

## WTCS Repository

10-804-133 Mathematics and Logic

# Course Outcome Summary

### Course Information

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|  | Description | Students will apply problem solving techniques from discrete mathematics. Topics include symbolic logic, sets, algebra and base number systems.Last revision date: 5/19/14 |
|  | Total Credits | 3.00 |

Pre/Corequisites

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| --- | --- |
| 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) |

### Course Competencies

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| 1 | Solve applied algebraic problems |
|  | Assessment Strategies |
|  | Oral, Written or Graphic Assessment |
|  | Criteria |
|  | you simplify algebraic expressionsyou solve algebraic equationsyou represent or interpret the applied problems algebraicallyyou  illustrate the solutions mathematically using charts, graphs, diagrams etc. |
| 2 | Utilize heuristic tools for problem solving |
|  | Assessment Strategies |
|  | Oral, Written or Graphic Assessment |
|  | Criteria |
|  | you differentiate among heuristic tools (examples may include draw a diagram, make a list, eliminate possibilities, look for sub-problems, work backwards, etc.)you identify the root of the problemyou justify choice of  heuristics when solving problemsyou apply the heuristics to the problemyou solve the problemyou document the process you used to solve the problem |
| 3 | Convert between place value number systems |
|  | Assessment Strategies |
|  | Oral, Written or Graphic Assessment |
|  | Criteria |
|  | you convert from base N to decimalyou convert from decimal to base Nyou convert between computer number systems (binary, octal and hexadecimal) |
| 4 | Apply number systems to problem solving |
|  | Assessment Strategies |
|  | Oral, Written or Graphic Assessment |
|  | Criteria |
|  | you differentiate among different number systemsyou analyze the root of the problemyou justify the choice of  the number system for solving the problemyou apply the number system to solving the problemyou solve the problemyou document the process you used to solve the problem |
| 5 | Apply principles of set theory |
|  | Assessment Strategies |
|  | Oral, Written or Graphic Assessment |
|  | Criteria |
|  | you use set theory notationyou use appropriate set terminologyyou apply set properties to solve problemsyou apply the concept of cardinalityyou draw a Venn diagramyou use Venn diagram to solve problemsyou document the process you use to solve the problem |
| 6 | Apply symbolic logic principles |
|  | Assessment Strategies |
|  | Oral, Written or Graphic Assessment |
|  | Criteria |
|  | you differentiate among logical operators ( i.e. and, or, x-or, and not)you differentiate between conditional and biconditional using various logical methods (i.e. truth table, matrix logic, Boolean algebra, etc.)you apply logic methods to solve problemsyou verify the solution to the problem |