M316L Fall 2012 Syllabus

Unique number: 55875
Time and Place: MWF, 11a-12n, RLM 6.118
Textbook: *Mathematics for Elementary Teachers with Activity Manual*, Beckmann, 3rd Edition and instructor provided course Explorations
Website: Accessible from BlackBoard, `http://courses.utexas.edu/`.

Instructor: Dr. Zachary Miner
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Office: RLM 12.144
Office hours: MWF 12n-1p; TuTh 10:30-11:30a

Course Description

This course is an analysis, from an advanced perspective, of the basic concepts and methods of geometry, statistics, and probability, including: representation and analysis of data; discrete probability, random events, and conditional probability; two- and three-dimensional geometry; measurement; similarity and congruence; coordinate geometry; and transformation. Problem solving will be stressed throughout.

Prerequisites

M 316K with a grader of C or better.

Relationship to other courses

M316L is the second of a two-course sequence. This course, as the name suggests, focuses on geometry, probability, and statistics.

Students in the primary audience (those working for EC-4 certification) will also take a math teaching methods course in the College of Education. M316K/L are not math teaching methods courses (please see a note from the mathematics education department below*).

Course goals

- To increase students' understanding of the mathematics of elementary school in order to help them improve their ability to teach mathematics at the elementary level. In particular, to help bring students up to the level of mathematics understanding outlined in the State Board for Educator Certification (SBEC) Standards for Early Childhood-Grade 5 (K-5). These can be downloaded from:

  http://www.tea.state.tx.us/index2.aspx?id=2147499971

- To have future teachers experience learning in some of the formats in which they will be expected to teach: using hands-on activities, in cooperative groups, in problem-based situations, and by discovery methods.

- To have future teachers practice in communicating mathematics. In particular, the following SBEC standards will be addressed throughout the course. The beginning teacher of mathematics is able to:

  - use questioning strategies to identify, support, monitor, and challenge students' mathematical thinking;
  - translate mathematical statements among developmentally appropriate language, standard English, mathematical language, and symbolic mathematics;
  - provide students with opportunities to demonstrate their understanding of mathematics in a variety of ways using a variety of tools; and
  - use the language of mathematics as a precise means of expressing mathematical ideas.

Grading

Your course average will be weighted as follows:

- Tests - 30%
- Participation, presentations and in-class work - 30%
- Homework - 10%
- Journal - 10%
- Final exam - 20%

Final grades will be determined by the following scale: 90-100 A; 80-89 B; 70-79 C; 60-69 D; 0-59 F.

Late policy

No late work will be accepted and **no exam make-ups** will be given without documentation justifying an exception (like a doctor's note or other record of a university-excused absence).

Tests

There will be two take-home exams, tentatively scheduled for 9/21 and 11/23, and one in-class exam, tentatively scheduled for 10/19.

Participation

We will spend the majority of our class time working on problems and explorations. You are expected be in class every day, participate in all class activities, contribute to the discussion, and present problems to the class. You will usually be working in groups, and I may collect the work that you do. The instructor reserves the right to deduct points for excessive absences or if you consistently choose not to participate.

Homework

These will be problems assigned each Friday, due at the beginning of class on the following Friday. These problems may end up being presented in class, so keep that in mind while preparing your written solutions. Your goal is for your solution to be clearly understood by your audience, so work towards clear, easily understood solutions.

Journal

As part of your coursework for this class, you are required to keep a class-related journal. The journal will serve several purposes, including: encouraging you to reflect on your problem solving behavior and other topics related to mathematics, giving you practice writing about mathematics, providing feedback to me, and providing another means for me to give feedback to you.

You are expected to make journal entries at least twice a week, with each entry being at least one half of a handwritten, standard sized page, or the equivalent word processed. Feel free to write more than half a page per entry if you have more to say. *Please date each entry and keep them in chronological order.*

Periodically I will ask you to write on a specific topic. If I have not made a journal assignment, the choice will be up to you. Possibilities include:

- Your reactions (thoughts, and feelings if you wish) to topics discussed in class.
- Analysis of how you go about solving problems (e.g., what strategies you most often use), and how you might do so better.

- Insights you have had into various mathematical concepts.
- Comparing and contrasting how you and other students go about solving problems.
- Comparing and contrasting different solutions to the same problem.
- How you have used ideas and strategies discussed in this class in your other classes or other situations and problems in your life, or how these relate to what we've discussed in class.
- How you might incorporate ideas in this class in your other classes.
- How you might use what you learned in solving one problem in solving another.
- Suggesting generalizations of problems we have discussed in class or in the homework.
- Describing problems you have made up, and why, when, and how they might be good problems.

You should *not* use your journal to record what went on in class (except brief accounts to introduce your own reactions to this) or to write up solutions to problems. You are expected to write in your journal outside class. If you wish to take class notes, you should keep these in a separate notebook or folder.

I will collect, read, and make comments on your journal every other week. Your journal grade will depend on the thoughtfulness that went into your writing, and not on the correctness of the mathematical content of your journal. *Journals will be due every other Monday.*

*A note from the mathematics education department

As part of your preparation to become elementary teachers, you will be taking three courses dealing with mathematics. The first two of those courses M 316K and M 316L you will take in the Mathematics Department. They will help you learn in depth the content you're going to teach and some of the content beyond what you're going to teach. The third course EDC 370E you'll take in the Department of Curriculum and Instruction. It will help you learn how to teach math to elementary-aged children.

The mathematics you'll learn in M 316K and L is critical to success in EDC 370E and later in the classroom. You will work on deepening your understanding of concepts, solving and explaining problems, justifying ideas, and, in general, developing a productive mathematical disposition. When you get to EDC 370E, you will then work on how to help children learn math, with attention to the same kinds of things you learned about in your math courses concepts, problem solving, justification, and confidence. In this final course, we will integrate what you've learned about content with what you need to know about pedagogy.

Good luck as you begin your journey to becoming a teacher.

Students With Disabilities

The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-4641 TTY.

Dropping the Course

A student may not drop a course after the fourth class day except for good cause (e.g., health or serious personal problems, or other demonstrated need). A student seeking to drop a class after the fourth class day should go to the Office of the Dean/Student Division for necessary approvals.

UT Policy On Scholastic Dishonesty

Students who violate university rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the university. Since such dishonesty harms the individual, all students, and the integrity of the university, policies on scholastic dishonesty will be strictly enforced.