Writing Course Review Form (12/1/08)

I. General Education Review - Writing Course

<table>
<thead>
<tr>
<th>Dept/Program Subject</th>
<th>Course # (i.e.)</th>
<th>Math 406</th>
</tr>
</thead>
</table>

| Course Title         | History of Mathematics |

II. Endorsement/Approvals

Complete the form and obtain signatures before submitting to Faculty Senate Office.

<table>
<thead>
<tr>
<th>Please type / print name</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor</td>
<td>Bharath Sriraman [Spring 07, 08]</td>
<td>01/29/09</td>
</tr>
<tr>
<td>Phone / Email</td>
<td>406-243-6714</td>
<td><a href="mailto:sriramanb@mso.umt.edu">sriramanb@mso.umt.edu</a></td>
</tr>
<tr>
<td>Program Chair</td>
<td>David Patterson</td>
<td></td>
</tr>
</tbody>
</table>

III. Overview of the Course Purpose/Description: Provides an introduction to the subject matter and explains course content and learning goals.

The goal of the course is to familiarize students with mathematics starting from the Sumerians onto the period before the dawn of modern set theory. We will pay attention to particular time periods and individuals within those time periods whose work has left a lasting impression on the field of mathematics. Emphasis is on developing student's abilities to read historical literature, understand the mathematical techniques, and hone writing abilities in expository scientific writing.

1. To imbue a sense of the development of mathematical ideas over time.
2. To develop a knowledge of the times and places where ideas developed, and the ways in which such ideas were transmitted across cultures and time.
3. To learn about the people behind the mathematics that is taught today, and to understand the contributions of other cultures to mathematics.
4. To improve students' abilities to write in the context of mathematics.

IV. Learning Outcomes: Explain how each of the following learning outcomes will be achieved.

<table>
<thead>
<tr>
<th>Student learning outcomes: Use writing to learn and synthesize new concepts</th>
<th>Reading historical literature on the development of the same mathematical techniques in different cultures/locations written in different pre-modern notation, and being able to synthesize these ideas to explain the modern mathematical concept that grew out of these techniques.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulate and express opinions and ideas in writing</td>
<td>See Research Paper description in appended Course Syllabus</td>
</tr>
<tr>
<td>Compose written documents that are appropriate for a given audience or purpose</td>
<td>Archival research based on course readings with the aim of composing a summative written paper on a chosen topic</td>
</tr>
<tr>
<td>Revise written work based on constructive feedback</td>
<td>Periodic feedback from instructor on prior drafts</td>
</tr>
</tbody>
</table>
Find, evaluate, and use information effectively
(see http://www.lib.umt.edu/informationliteracy/)
Students are given a primer on reliable
databases, scholarly journals and books. Non-peer reviewed sources or information
obtained from non-scholarly sources are not allowed.

Begin to use discipline-specific writing
conventions
Reading examples of expository writing. Students are provided anonymous copies of exemplary papers from the previous semesters.

Demonstrate appropriate English language
usage
Students are required to use APA style

V. Writing Course Requirements Check list

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is enrollment capped at 25 students? If not, list maximum course enrollment. Explain how outcomes will be adequately met for this number of students. Justify the request for variance.</td>
<td>Yes</td>
</tr>
<tr>
<td>Are outcomes listed in the course syllabus? If not, how will students be informed of course expectations?</td>
<td>Yes [see attached course syllabus from Spring 2008]</td>
</tr>
<tr>
<td>Are expectations for Information Literacy listed in the course syllabus? If not, how will students be informed of course expectations?</td>
<td>Yes [see course syllabus that stresses the need for archival research]</td>
</tr>
<tr>
<td>Are detailed requirements for all written assignments included in the course syllabus? If not how and when will students be informed of written assignments?</td>
<td>Yes</td>
</tr>
<tr>
<td>What instructional methods will be used to teach students to write for specific audiences, purposes, and genres?</td>
<td>Samples of writing are provided from a wide spectrum of journals. These readings are discussed on their accessibility, style of writing, and the sophistication of the mathematics conveyed.</td>
</tr>
<tr>
<td>Will written assignments include an opportunity for revision? If not, then explain how students will receive and use feedback to improve their writing ability.</td>
<td>Yes</td>
</tr>
</tbody>
</table>

VI. Writing Assignments: Please describe course assignments. Students should be required to individually compose at least 16 pages of writing for assessment. At least 50% of the course grade should be based on students’ performance on writing assignments. Clear expression, quality, and accuracy of content are considered an integral part of the grade on any writing assignment.

Formal Graded Assignments
450 out of 700 points is formally graded writing assignments [which is 64% of the course grade]

Informal Ungraded Assignments
Informal feedback is continually provided to students as they are developing their research papers.

VII. Syllabus: Paste syllabus below or attach and send digital copy with form. ↓ The syllabus
should clearly describe how the above criteria are satisfied. For assistance on syllabus preparation see: http://teaching.berkeley.edu/bgd/syllabus.html

Paste syllabus here. Syllabus appended

MATH 406 History of Mathematics Spring 2008

Time: MWF 12:10 - 1:00 pm
Place: Room 311
Instructor: Dr. Sriraman
Office: 301
Office Hours: MW: 9:40 - 11:00
Phone & E-mail: 243-6714; sriramanb@mso.umt.edu
Pre-Requisite: Math 305

Other Interesting Sources (not required)

A Short Account of the History of Mathematics by W. W. Rouse Ball

Africa Counts: Number and Pattern in African Culture by Claudia Zaslavsky
ISBN: 1556523505 Publisher: Chicago Review Press, Incorporated

Calculus Wars: Newton, Leibniz, and the Greatest Mathematical Clash of All Time by Jason Socrates Bardi
ISBN: 1560257067 Publisher: Avalon Publishing Group Incorporated

The Elements: Complete and unabridged. Barnes and Nobles

Supplementary handouts provided by the Instructor

Course Purpose and Objectives

The goal of the course is to familiarize students with mathematics starting from the Sumerians onto the period before the dawn of modern set theory. We will pay attention to particular time periods and individuals within those time periods whose work has left a lasting impression on
the field of mathematics. Emphasis is on developing student's abilities to read historical literature, understand the mathematical techniques, and hone writing abilities in expository scientific writing.

