**MATH 1314 College Algebra, 3 Credits**

Description

In-depth study and applications of polynomial, rational, radical, absolute value, piecewise-defined, exponential and logarithmic functions, equations, inequalities, graphing skills and systems of equations using matrices. Additional topics such as sequences, series, probability, conics, and inverses may be included.

Prerequisites

MATH 0310 or placement by testing; Course may be taken as a corequisite with ENGL 0305 or ENGL 0365 and ENGL 0307

Textbook for Math 1314

*College Algebra;* Rockswold, 5th edition

Loose leaf bundled with a MyMathLab access code card; Pearson Publishing

ISBN-13: 978-126-9891042

Math 1314 Outcomes

* Demonstrate and apply knowledge of properties of functions, including domain and range, operations, compositions, inverses and piecewise defined functions.
* Recognize, graph and apply polynomial, rational, radical, exponential, logarithmic and absolute value functions and solve related equations.
* Apply graphing techniques.
* Evaluate all roots of higher degree polynomial and rational functions.
* Recognize, solve and apply systems of linear equations using matrices.
* Solve absolute value, polynomial and rational inequalities.

**Math 1314 Sections**

*1.2\* Visualizing and Graphing Data*

1.3 Functions and Their Representations

1.4 Types of Functions and Their Rates of Change

*2.1\* Equations of Lines (first 3 objectives only)*

2.2 Linear Equations

2.3 Linear Inequalities

2.4 More Modeling with Functions (first two objectives only)

2.5 Absolute Value Equations and Inequalities

3.1 Quadratic Functions and Models

3.2 Quadratic Equations and Problem Solving

*3.3\* Complex Numbers*

3.4 Quadratic Inequalities

3.5 Transformations of Graphs

4.1 More Nonlinear Functions and Their Graphs

4.2 Polynomial Functions and Models

*4.3\* Division of Polynomials*

4.6 Rational Functions and Models (include optional objective)

4.7 More Equations and Inequalities

4.8 Radical Equations and Power Functions

5.1 Combining Functions

5.2 Inverse Functions and Their Representations

5.3 Exponential Functions and Models

5.4 Logarithmic Functions and Models

5.5 Properties of Logarithms

5.6 Exponential and Logarithmic Equations

*6.1\* Functions and Systems of Equations in Two Variables (first 6 objectives only)*

*6.2\* Systems of Inequalities in Two Variables (first objective only)*

*6.3\* Linear Equations in Three Variables*

6.4 Solutions to Linear Systems Using Matrices

**(Unless otherwise noted, exclude optional objectives as noted in textbook)**

**MATH 1316 Trigonometry, 3 Credits**

Description

Trigonometric functions and their applications, solutions of right and oblique triangles, trigonometric identities and equations, inverse trigonometric functions, graphs of the trigonometric functions, vectors and polar coordinates

Prerequisite

MATH 1314 OR placement by testing; ENGL 0305 or ENGL 0365 OR higher level course (ENGL 1301), OR placement by testing;

Corequisite

ENGL 0307

Textbook for Math 1316 and Math 2412

*PreCalculus*

Michael Sullivan

Addison Wesley; 9th edition

ISBN-10: 0321716833

ISBN-13: 978-0321716835

Math 1316 Outcomes

* Compute the values of trigonometric functions for key angles in all quadrants of the unit circle measured in both degrees and radians.
* Compute values of the six basic inverse trigonometric functions.
* Graph trigonometric functions and their transformations.
* Prove trigonometric identities.
* Solve trigonometric equations.
* Solve right and oblique triangles.
* Use the concepts of trigonometry to solve applications.
* Compute operations of vectors.
* Represent complex numbers in trigonometric form.

