

## WTCS Repository

10-804-118 Interm Algebra w Apps

# Course Outcome Summary

### Course Information

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|  | Description | This course offers algebra content with applications. Topics include properties of real numbers, order of operations, algebraic solution for linear equations and inequalities, operations with polynomial and rational expressions, operations with rational exponents and radicals, algebra of inverse, logarithmic and exponential functions. |
|  | Total Credits | 4.00 |

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. |

### Course Competencies

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| 1 | Apply properties of real number systems |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you identify the different sets of real numbers  you use set notations  you find intersections and unions of sets  you graph real numbers on the number line  you compare real numbers |
| 2 | Evaluate expressions |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you identify additive inverse, absolute values, and reciprocals  you add, subtract, multiply, and divide real numbers  you substitute values for variables  you find powers and roots of real numbers  you apply the order of operation  you evaluate absolute value expressions |
| 3 | Solve linear equations |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you evaluate formulas  you find equations and formulas for a specific variable  you write and solve equations from given information  you solve application problems using formulas and linear equations |
| 4 | Solve linear inequalities |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you solve simple and compound linear and compound linear inequalities  you solve absolute value equations and inequalities  you solve word problems involving equations, absolute value, and inequalities  you use internal notation and set builder notations  you graph inequalities |
| 5 | Use the Cartesian coordinate system |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you find the distance between two points  you find the midpoint of two points  you find the slope given two points or the equation of the line |
| 6 | Demonstrate graphing skills on the Cartesian coordinate plane |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you plot ordered pairs, read coordinates, and identify x- and y- intercepts  you graph a line, given its slope and point on the line  you graph linear function  you graph linear equations |
| 7 | Analyze linear equations |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you use slope to determine if two lines are parallel, perpendicular, or neither  you find the equation of a line, given two points of the line  you write the equation of a line in standard, slope-intercept, or pint-slope form |
| 8 | Apply properties of functions and relations |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you distinguish the differences between relations and functions  you find the domain and range of a relation or function  you use function notation  you solve applications involving functions |
| 9 | Solve systems of equations and inequalities |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you solve systems of two linear equation by graphing, elimination, and substitution methods  you solve systems of three linear equations using elimination and /or substitution methods  you classify systems as consistent/inconsistent or dependent/ independent  you graph absolute value inequalities  you solve application problems involving systems or equations  you solve applications of systems of equations |
| 10 | Apply properties of exponents |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you apply product, quotient, negative, and zero exponent rules  you apply the power rule for exponents  you change numbers to scientific notation and vice versa  you use scientific notation in calculations |
| 11 | Perform basic operations with polynomials |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you identify the degree of a polynomial  you add, subtract, multiply, and divide polynomials  you solve application problems involving polynomials |
| 12 | Graph functions and relations |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you graph quadratic, radical, absolute value, and cubic functions  you interpret rigid transformations of functions  you recognize equations of circle in standard form  you recognize circles in non-standard form  you graph circles |
| 13 | Factor polynomials |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you calculate the greatest common factors  you factor trinomials  you factor by grouping and by substitution  you factor the difference of two squares, two cubes, and the sum of two cubes |
| 14 | Solve equations using factoring |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you use the zero factor property  you solve quadratic and cubic equations using factoring |
| 15 | Evaluate rational expressions |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you identify and simplify rational expressions  you find domain of rational expressions  you add, subtract, multiply, and divide rational expressions  you simplify complex fractions |
| 16 | Solve equations involving rational expressions |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you solve application equations using proportions  you solve application equations by clearing the equation of factors  you check solution for extraneous roots |
| 17 | Evaluate radical expressions |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you convert radical notations to exponential expressions and vice-versa  you simplify radicals  you apply rules of exponents with positive and negative rational exponents  you add, subtract, multiply, and divide radicals |
| 18 | Solve radical equations |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you simplify radicals with numerical values  you simplify radical with algebraic terms  you interpret a graph of a radical equation |
| 19 | Operate within the complex number system |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you identify complex numbers  you simplify radicals that include complex numbers  you add, subtract, multiply, and divide complex numbers |
| 20 | Solve quadratic equations |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you use square root principle and quadratic formula  you use the Pythagorean Theorem to solve problems involving right triangles  you solve application problems involving quadratic equations |
| 21 | Use Algebra functions |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you add, subtract, multiply, and divide functions  you find composites of functions  you identify one-to-one functions  you find and graph inverse functions |
| 22 | Apply properties of exponential and logarithmic functions |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale  by active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you identify, graph and evaluate exponential functions.  you rewrite exponential equations as logarithmic and vice-versa  you use properties of logarithmic equations  you solve exponential and logarithmic equations  you solve applied problems involving exponential and logarithmic equations |