

EASTERN ILLINOIS UNIVERSITY
DEPARTMENT OF MATHEMATICS & COMPUTER SCIENCE

MAT.1420.007 – Mathematics for Elementary Teachers I
Spring 2009

CRN 30279 Room: M3010 Time: 4:30 – 5:45 Tuesday & Thursday

Instructor: Rick Anderson
Email: rdanderson@eiu.edu
Phone: 217.581.5427 (Leave a message if I'm not in my office.)
Webpage: <http://ux1.eiu.edu/~rdanderson> (assignments will be posted here)
Office: Old Main 3630
Office Hours: 2:00pm – 4:30pm (Tuesday & Thursday) or by appointment

Course Description

The study of the concepts and theory of numeration as well as the development of the numeration system via a problem-solving approach.

Prerequisites

Placement by Mathematics Department guidelines. Students enrolled in MAT 1420 must be education/special education majors.

Required Text and Tools

- *Mathematics for Elementary Teachers* (2nd edition). Sybilla Beckmann, 2008. Boston, MA: Pearson/Addison Wesley. [**Available from textbook rental.**]
- *Activities Manual: Mathematics for Elementary Teachers* (2nd edition). Sybilla Beckmann, 2008. Boston, MA: Pearson/Addison Wesley. [**Purchase at bookstore.**]
- Calculator (A four-function calculator is adequate – approximately \$1.)
- Three-ring binder, colored pencils, graph paper, ruler (optional)

Course Goals

- Encourage and honor the mathematician within ourselves
- Extend mathematical knowledge and conceptual understanding
- Reason and communicate mathematically
- Develop good number sense for ourselves and for teaching
- Build confidence in mathematical problem solving
- Invent mathematical procedures and make generalizations
- Respect and understand the mathematical thinking of others
- Enjoy learning and doing mathematics

Student Contributions

Classroom Etiquette. Cell phones should be turned off or be put on silent and placed out of sight during class. Students who choose to send text messages or make/receive phone calls during class will be asked to drop the class or may receive a failing final grade. Notify the instructor if an emergency makes it necessary for an exception to this policy.

Preparation. Each student must spend adequate time each week preparing for class. Feel free to see me for additional assistance during office hours or with phone or email messages. Please do not see office hours exclusively as a time to address problems with the course. You can use them to clarify points you don't understand, to talk about the subject matter in relation to your special interests, or to go over work in progress.

Attendance. Punctual and regular attendance is expected for this class. The class will meet for the scheduled time on the scheduled days. Unless arrangements are made with the instructor, students missing three or more consecutive days of class (or five total days during the semester) may be asked to drop the class.

Assignments. *Except in unusual and unforeseen circumstances, missed assignments may not be made up unless the student makes arrangements acceptable to the instructor, prior to an absence.* Assignments are due at the start of class. Late assignments will be accepted at the instructor's discretion.

Student Conduct. EIU students are expected to observe the highest principles of academic integrity and support a campus environment conducive to scholarship. Violations include cheating, plagiarism, collusion, misrepresentation or falsification of data along with complicity with others in violations. (Excerpted from the University's Student Conduct Code) Students who have been found in violation of expected student conduct may receive a failing grade for the course or other sanctions according to university policy.

Evaluation and Grading

Your grade will be determined by an average of points earned with equal weight given to each of three categories: (1) activities & homework assignments, (2) extended response problem solving (ERPS) assignments and quizzes, and (3) tests.

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| A (Excellent): 90% - 100% | B (Good): 80% - 89% |
| C (Average): 70% - 79% | D (Poor): 60% - 69% |

Important Note: To pass the class, you must receive a minimum of 70% in each of the three categories. Unless arrangements are made with the instructor, students missing three or more consecutive days (or five days total) of class will not receive a passing grade for the course.

Resources

- **Booth Library & Ballenger Teachers' Center:** Internet, journals, books, etc.
 - *Teaching Children Mathematics* – QA135.5 .T4
 - *Mathematics Teaching in the Middle School* – QA13 .M37
 - Journals are available online through the full text database.
<http://www.library.eiu.edu>
 - Curriculum materials in Ballenger Teachers' Center

- **Professional Organizations:** You are encouraged to become a member of professional organizations for mathematics teachers. Most organizations offer a special rate for students! Benefits include subscriptions to journals and newsletters, reduced rate for conferences, and interaction with others in the professional community of mathematics teachers. See the respective websites for details.
 - EIU Math Energy Club (<http://www.eiu.edu/~mathnrgy>)
Meetings at 7pm: 1/26 (UB), 2/23 (UB), 4/6 (LA), 4/20 (UB)
 - EIU Conference on Teaching & Learning Mathematics – April 7 (Student Union)
 - Illinois Council of Teachers of Mathematics (<http://www.ictm.org>)
 - National Council of Teachers of Mathematics (<http://www.nctm.org>)

- **Mathematics & Computer Science Department Computer Labs:** The PC lab is located in OM 3041 and the Mac lab is located in OM 3013. These labs contain several software programs including Geometer's Sketchpad and Fathom. Check the department website for lab hours. (<http://www.eiu.edu/~math>)

- **Disability Services:** If you have a disability and wish an accommodation please make arrangements to meet with me outside of class to discuss your specific request. A request for accommodation will require documentation be reviewed by the coordinator of the Office of Disability Services (217.581.6583). Please let me know if there is any other situation, even if it is not documented, that I should be aware of.

