Math 247 Syllabus | Fall 2021 | Laurel Langford
Math for Elementary Teachers II | laurel.langford@uwrf.edu
Section 1; Credits: 4 | http://langfordmath.com/

Office hours (getting help): I will be available in my office to answer questions (207B NH) MWF 2:00-2:50, T 1:00-2:50. I am around a lot during the day when I am not in class, and I am (almost) always happy to see you (it is a good idea to make an appointment if you are able to plan ahead). If you call or email me (office phone 715-425-4360, Google Voice number 612-504-4425) and I'm available, I'm happy to do a Zoom office hour if you don't want to come to North Hall. My Google Voice number goes to my cell phone, so it works when I'm not in the office

Schedule: We will meet in NH 205 at 10:00 Mon., Wed. and Fri. and you will have asynchronous lectures to watch and respond to on

Final Exam: Friday Dec 17, 2021 10:15 AM-12:15 PM

Text: you should have the textbook Mathematics for Elementary Teacher by Bennet and Nelson (6 ed.), but we will probably not use it, or not use it very much. Make sure you keep up with the content in class and posted on the web site!

Announcements, schedules, assignments and review sheets are posted on my web site: http://langfordmath.com/. I will be posting your scores on Canvas. Sometimes there are problems (both human and machine errors). *Please save your graded work until after you have checked your grades in Canvas to make sure I have scores recorded correctly.*

Supplies: You will need to have the following supplies at home: ***scissors, tape, colored pencils*** *(or similar), and a* ***ruler****.* An emphasis of this class is arithmetic, so you will *not* be allowed to use a calculator for most assignments and tests.

Grading: Your grade will be based primarily on the weighted average of your assessments. I will occasionally raise a grade for someone who shows a greater understanding of the content (eg. in class discussions) than is reflected in the test scores, but I never lower a grade below what is indicated by the weighted average.
indicated by the weighted averages below:

A: 94-100%	A-: 90-93%	B+: 87-89%	B: 84-86%	B-: 80-83%
C+: 77-79%	C: 74-76%	C-: 70-73%	D: 60-69%	

Weighted averages: tests: 80%, Homework 20%

Tests: 80%. There will be 2-3 hour-long tests (scaled to 100 pts), and a comprehensive final exam (scaled to 200 pts). There may also be some shorter quizzes (variable points).

Homework: 20% Homework will be assigned and collected regularly, and often daily. Expect to spend time each night on homework for this class. The homework score may include:

- Practice problems on paper
- Practice problems submitted online
- Video lecture response questions
- Short projects

Late work will always be accepted for half-credit for a week or until the unit exam date (whichever is sooner). Late work may receive a higher grade or be accepted for a longer time at my convenience (for example, if you turn in the homework after class, but before I have graded it, you will often receive full credit).

Attendance and class participation: Participation is key to being successful in this class and in being successful as a future teacher.

Illness: Don't come to class if you are sick. I will do my best to provide effective ways for you to learn if you have to miss class due to illness, and you will be allowed to turn in any assignments online or via email while sick or isolating, and in many circumstances may be allowed to turn in assignments late with no penalty or a reduced penalty.

Wear your mask: If UWRF and the CDC tells you to wear a mask, then you need to wear a mask. I'm fully vaccinated, and I'm wearing a mask. If we are all *really* responsible, *maybe* we can stay face to face for the whole school year!

Individual concerns: If you are concerned about any aspect of the course requirements (test taking, homework, participation), please make an appointment to talk to me about your concerns.

Teacher Content Standards: The College of Arts and Sciences has a webpage that links you to the teacher content standards by course number. " DPI CONTENT STANDARDS: The State of Wisconsin has established content standards that education programs are required to have in their courses. These standards are the basis of the Praxis II Content exams that all licensure candidates are required to pass prior to receiving a license to teach in Wisconsin." Linked by course number from this page: https://www.uwrf.edu/MATH/WisconsinContentTeacherStandardsMathematicsCourses.cfm.

The UWRF promotes safe, inclusive and effective learning environments that protect the rights and support the interests of both students and faculty. For additional information regarding our inclusivity expectations, academic accommodations, academic conduct expectations and processes, and other syllabi information, please consult http://go.uwrf.edu/Syllabi

Course Objectives

At the end of this course students will be able to:

- Explain why various mathematical procedures work, as well as carry out those procedures.
- Use appropriate mathematical language and symbols when discussing or writing about mathematics.
- Describe relationships/connections between and among mathematical topics.
- Solve mathematical problems based on the concepts presented in each topic area.
- Solve "real-world" application problems from each topic area.
- Use appropriate technology to interpret, model, and solve mathematical problems.

Required Course Content

A. Number Theory 1. Primes and composites 2. Divisibility 3. Least common multiples and greatest common factors 4. Fundamental Theorem of Arithmetic 5. Technology Applications: Graphics software – example – Kid Pix * B. Integers, Rational and Real Numbers 1. Concepts, and models 2. Number sense 3. Equivalence 4. Order 5. Properties 6. Models for the operations 7. Algorithms for the operations 8. Technology Applications: Calculators & Rational Number Software – example – Mighty Math Number Heroes * C. Ratio, proportion, and percents 1. Equivalent ratios 2. Rates 3. Relating fractions, decimals and percents 4. Models for percent 5. Technology Applications: Graphics software – example – Kid Pix * D. Geometry 1. Similarity 2. Tesselations using regular polygons	E. Measurement 1. Measurement systems - English, non-standard systems 2. Surface area 3. Volume F. Data Analysis 1. Organizing and interpreting information (tables and graphs) 2. Measures of central tendency 3. Measures of dispersion 4. Applications and misuse of statistics 5. Technology Applications: Data Analysis & Generation Software – examples – Data Explorer and Tabletop * G. Probability 1. Sample spaces, outcomes, and events 2. Tree diagrams and other representations 3. Experimental and theoretical probability 4. Independent and dependent events 5. Mutually exclusive events 6. Counting techniques 7. Odds 8. Applications of Pascal's Triangle 9. Technology Applications – Implements of Chance – examples – Kid Pix and Mighty Math Number Heroes * H. Manipulatives Integrated Throughout Curriculum (A – G) Including, but not limited to: 1. Counters, snap cubes, and number lines 2. Fraction pieces 3. Base blocks

3. Nets and modeling of 3-D shapes: focus on pyramids, prisms, and regular polyhedra 4. Euler's Formula 5. Technology Applications: Geometry Software – examples – Geometer's Sketchpad and Tesselmania *	4. Pattern blocks 5. Cuisenaire rods 6. Geoboards 7. Power solids 8. Polydrons 9. Protractors, rulers, and compasses

* Example Software Only – May use alternative software or applications on the www

Mode of Instruction: Face to Face **Prerequisites:** A grade of C or better in Math 246.

Projected calendar:

Weeks 1-3: integers, basic concepts of fractions (test)
Weeks 4-7: operations on fractions, prime factorization (test)
Weeks 8-10: ratios and similarity (test)
Weeks 11-12: Measurement (quiz?)
Weeks 13-14: Probability and Data (final exam)