

INTERMEDIATE ALGEBRA COURSE SYLLABUS

Course Number: _____ Course Name: Intermediate Algebra Term/Year: _____

Prerequisite: _____ Instructor: _____ Office: _____

or by placement

Phone: _____

COURSE DESCRIPTION

This course represents further development in algebraic and function concepts above beginning algebra and below college algebra. The course includes: a study of function representation, behaviors of the linear, quadratic, exponential, absolute value, and square root functions. It also includes a deeper analysis of the square root, rational, trig, and logarithmic functions with their connected algebra, solving linear systems, and a brief intro to geometry. These concepts/skills are taught using a function approach.

GOALS AND/OR OBJECTIVES

This course is designed to improve the student's understanding and memory/recall of the algebra taught. We will develop the mathematical tools needed so that students can solve problems. This course will better prepare students for higher level mathematical study and at the same time, provide mathematics that is required for entry-level work.

TEXTBOOK: SPECIAL COURSE REQUIREMENTS

Foundations for College Algebra 3e, Laughbaum, Red Bank Publishing, © 2013. The Texas Instruments graphing calculator, the TI-83/84 is required. (or the TI-nspire) *Explorations, Concept Quizzes, Investigations, and Modeling Projects for Foundations for College Mathematics 3e*, Laughbaum, Red Bank Publishing, © 2014

INSTRUCTIONAL METHODS

Lecture/demonstration, teaching activities/homework, and summative modeling projects.

METHODS OF ASSESSMENT

A series of tests, quizzes, explorations, investigations, and modeling projects totaling *approximately* 800-900 points.

Quizzes and explorations/investigations are **given unannounced**.

Grades are assigned by the following scale:

.....	A =	100 - 90%	10 - 15 concept quizzes	10 points each
	B =	89 - 80%	10 - 15 explorations	10 points each
	C =	79 - 70%	3 modeling projects	25 points each
	D =	69 - 60%	3 - 5 investigations	10 points each
	E =	59 - 0%	3 midterms	100 points each
			final exam	200 points

UNITS OF INSTRUCTION

Chapter 2	2.1 - 2.4	Chapter 11	11.1 - 11.4
Chapter 3	3.1 - 3.5	Chapter 12	12.1 - 12.4
Chapter 8	8.1 - 8.5	Chapter 13	13.1 - 13.4
Chapter 9	9.1 - 9.6	Chapter 13	14.1 - 14.4

Units of instruction are subject to change at the discretion of the instructor.

ATTENDANCE POLICY AND OTHER

Attendance is expected and is an integral part of learning mathematics. **Failure to attend regularly will result in less than optimum learning.** Students are responsible for all in-class announcements regarding changes in the **syllabus, class policy, and test dates.** *Students are also required to read all chapters and sections listed above.* It is the college policy to provide reasonable accommodations to students. If you would like to request such accommodations because of a physical, mental, or learning disability, please contact me within the first two weeks of class.

INSTRUCTOR'S OFFICE HOURS

Intermediate Algebra Daily Schedule 5-Hour, 10-Week Quarter

Note: Explorations, Concept Quizzes, and Investigations are usually given to students at the end of class and collected at the beginning of the next class; Modeling Projects are due in a week. All activities can/should be assigned as group activities outside of class, but some students prefer to not participate in groups. “Developing the Pre-Frontal Lobes” exercises may be assigned as in-class group activities. All assignments assume students have access to a graphing calculator. Something else to consider is to assign reading the pages dealing with brain function early in the course.

Week 1:

- PowerPoint Presentation: The Neuroscience of Understanding and Long-term Memory (**first day**)
- 2.1 Data Relationships Represented Numerically and Graphically
Textbook Homework: -4 – 31
Activity Assignment: Exploration
- 2.2 Data Relationships Represented Symbolically
Textbook Homework: -4 – 10 and 13 – 56
Activity Assignment: Exploration 1 and/or Concept Quiz 2, the Investigation may be a good option
- 2.3 Geometric Behaviors of Data Relationships (**2 days**)
Textbook Homework: -4 – 20
Activity Assignment: Exploration 1 or Exploration 3 and Exploration 4 or Exploration 7 and Exploration/Concept Quiz and Investigation 1. One day should be nothing by activities

Week 2:

