MA 201: Math for Elementary Teachers
Sections 002 & 003
College of Arts & Sciences (A&S)
Department of Mathematics (MA)
Fall 2018

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Class Times (002): Tuesday/Thursday 9:30am-10:45am
Class Times (003): Tuesday/Thursday 11:00am-12:15am
Class Location: Whitehall Classroom Building (CB) 343

Course Coordinator: Amy Green (mrs.amy.green@uky.edu)

Introduction

Course Description
MA 201: Sets, numbers and operations, problem solving and number theory.
Recommended only for majors in elementary and middle school education.
Prerequisites: MA 109 or MA 111 or consent of department.

What to Expect from this Course
MA 201 is a mathematical content course, not a pedagogy course. You will be graded based on your ability to solve and write comprehensive solutions to mathematical problems. We may discuss teaching methods in class, but you will not be graded on knowledge or skills specifically related to teaching. The emphasis of the course is on developing conceptual knowledge, which is a requirement for effectively communicating mathematics to elementary school students. We will concentrate on the why more than the how.

My Expectations of You
I expect that you will maintain a positive attitude throughout the semester. This means being respectful toward others *and yourself*. At all times, constructive language should be used to describe the productive struggle of learning math. Strive for a growth mindset: instead of saying, "I can't do this," say "I can't do this YET!" I also expect that you will come to class on time and prepared, ask questions, and engage in your own education.

Office Hours and Campus Resources
I will have my availability posted on my website at `http://ms.uky.edu/~ali266/MA201Fall18`. Please take advantage of this time. If you can not make those time spots or you would like some extra time, please send me an email to make appointments. In addition, do not forget your other campus resources. The Mathskeller (in the basement of CB) is a great place to

go for free help, or for a positive working environment. While MA 201 is not explicitly listed on the Mathskeller's website, many tutors will be happy to help you nonetheless. Remember that you also have a whole class full of other people to study with. Mathematics is best learned through collaboration and open discussion, and teaching is at its finest when great minds come together. I encourage you to work honestly with each other.

Required Materials

- A digital or physical copy of the textbook
- WebAssign access
- Notebook
- Scissors
- Ruler
- Suggested: colored pencils or markers
- *No calculator!*

Textbook
This semester we will be using *Mathematical Practices, Mathematics for Teachers: Activities, Models, and Real-Life Examples*, 1st Edition, by Ron Larson and Robyn Silbey, ISBN 978-1-285-44710-0. You are expected to read the book ahead of time in preparation for each class meeting. In addition to being good practice for you as a student, reading the textbook is mandatory for teachers. Since math textbooks are not read in the same way as a storybook, reading them is a skill that must be honed through practice.

In this course, we will cover Chapters 2-8 in the textbook.

Technology Policy
Please keep all non-calculator screens out of sight during class, unless otherwise instructed. Calculators will be allowed in-class and on homework assignments for checking work, but all calculators will be forbidden on quizzes and exams. In previous semesters, students who relied on calculators to do the homework generally performed poorly on exams. For this reason, I strongly suggest that you forego calculators entirely.

Motivation – Why Does this Course Exist?
You graduated from elementary school, so why do you need to take this course? This course is not a repeat of elementary school mathematics. You will learn the same concepts but on a much deeper level. This will help you effectively explain mathematics to your future students. For example, rather than merely being able to correctly add two fractions, you will know several models to aid in the teaching of adding fractions and explain why they work. 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 understand students' difficulties and have flexibility to accommodate individual student learning styles.

Student Learning Outcomes
Students who successfully complete MA 201...

- have a comprehensive knowledge of elementary school mathematics.
- can describe the standard concepts of elementary mathematics in several ways.
- are familiar with various mathematical modeling techniques.
- understand and appreciate the importance of mathematics in the elementary school curriculum and effectively advocate mathematics to students.

