Math 602 (Fall 2012) Teaching Collegiate Mathematics

Time: Mondays, 4.40-7.00 pm  
Place: Math 108  
Instructor: Dr. Bharath Sriraman  
Phone and E-mail: 243-6714; sriramanb@mso.umt.edu  
Office: Math 301  
Office hours: To be announced

This is a 600 level mathematics education course offered on a 3 year rotation which emphasizes issues of teaching and learning mathematics at the university level. The course will substantially benefit graduate students aiming at teaching careers as well as TA’s interested in improving their teaching experiences.

The objectives of this course are:
- To survey recent efforts to reform college mathematics content and teaching as advocated by the AMS-MAA and mathematics education research
- To familiarize students with reform efforts within Calculus, Abstract Algebra, Mathematical Proofs and the History of Mathematics
- To create “micro” teaching experiences, opportunities for individual reflection and group critique and analysis of teaching experiences
- To familiarize students with frameworks for analyzing collegiate teaching.

Text

Supplemental readings will be provided by the instructor

List of Useful Texts


ASSIGNMENTS AND GRADE DISTRIBUTION

1. DISCUSSION FACILITATOR/THMES AND ISSUES FOR EACH READING [2] 10%

2. 6 Teaching Experiences (30 minutes each) 40%

3. Journal chronicling individual teaching experiences, analysis and reflections
Due the week after 20%

4. Group Analysis of teaching experiences
   [Feedback to Presenters] 10%

5. Write up of One teaching Module 20%

Descriptions of assignments

1. Discussion Facilitator/Moderator [2 per student]

   Each student will be the discussion facilitator/moderator twice over the course of the semester.
   This person is responsible for constructing a typed Outline with Themes, Issues & Questions based on the reading. This person will also “chase down” one additional reference related to the reading and provide a copy of this reading to the class.
   A Detailed Outline that summarizes the readings and questions will be handed to me; An outline with questions should be handed to students in the class.

   This person will moderate the discussion by keeping responses focused on the chapters being discussed. While opinions based on personal experience have their value, off the cuff statements (which do not pertain to the discussion) will be redirected by the teacher and/or the moderator. Every math content course you have taken so far should serve as a fertile source to dig into while you hold the floor.

2. Teaching Experiences [6 per student]

   Omnium rerum principia parva sunt - Cicero
   [Everything has a small beginning]

   This is essentially the crux of this course. Students will choose two content areas (For instance, Calculus, Discrete Math, Contemporary Math, Abstract Algebra, etc...) and teach one particular topic from the content area to the class. The first “content” area will be based on the “Algebra of Investment” [Imagine this to be a lesson in a 100 level Math service course for non-majors]. The teaching will be video-taped and analyzed (both individually and as a class). Individual reflection and group feedback will be used to modify and re-teach and re-re-teach the same topic. An outside observer may be invited by the instructor to observe and comment on your teaching in its third iteration.
3. Journal
Each student will maintain a journal in which they chronicle their teaching experiences, reflections, and reactions to feedback over the course of the semester. For each teaching experience there should be at least one-page entry before the teaching (anticipatory), at least one page after the teaching (reflective), and at least one page reacting to the feedback (reactive). In all you will have at least $3 \times 6 = 18$ pages in your journals.

4. Group Analysis of teaching experiences
Each student will give a constructive and critical written feedback to other students after their teaching. Over the course of the semester a framework for analyzing videos will be developed.

5. Write Up of One Teaching Module
You will write an 8-10 page [double-spaced, typed] paper about the specific topic you have taught in the class. In your write-up you should describe and discuss the research done on the teaching and learning of your particular topic. You are to include at least 7 and at most 10 specific references in your paper. The paper is to be written in APA style (including the reference list).

**Administrative Policies:**

**Important Dates:**

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<tr>
<th>Date</th>
<th>Event</th>
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<tr>
<td>Monday, Sept 3</td>
<td>Labor Day Holiday</td>
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<td>Monday, Sept 17, 5:00 pm</td>
<td>Last Day to Add/Drop by CyberBear.</td>
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<td>Also last day to select AUDIT option.</td>
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<td>After this date, a drop results in W on</td>
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<td>transcript and no refund is given.</td>
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<td>October 29</td>
<td>Last Day to Drop by Paper Form. Transcript</td>
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<td>will show WP or WF. After Oct. 29, student</td>
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<td>with instructor signature and</td>
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<td>recommendation. The petition also requires</td>
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<td>the Dean’s signature. This option ends on</td>
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<td>December 7.</td>
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<td>Tuesday, Nov 6</td>
<td>Election Day, No classes, Offices closed</td>
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<td>Monday, Nov 12</td>
<td>Veterans Day, no classes</td>
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<td>Wednesday, Nov 21</td>
<td>Student Travel Day, no classes</td>
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<td>Thursday-Friday, Nov 22-23</td>
<td>Thanksgiving Holiday, no classes</td>
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<tr>
<td>Friday, Dec 7</td>
<td>Last Day of regular classes</td>
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Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. Academic misconduct is defined as all forms of academic dishonesty and the Student Conduct Code. The Code is available for review online at [http://www.umt.edu/AS/APSA/index.cfm/page/1321](http://www.umt.edu/AS/APSA/index.cfm/page/1321)

In particular, Student Conduct Code Section IV.a.5 identifies the following violations:

Submitting false information: Knowingly submitting false, altered, or invented information, data, quotations, citations, or documentation in connection with an academic exercise
Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). “Reasonable” means the University permits no fundamental alterations of academic standards or retroactive modifications. For more information, please consult http://www.umt.edu/disability