- 2.4 Functions Represented Graphically
Textbook Homework: -4 – 20
Activity Assignment: Concept Quiz and/or Investigation
- 3.1 An Introduction to the Analysis of the Linear Function $dx + e$
Textbook Homework: -4 – 28
Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and/or Investigation
- 3.2 An Introduction to the Analysis of the Quadratic Function $d(x + e)^2 + f$
Textbook Homework: -4 – 25
Activity Assignment: Exploration 1 or 3 and/or Concept Quiz and/or Investigation
- 3.3 An Introduction to the Analysis of the Absolute Value Function $d|x + e| + f$
Textbook Homework: -4 – 24
Activity Assignment: Exploration 1 or 2 and Concept Quiz and/or Investigation
- 3.4 An Introduction to the Analysis of the Square Root Function $d\sqrt{x + e} + f$
Textbook Homework: -4 – 21
Activity Assignment: Exploration 1 and Exploration 2 and/or Concept Quiz

Week 3:

- 3.5 An Introduction to the Analysis of the Exponential Function $d \cdot 2^{x+e} + f$
Textbook Homework: -4 – 22
Activity Assignment: Exploration and/or Concept Quiz 1 and/or 2, AND Modeling Projects 1, 2, or 3
Chapters 2 & 3 Summary
Chapters 2 & 3 Test
- 8.1 Rational Functions (**day-1**)
Textbook Homework: -4 – 18
Activity Assignment: Exploration 2 and Investigation
- 8.1 Rational Functions (**day-2**)
Textbook Homework: 19 – 43
Activity Assignment: Concept Quiz 1, 2 and/or 3

Week 4:

- 8.2 The Fundamental Property of Rational Functions
Textbook Homework: -4 – 17
Activity Assignment: Exploration and/or Concept Quiz and/or Investigation
- 8.3 Multiplication and Division of Rational Functions
Textbook Homework: -4 – 20
Activity Assignment: Concept Quiz and/or Investigation
- 8.4 Addition and Subtraction of Rational Functions and Simplification of Complex Rational Functions
Textbook Homework: -4 – 28
Activity Assignment: Exploration and/or Concept Quiz 1 and/or 2 and/or Investigation
- 8.5 Solving Equations and Inequalities Containing the Rational Function and Inverse Variation (may need 2 days)
Textbook Homework: -4 – 34
Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and Modeling Project 1 or 2
- 9.1 The Square Root Function (**day-1**)
Textbook Homework: -4 – 13
Activity Assignment: Exploration and/or Concept Quiz 1 or 2

Week 5:

- 9.1 The Square Root Function (**day-2**)
Textbook Homework: 14 – 47
Activity Assignment: Concept Quiz 3 or 4 and/or Investigation
- 9.2 Properties of Irrational Expressions
Textbook Homework: -4 – 6, 7 – 39 odd
Activity Assignment: Concept Quiz 1 or 2 and/or Investigation
- 9.3 Operations with Irrational Expressions
Textbook Homework: -4 – 6, 7 – 35 odd
Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and/or Investigation
- 9.4 Fractional Exponents
Textbook Homework: -4 – 32
Activity Assignment: Concept Quiz and/or Investigation
- 9.5 Solving Equations Containing the Square Root Function
Textbook Homework: -4 – 25
Activity Assignment: Exploration and/or Concept Quiz and/or Investigation

Week 6:

- 9.6 The Square Root Function as a Mathematical Model
Textbook Homework: -4 – 32
Activity Assignment: Modeling Project 1, 2, or 3
Chapters 8 & 9 Summary
Chapters 8 & 9 Test
- 11.1 The Distance and Midpoint Formulas
Textbook Homework: -4 – 20
Activity Assignment: Exploration and/or Concept Quiz and/or Investigation
- 11.2 Triangles
Textbook Homework: -4 – 19
Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz

Week 7:

- 11.3 Parallelograms
Textbook Homework: -4 – 18
Activity Assignment:
- 11.4 Circles
Textbook Homework: -4 – 26
Activity Assignment: Exploration 1 and/or 2 and/or Investigation
- 12.1 Conversions between Degrees and Radians
Textbook Homework: -4 – 13

Activity Assignment: Exploration 1 and/or 2 and/or Investigation

12.2 **Trigonometric Definitions (may take 2 days)**

Textbook Homework: -4 – 17

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and/or Investigation

12.3 **Solving Right Triangles**

Textbook Homework: -4 – 15

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and/or Investigation

Week 8:

12.4 **Trigonometric Functions as Mathematical Models**

Textbook Homework: -4 – 19

Activity Assignment: Exploration 1 and/or 2 and/or 3 and Modeling Project 1 or 2

Chapters 11 & 12 Summary

Chapters 11 & 12 Test

13.1 **Solving Systems Graphically**

Textbook Homework: -4 – 6, 7 – 29 odd

Activity Assignment: Exploration 1 and/or 2 and/or 3 and/or Concept Quiz and/or Investigation

