

Math 1110-004: The Spirit and Uses of Mathematics, Fall 2008

Class Meetings: Monday, Wednesday, Friday 2:00-2:50 PM, STAD 112

Instructor: Amy Keighley (Amy.Keighley@colorado.edu)

Office Hours: Tuesday 1:50-2:50pm, Thursday 9:50-10:50am, and Friday 12:50-1:50pm, in Math 366

Prerequisites. One year of high school algebra and one year of geometry **Book.** *A Problem Solving Approach to Mathematics for Elementary School Teachers*, by Billstein, Libeskind, and Lott (Addison Wesley Longman), 9th edition

Website. Please see

for homework assignments, exam review material, and other stuff relevant to the course.

Undergraduate Mathematics Resource Center: You may seek assistance with your math questions at the Undergraduate Mathematics Resource Center, which will open Monday August 25 at noon, and thereafter will be open (on school days only) Thursdays 8 AM - 6 PM, and Fridays 8 AM-2 PM, beginning August 25 and ending December 12, in Math 175. You may request help from any lab tutor.

VOLUNTEER!!. This semester, you will have the opportunity to volunteer as a “learning aide” during math sessions at Whittier Elementary in Boulder and/or Pioneer Bilingual Elementary in Lafayette. It’s fun, rewarding, will help you reinforce and use what you’re learning in this class, and looks good on your resume! See our web page (above) for details.

The goals of the course. This is a mathematics course, but it’s not. In other words, it’s unlike most math courses. It will not just be about manipulating equations, memorizing and applying formulas, and the like, but rather about how to solve problems and clearly communicate their solution, and how to look at, and see, math’s BIG PICTURE. Along the way, you will be exposed to some of the most beautiful ideas in mathematics.

ONE OF OUR PRIMARY GOALS IS TO HAVE FUN!! The most important BIG IDEA you can pass along to the youngsters you teach (if you’re going to teach; if not it’s still a great BIG IDEA) is that math can be, and is, fun. First, you need to believe it yourself. BELIEVE IT!! I’ll do my best to convince you.

Whom the course is designed for. Prospective elementary school teachers; any student in the liberal arts who is interested in the material covered.

QRMS warning. This course is not the quickest or easiest way to fulfill the QRMS requirement of the College of Arts and Sciences! You need to take both Math 1110 *and* Math 1120 to get credit for the QRMS requirement. On the other hand, a course like Math 1012 satisfies the requirement in one semester.

REQUIREMENTS AND GRADES. Here is what you will need to do in this course:

1. Homework. This will be assigned, and due, roughly every two weeks. No late homework will be accepted, but *your lowest two homework scores will be dropped.*

On days that homework is due, we will spend much of the period going over homework in class. *Feel free to discuss homework with your groupmates* (see requirement #2 below). Do as much of the homework as you can at home *before* the due date, so you can concentrate, in class, on problems that gave you difficulty.

Graded assignments will be returned in class. Homework equals **10%** of your course grade.

The first assignment is posted on the class website. Subsequent assignments will also be posted on this site. *Note that many of the exercises are solved in the back of the book.* But please *do everything you can* to figure out the problem before referring to the solutions. On the other hand, it's a great idea to *check your work* in the back, once you're done. **2. In-class group worksheets.** On numerous occasions (you can count on this at least once a week, maybe more), the last 20–25 minutes of the class period will be set aside for you to work on problems related to the material. You will do this work in small groups consisting of yourself and several of your classmates. (The class roster, and therefore the groups, will fluctuate a bit during the first week or so; ultimately we hope to settle down into groups of four or five or so.) This in-class work will make up another **15%** of your grade, with the lowest three worksheet scores being dropped.

3. In-class exams. There will be two during the semester, given on:

Wednesday, October 1 and Wednesday, November 5

respectively. Each exam will constitute **20%** of your final grade.

You will only be excused from an exam (including the final; see #5 below) in case of a *documented* illness or other emergency.

4. The GROUP term project. Here's your assignment: working TOGETHER with the other members of your group (which you will form in class over the first few weeks), be creative with math!! You have many options here, according to your talents, abilities, hobbies, and so on. If you like games, you can design and create a board game that involves math. If you're musical, you can write and/or perform a song with math lyrics. If you like to draw, you can do a picture that reflects geometrical ideas. If you like to build things, you can make a toy or machine whose workings involve mathematical principles. Etc.

The term project may be handed in *anytime* up to and including the last class on December 12. It will count towards **15%** of your final grade.

If your project is a performance piece (a song, a play, etc.), or if it's simply something you'd like to show the rest of the class, let me know in advance so we can try to schedule some class time for it near the end of the semester.

IMPORTANT NOTE: Each group member will be asked to grade the participation, on the term project, of the other members of the group. BE A GOOD GROUP CITIZEN! Don't force your group members to pick up your slack on the term project, or your term project grade may suffer for it!!

5. The final exam. It's on **Monday December 15, 4:30-7 PM**, in this room. It will constitute the remaining **20%** of your final grade. The final will *not* be cumulative.

6. Class participation. In borderline cases, class participation (not counting the mandatory group worksheets, above) will be taken into account in determining final grades.

7. General note: A commonly asked question is "Will my grades be curved?" The answer is yes, in the sense that your performance will be measured in relation to that of other students in the course. On the other hand, there are no rigid quotas of A's, B's, C's, etc. Please see our course webpage for important policy information regarding disabilities, religious holidays, classroom behavior, discrimination and harrassment, and the CU Honor Code.