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Wisconsin Indianhead Technical College

10804114 College Technical Mathematics 1B

Course Outcome Summary

Course Information

Description	This course is a continuation of College Technical Mathematics 1A. Topics include: performing operations on polynomials, solving quadratic and rational equations, formula rearrangement, solving systems equations, and oblique triangle trigonometry. Emphasis will be on the application of skills to technical problems. Successful completion of or concurrent enrollment in College Technical Mathematics 1A is required for course enrollment. Successful completion of College Technical Mathematics 1A and College Technical Mathematics 1B is the equivalent of College Technical Mathematics 1. COREQUISITE: 10804113 College Technical Mathematics 1A.
Instructional Level	Associate Degree
Total Credits	2.00
Total Hours	32.00

Types of Instruction

Instruction Type	Credits/Hours
Classroom Presentation (Lecture/Demonstration/Discussion)	2/32

Course History

Revised By	Andrea Schullo (andrea.schullo)
Last Approval Date	11/3/2016

Purpose/Goals

This course outcome summary includes the competencies and criteria for College Technical Mathematics 1B (10-804-114). This course is part of the General Studies Core offered throughout the Wisconsin Technical College System (WTCS). The course competencies are consistent among the colleges and are at baccalaureate level to accommodate student success in transfer to four-year colleges.

Course Competencies

1. Perform operations on polynomials					
<i>Domain</i>	<i>Cognitive</i>	<i>Level</i>	<i>Applying</i>	<i>Status</i>	<i>Active</i>

Assessment Strategies

- 1.1. oral, written, or graphic product

Criteria

Criteria: Performance will be satisfactory when:

- 1.1. you add, subtract, multiply, and divide polynomials
- 1.2. you utilize appropriate technology
- 1.3. you apply the process for solving technical problems according to the problem-solving criteria (i.e. you show work in a clear and logical manner, you verify the solution, solution is within stated range and reflects appropriate accuracy or precision, solution is labeled with appropriate units)

Learning Objectives

- 1.a. Combine like terms within a polynomial
- 1.b. Simplify expressions involving the addition, subtraction, multiplication, and division of monomials and polynomials
- 1.c. Find powers and roots of monomials and polynomials
- 1.d. Solve technical problems using the basic operations on polynomials

2. Factor algebraic expressions

Domain Cognitive Level Applying Status Active

Assessment Strategies

- 2.1. oral, written, or graphic product

Criteria

Criteria: Performance will be satisfactory when:

- 2.1. you factor using the greatest common factor
- 2.2. you factor binomials and trinomials
- 2.3. you apply skill to technical problems
- 2.4. you utilize appropriate technology
- 2.5. you apply the process for solving technical problems according to the problem-solving criteria (i.e. you show work in a clear and logical manner, you verify the solution, solution is within stated range and reflects appropriate accuracy or precision, solution is labeled with appropriate units)

Learning Objectives

- 2.a. Identify factors of a monomial
- 2.b. Factor a polynomial by greatest common factor
- 2.c. Factor a polynomial by trial and error
- 2.d. Factor a polynomial by grouping
- 2.e. Solve technical problems using factoring techniques for algebraic expressions.

3. Solve quadratic equations over the set of real numbers

Domain Cognitive Level Applying Status Active

Assessment Strategies

- 3.1. oral, written, or graphic product

Criteria

Criteria: Performance will be satisfactory when:

- 3.1. you identify coefficients of a quadratic equation in standard form
- 3.2. you select appropriate method for solving second degree equations
- 3.3. you generate the equation which satisfies the conditions of the problem
- 3.4. you solve second degree equation using the selected method
- 3.5. you select relevant solution(s)
- 3.6. you apply skill to technical problems
- 3.7. you utilize appropriate technology
- 3.8. you apply the process for solving technical problems according to the problem-solving criteria (i.e. you show work in a clear and logical manner, you verify the solution, solution is within stated range and reflects appropriate accuracy or precision, solution is labeled with appropriate units)