13.2 **Solving Systems by the Addition and Substitution Methods**

Textbook Homework: -4 – 6, 7 – 15 odd, 16

Activity Assignment: Exploration 1 and/or Concept Quiz and/or Investigation

Week 9:

13.3 **Solving Systems Using Cramer's Rule and Matrices (may take 2 days)**

Textbook Homework: -4 – 6, 7 – 33 odd, 34

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz 1 and/or 2 and/or Investigation

13.4 **Modeling with Systems of Equations**

Textbook Homework: -4 – 6, 7 – 23 odd

Activity Assignment: Exploration and/or Concept Quiz

14.1 **The Logarithmic Function (day-1)**

Textbook Homework: -4 – 22

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz

14.1 **The Logarithmic Function (day-2)**

Textbook Homework: -4 – 23 – 45

Activity Assignment: Investigation

14.2 **Properties of Logarithms (may take 2 days)**

Textbook Homework: -4 – 37

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and/or Investigation

Week 10:

14.3 **Solving Logarithmic and Exponential Equations**

Textbook Homework: -4 – 6, 7 – 27 odd

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and/or Investigation

14.4 **The Logarithmic Function as a Mathematical Model**

Textbook Homework: -4 – 23

Activity Assignment: Concept Quiz and Modeling Project 1, 2, or 3

Chapters 13 & 14 Summary

Course Summary

Week 11:

Chapters 13 & 14 Test & Final Exam

Intermediate Algebra Daily Schedule 3-Hour, 15-Week Semester

Note: Explorations, Concept Quizzes, and Investigations are usually given to students at the end of class and collected at the beginning of the next class; Modeling Projects are due in a week. All activities can/should be assigned as group activities outside of class, but some students prefer to not participate in groups. “Developing the Pre-Frontal Lobes” exercises may be assigned as in-class group activities. All assignments assume students have access to a graphing calculator. Something else to consider is to assign reading the pages dealing with brain function early in the course.

Week 1:

- 2.1 Data Relationships Represented Numerically and Graphically **AND** PowerPoint Presentation: The Neuroscience of Understanding and Long-term Memory
Textbook Homework: -4 – 31
Activity Assignment: Exploration
- 2.2 Data Relationships Represented Symbolically
Textbook Homework: -4 – 10 and 13 – 56
Activity Assignment: Exploration 1 and/or Concept Quiz 2, the Investigation may be a good option
- 2.3 Geometric Behaviors of Data Relationships (**day-1**)
Textbook Homework: -4 – 20
Activity Assignment: Exploration 1 or Exploration 3 and Exploration 4 or Exploration 7 and Exploration/Concept Quiz and Investigation 1. One day should be nothing by activities

Week 2:

- 2.3 Geometric Behaviors of Data Relationships (**day-2**)
Textbook Homework:
Activity Assignment: Exploration 2 or Exploration 5 and Exploration 6 or Exploration 7 and Exploration/Concept Quiz and Investigation 1
- 3.1 An Introduction to the Analysis of the Linear Function $dx + e$
Textbook Homework: -4 – 28
Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and/or Investigation
- 3.2 An Introduction to the Analysis of the Quadratic Function $d(x + e)^2 + f$
Textbook Homework: -4 – 25
Activity Assignment: Exploration 1 or 3 and/or Concept Quiz and/or Investigation

Week 3:

- 3.3 An Introduction to the Analysis of the Absolute Value Function $d|x + e| + f$
Textbook Homework: -4 – 24
Activity Assignment: Exploration 1 or 2 and Concept Quiz and/or Investigation
- 3.4 An Introduction to the Analysis of the Square Root Function $d\sqrt{x + e} + f$
Textbook Homework: -4 – 21
Activity Assignment: Exploration 1 and Exploration 2 and/or Concept Quiz
- 3.5 An Introduction to the Analysis of the Exponential Function $d \cdot 2^{x+e} + f$
Textbook Homework: -4 – 22
Activity Assignment: Exploration and/or Concept Quiz 1 and/or 2, AND Modeling Projects 1, 2, or 3

Week 4:

- Chapters 2 & 3 Summary
Chapters 2 & 3 Test
- 8.1 Rational Functions (**day-1**)
Textbook Homework: -4 – 18
Activity Assignment: Exploration 2 and Investigation

Week 5:

