## Overview of Schedule – Math 110

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Detailed Schedule – Math 110

Week 1: Aug 24 – Aug 28

❖ 3.1. Quadratic Functions and Models
   ➢ Quadratic Functions
   ➢ Graphing Techniques
   ➢ Completing the Square
   ➢ The Vertex Formula
   ➢ Quadratic Models and Curve Fitting

❖ R.3. Polynomials
   ➢ Division

Week 2: Aug 31 – Sept 4

❖ 3.2. Synthetic Division
   ➢ Synthetic Division
   ➢ Remainder Theorem
   ➢ Testing Potential Zeros

❖ 3.3. Zeros of Polynomial Functions
   ➢ Factor Theorem
   ➢ Rational Zeros Theorem
   ➢ Number of Zeros
   ➢ Conjugate Zeros Theorem
   ➢ Descartes’ Rule of Signs
   ➢ Finding Zeros of Polynomial Functions

Week 3: Sept 7 – Sept 11 (No Class Monday - Labor Day)

❖ 3.4. Polynomial Functions...
   ➢ Graphs of $f(x) = ax^n$
   ➢ Graphs of General Polynomials
   ➢ Turning Points and End Behavior
   ➢ Graphing Techniques
   ➢ Polynomial Models and Curve Fitting
Week 4: Sept 14 – Sept 18

- 3.5. Rational Functions...
  - The Reciprocal Function \( f(x) = \frac{1}{x} \)
  - The Function \( f(x) = \frac{1}{x^2} \)
  - Asymptotes
  - Steps for Graphing Rational Functions
  - Rational Function Models
- Exam 1 (3.1, R.3, 3.2, 3.3, 3.4)

Week 5: Sept 21 – Sept 25

- 3.5. Rational Functions...
  - Rational Function Models
- 4.1. Inverse Functions
  - Inverse Operations
  - One-to-One Functions
  - Inverse Functions
  - Equations of Inverses

Week 6: Sept 28 – Oct 2

- R.6. Rational Exponents
  - (do a quick review of exponent rules, p. 57)
- 4.2. Exponential Functions
  - Exponents and Properties
  - Exponential Functions
  - Exponential Equations
  - Compound Interest
  - The Number \( e \) and Continuous Compounding
  - Exponential Models and Curve Fitting
Week 7: Oct 5 – Oct 9

- 4.3. Logarithmic Functions
  - Logarithms
  - Logarithmic Equations
  - Logarithmic Functions
  - Properties of Logarithms

- Exam 2 (3.5, 4.1, R.6, 4.2)

- 4.4. Evaluating Logarithms...
  - Common Logarithms
  - Natural Logarithms
  - Logarithms with Other Bases

Week 8: Oct 12 – Oct 16

- 4.5. Exponential and Logarithmic Equations
  - Exponential Equations
  - Logarithmic Equations
  - Applications and Modeling

- 4.6. Applications and Modeling...
  - Exponential Growth or Decay Function
  - Growth Function Models
  - Decay Function Models

Week 9: Oct 19 – Oct 23 (No Class Monday and Tuesday – Fall Break)

- 5.1. Systems of Linear Equations
  - Linear Systems
  - Substitution Method
  - Elimination Method

Week 10: Oct 26 – Oct 30

- Exam 3 (4.3, 4.4, 4.5, 4.6)

- 5.2. Matrix Solution of Linear Systems
  - The Gauss-Jordan Method
  - Special Systems

Week 11: Nov 2 – Nov 6
5.3. Determinant Solutions of Linear Systems
   - Determinants
   - Evaluating \( n \times n \) Determinants (via Calculator)

5.4. Partial Fractions
   - Decomposition of Rational Expressions
   - Distinct Linear Factors
   - Repeated Linear Factors
   - Distinct Linear and Quadratic Factors
   - Repeated Quadratic Factors

**Week 12: Nov 9 – Nov 13**

- 5.5. Nonlinear Systems of Equations
  - Solving w/ Real Solutions

**Exam 4** (5.1, 5.2, 5.3, 5.4)

**Week 13: Nov 16 – Nov 20**

- 5.6. Systems of Inequalities and Linear Programming
  - Solving Linear Inequalities
  - Solving Systems of Inequalities
  - Linear Programming

- 5.7. Properties of Matrices
  - Basic Definitions
  - Adding Matrices
  - Special Matrices
  - Subtracting Matrices
  - Multiplying Matrices
  - Applying Matrix Algebra

**Week 14: Nov 23 – Nov 27 (No Class Wednesday, Thursday, and Friday; Thanksgiving)**

- 5.7. Properties of Matrices
  - Multiplying Matrices
  - Applying Matrix Algebra

**Week 15: Nov 30 – Dec 4**

- 5.8. Matrix Inverses
  - Identity Matrices
  - Multiplicative Inverses
  - Solving Systems using Inverse Matrices

**Exam 5** (5.5, 5.6, 5.7, 5.8)
(SUB)SECTIONS NOT TO BE COVERED

- 3.6 – Variation (entire section)
- 4.1 – Inverse Functions : An Application of Inverse Functions to Cryptography
- 4.4 – Evaluating Logarithms : Applications and Modeling with Common Logarithms
- 4.4 – Evaluating Logarithms : Applications and Modeling with Natural Logarithms
- 5.1 – Systems of Linear Equations : Applying Systems of Equations
- 5.1 – Systems of Linear Equations : Using Systems of Equations to Model Data
- 5.3 – Determinant Solutions of Linear Systems : Cofactors
- 5.3 – Determinant Solutions of Linear Systems : Cramer’s Rule
- 5.5 – Systems of Nonlinear Equations : Nonreal Complex Solutions
- 5.5 – Systems of Nonlinear Equations : Applying Nonlinear Systems