

Intermediate Algebra with Applications

Course Outcome Summary

Course Information

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| Course Number | 10-804-118 |
| Total Credits | 4 |

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.

Exit Learning Outcomes

Core Abilities

- A. Communicate Professionally
 - 1. Demonstrate communication standards specific to occupational area
 - 2. Write professionally
 - 3. Speak professionally
 - 4. Interpret professional documents
 - 5. Demonstrate critical listening skills
 - 6. Communicate using professional non-verbal behavior
- B. Use Appropriate Technology
 - 1. Select equipment, tools, and resources to produce desired results
 - 2. Demonstrate proper and safe usage of equipment
 - 3. Demonstrate occupational specific computer skills
 - 4. Adapt to new technology
 - 5. Use security measures to protect confidentiality
- C. Work Effectively in Teams
 - 1. Participate in identifying team goals
 - 2. Respect the contributions and perspectives of all members
 - 3. Work with others
 - 4. Complete assigned tasks
 - 5. Motivate team members
 - 6. Resolve conflicts
 - 7. Assess team outcomes
- D. Demonstrate Professional Work Behavior
 - 1. Follow policies and procedures
 - 2. Meet attendance expectations
 - 3. Manage time effectively
 - 4. Dress appropriately
 - 5. Accept constructive feedback
 - 6. Take initiative
 - 7. Work productively

8. Be accountable
 9. Demonstrate organization/prioritization skills
 10. Demonstrate effective customer service skills
 11. Transfer learning from one context to another
 12. Adapt to change
- E. Show Respect for Diversity
1. Interact with diverse groups respectfully
 2. Treat everyone without bias
 3. Seek information when necessary to interact effectively with others
 4. Adapt to diverse situations
 5. Demonstrate respect and common courtesy
- F. Solve Problems Efficiently
1. Identify a problem to be solved
 2. Select an appropriate problem-solving methodology
 3. Recognize and gather relevant information
 4. Apply mathematical reasoning
 5. Utilize appropriate resources
 6. Recognize when to change direction if needed
 7. Recognize when the process is complete
- G. Lead by Example
1. Recognize leadership qualities in others
 2. Demonstrate legal and ethical standards of practice
 3. Create and share a vision
 4. Develop and implement a plan to accomplish a goal
 5. Manage conflict, pressure, and change with constructive strategies
 6. Be a colleague/peer others can depend on
 7. Acquire the knowledge needed for success
 8. Bring passion and energy to your work/project
 9. Take risks when necessary or appropriate

Competencies

1. Apply properties of real number systems

Linked Core Abilities

Solve Problems Efficiently

Competence will be demonstrated:

1.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

1.b. by active participation in class discussion and activities

Performance will be successful when:

1.a. you identify the different sets of real numbers

1.b. you use set notations

1.c. you find intersections and unions of sets

1.d. you graph real numbers on the number line

1.e. you compare real numbers

2. **Evaluate expressions**
Linked Core Abilities
Solve Problems Efficiently
Competence will be demonstrated:
 - 2.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
 - 2.b. by active participation in class discussion and activities**Performance will be successful when:**
 - 2.a. you identify additive inverse, absolute values, and reciprocals
 - 2.b. you add, subtract, multiply, and divide real numbers
 - 2.c. you substitute values for variables
 - 2.d. you find powers and roots of real numbers
 - 2.e. you apply the order of operation
 - 2.f. you evaluate absolute value expressions
3. **Solve linear equations**
Linked Core Abilities
Communicate Professionally
Solve Problems Efficiently
Competence will be demonstrated:
 - 3.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
 - 3.b. by active participation in class discussion and activities**Performance will be successful when:**
 - 3.a. you evaluate formulas
 - 3.b. you find equations and formulas for a specific variable
 - 3.c. you write and solve equations from given information
 - 3.d. you solve application problems using formulas and linear equations
4. **Solve linear inequalities**
Linked Core Abilities
Communicate Professionally
Solve Problems Efficiently
Competence will be demonstrated:
 - 4.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale
 - 4.b. by active participation in class discussion and activities**Performance will be successful when:**
 - 4.a. you solve simple and compound linear and compound linear inequalities
 - 4.b. you solve absolute value equations and inequalities
 - 4.c. you solve word problems involving equations, absolute value, and inequalities
 - 4.d. you use interval notation and set builder notations
 - 4.e. you graph inequalities
5. **Use the Cartesian coordinate system**
Linked Core Abilities
Use Appropriate Technology
Solve Problems Efficiently

Competence will be demonstrated:

5.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

5.b. by active participation in class discussion and activities

Performance will be successful when:

5.a. you find the distance between two points

5.b. you find the midpoint of two points

5.c. you find the slope given two points or the equation of the line

6. Demonstrate graphing skills on the Cartesian coordinate plane

Linked Core Abilities

Use Appropriate Technology

Solve Problems Efficiently

Communicate Professionally

Competence will be demonstrated:

6.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

6.b. by active participation in class discussion and activities

Performance will be successful when:

6.a. you plot ordered pairs, read coordinates, and identify x- and y- intercepts

6.b. you graph a line, given its slope and point on the line

6.c. you graph linear function

6.d. you graph linear equations

7. Analyze linear equations

Linked Core Abilities

Solve Problems Efficiently

Competence will be demonstrated:

7.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

7.b. by active participation in class discussion and activities

Performance will be successful when:

7.a. you use slope to determine if two lines are parallel, perpendicular, or neither

7.b. you find the equation of a line, given two points of the line

7.c. you write the equation of a line in standard, slope-intercept, or point-slope form

8. Apply properties of functions and relations

Linked Core Abilities

Communicate Professionally

Solve Problems Efficiently

Competence will be demonstrated:

8.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

8.b. by active participation in class discussion and activities

Performance will be successful when:

8.a. you distinguish the differences between relations and functions

8.b. you find the domain and range of a relation or function

8.c. you use function notation

8.d. you solve applications involving functions

9. Solve systems of equations and inequalities

Linked Core Abilities

Solve Problems Efficiently

Competence will be demonstrated:

9.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

9.b. by active participation in class discussion and activities

Performance will be successful when:

9.a. you solve systems of two linear equation by graphing, elimination, and substitution methods

9.b. you solve systems of three linear equations using elimination and /or substitution methods

9.c. you classify systems as consistent/inconsistent or dependent/ independent

9.d. you graph absolute value inequalities

9.e. you solve application problems involving systems or equations

9.f. you solve applications of systems of equations

10. Apply properties of exponents

Linked Core Abilities

Communicate Professionally

Solve Problems Efficiently

Competence will be demonstrated:

10.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

10.b. by active participation in class discussion and activities

Performance will be successful when:

10.a. you apply product, quotient, negative, and zero exponent rules

10.b. you apply the power rule for exponents

10.c. you change numbers to scientific notation and vice versa

10.d. you use scientific notation in calculations

11. Perform basic operations with polynomials

Linked Core Abilities

Solve Problems Efficiently

Competence will be demonstrated:

11.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

11.b. by active participation in class discussion and activities

Performance will be successful when:

11.a. you identify the degree of a polynomial

11.b. you add, subtract, multiply, and divide polynomials

11.c. you solve application problems involving polynomials

12. Graph functions and relations

Linked Core Abilities

Use Appropriate Technology

Solve Problems Efficiently

Competence will be demonstrated:

12.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

12.b. by active participation in class discussion and activities

Performance will be successful when:

12.a. you graph quadratic, radical, absolute value, and cubic functions

12.b. you interpret rigid transformations of functions

12.c. you recognize equations of circle in standard form

12.d. you recognize circles in non-standard form

12.e. you graph circles

13. Factor polynomials

Linked Core Abilities

Solve Problems Efficiently

Competence will be demonstrated:

13.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

13.b. by active participation in class discussion and activities

Performance will be successful when:

13.a. you calculate the greatest common factors

13.b. you factor trinomials

13.c. you factor by grouping and by substitution

13.d. you factor the difference of two squares, two cubes, and the sum of two cubes

14. Solve equations using factoring

Linked Core Abilities

Communicate Professionally

Solve Problems Efficiently

Competence will be demonstrated:

14.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

14.b. by active participation in class discussion and activities

Performance will be successful when:

14.a. you use the zero factor property

14.b. you solve quadratic and cubic equations using factoring

15. Evaluate rational expressions

Linked Core Abilities

Solve Problems Efficiently

Competence will be demonstrated:

15.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

15.b. by active participation in class discussion and activities

Performance will be successful when:

15.a. you identify and simplify rational expressions

15.b. you find domain of rational expressions

15.c. you add, subtract, multiply, and divide rational expressions

15.d. you simplify complex fractions

16. Solve equations involving rational expressions

Linked Core Abilities

Solve Problems Efficiently

Competence will be demonstrated:

16.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

16.b. by active participation in class discussion and activities

Performance will be successful when:

16.a. you solve application equations using proportions

16.b. you solve application equations by clearing the equation of factors

16.c. you check solution for extraneous roots

17. Evaluate radical expressions

Linked Core Abilities

Solve Problems Efficiently

Competence will be demonstrated:

17.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

17.b. by active participation in class discussion and activities

Performance will be successful when:

17.a. you convert radical notations to exponential expressions and vice-versa

17.b. you simplify radicals

17.c. you apply rules of exponents with positive and negative rational exponents

17.d. you add, subtract, multiply, and divide radicals

18. Solve radical equations

Linked Core Abilities

Solve Problems Efficiently

Competence will be demonstrated:

18.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

18.b. by active participation in class discussion and activities

Performance will be successful when:

18.a. you simplify radicals with numerical values

18.b. you simplify radical with algebraic terms

18.c. you interpret a graph of a radical equation

19. Operate within the complex number system

Linked Core Abilities

Communicate Professionally

Solve Problems Efficiently

Competence will be demonstrated:

19.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

19.b. by active participation in class discussion and activities

Performance will be successful when:

19.a. you identify complex numbers

19.b. you simplify radicals that include complex numbers

19.c. you add, subtract, multiply, and divide complex numbers

20. Solve quadratic equations

Linked Core Abilities

Solve Problems Efficiently

Competence will be demonstrated:

20.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

20.b. by active participation in class discussion and activities

Performance will be successful when:

20.a. you use square root principle and quadratic formula

20.b. you use the Pythagorean Theorem to solve problems involving right triangles

20.c. you solve application problems involving quadratic equations

21. Use Algebra functions

Linked Core Abilities

Communicate Professionally

Solve Problems Efficiently

Competence will be demonstrated:

21.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

21.b. by active participation in class discussion and activities

Performance will be successful when:

21.a. you add, subtract, multiply, and divide functions

21.b. you find composites of functions

21.c. you identify one-to-one functions

21.d. you find and graph inverse functions

22. Apply properties of exponential and logarithmic functions

Linked Core Abilities

Solve Problems Efficiently

Competence will be demonstrated:

22.a. by completing assignments, quizzes, lab work, and tests with a satisfactory score as detailed in the grading scale

22.b. by active participation in class discussion and activities

Performance will be successful when:

22.a. you identify, graph and evaluate exponential functions.

22.b. you rewrite exponential equations as logarithmic and vice-versa

22.c. you use properties of logarithmic equations

22.d. you solve exponential and logarithmic equations

22.e. you solve applied problems involving exponential and logarithmic equations