COURSE SYLLABUS: MATHEMATICS 320
MATHEMATICS FOR ELEMENTARY SCHOOL TEACHERS

Instructor: Dr. Michael Scott
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  Office: 125 Cardwell Hall  Office Hours: TBA.

Class Information:
  Time and Place: MWF 1:30 PM, Room: CW 130
  Class Web Page: http://www.math.ksu.edu/~mbscott/math320/

Course Objective. Mastery of mathematical concepts in the K-8 curriculum.
The following set criteria offers a guideline for what mastery means and is what will be emphasized in this class.

- Problem Solving.
  - Place mathematical problems in context and explore their relationship with other problems.
  - Solve problems using multiple methods and analyze and evaluate the efficiency of the different methods.
  - Generalize solutions where appropriate and justify conclusions.
  - Use appropriate techniques to conduct investigations, make conjectures, and solve problems.

- Mathematics as Communication.
  - Articulate mathematical ideas verbally and in writing, using appropriate terminology.
  - Present mathematical explanations suitable to a variety of audiences with differing levels of mathematical knowledge.
  - Analyze and evaluate the mathematical thinking and strategies of others.
  - Use clarifying and extending questions to learn and to communicate mathematical ideas.
  - Use models, charts, graphs, tables, figures, equations, and appropriate media to present mathematical ideas and concepts.

- Mathematical Reasoning.
  - Reason both deductively and inductively.
  - Formulate and test conjectures, construct counter-examples, make valid arguments, and judge the validity of mathematical arguments.
  - Present informal and formal proofs in oral and written formats.

- Mathematical Connections.
  - Investigate ways mathematical topics are inter-related.
  - Apply mathematical thinking and modeling to solve problems that arise in other disciplines.
  - Illustrate (when possible), abstract mathematical concepts using applications.
  - Recognize how a given mathematical model can represent a variety of situations.
  - Create a variety of models to represent a single situation.

Grading Policy. Your grade will be based on the completion of assignments given in class as follows:

<table>
<thead>
<tr>
<th>Point Structure.</th>
<th>Points</th>
<th>Drop/Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Work and Class Presentations</td>
<td>100</td>
<td>2 lowest scores</td>
</tr>
<tr>
<td>Homework</td>
<td>100</td>
<td>2 lowest scores</td>
</tr>
<tr>
<td>Gateway Quizzes</td>
<td>100</td>
<td>12.5 points each pass or fail</td>
</tr>
<tr>
<td>Writing Assignments</td>
<td>100</td>
<td>Given weekly</td>
</tr>
<tr>
<td>Term Project</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Midterm Exams</td>
<td>200</td>
<td>Two 100 point hour exams</td>
</tr>
<tr>
<td>Final Exam</td>
<td>200</td>
<td>Comprehensive</td>
</tr>
<tr>
<td>Total</td>
<td>900</td>
<td></td>
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</tbody>
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Tentative Grading Scale.
- A 810 - 900 points
- B 720 - 809 points
- C 630 - 719 points
- D 540 - 629 points
- F Less than 540 points

Date: Spring 2004.
Course Components.

Preparation and Extra Credit. You can earn extra credit by reading the section we will cover in class beforehand. The sections to be covered in class will be posted on the class web page and updated throughout the semester. For extra credit, you may prepare a 4” x 6” note card about the section to be turned in at the beginning of the lecture. The specific instructions for preparing the cards will vary somewhat over the course of the semester and will be announced in class. Additionally, there may be other extra-credit opportunities during the semester.

Group Work and Class Presentations. Group Work will be given periodically throughout the semester. A group will usually consist of two to three people. The assignment will consist of a set of problems and selected groups will present their solutions to the class. Each group member will receive the same grade for that assignment on a 10 point scale. You cannot make-up Group Work assignments, but the two lowest Group Work grades will be dropped.

Homework. Homework will be assigned every week. Your homework must be in a specific format that will be given later. No late homework assignments will be accepted, but the two lowest homework grades will be dropped.

Gateway Quizzes. There will be eight online Gateway Quizzes worth 12.5 points each. Each quiz is pass/fail and will be given in the mathematics computer lab. You will have multiple opportunities to pass each quiz. Instructions on how to access the Gateway Quizzes will be given in class.

Writing Assignments. There will be a writing assignments due each Sunday at midnight and will be posted on the class message board. More information about this will be given in class.

Term Project. The term project will consist of a paper on a subject to be announced. More information about the project will be given in class.

Exams. The exam questions will for the most part come from the homework, group work, writing assignments, lecture notes, and material given on any handouts. No make-up midterms, or final exam will be given.

Important Dates.

Dates of Midterms: February 20, and April 14.
Date of Final: Tuesday, May 18, 11:50 PM - 1:30 PM.

Textbook Information.

- Knowing and Teaching Elementary Mathematics by Liping Ma. ISBN 0-8058-2901-1
- Class Reading Packet available at the Arts and Sciences Copy Center in the basement of Eisenhower Hall in room 11. The Copy Center does not accept credit cards.

Important Notices.

- Plagiarism and cheating are serious offenses and may be punished by failure on the exam, paper, or project, failure in the course, and/or expulsion from the University. For more information refer to the Kansas State University honor code at http://www.ksu.edu/honor.
- In this class you are allowed and even expected to work together unless otherwise informed. I will have you sign the honor pledge on any work where you are not to work someone else.
- If you have any condition, such as a physical or learning disability, which will make it difficult for you to carry out the work as I have outlined it or which will require academic accommodations, please notify me in the first two weeks of the course.