MA 202 – Mathematics for Elementary Teachers
Section 005

University of Kentucky, Department of Mathematics
Spring 2018

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Office Hours:
M 11:00am-12:00pm
T 11:00am-12:00pm
Th 11:00am-12:00pm
& Other times by appointment

Meeting Times: TR 12:30pm - 1:45pm, CB 345

Textbook: We will be using the book *Mathematical Practices: Mathematics for Teachers* by Ron Larson and Robyn Silbey. Students are expected to read through each section in the text before coming to the corresponding lecture. All relevant course materials including the syllabus, homework assignments, and grades will be posted to Canvas.

Required Materials:

1. Protractor/Compass

2. Ruler

Suggested: Colored pencils or markers.

Introduction: This course will provide future elementary educators with the mathematical background needed for teaching elementary school mathematics. The focus of this course is NOT teaching mathematics; there is a different course designed specifically for that topic! The emphasis of this course is to develop conceptual knowledge, which is a requirement for effectively communicating mathematics to elementary school students. In particular, we will concentrate on the *why* more than the *how*. Again, this is not a pedagogy course! This is an upper level college mathematics course in which you will acquire mathematical skills to use in future education courses. As the second part of the MA 201/202 sequence, we will cover Chapters 9 - 15 in the textbook. Although it will not be tested explicitly, you are responsible for being familiar with the material in Chapters 2 - 8.

Outcomes: Students who successfully complete MA 201/202 will:

- Have a comprehensive knowledge of elementary school mathematics.

- Be able to describe the standard concepts of elementary mathematics in several ways and be familiar with various mathematical modeling techniques.

- Understand and appreciate the importance of mathematics in the elementary school curriculum and be equipped to effectively advocate mathematics to students.

Motivation: You graduated from elementary school, so why do you need to take this course? This course is not simply a repeat of elementary school mathematics. You will learn the same concepts but on a much deeper level and from many different perspectives. This will help you explain mathematics to your future students. For example, rather than being able to correctly add two fractions, you will know several models to aid in the teaching of adding fractions, explain why the models work, and identify where the student erred. In order to teach mathematics effectively at any level:

- Your mathematical understanding of the concepts you teach must be much deeper than the procedural level. You must be able to explain why and how mathematics works.

- You need to be familiar with many ways of describing and modeling mathematical concepts.

- You must have the ability to understand students' difficulties and have the flexibility to accommodate individual student learning styles.

Typical Class: Each day you will come to class and take out your homework. If you wish to go over a homework problem, write the problem number on the board before sitting down. We will spend the first 5-10 minutes of class answering those questions. See Homework section for details. Then we will spend the next 5 minutes taking a quiz over the homework due in class that day. See Quiz section. After collecting the quiz, the next 60 minutes will consist of a mixture of lecture, group work, and activities.

Grading: The breakdown of your course grade is as follows:

Homework	10%
Quizzes	8%
Presentation	5%
Professionalism	5%
Exam 1	18%
Exam 2	18%
Exam 3	18%
Final Exam	18%
Total	**100%**

Letter grades will be assigned as follows:

A: 90% - 100%
B: 80% - 89%
C: 70% - 79%
D: 60% - 69%
E: Below 60%

Homework: Mathematics requires regular practice. For this course that practice comes in the form of daily homework assignments to be completed outside of lecture. Each homework assignment will be approximately 10-14 problems chosen to help you better understand the material and assist you in preparation for the course exams. I will grade the homework out of 10 points for completion and/or accuracy (show your work!).
Homework will be turned in at the start of class. If you have questions over the homework, write the problem number you have a question about on the board before the start of class. I will reserve the first 5-10 minutes of class to be devoted to asking homework questions prior to taking the daily quiz. I will ask for student volunteers to write and explain their solution on the board. I will keep track of when you present a solution and award bonus homework points as incentive to present correct solutions.

Quizzes: There will be a quiz given each class period. The quiz consists of one problem taken directly from the homework turned in that day, and you will be given 5 minutes to finish it. Quizzes will be graded for accuracy. Their purpose is to provide you with feedback that will help you prepare for the exams. They also serve as practice completing math problems in a test taking environment with a time limit. Quizzes missed due to *unexcused absences* cannot be made up and a grade of 0% will be issued. Quizzes missed due to *excused absences* must be made up during my office hours **within one week** of the excused absence; otherwise a grade of 0% will be issued. Since the quizzes are daily, poor performance on a couple quizzes will not heavily impact your final grade for this course. Repeated poor performance shows me you are not comfortable with the material and need to spend more time with the topics before the exam.

Presentations: Small groups (≈ 3 members) will give short presentations on Exam Review days of an activity from the textbook or the NCTM Illuminations website that covers a portion of the material for the upcoming exam. These presentations should only last 10 minutes per group and three different groups will present on each review day. This leaves 45 minutes of class time for a full-class review. The presentation will be graded and will provide you a chance to practice effectively teaching and communicating mathematics. You will also submit a short self-reflection, about a half page, discussing how you think your group presentation went, how it may have been improved, and how you think the class reacted. Reflections are due the class following your presentation. The group presentation activity

and the self-reflection will each contribute half of your presentation grade.

Further details for presentations will be given within the first weeks of class.

Attendance: You must attend class, or have an excused reason for your absence, to receive credit for your homework and and a chance to make up any missed quizzes or assignments. No late homework will be accepted for any reason aside from University Excused Absences as described in SR 5.2.4.2. In the event of an excused absence, you are expected to turn in your assignment **within one week** of the excused absence.

