Marshall University

College of Science

Mathematics Department

MTH 160: Applied Mathematical Reasoning

Course catalog description

A critical thinking course in applied mathematical reasoning. Topics include logic, problem solving, linear modeling, beginning statistics and probability, exponential and logarithmic modeling, formula use.

Credit hours

5 hours

Prerequisites

ACT Math 19 or MTH 099

Critical thinking (CT) designator

This course carries a CT designator, and students who complete the course receive 3 hours of CT credit towards their general education requirements.

List of topics

Logic

- Logical connectives, truth tables, and Venn diagrams
- Argument forms, soundness, and validity
- Inductive and deductive arguments
- Translating natural language arguments
- Conditional statements
- Logical fallacies
- Syllogisms, existential import, the square of opposition

Algebra

- Review of exponents and fractions
- Linear functions: algebraic forms, graphs, modeling problems, interpretation

- Quadratic functions: algebraic forms, graphs, modeling problems, interpretation
- Exponential and logarithmic functions: algebraic forms, graphs, modeling problems, interpretation

Statistics

- Introduction to statistics
- Data ethics
- Types of variables,
- Numerical measures for summarizing data
- Graphical methods for representing data
- Basic probability
- Normal distributions

Suggested textbooks

- Brase and Brase, *Understandable Statistics*, 10th edition
- Johnson, *A Logic Book*, 5th edition, Cengage
- McCallum, Connally, and Hughes-Hallet, *Algebra: Form and Function*

Last updated

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