

**ACADEMIC SKILLS AND GENERAL STUDIES DIVISION****CONTACT AND COMMITMENT:**

619-4240, Division Dean      986-6906, ACSK Mathematics Lead Faculty      619-4331, Secretary

*To offer curriculum and instructional methods that guide each learner  
to develop the skills and attitudes leading to academic and career success.*

**ACSK 0103      INTERMEDIATE ALGEBRA**

This developmental algebra course covers a quick beginning algebra review; solving systems of linear equations, inequalities in one variable, and radical, quadratic, rational equations; graphing lines, linear inequalities, and parabolas; working with function notation and radical expressions; and interwoven problem solving. Some graphing calculator lessons are included. Upon successful completion, a student may take MATH 1204, College Algebra or MATH 2043, Survey of College Mathematics. **PREREQUISITE:** Beginning Algebra (ACSK 0023) with a grade of C or better, or minimum placement score: COMPASS Prealgebra–39 & Algebra 41, ASSET Numerical Skills–40 & Elementary Algebra–43, or ACT Math–17. Beginning algebra background required. If prerequisites have not been met, drop this class or speak to the ACSK Mathematics Lead Faculty or Division Dean.

**CREDIT HOURS:** 3 credit hours, none counting toward any degree requirements.

**TARGET AUDIENCE AND TRANSFER:** This course is intended for college students who have had considerable algebra instruction, and for those students needing a review of high school algebra concepts to strengthen skill in preparation for college algebra study. Intermediate Algebra is a non-transfer course.

**INTELLECTUAL DEVELOPMENT CORE:**

Goals for student thinking that encourage intellectual risk, modeling and problem solving, and independent exploration all lead to the Intermediate Algebra course preparing productive workers and citizens with the following skills:

1. Persistence in independent problem solving and departing from rote procedure.
2. Develop communication skills within the context of real applications.
3. Actively explore solutions graphically to clarify algebraic approaches.
4. Gather, organize and summarize data.
5. Apply a variety of symbolic approaches to problem solving.
6. Allow for problems without unique solutions and judge the reasonableness of results.
7. Use technology for exploring, building ideas and as a natural tool for realistic mathematics problems.

**CONTENT CORE:**

A student successfully completing Intermediate Algebra, ACSK 0103, will demonstrate these five primary course competencies:

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| <ol style="list-style-type: none"> <li>1) Write the equation of a line in slope-intercept form given the y-intercept in point form and another point on the line.</li> <li>2) Graph any linear equation including horizontal and vertical.</li> <li>3) Solve a consistent system of two equations in two variables.</li> <li>4) Solve a quadratic equation with irrational solutions and reducible radical.</li> <li>5) Model linear, rational, Pythagorean, and quadratic problems using algebraic process.</li> </ol> | <ol style="list-style-type: none"> <li>6) And, meet all core objectives for Beginning Algebra:               <ol style="list-style-type: none"> <li>a) Find the solution of a linear equation</li> <li>b) Model a linear problem using algebraic process.</li> <li>c) Graph a linear equation in two variables.</li> <li>d) Simplify an exponential expression.</li> <li>e) Factor a second-degree polynomial .</li> <li>f) Meet all core objectives of Prealgebra (see Prealgebra course outline</li> </ol> </li> </ol> |
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**ADDITIONAL CONTENT EMPHASIS**—A student successfully completing Intermediate Algebra, ACSK 0103, will also be able to:

- 1) Perform operations on radical expressions.
- 2) Solve a linear inequality in one variable and graph the solution on a real number line.
- 3) Graph any linear equation and inequality in two variables, and radical and quadratic functions.
- 4) Solve quadratic equations via a variety of methods, including those with complex number solutions.
- 5) Work with functions, recognize a function, evaluate and graph functions, find the domain (graph & formula) and range (graphs).
- 6) Work with slope concepts (determine slope given any of: two points, a graph, an equation).

**REQUIRED FORMS OF ASSESSMENT:** In all sections of Intermediate Algebra, a divisional pre-diagnostic is given to help evaluate incoming skill relative to course success and end of semester assessments measure core content skill. Grouped statistics on overall student performance are used in faculty discussions on strengthening the learning environment and evaluations. To assess the primary goal for all developmental math courses, an ACSK Developmental Education Performance Report for math success indicates that students who are successful at Intermediate Algebra succeed in College Algebra at a rate comparable to students placed directly into that course.

