Mathematical Ways of Knowing
General Education Skill Competency and Knowledge Objectives

Coursework in this area is intended to develop an understanding of mathematical reasoning processes and the ability to utilize these processes to solve college-level mathematical problems.

Competency and Knowledge Objectives

To meet the mathematics requirement of the general education core, courses must cover the competency/knowledge objectives below.

1. Interpret mathematical concepts.
2. Represent information/data.
3. Use appropriate strategies/procedures when solving mathematical problems.
4. Draw reasonable conclusions based on quantitative information.

Value Rubric: Mathematical Ways of Knowing

	Meets End-of-Course Expectations	Partially Meets End-of-Course Expectations	Does Not Meet End-of-Course Expectations
COMPETENCY 1: Interpret mathematical concepts. *Ability to explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, notation/mathematical symbols, words)*	Provides accurate explanations of information presented in mathematical forms. For example, • uses appropriate mathematical language to explain course concepts consistently • or completely explains mathematical notation or abstractions related to course material	Provides foundational but incomplete explanations of information presented in mathematical forms. For example, • uses appropriate mathematical language to explain course concepts inconsistently • or partially explains mathematical notation or abstractions related to course material	Provides inaccurate explanations of information presented in mathematical forms or provides no explanation. For example, • uses inappropriate mathematical language to explain course concepts • or inaccurately explains mathematical notation or abstractions related to course material
COMPETENCY 2: Represent information/data. *Ability to convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words)*	Competently converts relevant information into an appropriate and desired mathematical portrayal. For example, • Appropriately represents data with a table or graph, such as a line graph, bar graph, circle graph, boxplot, scatterplot, or frequency distribution, etc. • Or appropriately represents information with a function,	Partially converts relevant information into an appropriate and desired mathematical portrayal. For example, • Partially represents data with a table or graph, such as a line graph, bar graph, circle graph, boxplot, scatterplot, or frequency distribution, etc. • Or partially represents information with a function,	Inappropriately converts relevant information into an appropriate and desired mathematical portrayal. For example, • Inappropriately represents data graphically with a table or graph, such as a line graph, bar graph, circle graph, boxplot, scatterplot, or frequency distribution, etc.

	equation, inequality, graph, table, drawing, diagram, words, etc.	equation, inequality, graph, table, drawing, diagram, words, etc.	• Or inappropriately represents information with a function, equation, inequality, graph, table, drawing, diagram, words, etc.
COMPETENCY 3: Use appropriate strategies/procedures when solving mathematical problems. *Ability to approach a problem in an appropriate and comprehensive way*	Calculations attempted are appropriate and sufficiently comprehensive to solve the problem. For example, • Applies an appropriate strategy or technique that is sufficient to solve the problem. • Performs a process that is adequate to solve the problem.	Calculations attempted are appropriate but are insufficient to solve the problem. For example, • Partially applies an appropriate strategy or technique that is sufficient to solve the problem. • Partially performs a process that is adequate to solve the problem.	Calculations attempted are inappropriate and insufficient to solve the problem. For example, • Applies an inappropriate strategy or technique to solve the problem. • Performs a process that is inadequate to solve the problem.
COMPETENCY 4: Draw reasonable conclusions based on quantitative information. *Ability to evaluate the reasonableness of the conclusion or result for a real-world mathematical problem*	Successfully evaluates the reasonableness of the result for a real-world mathematical problem. For example, • Demonstrates that the conclusion correctly addresses the problem. • Draws valid conclusions from analysis. • Or adequately checks the solution to confirm that it is reasonable.	Partially evaluates the reasonableness of the result for a real-world mathematical problem. For example, • Partially demonstrates that the conclusion correctly addresses the problem. • Draws partially valid conclusions from analysis. • Or inadequately checks the solution to confirm that it is reasonable.	Does not evaluate the reasonableness of the result for a real-world mathematical problem. For example, • Does not demonstrate that the conclusion correctly addresses the problem. • Does not draw valid conclusions from analysis. • Or does not check the solution to confirm that it is reasonable.