South Central College

MATH 110 Quantitative Reasoning

Common Course Outline

Course Information

Description Quantitative reasoning helps students develop problem-solving skills to think critically in our increasingly quantitative world. Topics in this course include problem-solving, numeracy, proportional reasoning, logic, mathematical modeling, finance, statistics, and probability. MATH 110 is a terminal course and does not serve as a prerequisite for any higher-level mathematics courses. MATH 110 satisfies the MNTC Category 4 Mathematical/Logical Reasoning requirement.
(Prerequisite: Corequisite enrollment in MATH 0097 OR Completion of MATH 0097 OR MATH 0085 OR MATH 0095 with a grade of C or higher OR Classic Accuplacer score 56+ in Arithmetic AND 76+ Elem Alg OR Next Gen Accuplacer score 250-300 QAS OR ACT math score 19-36 OR MCA score 1148-1164).

Total Credits 4

Total Hours 64

Types of Instruction

Instruction Type	Credits/Hours
Lecture	4/64

Pre/Corequisites

Prerequisite

Corequisite enrollment in MATH 0097

OR

Completion of MATH 0097 with a grade of C or higher

OR

Completion of MATH 0085 with a grade of C or higher

OR

Completion of MATH 0095 with a grade of C or higher

OR

Classic Accuplacer score 56+ in Arithmetic AND 76+ Elem Alg

OR

Next Gen Accuplacer score 237-300 QAS

OR

ACT math score 19-36

OR

MCA score 1148-1164

Institutional Core Competencies

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Outcomes

1. Communicate quantitative, mathematical, and statistical ideas in oral and written form.

Learning Objectives

Use appropriate mathematical and statistical language and notation.
Read and interpret mathematics from authentic text and publications.
Present written or verbal justification of solutions.

2. Develop problem-solving and critical thinking skills.

Learning Objectives

Analyze open-ended, real-world problems.
Develop strategies to solve problems.
Formulate solutions to open-ended, real-world problems.
Determine whether a solution is reasonable.

3. Formulate logical arguments.

Learning Objectives

Interpret statements using logical connectives.
Determine whether an argument is valid or invalid.
Distinguish between inductive and deductive reasoning.
Identify logical fallacies.
Apply concepts of set theory and Venn diagrams.

4. Apply quantitative methods to solve real-world problems.

Learning Objectives

Develop numeracy skills.
Evaluate quantitative information presented in media and other publications.
Solve real-world problems involving fractions, decimals, and percentages.
Solve real-world problems relating rates of change, in terms of absolute change and relative change.
Identify patterns to solve real-world problems.
Apply estimation techniques to solve problems.

5. Analyze quantitative information using proportional reasoning.

Learning Objectives

Solve real-world problems involving rates, ratios, and proportions.
Recognize when proportional reasoning is appropriate and when proportional techniques do not apply.

6. Construct mathematical models representing real-world problems.

Learning Objectives

Model real-world situations through multiple representations, including verbal, numerical, graphical, and algebraic representations.

Construct a linear model.
Construct an exponential model.
Distinguish between linear and exponential growth.
Determine an appropriate model for a given scenario.

7. Analyze mathematical models representing real-world problems.

Learning Objectives
Interpret a model.
Interpolate and extrapolate data from a model.
Assess the validity and limitations of a model.
Use models to make decisions.

8. Develop financial literacy.

Learning Objectives
Distinguish between simple and compound interest.
Apply financial formulas, including simple interest, compound interest, loans, and annuities.
Discuss aspects of personal finance, such as budgeting, savings, credit cards, loans, investments, and taxes.

9. Apply statistics to investigate and draw conclusions from real-world scenarios.

Learning Objectives
Collect data from real-world sources.
Create visual representations of real-world data using charts, tables, and graphs.
Interpret data sets, with regard to shape, center, and spread.
Normalize data sets.
Evaluate statistical information presented in the media and other publications.

10. Apply probability to investigate and draw conclusions from real-world scenarios.

Learning Objectives
Calculate probabilities in real-world scenarios.
Analyze a question using probabilities.
Draw conclusions from probabilities.

11. Establish meaningful links between mathematics and other disciplines.

Learning Objectives
Explain how mathematics and statistics relate to a specific career field.
Explain the relevance of mathematics and statistics to the modern world.

12. Use technology to solve real-world problems.

Learning Objectives
Build models, charts, and diagrams with technology.
Construct mathematical, statistical, and probabilistic models with technology.
Use spreadsheets to organize and solve problems.
Utilize online technology tools for calculations as appropriate.

SCC Accessibility Statement

Disability Services provides accommodations and other supports to students with permanent and temporary disabilities that affect their SCC experience. Disabilities may include mental health (anxiety, depression, PTSD), ADHD, learning disabilities, chronic health conditions (migraine, fibromyalgia), sensory disabilities, and temporary disabilities (broken arm, surgery). Common accommodations are extended test time, private room for testing, audiobooks, and sign language interpreter.

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