

# Mathematics for Allied Health

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## 1 Course Description

**Course:** 2030:130 Mathematics for Allied Health

**Credits:** 3

**Prerequisite:** Placement test or completion of 2010:052, 054, 057, or 084 with a grade of C or better.

**Bulletin Description:** Prerequisite: Placement test or completion of 2010:052, 054, 057, or 084 with a grade of C or better. The real number system, systems of measurement, conversions, linear equations, factoring, quadratic equations, graphing, linear systems, organizing data, averages, standard deviation, the normal distribution.

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## 2 Course Outcomes

After completing this course the student should have the following competencies:

1. the ability to use basic algebra;
2. the ability to use ratios, proportions, variation to solve real-world problems;
3. a complete understanding of percentages and their uses;
4. an understanding of measurement systems;
5. the ability to convert measurements from one form to another form of measurement;
6. the ability to solve systems of linear equations and to use them in applications;
7. an understanding of the algebra of polynomials up to quadratic equations;
8. the ability to compute and use basic statistics.

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## 3 Course Outline

1. The Real numbers
  - (a) Fractions, decimals, percentages
  - (b) Negative numbers
  - (c) Powers and roots
2. Systems of measurement
  - (a) Metric and U.S. systems: length, area, volume, mass, capacity, temperature, time, pressure, velocity
  - (b) Reductions and conversions
3. Basic algebra
  - (a) Algebraic expressions and operations: symbols and terminology, addition and subtraction of polynomials, multiplication and division of polynomials
  - (b) Linear equations: finding solutions, formulas, word problems, ratios and proportions, mixture problems, dilution problems, percentages of solution problems, direct and indirect variation
  - (c) Factoring: removing common factors, differences of squares, trinomials
  - (d) Quadratic equations: Solving by factoring, using the quadratic formula, applications
4. Graphs
  - (a) The rectangular coordinate system
  - (b) Graphs of linear equations in two variables
5. Systems of equations
  - (a) Solving a  $2 \times 2$  system graphically
  - (b) Solving a  $2 \times 2$  system algebraically
  - (c) Mixture problems
6. Statistics
  - (a) Organizing data: tables, pie charts, bar graphs, etc.
  - (b) Mode, median, mean
  - (c) Standard deviation
  - (d) The normal distribution

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## 4 Textbook

*Mathematics for the Health Sciences: A Comprehensive Approach.* Joel R. Helms. Delmar, Cengage Learning, 2010.

**Supplement:** *Technical Mathematics.* Dale Ewen, Joan S. Gary, and James E. Trefzger. Pearson, Second Edition, 2005.

The following sections of *Mathematics for the Health Sciences* should be covered in this course and in order they are listed. As the text does not contain all of the topics that need to be covered in the course, supplementary material from *Technical Mathematics* is also listed. Sections 5.1, 6.2, 6.3, 8.2, and 8.3 of *Mathematics for the Health Sciences* may be consulted for examples

and background information.

**Chapter 1:** 1.1, 1.2, 1.3, 1.4, 1.5

**Chapter 2:** 2.1, 2.2

**Supplement:** Section 6.1 from *Technical Mathematics*

**Chapter 2:** 2.3, 2.4, 2.5, 2.6, 2.7, 2.8

**Supplement:** Sections 5.1, 5.2, 5.3, 7.1, and 7.3 from *Technical Mathematics*

**Chapter 3:** 3.1, 3.2, 3.3, 3.5

**Chapter 4:** 4.1, 4.2, 4.3, 4.4

**Chapter 5:** 5.2, 5.7

**Chapter 6:** 6.1, 6.4, 6.5, 6.6

**Chapter 9:** 9.1, 9.2, 9.3, 9.4

**Chapter 10:** 10.1, 10.2, 10.3, 10.4, 10.5

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## 5 Calculator Policy

All students are **required** to have a **scientific** or graphing calculator with minimum functionality equivalent to that of the **Texas Instruments TI-30X IIS** calculator. Every student is **required** to have possession of their calculator by the end of the first week of classes. No exceptions to this policy will be made by the instructor.