Learning Objectives

- 3.a. Identify coefficients of a quadratic equation in standard form
- 3.b. Select appropriate method for solving second-degree equations
- 3.c. Generate the equation which satisfies the condition of the problem
- 3.d. Solve second-degree equations using the selected method
- 3.e. Select relevant solutions
- 3.f. Solve technical problems using quadratic equations

4. Perform operations with rational expressions

Domain Cognitive Level Applying Status Active

Assessment Strategies

- 4.1. oral, written, or graphic product

Criteria

Criteria: Performance will be satisfactory when:

- 4.1. you add, subtract, multiply, and divide rational expressions
- 4.2. you apply skill to an applied technical problem
- 4.3. you simplify complex fractions
- 4.4. you utilize appropriate technology
- 4.5. you apply the process for solving technical problems according to the problem-solving criteria (i.e. you show work in a clear and logical manner, you verify the solution, solution is within stated range and reflects appropriate accuracy or precision, solution is labeled with appropriate units)

Learning Objectives

- 4.a. Perform the operations of addition, subtraction, multiplication, and division with rational expressions
- 4.b. Simplify complex fractions
- 4.c. Solve technical problems using rational expressions

5. Solve rational equations

Domain Cognitive Level Applying Status Active

Assessment Strategies

- 5.1. oral, written, or graphic product

Criteria

Criteria: Performance will be satisfactory when:

- 5.1. you apply multiplication property to clear all denominators
- 5.2. you solve equations
- 5.3. you identify extraneous solutions
- 5.4. you apply skill to technical problems
- 5.5. you utilize appropriate technology
- 5.6. you apply the process for solving technical problems according to the problem-solving criteria (i.e. you show work in a clear and logical manner, you verify the solution, solution is within stated range and reflects appropriate accuracy or precision, solution is labeled with appropriate units)

Learning Objectives

- 5.a. Use multiplication to clear denominators of algebraic fractions contained in an equation
- 5.b. Solve equations that contain algebraic fractions
- 5.c. Identify extraneous solutions
- 5.d. Solve technical problems using rational equations

6. Solve systems of equations

Domain Cognitive Level Applying Status Active

Assessment Strategies

- 6.1. oral, written, or graphic product

Criteria

Criteria: Performance will be satisfactory when:

- 6.1. you solve systems of two and three equations or formulas
- 6.2. you check all solutions in the system
- 6.3. you apply skill to technical problems
- 6.4. you utilize appropriate technology
- 6.5. you apply the process for solving technical problems according to the problem-solving criteria (i.e. you show work in a clear and logical manner, you verify the solution, solution is within stated range and reflects appropriate accuracy or precision, solution is labeled with appropriate units)

Learning Objectives

- 6.a. Solve systems of equations that contain two or three unknowns
- 6.b. Check all solutions in the system
- 6.c. Solve technical problems using systems of equations

7. Solve oblique triangles

Domain Cognitive Level Applying Status Active

Assessment Strategies

- 7.1. oral, written, or graphic product

Criteria

Performance will be satisfactory when:

- 7.1. you use the Law of Cosines, Law of Sines, and right triangle methods when appropriate
- 7.2. you apply skill to technical problems such as vectors
- 7.3. you utilize appropriate technology
- 7.4. you apply the process for solving technical problems according to the problem-solving criteria (i.e. you show work in a clear and logical manner, you verify the solution, solution is within stated range and reflects appropriate accuracy or precision, solution is labeled with appropriate units)
- 7.5. you relate angle in standard position to its reference angle

Learning Objectives

- 7.a. Identify angles in standard position
- 7.b. Calculate the reference angle for an angle in standard position
- 7.c. Identify multiple angles associated with a given trigonometric ratio
- 7.d. Use Law of Cosines, Law of Sines, and right triangle trigonometry to solve for missing parts of triangles
- 7.e. Find the horizontal and vertical components of vectors given in polar form
- 7.f. Find the magnitude and direction of vectors given in component form
- 7.g. Solve technical problems using techniques for solving oblique triangles