Given the fact that the majority of the literature on the history of mathematics is predominantly Euro-centric, we will purposely examine the mathematics created in Egypt, Mesopotamia, China, India and Islam (as well as Africa - non Egyptian) independently of the work occurring in Europe.

Learning goals:
5. To imbue a sense of the development of mathematical ideas over time.
6. To develop a knowledge of the times and places where ideas developed, and the ways in which such ideas were transmitted across cultures and time.
7. To learn about the people behind the mathematics that is taught today, and to understand the contributions of other cultures to mathematics.
8. To improve students’ abilities to write in the context of mathematics.

Other goals:

Over the course of the semester, students will also be required to take a critical stance on several issues. Specifically:
- assess popular myths about mathematics (science) or competing histories of the origins and/or models of the development of mathematics (science)
- assess mathematics (science) as an authoritative and powerful institution controlling knowledge production
- is mathematics (science) value-free; consider gender, class, race, non-Western approaches and contributions, etc.

Administrative Policies: [** Important]:
Feb. 9 is the last day to ADD or DROP courses without a fee charged.
March 5 is the last day to drop with instructor and advisor signatures. This option ends on May 4.
Note: After March 5 a grade or WP or WF must be assigned and will appear on your transcript.
April 27: Last day to withdraw from university (drop all courses) [Petition required]
Academic misconduct (plagiarism, misappropriation of work, as defined by the 2006-2007 Catalog, p.21) will not be tolerated

Note: This is a 400 level course and I expect you to take the initiative to complete all the assignments in a timely manner. You will have the following assignments to complete over the course of the semester

Assignments
Group Project [ 2 ] 300
[writing component of group projects is 50%]
Research Papers  [  2 ]   300
FINAL EXAM [IN CLASS]           100
TOTAL                              700

**Grading Scale:**
90-100   A ;   80-89.9       B ;  70-79.9    C ;  60-69.9   D ;  Below 60     F

**Final Exam:**       May 10th from 10.10 -12.10 p.m *(No exceptions)*

**DESCRIPTION OF ASSIGNMENTS**

**GROUP PROJECT**
We will take a project-based approach to the material in the course, complemented by lectures from the instructor and other invited speakers. The class will be divided into groups of 4, and each group will select two topics of interest from various sections of the book.

After reading a topic, the group is responsible for constructing a two page Themes and Issues for the reading. This entails finding three other sources for the particular topic and assessing whether the textbook portrays the history accurately; whether certain contributions were overlooked; discrepancy in the demonstrated techniques. There will be two-three additional pages devoted to Techniques and Examples, where every person in the group will learn a particular historical technique and apply it to some problems. In all the project paper will consist of approximately five pages of expository scientific writing.

Group Project 2

**RESEARCH PAPERS:**
_Omnium rerum principia parva sunt - Cicero_
[Everthing has a small beginning]

This is A VERY IMPORTANT COMPONENT OF THE COURSE FOR YOU TO FULFILL THE UPPER DIVISION WRITING REQUIREMENT. Each Student will choose two historic areas (For instance: Enumeration systems and modern arithmetic; A comparison of African mathematics with the Greek tradition; Indian mathematics and approximation techniques; Chinese mathematics and Diophantine Equations; Arab mathematics and the theory of equations; Bolzano and the advent of analysis; Fermat and Calculus; Connections between the Greek and Indian mathematics; The history of proof in relation to Greek and non-Greek mathematics, etc, etc) and research the particular topic in depth. The research should build of the readings we are embarking on this semester and the final paper should present a coherent synthesis, extensions and evolution of mathematical ideas. Formatting guidelines will be provided over the course of the semester. The papers will be presented in class towards the end of April The second paper should substantially build and extend on the first one and present more historical and mathematical details

The following parameters will be applied to determine your grade on the first and second paper.
1. The paper must meet the following specifications (the first paper should be at least 7 pages single spaced, 1" margins, Font size 10).
2. The second paper should substantially extend the ideas in the first paper and must be at least 12 single spaced pages.
3. Paper should be typed in APA style
4. The bibliography/references must be appended as well as copies of pages from books/articles that were referred too. The more comprehensive the better.
5. The paper must contain a relative in depth exposition or narrative about one or two aspects of the topic and the relevant mathematics. The second paper will focus on only one particular aspect.
6. The research must be archival in nature, with no primary or secondary online references. This criteria will be stringently applied to the papers.
7. The criteria of novelty: The second paper should not simply extend the ideas from your 5 page outline, but also result in some new findings on the topic based on your archival research.
8. The paper should not parse or include quotes more than 30 words in length. This means you will have to read the ideas and reformulate it in your own words.
9. Timelines and prior drafts
   a. Please keep a time log with details of the tasks you engaged in.
   b. All prior outlines and drafts may also be appended to the project. This is helpful to me to assess how your ideas evolved.