- **Web Resources:** Several resources are available on the web. A few links related to this course are listed below.
 - National Library of Virtual Manipulatives for Interactive Mathematics:
<http://nlvm.usu.edu/>
 - National Council of Teachers of Mathematics – *Principles & Standards for School Mathematics*: <http://standards.nctm.org/>
 - Illinois State Board of Education – Mathematics Assessment:
<http://www.isbe.net/assessment/math.htm>
 - Illuminations – resources from the National Council of Teachers of Mathematics:
<http://illuminations.nctm.org/>

Schedule (Tentative)

| | Date | Topic of the Day (section in textbook) | Notes |
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| Week 1 | Tuesday, January 13 | Introduction; Exploring Patterns (1.1, 13.1) | |
| | Thursday, January 15 | Arithmetic & Geometric Sequences (13.3) | |
| | Friday, January 16 | Deadline to Add Courses | |
| Week 2 | Monday, January 19 | No Classes: M.L.K. Birthday | |
| | Tuesday, January 20 | Patterns, Explaining Solutions (1.2) | |
| | Thursday, January 22 | Patterns; Problem Solving (13.4) | |
| Week 3 | Monday, January 26 | Deadline to Drop a Course with No Grade (4pm) | |
| | Tuesday, January 27 | Number Systems (2.1) | ERPS 1 Due |
| | Thursday, January 29 | Place Value (2.2) | |
| Week 4 | Tuesday, February 3 | Decimal Numbers (2.3) | |
| | Thursday, February 5 | Decimal Concepts (2.4, 2.5) | Quiz 1 |
| Week 5 | Tuesday, February 10 | Meaning of Fractions (3.1, 3.2) | |
| | Thursday, February 12 | Fraction Concepts (3.3, 3.4) | |
| | Friday, February 13 | No Classes: Lincoln's Birthday | |
| Week 6 | Tuesday, February 17 | Interpretation of Addition & Subtraction (4.1) | ERPS 2 Due |
| | Thursday, February 19 | Algorithms for Addition & Subtraction (4.2) | |
| Week 7 | Tuesday, February 24 | Addition & Subtraction with Fractions (4.3, 4.6) | |
| | Thursday, February 26 | Wrap-up & Review | |
| Week 8 | Tuesday, March 3 | <i>Test 1</i> (Chapters 1 – 4, 13) | Test 1 |
| | Thursday, March 5 | Meaning of Multiplication (5.1) | |
| Week 9 | Tuesday, March 10 | Multiplying by 10 (5.2) | |
| | Thursday, March 12 | Multiplication Properties (5.3, 5.4) | ERPS 3 Due |
| No Classes: Spring Break (March 16 – March 20) | | | |

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| Week 10 | Tuesday, March 24 | More with Multiplication (5.5, 5.6) | |
| | Thursday, March 26 | Algorithms for Multiplications (5.7) | |
| Week 11 | Tuesday, March 31 | Multiplication of Fractions & Decimals (6.1, 6.2) | |
| | Thursday, April 2 | Meaning of Division (7.1) | Quiz 2 |
| | Friday, April 3 | Deadline to Withdraw from a Course | |
| Week 12 | Tuesday, April 7 | Division Algorithms (7.2) | |
| | Tuesday, April 7 | EIU Conference on Teaching & Learning Mathematics (MLK Student Union) | |
| | Thursday, April 9 | Fraction & Division (7.3) | |
| Week 13 | Tuesday, April 14 | Dividing Fractions (7.4) | |
| | Thursday, April 16 | Dividing Decimals (7.5) | ERPS 4 Due |
| Week 14 | Tuesday, April 21 | Ratio & Proportion (7.6) | |
| | Thursday, April 23 | Prime Numbers (12.3, 12.4) | |
| Week 15 | Tuesday, April 28 | Even & Odd Numbers; Divisibility Tests (12.5) | |
| | Thursday, April 30 | Wrap-up & Review | |
| Finals | Tuesday, May 5 | <i>Final Exam</i> (5:15 PM – 7:15 PM) | Final Exam |