8.1 Rational Functions (**day-2**)

Textbook Homework: 19 – 43

Activity Assignment: Concept Quiz 1, 2 and/or 3

8.2 The Fundamental Property of Rational Functions

Textbook Homework: -4 – 17

Activity Assignment: Exploration and/or Concept Quiz and/or Investigation

8.3 Multiplication and Division of Rational Functions

Textbook Homework: -4 – 20

Activity Assignment: Concept Quiz or Investigation

Week 6:

8.4 Addition and Subtraction of Rational Functions and Simplification of Complex Rational Functions

Textbook Homework: -4 – 28

Activity Assignment: Exploration and/or Concept Quiz 1 and/or 2 and/or Investigation

8.5 Solving Equations and Inequalities Containing the Rational Function and Inverse Variation (may need 2 days)

Textbook Homework: -4 – 34

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and Modeling Project 1 or 2

9.1 The Square Root Function (**day-1**)

Textbook Homework: -4 – 13

Activity Assignment: Exploration and/or Concept Quiz 1 or 2

Week 7:

9.1 The Square Root Function (**day-2**)

Textbook Homework: 14 – 47

Activity Assignment: Concept Quiz 3 or 4 and/or Investigation

9.2 Properties of Irrational Expressions

Textbook Homework: -4 – 6, 7 – 39 odd

Activity Assignment: Concept Quiz 1 or 2 and/or Investigation

9.3 Operations with Irrational Expressions

Textbook Homework: -4 – 6, 7 – 35 odd

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and/or Investigation

Week 8:

9.4 Fractional Exponents

Textbook Homework: -4 – 32

Activity Assignment: Concept Quiz and/or Investigation

9.5 Solving Equations Containing the Square Root Function

Textbook Homework: -4 – 25

Activity Assignment: Exploration and/or Concept Quiz and/or Investigation

9.6 The Square Root Function as a Mathematical Model

Textbook Homework: -4 – 32

Activity Assignment: Modeling Project 1, 2, or 3

Week 9:

11.1 The Distance and Midpoint Formulas

Textbook Homework: -4 – 20

Activity Assignment: Exploration and/or Concept Quiz and/or Investigation

11.4 Circles

Textbook Homework: -4 – 26

Activity Assignment: Exploration 1 and/or 2 and/or Investigation

Chapters 8, 9, & 11 Summary

Week 10:

Chapters 8, 9, & 11 Test

12.1 Conversions between Degrees and Radians

Textbook Homework: -4 – 13

Activity Assignment: Exploration 1 and/or 2 and/or Investigation

12.2 Trigonometric Definitions (may take 2 days)

Textbook Homework: -4 – 17

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and/or Investigation

Week 11:

12.3 Solving Right Triangles

Textbook Homework: -4 – 15

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and/or Investigation

12.4 Trigonometric Functions as Mathematical Models

Textbook Homework: -4 – 19

Activity Assignment: Exploration 1 and/or 2 and/or 3 and Modeling Project 1 or 2

13.1 Solving Systems Graphically

Textbook Homework: -4 – 6, 7 – 29 odd

Activity Assignment: Exploration 1 and/or 2 and/or 3 and/or Concept Quiz and/or Investigation

Week 12:

13.2 Solving Systems by the Addition and Substitution Methods

Textbook Homework: -4 – 6, 7 – 15 odd, 16

Activity Assignment: Exploration 1 and/or Concept Quiz and/or Investigation

13.3 Solving Systems Using Cramer's Rule and Matrices (may take 2 days)

Textbook Homework: -4 – 6, 7 – 33 odd, 34

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz 1 and/or 2 and/or Investigation

13.4 Modeling with Systems of Equations

Textbook Homework: -4 – 6, 7 – 23 odd

Activity Assignment: Exploration and/or Concept Quiz

Week 13:

Chapters 11 & 12 Summary

Chapters 11 & 12 Test

14.1 The Logarithmic Function (**day-1**)

Textbook Homework: -4 – 22

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz

Week 14:

14.1 The Logarithmic Function (**day-2**)

Textbook Homework: -4 – 23 – 45

Activity Assignment: Investigation

14.2 Properties of Logarithms (may take 2 days)

Textbook Homework: -4 – 37

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and/or Investigation

14.3 Solving Logarithmic and Exponential Equations

Textbook Homework: -4 – 6, 7 – 27 odd

Activity Assignment: Exploration 1 and/or 2 and/or Concept Quiz and/or Investigation

Week 15:

14.4 The Logarithmic Function as a Mathematical Model

Textbook Homework: -4 – 23

Activity Assignment: Concept Quiz and Modeling Project 1, 2, or 3

Chapters 12, 13 & 14 Summary

Course Summary

Week 16:

Chapters 12, 13 & 14 Test, & Final Exam