**Math 1316 Sections**

6.1 Angles and Their Measure

6.2 Trigonometric Functions: Unit Circle Approach

6.3 Properties of the Trigonometric Functions

6.4 Graphs of the Sine and Cosine Functions

6.5 Graphs of the Tangent, Cotangent, Cosecant, and Secant Functions

6.6 Phase Shift; Sinusoidal Curve Fitting (optional)

7.1 The Inverse Sine, Cosine, and Tangent Functions

7.2 The Inverse Trigonometric Functions (continued)

7.3 Trigonometric Equations

7.4 Trigonometric Identities

7.5 Sum and Difference Formulas

7.6 Double-angle and Half-Angle Formulas

7.7 Product-to-Sum and Sum-to-Product Formulas

8.1 Right Triangle Trigonometry; Applications

8.2 The Law of Sines

8.3 The Law of Cosines

8.4 Area of a Triangle

9.1 Polar Coordinates (optional)

9.3 The Complex Plane; De Moivre’s Theorem

9.4 Vectors

9.5 The Dot Product (optional)

9.6 Vectors in Space (optional)

**MATH 1324 Finite Mathematics, 3 Credits**

Description

Applications of common algebraic functions, including polynomial, exponential, logarithmic, and rational, to problems in business, economics, and the social sciences are addressed. The applications include mathematics of finance, including simple and compound interest and annuities; systems of linear equations; matrices; linear programming; and probability, including expected value.

Prerequisites

MATH 0310 or placement by testing; ENGL 0305 or higher level course (ENGL 1301) or placement by testing

Corequisite

ENGL 0309

Textbook

*Finite Mathematics for Business, Economics, Life Sciences and Social Sciences*

Raymond A. Barnett, Michael R. Ziegler, and Karl Byleen

Prentice Hall; 12th edition

ISBN-10: 0321614011

ISBN-13: 978-0321614018

Math 1324 Outcomes

* Apply elementary functions, including linear, quadratic, polynomial, rational, logarithmic, and exponential functions to solving real-world problems.
* Solve mathematics of finance problems, including the computation of interest, annuities, and amortization of loans.
* Apply basic matrix operations, including linear programming methods, to solve application problems.
* Demonstrate fundamental probability techniques and application of those techniques, including expected value, to solve problems.
* Apply matrix skills and probability analyses to model applications to solve real-world problems.

**Math 1324 Sections**

1.1 Linear Equations and Inequalities

1.2 Graphs and Lines

2.1 Functions

2.2 Elementary Functions: Graphs and Transformations

2.3 Quadratic Functions

2.4 Polynomial and Rational Functions

2.5 Exponential Functions

2.6 Logarithmic Functions

3.1 Simple Interest

3.2 Compound and Continuous Compound Interest

3.3 Future Value of an Annuity; Sinking Funds

3.4 Present Value of an Annuity; Amortization

4.1 Review: Systems of Linear Equations in Two Variables (optional)

4.2 Systems of Linear Equations and Augmented Matrices

4.3 Gauss-Jordan Elimination

4.4 Matrices: Basic Operations

5.1 Inequalities in Two Variables

5.2 Systems of Linear Inequalities in Two Variables

5.3 Linear Programming in Two Dimensions: A Geometric Approach

6.1 A Geometric Introduction to the Simplex Method

6.2 The Simplex Method

6.3 The Dual Problem

7.2 Sets

7.3 Basic Counting Principles

7.4 Permutations and Combinations

8.1 Samples Spaces, Events, and Probability

8.2 Union, Intersection, and Complement of Events: Odds

8.3 Conditional Probability, Intersection, and Independence

8.4 Bayes' Formula

8.5 Random Variable, Probability Distribution, and Expected Value

11.1 Graphing Data

11.2 Measures of Central Tendency

11.3 Measures of Dispersion

**MATH 1325 Elements of Calculus with Applications, 3 Credits**

Description

A one-semester calculus course for non-science majors. Topics include limits, continuity, rates of change, differentiation and integration techniques and applications, calculus of the logarithmic and exponential functions and partial derivatives.

Prerequisites

MATH 1314 or placement by testing; ENGL 0305 or ENGL 0365 OR higher level course (ENGL 1301), OR placement by testing.