Important Semester Dates

- Wednesday, August 22: First day of classes
- Tuesday, August 28: Last day to add a class
- Monday, September 3: Labor Day (ACADEMIC HOLIDAY NO CLASSES)
- Wednesday, September 12: Last day to drop a class without receiving a grade
- Monday, October 15: Midterm of 2017 Fall semester
- Friday, November 10: Last day to withdraw from a class
- Wed–Fri, November 21-24: Thanksgiving Break (NO CLASSES)
- Friday, December 7: Last Day of Classes
- Mon–Fri, December 10-14: Final Examinations
- Friday, December 14: End of 2018 Fall semester

NOTE: A student who drops a class on or before September 12th, will receive no grade. A student who withdraws after September 12th, will receive a grade of W. After November 10th, no student will be allowed to withdraw unless his/her dean determines that unusual circumstances merit the withdrawal.

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, reflection on and analyzing core mathematical content that arise 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 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 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.

Grade

Grading Scheme
Grades will be calculated on the following scale and periodically posted on Canvas at `https://www.uky.edu/canvas`. Credit is earned by attending lecture (and participating), completing homework, giving in-class presentations, and taking quizzes and exams.

Attendance & Participation	(daily)	4%
Homework	(assigned regularly)	20%
Presentations	(sign-up)	8%
Quizzes	(weekly)	8%
Exam I	(20 September)	15%
Exam II	(18 October)	15%
Exam III	(15 November)	15%
Final Exam	(see calendar)	15%

Attendance Grade
The attendance portion of your grade will be calculated as follows:

$$.04 \times \frac{\#\text{ of classes participated in} + \#\text{ of excused absences}}{\text{total }\#\text{ of classes}}$$

Unexcused absences include missing class entirely without an excuse, showing up more than 5 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 must leave early on a regular basis, please contact me as soon as possible.

I expect you to participate by being present, engaging in group activities, asking, and answering questions. This includes bringing your textbook if you need it, something to write with and on, and anything else you might need. Students are expected to ask questions when they don't understand something.

Per University policy, students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused or otherwise).

Homework Grade
The homework portion of your grade will be calculated as follows:

$$.20 \times \text{raw percentage from WebAssign}$$

All online homework assignments are to be submitted via WebAssign. I will not accept paper copies of online homework. Any submissions after the due date/time will earn a 0% grade. Extensions will only be granted under extraordinary circumstances. There might be written homework assigned as well.

Presentation Grade
The presentation portion of your grade will be calculated as follows:

$$.08 \times \frac{\text{\# of points earned on presentation}}{20}$$

Small groups (≤ 3 members) will give short presentations on 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 10-12 minutes per group.

The presentation will be graded and will provide you a chance to practice effectively teaching and communicating mathematics. You will also submit a short one page self-reflection, discussing how you think your group presentation went, how it may have been improved, and how you think the class reacted. Reflections are due one week after the presentation. The group presentation activity and the self-reflection will each contribute half of your presentation grade.

See the rubric for more information about how presentations will be evaluated.

Quiz Grade
The quiz portion of your grade will be calculated as follows:

$$.08 \times \frac{\text{\# of points earned on quizzes}}{\text{total \# of quiz points possible}}$$

Quizzes missed due to an unexcused absence cannot be made up. A grade of 0% will be issued for such quizzes. Quizzes missed due to an excused absence must be made up outside of class time within one week following the period of the excused absence.

Exam Grade
The exam portion of your grade will be calculated as follows:

$$.60 \times \frac{\text{Exam I score} + \text{Exam II score} + \text{Exam III score} + \text{Exam IV score}}{400}$$

Exams missed due to an unexcused absence cannot be made up. A grade of 0% will be issued for such exams. Exams missed due to an excused absence must be made up outside of class time within one week of returning to class.

The final exam will take place in CB 343 at the time designated for your section. Be sure to know what section you are in, and what time your final exam takes place.

Attendance Policy

A portion of your final grade will be determined by attendance and class participation. This class is very interactive. Therefore, attendance is mandatory.

