

# MATH 316K - Foundations of Arithmetic

## Fall 2008

Class Number: 58765 (MWF 10-11), 58770 (MWF 11-12)  
Course Webpage: <http://www.ma.utexas.edu/users/djensen/m316k>  
Instructor: Dave Jensen  
Office: RLM 9.144  
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Office Hours: Tuesday, 12:30 - 2:00, Thursday, 2:00 - 3:30

### Grading

The only way to truly learn mathematics is by doing mathematics. With that in mind, the grading scheme below is intended to reward you for keeping up with the work during the semester.

Homework, 10%

Homework is due every Friday (except for the week of Thanksgiving, when it will be due on Wednesday instead), at the beginning of class. Homework must be *stapled*, and late homework will not be accepted. In order to receive credit on a problem *you must show your work*.

Participation, 10%

Nearly all of our time in this class will be spent on in-class explorations, so come prepared to think as well as write. Your productive participation in these explorations accounts for 10 percent of your grade in this class. In order to be prepared, you should look over the exploration briefly before coming to class.

Projects, 15% each

There are two written projects in this class. The goal of these projects is to explore connections between class material and the daily work of an elementary school teacher, in greater depth than we are able to cover in class. The projects are due on the following dates:

Project 1 – 10/17

Project 2 – 12/5

In-Class Exams, 15% each

There are two in-class exams in this class, on the following dates:

Exam 1 – 9/19

Exam 2 – 11/21

Final Exam 20%

The final exam for this class is tentatively scheduled for the following dates:

58765 – 12/12

58770 – 12/16

## Textbook

Bassarear, Mathematics for Elementary School Teachers, Fourth Edition  
(Textbook *plus* Explorations book)

## Course Description

An analysis, from an advanced perspective, of the concepts and algorithms of arithmetic, including sets, numbers, numeration systems, definitions, properties, and algorithms of arithmetic operations, and percents, ratios, and proportions. Problem solving is stressed.

## Some Important Information

1. The use of electronic devices is strictly prohibited in this classroom. This includes calculators, cell phones, and laptops.
2. Questions about grades or other administrative issues should be addressed to me outside of class, either in office hours or via email. I will not answer such questions in class.
3. Note that September 24 is the last day to drop this class without possible academic penalty. The last day to drop this class *with the dean's approval* is October 22.
4. 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, 471-6441 TTY.

## A Letter From Dr. Empson

Sept. 2007

Dear M 316K and L Students,

As part of your preparation to become elementary teachers, you will be taking three courses dealing with math. The first two of those courses – M316K and M316L – you'll take in the math department. They will help you learn in depth the *content* you're going to teach and some content beyond what you're going to teach. The third course – EDC370E – 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 M316K and L is critical to success in EDC370E 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 EDC370E, 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 the 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.

Sincerely,

Susan Empson  
Assoc. Professor of Mathematics and Science Education

## Schedule

| Date  | Reading    | Exploration           | Homework                            | Exam/Project |
|-------|------------|-----------------------|-------------------------------------|--------------|
| 8/27  |            | 1.1, part 2           |                                     |              |
| 8/29  | p. 1-16    | 1.1, part 4           | Section 1.3, #1,6,12,15,19          |              |
| 9/3   | p. 16-26   | 1.3, parts 1 and 2    |                                     |              |
| 9/5   | p. 30-48   | 1.4, parts 1 and 2    | Section 1.6, #3,13,16,24,31         |              |
| 9/8   | p. 80-84   | 2.3                   |                                     |              |
| 9/10  | p. 84-91   | 2.5                   |                                     |              |
| 9/12  | p. 91-96   | 2.8, part 1           | Section 2.2, #2,14,22,30,34         |              |
| 9/15  | p. 101-109 | 2.8, part 2           |                                     |              |
| 9/17  | p. 109-118 | 2.8, part 3           |                                     |              |
| 9/19  |            |                       | Section 2.3, #13,23,27,30,32        | EXAM 1       |
| 9/22  | p. 127-134 | 3.1                   |                                     |              |
| 9/24  | p. 134-143 | 3.2                   |                                     |              |
| 9/26  | p. 143-150 | 3.3                   | Section 3.1, #5,6,9,10,22           |              |
| 9/29  | p. 152-157 | 3.5                   |                                     |              |
| 10/1  | p. 157-162 | 3.6                   |                                     |              |
| 10/3  | p. 163-166 | 3.8, parts 1 and 3    | Section 3.2, #1,8,12,20,27          |              |
| 10/6  | p. 168-175 | 3.9                   |                                     |              |
| 10/8  | p. 175-181 | 3.10                  |                                     |              |
| 10/10 | p. 181-185 | 3.12                  | Section 3.3, #6,14,19,34,43         |              |
| 10/13 | p. 189-195 | 3.17                  |                                     |              |
| 10/15 | p. 195-201 | 3.15                  |                                     |              |
| 10/17 | p. 201-207 | 3.18                  | Section 3.4, #8,26,30,37,57         | PROJECT 1    |
| 10/20 | p. 215-229 | 4.2                   | Section 4.1, #6,27,30 (due Friday)  |              |
| 10/22 | p. 232-239 | 4.5                   | Section 4.2, #16,17,21 (due Friday) |              |
| 10/24 | p. 241-251 | 4.4                   | Section 4.3, #5,11                  |              |
| 10/27 | p. 255-258 | 5.1, 5.2              |                                     |              |
| 10/29 | p. 258-263 | 5.3                   |                                     |              |
| 10/31 | p. 263-265 | 5.4                   | Section 5.1, #7,8,11,22,23          |              |
| 11/3  | p. 267-272 | 5.9                   |                                     |              |
| 11/5  | p. 272-275 | 5.8                   |                                     |              |
| 11/7  | p. 276-281 | 5.8                   | Section 5.2, #1,6,8,12,33           |              |
| 11/10 | p. 284-292 | 5.12                  |                                     |              |
| 11/12 | p. 292-299 | 5.13                  |                                     |              |
| 11/14 | p. 299-303 | 5.15                  | Section 5.3, #15,19,21,26,44        |              |
| 11/17 | p. 308-318 | 5.16                  |                                     |              |
| 11/19 | p. 318-331 | 5.17                  |                                     |              |
| 11/21 |            |                       | Section 5.4, #14,16,40,51,53        | EXAM 2       |
| 11/24 | p. 337-344 | 6.2, parts 1,3, and 4 |                                     |              |
| 11/26 | p. 344-353 | 6.4                   | Section 6.1, #7,11,20,35,47         |              |
| 12/1  | p. 357-363 | 6.5                   |                                     |              |
| 12/3  | p. 363-373 | 6.7                   |                                     |              |
| 12/5  |            | Review                | Section 6.2, #12,28,37,40,43        | PROJECT 2    |