Corequisite

ENGL 0307

Textbook

*Calculus for Business, Economics, Life Sciences and Social Sciences*

by Raymond A. Barnett, Michael R. Ziegler, and Karl Byleen

Publisher: Prentice Hall; 13th edition

ISBN‐10: 0321925718

ISBN‐13: 978‐0321925718

Math 1325 Outcomes

* Apply calculus to solve business, economics, and social sciences problems.
* Apply appropriate differentiation techniques to obtain derivatives of various functions, including logarithmic and exponential functions.
* Solve application problems involving implicit differentiation and related rates.
* Solve optimization problems with emphasis on business and social sciences applications.
* Determine appropriate technique(s) of integration.
* Integrate functions using the method of integration by parts or substitution, as appropriate.
* Solve business, economics, and social sciences applications problems using integration techniques.

**Math 1325 Sections**

1.1 Functions (optional)

1.2 Graphs and Transformations (optional)

1.3 Quadratic Equations (optional)

1.4 Polynomial and Rational Functions (optional)

1.5 Exponential Functions (optional)

1.6 Logarithmic Functions (optional)

2.1 Introduction to Limits

2.2 Infinite Limits and Limits at Infinity

2.3 Continuity

2.4 The Derivative

2.5 Basic Differentiation Properties

2.6 Differentials (optional)

2.7 Marginal Analysis in Business and Economics

3.1 The Constant e and Continuous Interest

3.2 Derivatives of Exp and Logarithmic Functions

3.3 Derivatives of Products and Quotients

3.4 The Chain Rule

3.5 Implicit Differentiation

3.6 Related Rates

3.7 Elasticity of Demand (optional)

4.1 First Derivative and Graphs

4.2 Second Derivative and Graphs

4.3 L’Hôpital’s Rule (optional)

4.4 Curve Sketching Techniques

4.5 Absolute Maxima and Minima

4.6 Optimization

5.1 Anti‐derivatives and Indefinite Integrals

5.2 Integration by Substitution

5.3 Diff. Equations: Growth and Decay

5.4 The Definite Integral

5.5 The Fundamental Theorem of Calculus

6.1 Area between Curves

6.2 Applications in Business and Economics

6.3 Integration by Parts

7.1 Functions of Several Variables

7.2 Partial Derivatives

**MATH 1332 College Mathematics for Liberal Arts, 3 Credits**

Description

College Mathematics for Liberal Arts is a course designed for liberal arts and other nonmathematics, non-science, and nonbusiness majors, emphasizing an appreciation of the art, history, beauty, and applications of mathematics. Topics may include, but are not limited to, sets, logic, number theory, measurement, geometric concepts, and an introduction to probability and statistics.

Prerequisites

MATH 0310 or placement by testing; ENGL 0305 or ENGL 0365 OR higher level course (ENGL 1301), or placement by testing.

Corequisite

ENGL 0307

Textbook

Thinking Mathematically, 6/E

Robert F. Blitzer, *Miami-Dade Community College*

productFormatCode=C02  
productCategory=10  
statusCode=5  
isBuyable=true  
subType=  
path/ProductBean/courseSmarttrue

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©2015 • Pearson • Cloth, 1040 pp

Math 1332 Outcomes

* Demonstrate a mastery of the language of sets.
* Solve counting applications using permutation and combinations.
* Compute probabilities, including conditional probabilities, using principles of sets and counting.
* Identify the use and misuse of statistics in the real world.
* Create and interpret various methods of statistical display.

