
## 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 scaleby 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 scaleby active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you identify additive inverse, absolute values, and reciprocalsyou add, subtract, multiply, and divide real numbers you substitute values for variablesyou find powers and roots of real numbersyou 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 scaleby 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 scaleby 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 scaleby 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 pointsyou 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 scaleby 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 lineyou 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 scaleby 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 lineyou 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 scaleby 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 functionyou use function notationyou 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 scaleby 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 equationsyou 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 scaleby 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 versayou 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 scaleby active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you identify the degree of a polynomialyou 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 scaleby 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 functionsyou recognize equations of circle in standard formyou recognize circles in non-standard formyou graph circles |
| 13 | Factor polynomials |
|  | Assessment Strategies |
|  | by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scaleby active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you calculate the greatest common factorsyou factor trinomialsyou factor by grouping and by substitutionyou 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 scaleby 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 scaleby active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you identify and simplify rational expressions you find domain of rational expressionsyou 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 scaleby 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 factorsyou 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 scaleby active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you convert radical notations to exponential expressions and vice-versayou simplify radicals you apply rules of exponents with positive and negative rational exponentsyou 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 scaleby active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you simplify radicals with numerical values you simplify radical with algebraic termsyou 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 scaleby active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you identify complex numbers you simplify radicals that include complex numbersyou 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 scaleby active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you use square root principle and quadratic formulayou 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 scaleby active participation in class discussion and activities |
|  | Criteria |
|  | Performance will be successful when: |
|  | you add, subtract, multiply, and divide functionsyou 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 scaleby 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 |