Math 120 Syllabus

Call #: 13084  Meetings: Tues/Thurs 5:30p – 7:20p  Room #: 408

Instructor: Benjamin Elbert
Office: Morton 532C
Office Hours: Arranged
Office Phone: 740-593-1271
Email: b.elbert13@gmail.com

Text: Mathematics for Elementary School Teachers (4th Edition) :: O'Daffer et al :: 0321448049

Course Website: http://www.ohio.edu/people/be173805/Courses/math120.html

Calculator: A calculator is not required for the course, but having one will make in-class and exam work easier. On exams, no credit will be given for answers without work so using a calculator to obtain the answer does not help.

Attendance: Attendance is strongly encouraged due to the pace, minimal number of meetings, and the fact that plenty of material discussed in class cannot be found in the textbook.

Grades: The following is a breakdown of your weighted grades:

**Homework and Quizzes: 40%**
You will have occasional homework that will help to reinforce the material we cover in class. The homework assignments will be posted on Blackboard and will give the full statement of the problem (thus allowing for either the 3rd or 4th Edition to be used by the student). Quizzes will be either surprise or take-home in nature. If you miss a class and were not properly excused beforehand, and there was a quiz, no makeup will be allowed.

**Final Project: 10%**
There will be a final project—announced on Tuesday of Week 5—that will require you to utilize outside resources, creativity, presentation and communication skills, and team work.

**Midterm/Final: 15%/35%**
These exams will be closed book, closed note. Your final is on:

**Tuesday, March 13, 2012 @ 5:30 in BRSE 408**

Notes: All policies regarding disabilities, excuses from exams, academic misconduct, etc. that are found in the student handbook are obviously in effect.

Grading Scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score Range</th>
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<tbody>
<tr>
<td>A</td>
<td>[93,100]</td>
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<tr>
<td>A-</td>
<td>[90,93)</td>
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<tr>
<td>B+</td>
<td>[87,90)</td>
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<tr>
<td>B</td>
<td>[83,87)</td>
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<td>B-</td>
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<td>C+</td>
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<td>D</td>
<td>[63,67)</td>
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<tr>
<td>D-</td>
<td>[60,63)</td>
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<td>F</td>
<td>[0,60)</td>
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Guiding Questions for the Course:

Q: Can we construct numbers, mathematical operations, etc.?

Q: What properties about mathematical constructs should we take as axioms, which should we prove? How do we go about proving what we should prove?

Q: In what ways can we teach and carry out mathematical concepts and operations?

Q: How can we attain numerical values or answer mathematical questions algorithmically?

Q: What (if any) is different about a number if we represent it in a base other than decimal? (This question can actually be rephrased in a more general sense as “What properties are innate to numbers, and what properties are innate to representations of numbers?”)

Outline of Topics (Mostly, but not necessarily ordered):

1) Inductive and Deductive Logic (with proofs)
2) Sets, Properties of Sets, and the Relation Between Sets and Whole Numbers
3) Number Theory: Models, Algorithms, and Properties
4) Integers: Operations, Relations, and Properties
5) Rational Numbers: Operations and Properties
6) Other Representational Bases: Working With, Changing Between, and Properties

Statement of Purpose for MATH 120:

The purpose of the MATH 12x series is to lay the mathematical foundations upon which elementary school teachers will build their classes. This series, and MATH 120 in particular, will be taught at a collegiate level—you will be expected to be significantly more advanced in mathematics than the students you teach. We will be looking proofs, theorems, definitions, and all sorts of other “scary” words in this course as these technical components provide valuable insight into the topics we investigate. At the end of this course, you will find yourself adequately prepared to not only answer the inevitable philosophical questions about mathematics that students have but also be able to think about the world in which we exist in deeper ways.