

MATH 160: MATHEMATICS FOR EVERYDAY LIVING - A LIBERAL ARTS COURSE

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Fall 2024
Credits:	5
Total Contact Hours:	90
Lecture Hours :	90
Lab Hours:	0
Hours Arranged:	0
Outside of Class Hours:	180
Total Student Learning Hours:	270
Prerequisite:	Intermediate algebra or higher or direct placement based on multiple measures.
District General Education:	A3. Mathematics
Transferable to CSU:	Yes
Transferable to UC:	Yes - Approved
Grading Method:	Standard Letter, Pass/No Pass

Catalog Course Description

A course in mathematical concepts for the liberal arts student. Topics include critical thinking, approaches to problem solving, numbers in the real world, financial management, statistical reasoning, probability, and applications of exponential growth and decay. 90 lecture hours.

Course Objectives

- Construct valid arguments and find fallacies in faulty arguments.
- Perform set operations and use Venn diagrams.
- Recognize and apply the concepts of mathematics as a problem-solving tool to other disciplines.
- Demonstrate a strong number sense to recognize reasonable claims.
- Demonstrate an understanding and working knowledge of math related consumer topics, including simple and compound interest, loans, and mortgages.
- Present statistical analysis of data in a variety of descriptive ways.
- Calculate measures of central tendency and measures of variation.
- Apply the rules of simple probability.
- Use the normal distribution curve to estimate probabilities.
- Recognize and utilize linear and exponential growth patterns.
- Demonstrate an understanding of the use of technology in mathematics, including use of calculators and other devices.

Major Course Content

Unit I Thinking Critically

1. Explore Common Fallacies and How to Avoid Them
2. Basic Components of Logic: Propositions, Truth Values, Truth Tables, and Logical Connectors
3. Sets and Venn Diagrams

4. Inductive and Deductive Arguments
5. Applying Logic to Common Situations

Unit II Approaches to Problem Solving

1. Dimensional Analysis
2. Review of Standardized Units
3. Problems Solving Guidelines and Hints

Unit III Numbers in the Real World

1. Uses and Abuses of Percentages
2. Use of Scientific Notation to Gain Perspective on Small and Large Numbers
3. Significant Digits, Rounding, Errors, Accuracy and Precision
4. The Role of Index Numbers (CPI)
5. How Numbers Deceive: Polygraphs, Mammograms, and Morgages

Unit IV Financial Management

1. Basics of Personal Budgeting
2. Compound Interest
3. Savings Plans and Investments
4. Loan Payments, Credit Cards and Mortgages

Units V Statistical Reasoning

1. Fundamentals of Statistics
2. Eight Useful Guidelines for Evaluating Statistical Claims
3. Descriptive Statistics
4. Common Types of Media Graphics
5. Correlation and Causality

Unit VI Putting Statistics to Work

1. Measures of Central Tendency
2. Measures of Variation
3. The Normal Distribution

Unit VII Probability

1. Fundamentals of Probability
2. Combining Probabilities: Addition and Multiplication Rules
3. The Law of Large Numbers
4. Permutations and Combinations

Unit VIII Applications of Exponential Growth and Decay

1. Linear vs. Exponential Growth
2. Doubling Time and Half-Life
3. Logarithmic Scales: Richter, Decibel and pH scales

Examples of Required Writing Assignments

The students have a project to complete which assesses their understanding of the financial formulas used in Unit 4. They have their choice to pick one of the following topics : 1) Financing the purchase of a car with a loan 2) Financing the purchase of a house with a loan 3) Saving for retirement Students are instructed to use either Microsoft Word, or

Google docs, for their final draft that is due and turned in digitally using e-mail, preferably through Canvas.

Examples of Outside Assignments

Students will be required to complete the following types of assignments outside of the regular class time:

Read textbook Practice mathematical skills Study Group and Individual Projects Solve homework problems using online homework program (such as MyMath Lab)

Solve problems - includes:

Solving problems that are similar to those demonstrated in class. These serve as practice exercises to reinforce the learning of the skills and concepts being taught.

Solving problems that are different from those presented in class. Such problem solving requires students to apply concepts in a new context.

Application problems are regularly assigned. Here students learn to evaluate an unfamiliar problem by recognizing the mathematical concepts that apply and then using acquired mathematical skills to solve the problem.

Instruction Type(s)

Lecture, Online Education Lecture

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

Yes