

MATH 114 Departmental Syllabus

MATH 114 Course Description (As posted in the Fall 2021 description on UDSIS): Stresses mathematical concepts and algebraic skills with a strong emphasis on applications in the areas of management, life and social sciences. Topics include various function classes and models as well as statistics including descriptive statistics, probability, and regression.

PREREQUISITE: Requires a grade of C- or better in MATH010, or a score of 45 or better in the Math Placement Test. See <https://www.mathsci.udel.edu/courses-placement/ud-math-placement> for more information.

RESTRICTIONS: Students who received credit in MATH115, MATH117, MATH221, MATH222, MATH231, MATH241, MATH242, or MATH243 are not eligible to take this course without permission.

TEXTBOOK: College Mathematics and Statistics: Custom Edition for University of Delaware, consisting of the following two books:

- For the algebra component: *College Algebra with Application for Business and the Life Sciences 2nd ed.* by Larson and Hodgkins, Cengage Learning.
- For the statistics component: *Understanding Basic Statistics 7th ed.* by Brase and Brase, Cengage Learning.

OTHER REQUIRED MATERIALS: WebAssign, Graphing Calculator, MATH 114 Regression Packet.

TEXTBOOK SECTIONS AND/OR TOPICS

Each “unit” below is a 50-minute class meeting with the primary instructor. A typical spring semester has 38-40 units. Below is the number of units per topic for a 40-unit semester (36 units of content and 4 review days):

Algebra Chapter 1: Equations and Inequalities (6.5 units)

- 1.1 Linear Equations (1)
- 1.2 Mathematical Modeling (2)
- 1.3 Quadratic Equations (1)
- 1.4 The Quadratic Formula (1.5)
- 1.6 Linear Inequalities (1)

Algebra Chapter 2: Functions and Graphs (4.5 units)

- 2.2 Lines in the Plane (1)
- 2.3 Linear Modeling (1.5)
Note: Stat 4.1 is covered after 2.3 (see Statistics sections below)
- 2.4 Functions (1)
- 2.5 Graphs of Functions (1)

Algebra Chapter 3: Polynomial and Rational Functions (2 units)

- 3.1 Quadratic Functions and Models (2)

Algebra Chapter 4: Exponential and Logarithmic Functions (8 units)

- 4.1 Inverse Functions (1)
- 4.2 Exponential Functions (2)
- 4.3 Logarithmic Functions (1)
- 4.4 Properties of Logarithmic Functions (1)
- 4.5 Solving Exponential and Logarithmic Equations (1.5)
- 4.6. Exponential and Logarithmic Models (1.5)

Statistics Chapter 1: Getting Started (2 units)

- 1.1 What is Statistics? (1)
- 1.2 Random Samples (1)

Statistics Chapter 2: Organizing Data (4 units)

- 2.1 Frequency Distributions and Histograms (2)
- 2.2 Bar Graphs and Circle Graphs (1)
- 2.3 Stem-and-Leaf Displays (1)

Statistics Chapter 3: Averages and Variation (3 units)

- 3.1 Measures of Central Tendency: Mode, Median, and Mean (1)
- 3.2 Measures of Variation (1)
- 3.3 Percentiles and Box-and-Whisker Plots (1)

Statistics Chapter 4: Correlation and Regression (1 unit)

- 4.1 Scatter Diagrams and Linear Correlation (1)

Statistics Chapter 5: Elementary Probability Theory (1 unit)

- 5.1 What is Probability? (1)

Statistics Chapter 7: Normal Curves and Sampling Distributions (4 units)

- 7.1 Graphs of Normal Probability Distributions (1)
- 7.2 Standard Units and Areas Under the Standard Normal Distribution (1.5)
- 7.3 Areas Under Any Normal Curve (1.5)

GRADING SCALE: $A \geq 90\%$, $A^- \geq 87\%$, $B^+ \geq 84\%$, $B \geq 80\%$, $B^- \geq 77\%$, $C^+ \geq 74\%$, $C \geq 70\%$, $C^- \geq 67\%$, $D^+ \geq 64\%$, $D \geq 60\%$, $D^- \geq 57\%$, $F < 57\%$.

ASSESSMENT COURSE GRADE WEIGHT:

Spring 2021 & Fall 2021:

- Three Midterm Exams = 45%
 - Final Exam = 25%
 - Total Exam Weight = 70%
 - Homework = 10%
 - Instructor Freedom* = 20%
- *This may consist of a combination of quizzes, collected homework, group work, attendance, etc.

Notes:

- Completed by Giovanna Lisey, July 2021. Referenced the syllabi for Spring 2021 and Fall 2021 (anticipated) from the Newark campus. Approved by the Foundational Math Committee.