your capstone paper.

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Assignments and Discussions (assignments in D2L)</td>
<td>70%</td>
</tr>
<tr>
<td>Capstone Paper</td>
<td>30%</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

### Grading Scale

The following grading scale will be used in this class:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percent Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>[90%, 100%]</td>
</tr>
<tr>
<td>B</td>
<td>[80%, 90%)</td>
</tr>
<tr>
<td>C</td>
<td>[70%, 80%)</td>
</tr>
<tr>
<td>D</td>
<td>[60%, 70%)</td>
</tr>
<tr>
<td>F</td>
<td>[0%, 60%)</td>
</tr>
</tbody>
</table>

### Course Policies

**Late Assignments:** All assignments must be submitted on or prior to the due date. Assignments that are not submitted on time will receive a grade of zero unless the student has received prior written (email) approval from the instructor or has a valid reason why the assignment could not be completed on time.

**Incomplete:** An incomplete (I) grade will only be given in documented emergency situations. Bemidji State University policies will be followed.

### Disability Services

Upon request this document can be made available in alternate formats. If you have a documented disability and need accommodations for this course or have any questions regarding disability services, please contact the Disability Services Office:

[http://www.bemidjistate.edu/students/services/disability/](http://www.bemidjistate.edu/students/services/disability/)
BSU Curriculum Forms

Form 8

Signatures

Dr. Derek Webb / Chair of Mathematics Department / 11.10.2016
Proposer / Title / Date

Dr. Derek Webb / Chair of Mathematics and Computer Science Department / 11.10.2016
Chair or Director / Department or Program / Date
Note: "All departmental recommendations [on curriculum] must be reviewed and approved by the department's faculty."--IFO/MnSCU Master Agreement 2009-2011, 20.A.3 (p. 80).

Dr. Colleen Greer / Dean of College of Arts and Sciences / 12.15.16
Dean / College / Date

[Note: at this point, packet goes to Academic Affairs Office.]