



10-804-133 Mathematics and Logic

Course Outcome Summary

COURSE INFORMATION

Alternate Title: Math & Logic

Description:

Students will apply problem solving techniques from discrete mathematics. Topics include symbolic logic, sets, algebra and base number systems.

Total Credits: 3

PRE/COREQUISITES

- Prerequisite: Each Wisconsin Technical College determines the General Education course prerequisites used by their academic institution. If prerequisites for a course are determined to be appropriate, the final Course Outcome Summary must identify the prerequisites approved for use by the individual Technical College.
- Recommended Prerequisite Skills: Working knowledge of algebra (Pre-Algebra or Elementary Algebra)
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COURSE HISTORY

Last Revision Date: 7/20/2016

COURSE COMPETENCIES

1. Solve applied algebraic problems

Assessment Strategies

1.1. Oral, Written or Graphic Assessment

Criteria

- 1.1. you simplify algebraic expressions
- 1.2. you solve algebraic equations
- 1.3. you represent or interpret the applied problems algebraically
- 1.4. you illustrate the solutions mathematically using charts, graphs, diagrams etc.

2. Utilize heuristic tools for problem solving

Assessment Strategies

2.1. Oral, Written or Graphic Assessment

Criteria

- 2.1. you differentiate among heuristic tools (examples may include draw a diagram, make a list, eliminate possibilities, look for sub-problems, work backwards, etc.)

- 2.2. you identify the root of the problem
- 2.3. you justify choice of heuristics when solving problems
- 2.4. you apply the heuristics to the problem
- 2.5. you solve the problem
- 2.6. you document the process you used to solve the problem

3. Convert between place value number systems

Assessment Strategies

- 3.1. Oral, Written or Graphic Assessment

Criteria

- 3.1. you convert from base N to decimal
- 3.2. you convert from decimal to base N
- 3.3. you convert between computer number systems (binary, octal and hexadecimal)

4. Apply number systems to problem solving

Assessment Strategies

- 4.1. Oral, Written or Graphic Assessment

Criteria

- 4.1. you differentiate among different number systems
- 4.2. you analyze the root of the problem
- 4.3. you justify the choice of the number system for solving the problem
- 4.4. you apply the number system to solving the problem
- 4.5. you solve the problem
- 4.6. you document the process you used to solve the problem

5. Apply principles of set theory

Assessment Strategies

- 5.1. Oral, Written or Graphic Assessment

Criteria

- 5.1. you use set theory notation
- 5.2. you use appropriate set terminology
- 5.3. you apply set properties to solve problems
- 5.4. you apply the concept of cardinality
- 5.5. you draw a Venn diagram
- 5.6. you use Venn diagram to solve problems
- 5.7. you document the process you use to solve the problem

6. Apply symbolic logic principles

Assessment Strategies

- 6.1. Oral, Written or Graphic Assessment

Criteria

- 6.1. you differentiate among logical operators (i.e. and, or, x-or, and not)

- 6.2. you differentiate between conditional and biconditional using various logical methods (i.e. truth table, matrix logic, Boolean algebra, etc.)
- 6.3. you apply logic methods to solve problems
- 6.4. you verify the solution to the problem