

VIRGINIA HIGHLANDS COMMUNITY COLLEGE

Course of Study

COURSE NUMBER AND TITLE

MTH 04 - Algebra II

COURSE DESCRIPTION

Expands upon the topics of Algebra I including rational expressions, radicals and exponents, quadratic equations, systems of equations, and applications. Develops the mathematical proficiency necessary for selected curriculum entrance. Credits not applicable toward graduation. Prerequisites: a placement recommendation for MTH 04 and Algebra I or equivalent. Variable hours per week.

BROAD GOALS OF COURSE

Intermediate Algebra II will:

1. Reinforce the algebra skills from Basic Algebra I
2. Teach algebra skills necessary for satisfactory score on appropriate proficiency examination for a given curriculum
3. Serve as a prerequisite for certain other courses (see VHCC Catalog)

TOPICS TO BE COVERED

1. Review of Elementary Algebra Topics
2. Systems of Linear Equations
3. Rational Expressions & Functions
4. Radicals & Quadratic Equations

SPECIFIC OBJECTIVES

1. Apply the laws of exponents (integer exponents (5.4, 5.5, 5.6, 5.7, 5.8, Basic Math [6.9](#), [6.10](#), [6.11](#); rational; zero [5.8](#))
2. Convert decimal notation to scientific notation and vice versa (Basic Math [6.12](#) & [6.13](#))
3. Perform operations on numbers in scientific notation.
4. Classify and perform operations on polynomials ([6.1](#), [6.2](#), [6.3](#), [6.4](#), [6.5](#), [6.6,6.7](#), [6.8](#))
5. Factor using greatest common factor ([6.9](#), [6.10](#))
6. Factor by grouping ([6.11](#), [6.12](#))
7. Factor the difference of two squares ([6.18](#), [6.19](#))
8. Factor trinomials ([6.13](#), [6.14](#), [6.15](#), [6.16](#))
9. Factor the sum and difference of two cubes ([6.20](#))
10. Solve equations using the factoring method ([6.24](#), [6.25](#), [6.26](#), [6.27](#))
11. Determine the domain of a rational expression ([5.1](#))
12. Simplify or reduce a rational expression ([5.16](#), [6.21](#), [6.22](#), [6.23](#))
13. Perform operations on rational expressions ([5.9](#), [5.10](#), [5.13](#), [5.14](#), [5.15](#))
14. Simplify complex algebraic rational expressions ([5.11](#), [5.12](#))
15. Solve equations containing rational expressions ([5.18](#), [5.19](#), [5.20](#), [5.21](#), [5.22](#), [5.23](#))

16. Analyze a relation to determine the existence of direct or inverse variation and perform appropriate operations ([5.24](#), [5.25](#))
17. Simplify roots and radicals ([7.1](#))
18. Convert from radical notation to exponential form and vice versa
19. Perform operations on radical expressions ([7.2-7.5](#))
20. Rationalize the numerator or denominator of a radical expression ([7.6-7.7](#))
21. Solve equations containing radical expressions and exponents ([7.8-7.15](#))
22. Recognize imaginary numbers as part of the complex number system
23. Perform operations on complex numbers
24. Solve quadratic equations and other equations in quadratic form ([6.24](#), [6.25](#), [6.30-6.33](#))
25. Solve higher degree and rational inequalities ([6.34-6.36](#))
26. Use algebraic methods (above) to represent and evaluate verbal quantitative situations.
27. [Recognize various representations of functions and convert among a graph, a table, and an algebraic form](#)
28. [Recognize relations and functions](#) ([4.8](#) & [4.13](#))
29. [Determine the domain and range of a relation and perform algebraic and graphic operations](#) ([4.9](#) & [4.14](#))
30. [Use function – value notation](#)
31. Solve literal equations for a given variable ([5.17](#))
32. Solve absolute-value linear equations graphically and algebraically ([2.23](#), [2.24](#), [2.25](#), [2.26](#), [3.21](#))
33. Analyze a given set of ordered pairs for the existence of a pattern and represent the pattern appropriately
34. Solve a system of linear equations ([3.22](#)) ([2.31](#))
35. Solve a system of linear inequalities graphically ([3.19](#), [3.20](#), [3.23](#))

EMERGENCY POLICY

In the event of a College-wide emergency, course requirements, classes, deadlines, and grading schemes are subject to changes that may include alternative delivery methods, alternative methods of interaction with the instructor, class materials, and/or classmates, a revised attendance policy, and a revised semester calendar and/or grading scheme.

In the case of a College-wide emergency, please refer to the following about changes in this course:

- Course web page (Blackboard)
- Instructor's email (sfleming@vhcc.edu)
- Instructor's chosen emergency telephone number(s) (276-739-2513)

For more general information about the emergency situation, please refer to:

- Web site - www.vhcc.edu
- Telephone Number - 276-739-2400
- Emergency Text Messaging or Phone System- Virginia Highlands Community College uses VHCC Alert to immediately contact you during a major crisis or emergency. VHCC Alert delivers important emergency alerts, notifications and updates to you on your E-mail account (work, home, other), cell phone, pager or smartphone/PDA (BlackBerry, Treo & other handhelds). VHCC Alert is a free service offered by VHCC. Your wireless carrier may charge you a fee to receive messages on your wireless device. VHCC will test the alert system each semester. Register online at alert.vhcc.edu or by sending a **text message** to **411911** keyword: **VHCC**

In the event of an emergency just regarding this class, the instructor will post announcements on Blackboard and e-mail notification of the postings to students.