PART I: CATALOG DESCRIPTION

1. Course prefix and number, such as ART 1000: MAT 1420
2. Title (may not exceed 30 characters, including spaces): Math for Elem Teachers I
3. Long title, if any (may not exceed 100 characters, including spaces): Mathematics for Elementary Teachers I
4. Class hours per week, lab hours per week, and credit [e.g., (3-0-3)]: 3-0-3
5. Term(s) to be offered: ☑ Fall ☑ Spring ☐ Summer ☐ On demand
6. Initial term of offering: ☑ Fall ☐ Spring ☐ Summer Year: 2010
7. Course description (not to exceed four lines): Development of mathematical proficiency through mathematical reasoning and problem solving. The study of algebraic concepts, whole numbers, integers, rational numbers, irrational numbers and the real number system. Open only to early childhood, elementary, middle level, or special education majors.
8. Registration restrictions:
   a. Identify any equivalent courses (e.g., cross-listed course, non-honors version of an honors course). none
   b. Prerequisite(s), including required test scores, courses, grades in courses, and technical skills. Indicate whether any prerequisite course(s) MAY be taken concurrently with the proposed/revised course.
      Placement by ACT Mathematics score.
   c. Who can waive the prerequisite(s)?
      ☐ No one ☑ Chair ☐ Instructor ☐ Advisor ☐ Other (Please specify)
   d. Co-requisites (course(s) which MUST be taken concurrently with this one):
   e. Repeat status: ☑ Course may not be repeated.
      ☐ Course may be repeated to a maximum of ____ hours or ____ times.
   f. Degree, college, major(s), level, or class to which registration in the course is restricted, if any: early childhood education, elementary education, middle level education, special education
   g. Degree, college, major(s), level, or class to be excluded from the course, if any:
9. Special course attributes [cultural diversity, general education (indicate component), honors, remedial, writing centered or writing intensive] none
10. Grading methods (check all that apply): ☑ Standard letter ☐ C/NC ☐ Audit ☐ ABC/NC (“Standard letter”—i.e., ABCDF--is assumed to be the default grading method unless the course description indicates otherwise.)
11. Instructional delivery method:  
- lecture
- lab
- lecture/lab combined
- independent study/research
- internship
- performance
- practicum or clinical
- study abroad
- other

PART II: ASSURANCE OF STUDENT LEARNING

1. List the student learning objectives of this course:
   - Develop problem solving strategies
   - Demonstrate proficiency using symbols to generalize patterns
   - Formulate and justify algebraic generalization symbolically, graphically, and verbally
   - Write, interpret, represent, and compare numbers in the decimal number system
   - Write, interpret, represent, and compare rational numbers
   - Identify various meanings and representations for addition, subtraction, multiplication, division
   - Write & recognize word problems for various meanings of addition, subtraction, multiplication, division
   - Explain why algorithmic processes for addition, subtraction, multiplication, and division make sense
   - Use multiple strategies for addition, subtraction, multiplication, and division
   - Solve and explain the reasoning used to solve ratio problems

   a. If this is a general education course, indicate which objectives are designed to help students achieve one or more of the following goals of general education and university-wide assessment:
      - EIU graduates will write and speak effectively.
      - EIU graduates will think critically.
      - EIU graduates will function as responsible citizens.
      
      Not applicable

   b. If this is a graduate-level course, indicate which objectives are designed to help students achieve established goals for learning at the graduate level:
      - Depth of content knowledge
      - Effective critical thinking and problem solving
      - Effective oral and written communication
      - Advanced scholarship through research or creative activity
      
      Not applicable

2. Identify the assignments/activities the instructor will use to determine how well students attained the learning objectives:

   Explorations/Homework, Quizzes/Tests, Final Exam

<table>
<thead>
<tr>
<th>Objective</th>
<th>Explorations/Homework</th>
<th>Quizzes/Tests</th>
<th>Final Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop problem solving strategies</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate proficiency using symbols to generalize patterns</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Formulate and justify algebraic generalization symbolically, graphically, and verbally</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Write, interpret, represent, and compare numbers in the decimal number system</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Write, interpret, represent, and compare rational numbers

Identify various meanings and representations for addition, subtraction, multiplication, division

Write & recognize word problems for various meanings of addition, subtraction, multiplication, division

Explain why algorithmic processes for addition, subtraction, multiplication, and division make sense

Use multiple strategies for addition, subtraction, multiplication, and division

Solve and explain the reasoning used to solve ratio problems

3. **Explain how the instructor will determine students’ grades for the course:** Grades will be determined by a weighted average of Explorations/Homework, Quizzes/Tests, and Final Exam at discretion of instructor.

4. **For technology-delivered and other nontraditional-delivered courses/sections, address the following:**
   a. Describe how the format/technology will be used to support and assess students’ achievement of the specified learning objectives:
   b. Describe how the integrity of student work will be assured:
   c. Describe provisions for and requirements of instructor-student and student-student interaction, including the kinds of technologies that will be used to support the interaction (e.g., e-mail, web-based discussions, computer conferences, etc.):

   Not applicable

5. **For courses numbered 4750-4999, specify additional or more stringent requirements for students enrolling for graduate credit.** These include:
   a. course objectives;
   b. projects that require application and analysis of the course content; and
   c. separate methods of evaluation for undergraduate and graduate students.