The list of excused absences includes illness, death of a family member, any trips organized by the university, and religious holidays. Excused absences must be reported as soon as possible, within a week at the latest. To report an excused absence, email me and bring the appropriate documentation. Unexcused absences include missing class entirely without an excuse, showing up more than 10 minutes late or leaving early without an excuse, and neglecting to stay on task. If there are special circumstances that will require you to be late to class or have to leave early on a regular basis please contact me as soon as possible.

Important: Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed per University Policy. There is a procedure for withdrawing from a class. You have not withdrawn if you simply quit attending. Math is not a spectator sport!

Professionalism: Professionalism encompasses regular class attendance, respect for instructor and peers, and active participation.

As a sign of respect to the instructor and your fellow peers, cell phones and other electronic devices should be set to silent (not vibrate) and should not disrupt class in any fashion. Checking your phone during lecture is a distraction to the instructor as well as your peers. Don't do it. Pulling out your phone during classroom activities creates a barrier between yourself and the members of your group. Don't do it. Repeated abuses of the above will result in deducted professionalism points.

This class is very interactive. I expect you to participate by being present, engaging in group activities, as well as asking and answering questions. The activities for this course have been chosen with intent, and you may want to implement them into your own future classroom.

Exams: You will complete three in-class exams this semester, as well as one final exam. If you need a make-up or alternate exam, please follow university policy to obtain one. Calculators, notes, and books are strictly forbidden, unless otherwise specified in class. The tentative dates for exams are as follows.

Exam #1: Tuesday, February 6th, in class
Exam #2: Tuesday, March 6th, in class
Exam #3: Tuesday, April 10th, in class
Final Exam: Thursday, May 3rd, 1:00pm.

The final exam will be cumulative with an emphasis on material from Chapter 15.

Classroom Policies: Due to the nature of this course, students will not be permitted to use a calculator unless otherwise specified by the instructor. Therefore, using a calculator (except on the occasions when the instructor deems it appropriate) will be considered cheating.

Academic Integrity, Plagiarism and Cheating: Group work is great! Students are encouraged to work together on the course material. While you may work together on the homework outside of class, every member must turn in his or her own solutions which represent the work that the individual has put into the assignment. Copying someone else's solution or allowing someone to copy your solution is cheating. Don't do it. A student found guilty of academic dishonesty will receive an automatic zero on the assignment, and in some cases an E in the course or even expulsion. Quizzes and exams are individual assessments. No materials should be visible during this time, and any kind of communication with other students during an exam will be considered cheating and will be handled by university procedure. For more information see Senate Rule 6.3.1.

Disabilities: Students with documented physical, learning, or temporary disabilities may receive assistance and support from the Disability Resource Center. See documentation guidelines for more information at http://www.uky.edu/StudentAffairs/DisabilityResourceCenter/. Students should provide the instructor with a copy of their accommodation letter as soon as possible. Letters must be received at least *two weeks prior* to the requested accommodation.

Non-Discrimination Statement and Title IX Information:

- The University of Kentucky faculty are committed to supporting students and upholding the University's non-discrimination policy.

- Discrimination is prohibited at UK. If you experience an incident of discrimination we encourage you to report it to Institutional Equity Equal Opportunity (IEEO) Office, 13 Main Building, (859) 257-8927.

- Acts of Sex- and Gender-Based Discrimination or Interpersonal Violence If you experience an incident of sex- or gender-based discrimination or interpersonal violence, we en-

courage you to report it. While you may talk to a faculty member or TA/RA/GA, understand that as a "Responsible Employee" of the University these individuals MUST report any acts of violence (including verbal bullying and sexual harassment) to the University's Title IX Coordinator in the IEEO Office. If you would like to speak with someone who may be able to afford you confidentiality, the Violence Intervention and Prevention (VIP) program (Frazee Hall Lower Level; http://www.uky.edu/StudentAff airs/VIPCenter/), the Counseling Center (106 Frazee Hall, http://www.uky.edu/Stu dentAffairs/Counseling/), and the University Health Services (http://ukhealthcare.uky. edu/uhs/student-health/) are confidential resources on campus.

UK Mathematics Department Professional Themes: This course will address the four themes of the conceptual framework for the UK professional education program: research, reflection, learning, and leading. Students will engage with fundamental ideas in mathematical research, reflecting on and analyzing core mathematical content that arises throughout mathematics at all levels. Students will develop as life-long mathematical learners who will be able to take active leadership roles in their future roles as professionals and citizens. The ultimate goal in addressing these four themes is to produce teacher leaders who work together to improve student learning among diverse populations and improve education in Kentucky and beyond.

Unbridled Learning Initiatives and the Kentucky Core Academic Standards: This course will provide students an opportunity to advance their knowledge and mastery of the tools associated with Kentucky education reform, focusing on the content and practice standards outlined in the the Kentucky Core Academic Standards. As students carry out projects and complete assignments that involve mathematical content underlying instructional activities for P-12 students in Kentucky schools, they will address one or more components of the Unbridled Learning initiatives.

How to Succeed: This course is challenging for some students. If you find you are struggling, try the following:

- Spend time each day outside of class reading the textbook and studying your notes.

- Ask me for help! Come to my office hours and email me with any questions.

- Form a study group.

Important Date: The last day to withdraw from this course with no penalty is

<div align="center">

Wednesday, January 31st

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Changes: I reserve the right to make changes or amend this syllabus at any time. In this event, proper notice will be given in class.