**Math 1332 Sections**

2.1 Basic Set Concepts

2.2 Subsets

2.3 Venn Diagrams and Set Operations

2.4 Set Operations and Venn Diagrams with Three Sets

2.5 Survey Problems

3.1 Statements, Negations and Quantified Statements

3.2 Compound Statements and Connectives

3.3 Truth Tables for Negation, Conjunction and Disjunction

3.4 Truth Tables for the Conditional and Biconditional

3.5 Equivalent Statements and Variations of Conditional Statements

3.6 Negations of Conditional Statements and De Morgan's Laws

3.7 Arguments and Truth Tables

3.8 Arguments and Euler Diagrams

10.1 Points, Lines, Planes, and Angles

10.2 Triangles

10.3 Polygons, Perimeter, and Tessellations

10.4 Area and Circumference

11.1 The Fundamental Counting Principle

11.2 Permutations

11.3 Combinations

11.4 Fundamentals of Probability

11.5 Probability with the Fundamental Counting Principle, Permutations and Combinations

11.6 Events Involving *Not* and *Or*, Odds

11.7 Events Involving *And*; Conditional Probability

12.1 Sampling, Frequency Distributions and Graphs

12.2 Measures of Central Tendency

12.3 Measures of Dispersion

**MATH 1342 Statistics, 3 Credits**

Description

Collection, analysis, presentation and interpretation of data, and probability. Analysis includes descriptive statistics, correlation and regression, confidence intervals and hypothesis testing. Use of appropriate technology is recommended.

Prerequisites

MATH 1314 or placement by testing; ENGL 0305 or ENGL 0365 or higher level course (ENGL 1301), or placement by testing.

Corequisite

ENGL 0307

Textbook

*Elementary Statistics, A Brief Version*

Allan Bluman

McGraw-Hill Science/Engineering/Math; 6th edition

Language: English

ISBN-10: 0077567668

ISBN-13: 978-0077567668

Math 1342 Outcomes

* Explain the use of data collection and statistics as tools to reach reasonable conclusions.
* Recognize, examine and interpret the basic principles of describing and presenting data.
* Compute and interpret empirical and theoretical probabilities using the rules of probabilities and combinatorics.
* Explain the role of probability in statistics.
* Apply the Central Limit Theorem to the sampling process.
* Examine, analyze and compare various sampling distributions for both discrete and continuous random variables.
* Describe and compute confidence intervals.
* Solve linear regression and correlation problems.
* Perform hypothesis testing using statistical methods.

**Math 1342 Sections**

Chapter 1 is mainly for reading and terminology.

1.1 Descriptive and Inferential Statistics

1.2 Variables and Type of Data

1.3 Data Collection

1.4 Observational and Experimental Studies

1.5 Uses and Misuses

1.6 Computers and Calculators

2.1 Organizing Data

2.2 Histograms, Frequency Polygons and Ogives

2.3 Other Types of Graphs

2.4 Paired Data and Scatter Plots

3.1 Measures of Central Tenancy

3.2 Measures of Variation

3.3 Measures of Position

3.4 Exploratory Data Analysis

4.1 Sample Spaces and Probability

4.2 The Addition Rules

4.3 The Multiplication Rules

4.4 Counting Rules

4.5 Probability and Counting Rules

5.1 Probability Distributions

5.2 Mean, Variance, Standard Deviation and Expectation

5.3 The Binomial Distribution

6.1 Normal Distributions

6.2 Applications of the Normal Distribution

6.3 The Central Limit Theorem

7.1 Confidence Intervals for the Mean Standard Deviation Known

7.2 Confidence Intervals for the Mean, Standard Deviation Unknown

7.3 Confidence Intervals for Proportions

7.4 Confidence Intervals for Variances and Standard Deviation

8.1 Hypothesis Testing Traditional

8.2 z Test for a Mean

8.3 t Test for a Mean

8.4 z Test for a Proportion

8.5 Chi-Squared Test for a Variance and Standard Deviation

10.1 Correlation

10.2 Regression

11.1 Test for Goodness of Fit

11.2 Tests Using Contingency Tables

11.3 Analysis of Variance (ANOVA)

**MATH 1350 Foundations of Mathematics I, 3 Credits**

Description

This is designed specifically for students who seek elementary and middle school teacher certification. Topics include set theory, functions, numerations systems, number theory, emphasis on problem solving and critical thinking.

Prerequisite

MATH 1314 OR placement by testing; ENGL 0305 or ENGL 0365 OR higher level course (ENGL 1301), or placement by testing.

