

Math for the Liberal Arts Content Learning Outcomes From April 2014 Fac2Fac Conference

Learning Outcome 1

Consumer Finance

Students will be able to:

- Articulate the central ideas of consumer mathematics.
- Make decisions on the best financial choices for personal loans, installment buying, mortgages and annuities.

Learning Outcome 2

Statistics

Students will be able to:

- Students should be able to:
- Differentiate between a population and a sample.
- Calculate probability and express as a percent or decimal.
- Distinguish between descriptive and inferential statistics.
- Interpret and create graphical presentation of data.
- Calculate and analyze measures of central tendency.
- Calculate and interpret measures of dispersion.
- Demonstrate the use of the normal distribution to calculate and interpret probabilities.

Learning Outcome 3

Probability

Students will be able to:

- Identify the sample space for an experiment.
- Identify an experimental outcome.
- Calculate probabilities including conditional; and union and intersection problems.
- Distinguish between theoretical and experimental probability.
- Demonstrate the use of counting techniques including permutations and combinations.
- Calculate and analyze odds and expected value.

Learning Outcome 4

Problem Solving

Students will be able to:

- Use different techniques of problem solving, including visual, numerical, verbal and symbolic.
- Judge which problem solving method is most applicable in a given the situation.

Learning Outcome 5

Set Theory and Logic

Students will be able to:

- Define and employ set theory and logic notation and terminology.
- Identify and demonstrate subset, union, intersection and complement.
- Use Venn Diagrams to visually represent subset, union, intersection and complement.
- Organize data in a Venn diagram to solve applications.
- Distinguish between inductive and deductive reasoning.
- Apply conjunction, disjunction and negation to statements.
- Identify, create and interpret conditional and bi-conditional statements.
- Identify, create and interpret converse, inverse and contrapositive to conditional statements.
- Use Truth Tables to analyze the truth value of compound statements and of arguments.

**Learning Outcome 6:
Mathematical Modeling**

Students will be able to:

- Identify the domain and range of a function and use function notation.
- Create a linear or quadratic function modeling a real life situation.
- Read, interpret and construct graphs of linear functions and linear inequalities.
- Read, interpret and construct graphs of quadratic functions.
- Demonstrate the use of linear programming to optimize systems of inequalities with restraints.
- Apply the rules of exponents to simplify and calculate exponential expressions.
- Model exponential growth or decay.

**Learning Outcome 7:
Euclidean Geometry**

Students will be able to:

**Learning Outcome 8:
Numeration Systems**

Students will be able to:

**Learning Outcome 9:
Mathematics of Social Choice**

Students will be able to:

**Learning Outcome 10:
Management Science**

Students will be able to:

Recommendations from the [Colorado Math Pathways Task Force](#) – May 2015

Establish a new path, QuanThinking, to include a set of courses to support the learning needs of students who need a foundation in college level mathematics but will not be in the CalcPath or StatPath

QuanThinkingPath

1. MAT 050 as the developmental education path
2. Meets the gtPathways/core Gen Ed requirement
3. Generally is a terminal math course
4. Recommendation is for courses to be rigorous, support problem solving, numerical and reasoning skills, and address the state competencies.
5. Courses may include: Revised Math for Liberal Arts course and New algebra-based modeling course
6. Develop new algebraic modeling course for the CCCNS/4-year schools
 - Focus intended for majors that need Algebra skills but not Calculus
 - More conversation to come
 1. Intended Learning Outcomes to be determined
 2. Assessment Approaches
 3. Content to be determined