Make-Up Work
A university excused absence is usually an illness or a university-related trip or activity. In all cases, reasonable proof of a valid excuse should be presented to the instructor in a timely manner. It is the student's responsibility to make sure all missed work from an excused absence is made up, by notifying the instructor within a reasonable time after returning to class (usually on the first day back). Students with disabilities and student athletes should notify all of their instructors as soon as possible at the beginning of the semester to discuss accommodations. In the event of an excused absence, students have the right to make up any missed work. In the event of an unexcused absence, or even an excused absence but with clear evidence of egregious procrastination, the ability to make up a missed assignment is at the discretion of the instructor.

Excused Absences
Students need to notify the professor of absences prior to class when possible. Senate Rules 5.2.4.2 defines the following as acceptable reasons for excused absences: (a) serious illness, (b) illness or death of family member, (c) University-related trips, (d) major religious holidays, and (e) other circumstances found to fit "reasonable cause for nonattendance" by the professor. See `https://www.uky.edu/ombud/excused-absences` for more information.

Students anticipating an absence for a major religious holiday are responsible for notifying the instructor in writing of anticipated absences due to their observance of such holidays no later than the last day in the semester to add a class. Two weeks prior to the absence is reasonable, but should not be given any later. Information regarding major religious holidays may be obtained through the Ombud at 859-257-3737, or online at `https://www.uky.edu/ombud/religious-observation-accommodations`.

Students are expected to withdraw from the class if more than 20% of the classes scheduled for the semester are missed (excused) per University policy.

Per Senate Rule 5.2.4.2, students missing any graded work due to an excused absence are responsible: for informing the Instructor of Record about their excused absence within one week following the period of the excused absence (except where prior notification is required); and for making up the missed work. The professor must give the student an opportunity to make up the work and/or the exams missed due to an excused absence, and shall do so, if feasible, during the semester in which the absence occurred.

Verification of Absences
Students may be asked to verify their absences in order for them to be considered excused. Senate Rule 5.2.4.2 states that faculty have the right to request "appropriate verification" when students claim an excused absence because of illness, or death in the family. Appro-

priate notification of absences due to University-related trips is required prior to the absence when feasible and in no case more than one week after the absence.

Accommodations Due to Disability
If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a Letter of Accommodation from the Disability Resource Center (DRC). The DRC coordinates campus disability services available to students with disabilities. It is located on the corner of Rose Street and Huguelet Drive in the Multidisciplinary Science Building, Suite 407. You can reach them via phone at (859) 257-2754 and via email at drc@uky.edu. Their web address is `https://www.uky.edu/DisabilityResourceCenter`.

Behavior & Etiquette

Classroom Behavior, Decorum, and Civility
The university, college, and department have a commitment to respect the dignity of all and to value differences among members of our academic community. There exists the role of discussion and debate in academic discovery and the right of all to respectfully disagree from time to time. Students clearly have the right to take reasoned exception and to voice opinions contrary to those offered by the instructor and/or other students. Equally, a faculty member has the right—and the responsibility—to ensure that all academic discourse occurs in a context characterized by respect and civility. The accepted level of civility does not include attacks of a personal nature or statements denigrating another on the basis of race, religion, gender, sexual orientation, age, national/regional origin or other such irrelevant factors. Students who are disrespectful, not civil, or disruptive in any way may be asked to leave the class.

Academic Integrity, Cheating, and Plagiarism
I shouldn't even need to say this, but don't cheat. The University takes matters of academic integrity very seriously, and so do I. In addition to harming your learning process, cheating puts everyone involved (including me) into an uncomfortable situation. Working together is paramount, but keep it honest! In particular, most assignments may be discussed in small groups, but all work should be written up individually.

Per University policy, students shall not plagiarize, cheat, or falsify or misuse academic records. Students are expected to adhere to University policy on cheating and plagiarism in all courses. The minimum penalty for a first offense is a zero on the assignment on which the offense occurred. If the offense is considered severe or the student has other academic offenses on their record, more serious penalties, up to suspension from the University may be imposed.