Corequisite

ENGL 0307

Textbook for Math 1350 and Math 1351

*Mathematical Reasoning for Elementary School Teachers*

Calvin T. Long, Duane W. De Temple, Richard S. Millman

Addison Wesley; 6th edition

ISBN-10: 0321693124

ISBN-13: 978-0321693129

Math 1350 Outcomes

* Use models and manipulatives to demonstrate the four basic operations of the rational numbers.
* Demonstrate an understanding of place value through multiple representations including the use of grouping manipulatives, place value manipulatives and abstract representations such as with exponents and different number bases.
* Demonstrate an understanding of the attributes of numeration systems.
* Analyze mathematical situations and solve problems using mathematical heuristics.

**Math 1350 Sections**

1.1 An Introduction to Problem Solving

1.2 Pólya's Problem‐Solving Principles

1.3 More Problem‐Solving Strategies

1.4 Algebra as Problem‐Solving Strategy

1.5 Additional Problem‐Solving Strategies

1.6 Reasoning Mathematically

2.1 Sets and Operations on Sets

2.2 Sets, Counting, and the Whole Numbers

2.3 Addition and Subtraction of Whole Numbers

2.4 Multiplication and Division of Whole Numbers

3.1 Numeration Systems Past and Present

3.2 Non‐decimal Positional Systems

3.3 Algorithms for Adding and Subtracting

3.4 Algorithms for Multiplication and Division

3.5 Mental Arithmetic and Estimation

4.1 Divisibility of Natural Numbers

4.2 Tests for Divisibility

4.3 Greatest Common Divisors Least Common Multiples

5.1 Representations of Integers

5.2 Addition and Subtraction of Integers

5.3 Multiplication and Division of Integers

6.1 Basic Concepts of Fractions and Rational Numbers

6.2 Addition and Subtraction of Fractions

6.3 Multiplication and Division of Fractions

6.4 The Rational Number System

7.1 Decimals and Real Numbers

7.2 Computations with Decimals

7.3 Proportional Reasoning

7.4 Percent

8.1 Algebraic Expressions, Functions, and Equations

8.2 Graphing Points, Lines, and Elementary Functions

**MATH 1351 Foundations of Mathematics II, 3 Credits**

Description

This is designed specifically for students who seek elementary and middle school teacher certification. Topics include concepts of geometry, probability, and statistics, as well as applications of the algebraic properties of real numbers to concepts of measurement with an emphasis on problem solving and critical thinking.

Prerequisites

MATH 1314 OR placement by testing; ENGL 0305 or ENGL 0365 OR higher level course (ENGL 1301), or placement by testing.

Corequisite

ENGL 0307

Textbook for Math 1350 and Math 1351

*Mathematical Reasoning for Elementary School Teachers*

Calvin T. Long, Duane W. De Temple, Richard S. Millman

Addison Wesley; 6th edition

ISBN-10: 0321693124

ISBN-13: 978-0321693129

Math 1351 Outcomes

* Explore the geometric attributes of physical objects in order to classify and to form definitions.
* Analyze spatial characteristics such as direction, orientation, and perspective.
* Connect geometric ideas to numbers and measurement.
* Use geometric models to solve problems.
* Explore and understand measurement and estimation.
* Analyze data and statistics.
* Use probability with simple and complex experiments.
* Understand surface area and volume through discovery.

**Math 1351 Sections**

9.1 Graphical Representation of Data

9.2 Measures of Central Tendency and Variability

9.3 Statistical Inference and Sampling

10.1 Empirical Probability

10.2 Principles of Counting

10.3 Permutations and Combinations

10.4 Theoretical Probability

11.1 Figures in the Plane

11.2 Curves and Polygons in the Plane

11.3 Figures in Space

11.4 Networks

12.1 The Measurement Process

12.2 Area and Perimeter

12.3 The Pythagorean Theorem

12.4 Surface Area and Volume

13.1 Rigid Motions and Similarity Transformations

13.2 Patterns and Symmetries

13.3 Tilings and Escher-like Design

14.1 Congruent Triangles

14.2 Constructing Geometric Figures

14.3 Similar Triangles