   Not applicable

6. **If applicable, indicate whether this course is writing-active, writing-intensive, or writing-centered, and describe how the course satisfies the criteria for the type of writing course identified.** (See Appendix *.) Not applicable

**PART III: OUTLINE OF THE COURSE**

Provide a week-by-week outline of the course’s content. Specify units of time (e.g., for a 3-0-3 course, 45 fifty-minute class periods over 15 weeks) for each major topic in the outline. Provide clear and sufficient details about content and procedures so that possible questions of overlap with other courses can be addressed. For technology-delivered or other nontraditional-delivered courses/sections, explain how the course content “units” are sufficiently equivalent to the traditional on-campus semester hour units of time described above.

**Week 1**
Problem Solving, Algebraic Thinking

**Week 2**
Solving equations, Arithmetic & Geometric Sequences, Series
Week 3
Functions, Patterns

Week 4
Numbers and the Decimal System, Place value

Week 5
Fractions meanings

Week 6
Equivalent fractions, comparing fractions

Week 7
Interpretations of Addition & Subtraction, Algorithms

Week 8
Adding & Subtracting Fractions, Percents, Mental Strategies

Week 9
Meaning of Multiplication, Properties

Week 10
Multiplication Algorithm, Mental Strategies

Week 11
Meaning of Division, Division Algorithm

Week 12
Dividing Fractions & Decimals

Week 13
Ratio & Proportion

Week 14
Factors & Multiples

Week 15
Prime Numbers, Divisibility

PART IV: PURPOSE AND NEED

1. Explain the department’s rationale for developing and proposing the course. MAT 1420 and MAT 2420G are a two-course sequence for elementary education and some other education majors. The course revisions are proposed to reorder the content topics of the two courses. Probability and statistics topics will be moved from MAT 1420 to MAT 2420G allowing for more time on number and operation and algebra in MAT 1420. This follows recent practice among those teaching the courses in the department.
a. If this is a general education course, you also must indicate the segment of the general education program into which it will be placed, and describe how the course meets the requirements of that segment.

b. If the course or some sections of the course may be technology delivered, explain why.

2. Justify the level of the course and any course prerequisites, co-requisites, or registration restrictions. This is the first of two courses in an introductory college mathematics course sequence for early childhood, elementary, middle level, or special education majors.

3. If the course is similar to an existing course or courses, justify its development and offering.
   Not applicable.
   a. If the contents substantially duplicate those of an existing course, the new proposal should be discussed with the appropriate chairpersons, deans, or curriculum committees and their responses noted in the proposal.
   b. Cite course(s) to be deleted if the new course is approved. If no deletions are planned, note the exceptional need to be met or the curricular gap to be filled.

4. Impact on Program(s):
   a. For undergraduate programs, specify whether this course will be required for a major or minor or used as an approved elective. The revised course will continue to be required for the elementary education major and other education majors. There will be no changes to those programs.

   b. For graduate programs, specify whether this course will be a core requirement for all candidates in a degree or certificate program or an approved elective.

   If the proposed course changes a major, minor, or certificate program in or outside of the department, you must submit a separate proposal requesting that change along with the course proposal. Provide a copy of the existing program in the current catalog with the requested changes noted.

PART V: IMPLEMENTATION

1. Faculty member(s) to whom the course may be assigned: The course will be initially assigned to Henn, McBride, Oles, and Roan. Other qualified instructors can also be assigned.

   If this is a graduate course and the department does not currently offer a graduate program, it must document that it employs faculty qualified to teach graduate courses.

2. Additional costs to students: Students will be expected to purchase the consumable Activities Manual that accompanies the textbook.

   Include those for supplemental packets, hardware/software, or any other additional instructional, technical, or technological requirements. (Course fees must be approved by the President’s Council.)

3. Text and supplementary materials to be used (Include publication dates):

PART VI: COMMUNITY COLLEGE TRANSFER

If the proposed course is a 1000- or 2000-level course, state either, "A community college course may be judged equivalent to this course" OR "A community college course will not be judged equivalent to this course." A community college course will not be judged equivalent to a 3000- or 4000-level course but may be accepted as a substitute; however, upper-division credit will not be awarded.
A community college course may be judged equivalent to this course.

PART VII: APPROVALS

Date approved by the department or school: October 26, 2009
Date approved by the college curriculum committee: December 11, 2009
Date approved by the Honors Council (if this is an honors course):
Date approved by CAA: January 21, 2010

*In writing-active courses, frequent, brief writing activities and assignments are required. Such activities -- some of which are to be graded -- might include five-minute in-class writing assignments, journal keeping, lab reports, essay examinations, short papers, longer papers, or a variety of other writing-to-learn activities of the instructor's invention. Writing assignments and activities in writing-active courses are designed primarily to assist students in mastering course content, secondarily to strengthen students' writing skills. In writing-intensive courses, several writing assignments and writing activities are required. These assignments and activities, which are to be spread over the course of the semester, serve the dual purpose of strengthening writing skills and deepening understanding of course content. At least one writing assignment is to be revised by the student after it has been read and commented on by the instructor. In writing-intensive courses, students' writing should constitute no less than 35% of the final course grade. In writing-centered courses (English 1001G, English 1002G, and their honors equivalents), students learn the principles and the process of writing in all of its stages, from inception to completion. The quality of students' writing is the principal determinant of the course grade. The minimum writing requirement is 20 pages (5,000 words).