Plagiarism and cheating are serious breaches of academic conduct. Each student is advised

to become familiar with the various forms of academic dishonesty as explained in the Code of Student Rights and Responsibilities. Complete information can be found at the following website: `https://www.uky.edu/Ombud`. A plea of ignorance is not acceptable as a defense against the charge of academic dishonesty. It is important that you review this information as all ideas borrowed from others need to be properly credited.

Senate Rules 6.3.1 (see `https://www.uky.edu/Faculty/Senate/` for the current set of Senate Rules) states that all academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about a question of plagiarism involving their work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording, or content from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

Plagiarism includes reproducing someone else's work (including, but not limited to a published article, a book, a website, computer code, or a paper from a friend) without clear attribution. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work, which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.

When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content, and phraseology intact is plagiaristic. However, nothing in these Rules shall apply to those ideas, which are so generally and freely circulated as to be a part of the public domain.

Please note: Any assignment you turn in may be submitted to an electronic database to check for plagiarism.

Recording in the Classroom

Video and audio recordings are not permitted during the class unless the student has received prior permission from the Professors. If permission is granted, recording of other students is prohibited. Any distribution of recordings is also prohibited. Students with specific recording accommodations approved by the Disability Resource Center should present their official documentation to the professor. All content for this course, including handouts, assignments, and slideshow lectures are the intellectual property of the instructors and cannot be reproduced, sold, or used for any purpose other than educational work in this class without prior permission from the professor.

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 encourage 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; `https://www.uky.edu/StudentAffairs/VIPCenter/`), the Counseling Center (106 Frazee Hall, `http://www.uky.edu/counselingcenter/`), and the University Health Services (`https://ukhealthcare.uky.edu/`) are confidential resources on campus.

Course Calendar

23 August (Thursday): Ice Breaker, Syllabus
28 August (Tuesday): §2.1 Sets
30 August (Thursday): §2.2 Whole Numbers
4 September (Tuesday): §2.3 Number Lines and Numeral Systems
6 September (Thursday): §3.1 & 3.2 Add / Subtract Whole Numbers
11 September (Tuesday): §3.3 Multiplying Whole Numbers
13 September (Thursday): §3.4 Dividing Whole Numbers
18 September (Tuesday): Review for Exam I
20 September (Thursday): Exam I

25 September (Tuesday): §4.1 Mental Math & Estimation
27 September (Thursday): §4.2 Exponents
2 October (Tuesday): §4.3 Order of Operations
4 October (Thursday): §5.1 Divisibility Tests
9 October (Tuesday): §5.2 Primes and Composites
11 October (Thursday): §5.3 GCF and LCM
16 October (Tuesday): Review for Exam II
18 October (Thursday): Exam II

23 October (Tuesday): §6.1 Fractions
25 October (Thursday): §6.3 Multiplying & Dividing Fractions
30 October (Tuesday): §6.2 Adding & Subtracting Fractions
1 November (Thursday): §7.1 Decimals
6 November (Tuesday): §7.2 Adding & Subtracting Decimals
8 November (Thursday): §7.3 Multiplying & Dividing Decimals
13 November (Tuesday): Review for Exam III
15 November (Thursday): Exam III

20 November (Tuesday): §6.4 Ratios & Proportions
22 November (Thursday): Thanksgiving – NO CLASS
27 November (Tuesday): §7.4 Percents
29 November (Thursday): §8.1 Integers
4 December (Tuesday): §8.2 & 8.3 Operations with Integers
6 December (Thursday): Review for Exam IV (Final)
11 December (Tuesday): Exam IV (Final) for Section 002
13 December (Thursday): Exam IV (Final) for Section 003

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* I reserve the right to make changes to the syllabus or calendar at any time. In this event, proper written notice will be given.