Math 246 General Syllabus   Fall 2016   Laurel Langford
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http://langfordmath.com/

Office hours (getting help): I will be available in my office (206E NH; office phone 715-425-4360) MWF 2:00-3:00, T 1:00-1:50, R 11:00-12:00. 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). A more complete version of my schedule can be found at the schedule link from my homepage.

Schedule: We will meet in NH 205 on Monday, Wednesday and Friday at 10:00. On Thursday we will (generally) meet in DL 161.

Announcements, schedules, assignments and review sheets are posted on my web site. (also any revisions to the syllabus). I will be posting your scores on D2L. Occasionally there are problems with the gradebook (both human and machine errors). **Please save all of your work from this class until after you have checked your grades to make sure I have scores recorded**

Topics :
Sets, Problem Solving and Algebraic reasoning
Whole number concepts and operations
Geometry

Supplies: We have a fairly complete set of supplies in the classroom, but you will need to have the following 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 your scores on homework, projects, quizzes and tests. Homework and projects will count as 20% of your grade. Tests and quizzes will count as 80% of your grade. Your grade will be based primarily on the weighted average (mean) of your scores. Letter grades will be at least as high as those determined by your weighted average and these percents:
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%

Homework: There will be frequent homework problems. You are encouraged to study together, but each person should write up his/her work independently so that the work you submit reflects your understanding of the problem. D2L quizzes that are given as part of the online studying component of the course will be counted in the homework category

Quizzes There will (probably) be quizzes between exams. Quizzes are generally worth about 40 points.

Tests: Tests are generally worth about 80 points, and are given in class. I expect to give 2 in class tests, and a (comprehensive) final exam (about 160 pts). Please talk to me in advance if you have special needs for test taking.

<u>Class Participation</u> I may (or may not) award some points for class participation. I see this as my opportunity to reward students who perform particularly well in class discussions.

<u>Attendance:</u> I do a lot of things that are not in the book, and the only way to get the information is to be in class. I expect you to be near perfect in being in class on time every class period. If you are absent or tardy enough for me to be concerned, I will give you a warning, after which I may file a dispositions concern report with the College of Education.

<u>Late work:</u> Late work will be accepted at my convenience. Typically, if the work is turned in before I have a chance to grade that assignment, your work will be graded with the rest of the class. If you turn in work after I have graded the assignment for the rest of the class, you may still get full credit if your work is late due to an excused absence (circumstances beyond your control: illness, car in need of towing on the way to class, etc), and you have documentation verifying the reason for the absence. Vacations are not excused absences. If you do not have a verifiable excused absence, you may still get partial credit (about 50%) if the assignment is complete and turned in before the end of the unit. Once the unit final test has passed, no late work for the unit will be accepted.

You can do it: A lot of people who take this class don't have a strong background in math. A lot of people struggle, and need support. I have seen people with very weak math backgrounds succeed because they <u>worked hard and used their resources wisely</u>. I can be a good resource. Your classmates can be good resources. The Math Help Center has some tutors who are good resources. <u>If you need extra support, make sure you take advantage of my office hours and study time with your fellow students</u>. This class is designed to tackle the most important topics for elementary teachers to know in math; a lot of the things you will be doing and learning about in this class will be important for you and for your students when you start teaching. You can do it!

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

Math 246 content list for Fall 2016:
Weeks 1-2: Sets and Venn diagrams
- Introduction to sets and set relationships including subsets, disjoint sets, intersections and unions.
- Describing a set relationships using Venn diagrams, sentences, and set notation
- Using Venn diagrams to represent and solve problems with sets (Quiz)

Weeks 2-4: Patterns and functions
- Explaining and representing functions with words and algebraic notation, emphasizing connections between visual and algebraic descriptions for growing patterns
- Problem solving strategies for word problems with an emphasis on diagrams, tables and working backwards in solving problems involving patterns, functions and mixtures. Solving with algebraic equations is also addressed.
- The meaning of the equals sign and its importance in teaching mathematics, with an emphasis on writing careful balanced equations.
- Order of operations (Exam at the end of week 4)

Week5: Cognitively Guided Instruction as a research base for teaching number and operations in early grades
- Word problem structures for addition and subtraction
- Relative difficulty of different types of addition and subtraction problems
- Direct modeling and counting strategies for addition and subtraction

Weeks 6-8: Algorithms and representations for addition and subtraction with whole numbers
- Using bar diagrams to represent addition and subtraction
- Derived facts strategies for addition and subtraction
- Invented and alternate algorithms for 2-digit addition and subtraction
- Base 5, base 10 and the structure of our number system.
- Representing the standard addition and subtraction algorithms using manipulatives and numbers, with emphasis on making connections between manipulative or visual representations and the traditional numerical algorithm.
- Common error patterns for addition and subtraction. (Quiz)

Weeks 9-11: Algorithms and representations for multiplication and division
- Word problem structures for multiplication and division
- Bar diagram representations for multiplication and division
- Array/area representations for multiplication and the commutative and distributive laws
- Division with remainders
- Invented and alternate algorithms for multiplication and division (emphasis on expanded (partial products) and lattice multiplication and scaffolding division)
- Representing 2-digit multiplication with arrays, with an emphasis on connections with the expanded and standard multiplication algorithms.
- Representing the standard multiplication algorithm and the long division algorithm with manipulatives and numbers, with an emphasis on making connections between the manipulative and numerical representations.
- Common errors and error patterns in multiplication and division(Test)

Weeks 12-14: Shapes and geometry
- Geometric properties and definitions.
- Sorting geometric shapes using 2-set Venn diagrams to show relationships.
- Angle sums in polygons (deriving and solving problems with angle sum formulas for polygons)
- Symmetry transformations including compositions of transformations
- Common errors and misconceptions about shapes and properties (Final exam)