

Math 70 and 95 Master Syllabus 2017-2018

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Textbook and ALEKS:

Beginning and Intermediate Algebra, 5th ed., Miller, O'Neill, Hyde with ALEKS.

We have selected ALEKS as the online platform since it adapts to individual users needs. While the use of ALEKS is optional for instructors, it does make the book significantly cheaper. The eBook with ALEKS can be purchased as an 11-week subscription for a 52-week subscription. A photocopy of the book can be purchased for an additional \$15 through ALEKS. Due to cost, even if you do not plan to use ALEKS, you should create an ALEKS class with a course code so students can access the text at lower cost.

More information on ALEKS is available. Please email me tnezol@uoregon.edu

Course Content

We cover chapter 1-6 in the textbook. It is important to note that this class should form a foundation for modeling and problem solving. It is not enough to focus on ALEKS. ALEKS is great at helping students build the necessary skills, but the modeling and problem solving will come mostly from class.

Instructors should develop concepts through meaning and real world examples. Lines, for example, can be motivated by understanding examples of slopes in every day life before formulas are introduced. Once examples of slope and y -intercepts have been discussed in real world examples, then students can discover with their instructor how to find the slope-intercept form of a linear equation and why this equation makes sense. This motivation can help build modeling skills.

Assessments should include skills from ALEKS as well as modeling and deeper understanding from class. Worksheets for this purpose are available in the shared folders and instructors are welcome to take and add to them as they like. If you need to be added to the shared folder, please email me at tnezol@uoregon.edu.

Typically there are weekly quizzes, two midterms, and one final exam. Often finals are at combined final exam times so make sure of the time of your exam before writing your syllabus.

I tend to do 10% ALEKS, 10% Worksheets and other written homework, 10% Quizzes, 40% midterms, and 30% final.

This class is Pass/No Pass. A 70% is usually considered the baseline for a pass. In addition, you may consider a rule that at least a 60% is needed on the final to be able to pass the course.

Calculator Usage

Since 70 spends time on understanding basic calculations and many of the students have never worked without a calculator, it is recommended to have calculators for this course. I also do not recommend them for 95.

Course Outcomes for Math 70:

The successful Math 70 student can:

- accurately use the order of operations in order to reduce an expression, including those with absolute values, signed numbers, fractions, and/or decimals.
- add, subtract, multiply, and divide fractions and decimals
- explain when and why to use common denominators when performing operations on fractions
- identify whether a number is a whole number, an integer, or a real number
- simplify and evaluate algebraic expressions
- solve and simplify linear equations
- interpret a point on a line in the context of a word problem
- interpret the slope of a line in the context of a word problem
- graph linear equations in two variables
- determine the intercepts of a given line whether from a graph or from an equation
- determine whether a basic equation is linear or exponential
- determine from a table of values whether an equation is linear or exponential
- solve systems of linear equations
- identify solutions to systems of equation as either a line, a point, or no intersection (parallel lines)
- solve a variety of world problems based on linear equations or systems of linear equations
- manipulate exponential expressions, and use scientific notation
- factor quadratic and other polynomial equations
- solve quadratic equations

- identify whether an equation is linear, quadratic, or exponential

If time:

- Basic simplifying of square roots and knowing $x^2 = 25$ means $x = \pm\sqrt{5}$
- Basic use of quadratic formula

Course Outcomes for Math 95: (please include a version of this in your 95 syllabus) The successful math 95 student can:

- solve linear equations in two variables
- solve world problems involving linear equations and systems of linear equations
- interpret the slope and points of a line in the context of a word problem
- accurately and efficiently perform calculations with real numbers including fractions, decimals, signed numbers, absolute value, etc.
- identify equations as linear, exponential, or polynomial
- factor quadratic and other polynomial expressions including when the leading coefficient is not 1.
- solve quadratic equations by factoring, using the square root property, or using the quadratic formula
- perform operations involving polynomial and rational expressions
- solve equations containing rational expressions
- simplify and perform operations involving radicals/rational exponents/polynomials
- solve equations involving radical expressions
- apply the rule of functions including accurately applying function notation

- find the domain and range of a function from its graph
- find the largest possible domain of a linear, quadratic, square root, or rational function from its equation
- solve compound inequalities
- identify the vertex and intercepts of a quadratic function (in vertex form or standard form)
- solve word problems involving quadratic equations
- recognize exponential vs. linear modeling. (The student knows linear means increasing by a content amount while exponential means increasing by the same percentage.)
- solve absolute value equations
- solve simple absolute value inequalities by finding the x -intercepts
- solve systems of non-linear equations involving quadratic and linear equations.

Other Notes

You are welcome to copy my ALEKS course including due dates and objectives and make changes as you wish. The most recent class with the new book will have a section titled "Fall 2017". The due dates will give you a good idea of a schedule for the course. In general, I am usually starting lines around Midterm 1 (Week 4) and through systems and exponents before Midterm 2 (Week 8). It's a good idea to save enough time at the end for factoring.

If you are new to using ALEKS, please contact me for any help or advice. It's important you get your account setup well before the start of term.