**REQUIRED TEXT: Algebra: A Combined Approach, Second Edition. Martin-Gay. Prentice Hall, Upper Saddle River, NJ.: 2003.**

**HIGHLIGHT INTRODUCTION - a quick (minimal) review of Beginning Algebra:**

Appendix A - Transition Review; pp 967-972; Exercise Set: 1, 3, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 51, 53, 55, 57, 59, 61, 63

Appendix B - Transition Review; pp 973-978; Mental Math: 1, 3, 5, 7; Exercise Set: 3, 5, 9, 11, 15, 17, 21, 25, 29, 31, 33, 37, 41, 45, 49, 53

Chapter 6 Pretest: 1, 2, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15, 16, 18, 19

**REQUIRED TOPIC LIST –**

Integrated Reviews for all topics covered

\*Appendix C--An Introduction to Using a Graphing Utility; pp 979-984

2.8 Interval Notation and Linear Inequalities (review)

Appendix D: Sets and Compound Inequalities

Appendix E: Absolute Value Equations and Inequalities

Ch 7: Graphs and Functions

7.1 The Slope-Intercept Form

\*Graphing Calculator Explorations:  $Y=$ , p 494

7.2 More Equations of Lines

7.3 Introduction to Functions

7.4 Polynomials and Rational Functions

\*Graphing Calculator Explorations:  $Y=$ , rational functions p 527

7.5 Variation and Problem Solving

Ch 12: Conic Sections

12.3 Graphing Nonlinear Functions

Ch 8: Systems of Equations and Inequalities

8.1 Solving Systems of Linear Equations by Graphing

\*Graphing Calculator Explorations: INTERSECT, p 565

8.2 Solving Systems of Linear Equations by Substitution

8.3 Solving Systems of Linear Equations by Addition

Chapter 8 Focus on Mathematical Connections: Solving Nonlinear Systems

8.4 Systems of Linear Equations and Problems Solving

8.7 Systems of Linear Inequalities

Ch 9: Rational Exponents, Radicals, and Complex Numbers

9.1 Radical Expressions and Functions

9.2 Rational Exponents

9.3 Simplifying Radical Expressions

9.4 Adding, Subtracting, and Multiplying Radical Expressions

9.5 Rationalizing Numerators and Denominators of Radical Expressions

9.6 Radical Equations and Problem Solving

\*Graphing Calculator Explorations, INTERSECT, p 704

9.7 Complex Numbers

Ch 10: Quadratic Equations and Functions

10.1 Solving Quadratic Equations by Completing the Square

\*Graphing Calculator Explorations: INTERSECT, WINDOW, p 744

10.2 Solving Quadratic Equations by Using the Quadratic Formula

10.3 Solving Equations by Using Quadratic Methods

10.5 Quadratic Functions and Their Graphs

\*Graphing Calculator Explorations: Predicting Transformations, p 790

10.6 Further Graphing of Quadratic Functions

Totals:

4 review sections

+ 25 sections new material

+ 3 graphing calculator activities (any 3 with \*)

## STUDENT RESOURCES:

## ACSK 0103

## INTERMEDIATE ALGEBRA

<i>What.....</i>	<i>Why.....</i>	<i>Where.....</i>	<i>Product info</i>
<b>Student Solutions Manual</b>	Step by step solutions to odd-numbered exercises.	NWACC Bookstore	Prentice Hall
<b>Videotape Series</b>	Coverage by text sections. Text publisher.	NWACC Library BH	Free check-out
<b>Digitized Lecture Videos on CD-ROM</b>	All the Videos above in digital form	NWACC Library BH, NWACC Bookstore	Free check-out or purchase
<b>MathPro 5</b>	Online tutorial software	NWACC Bookstore	Prentice Hall
More publisher supports listed pg xvi of Preface	Computer tutorials, multimedia and web supports.	Access available in NWACC Learning Lab BH 1109 or MAT Math Café .10	Prentice Hall
Peer and Faculty <b>tutors</b>	Discuss specific homework questions, help prepare for exams.	NWACC Learning Lab BH 1109, Math Café MAT 10.	See Learning Lab Web Site for Schedule Details
Texas-Instruments 82 or 83 <b>Graphing Calculator</b>	Permits home practice with the graphing calculator.	Go to Cashier's window in BH, then take receipt to Math Secretary, MAT 02	\$30 semester rental cost.