

# MATH 065: A PREPARATION FOR THE STUDY OF ALGEBRA

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**Originator**

jlearned

**Co-Contributor(s)****Name(s)**

Le, Thang

**Justification / Rationale**

MATH 65 is a new course designed to prepare students for the study of algebra. It covers all of the arithmetic topics necessary for a student to be successful in the study of Algebra. As part of the realignment of our curriculum with AB 705, MATH 65 is a streamlining of our current lower division Pre-Algebra sequence of MATH 70 and Math 60 into a single course that will require less time (from two to one semester) and less units (from a total of 5 units to 4 units).

**Effective Term**

Fall 2019

**Credit Status**

Credit - Non Degree Applicable

**Subject**

MATH - Mathematics

**Course Number**

065

**Full Course Title**

A Preparation for the Study of Algebra

**Short Title**

PRE-ALGEBRA

**Discipline****Disciplines List**

Mathematics

**Modality**

Face-to-Face

**Catalog Description**

This is a course in the elementary operations required for algebra. Topics include adding, subtracting, multiplying, and dividing integer numbers, decimals, fractions and mixed numbers with an introduction to the concept and uses of variables. Other topics include arithmetic with percents, ratios, rates and proportions, the metric and American system of measurement, including the conversion of units, simplifying algebraic expressions and elementary geometry concepts such as perimeter, area, and volume.

**Schedule Description**

This course covers adding, subtracting, multiplying, and dividing integer numbers, fractions, mixed numbers and decimals with an introduction of variable expressions to prepare students for algebra.

Advisory: ENG 061 &amp; RDG 061

**Lecture Units**

3

**Lecture Semester Hours**

54

**Lab Units**

1

**Lab Semester Hours**

54

**In-class Hours**

108

**Out-of-class Hours**

108

**Total Course Units**

4

**Total Semester Hours**

216

**Prerequisite Course(s)**

Advisory: ENG 061 &amp; RDG 061

**Required Text and Other Instructional Materials****Resource Type**

Book

**Open Educational Resource**

Yes

**Formatting Style**

MLA

**Author**

Department of Math, College of the Redwoods

**Title**

Prealgebra Textbook

**Publisher**

Department of Math, College of the Redwoods

**Year**

2013

**College Level**

No

**Resource Type**

Book

**Open Educational Resource**

No

**Formatting Style**

MLA

**Author**

Martin-Gay

**Title**

Basic College Mathematics with Early Integers

**Edition**

3rd

**Publisher**

Pearson

**Year**

2014

**College Level**

No

**Flesch-Kincaid Level**

8.2

**ISBN #**

9780321922342

**Class Size Maximum**

35

**Entrance Skills**

ADVISORY SKILLS:

Read at an 8th grade level.

**Prerequisite Course Objectives**

ENG 061-Demonstrate the ability to think critically and express ideas using various patterns of development.

ENG 061-Demonstrate the ability to read and respond in writing beyond the literal interpretation of the text.

RDG 061-Read a variety of texts fluently.

**Course Content**

1. Basic number facts.
2. Addition, subtraction, multiplication, and division of rational numbers in fraction or mixed number form.
3. Natural number exponents and the order of operations involving fractions, mixed numbers and decimals.
4. Methods of finding the greatest common factor and least common multiple using prime factorizations.
5. Decimal notation and place value, including comparing, ordering, estimating and rounding decimals; and locate decimals on the real number line.
6. Addition, subtraction, multiplication and division of decimals.
7. Converting between decimals, fractions, and mixed numbers.
8. Ratios and rates, and the concept of proportions, including solving proportion problems.
9. Percents, converting between percents, fractions, and decimals; and solving percent problems using an equation or a proportion.
10. American and metric measurement units of length, volume, weight and time, including conversion within and between systems involving fractions, mixed numbers and decimals.
11. Perimeter and area of basic geometric figures such as rectangles, squares, triangles, and circles and figures that can be broken down into two or more of these.
12. Square roots and the Pythagorean Theorem.
13. Volume of basic geometric solids such as a rectangular solid, cylinder, and cone.
14. The concept of a variable.
15. Translating statements into the language of algebra.
16. Simplifying algebraic expressions; the use of the commutative, associative and distributive properties and the order of operations.
17. Rules of natural number exponents involving variables.
18. Add, subtract, multiply and divide rational expressions whose numerator and denominator are monomials.
19. Evaluate algebraic expressions for rational number and decimal values of variables.
20. Applications involving these concepts and skills

**Lab Content**

1. Participate in discussion of lectured material through question and answer format to improve understanding of new concepts.
2. Participate in skill lab by working on either paper or web based worksheets to practice skills learned in lectures.
3. Receive academic assistance from instructor, ISAs and tutors on individual basis.

**Course Objectives**

	<b>Objectives</b>
Objective 1	Demonstrate proficiency in basic number facts (addition, subtraction, multiplication, division of integer numbers).
Objective 2	Comprehend the concept of a fraction as a part of a whole.
Objective 3	Convert between improper fractions and mixed numbers.
Objective 4	Compute using the four basic operations of addition, subtraction, multiplication, and division on the rational numbers in both fraction and mixed number forms.
Objective 5	Apply prime factorization to simplify fractions and find least common multiples.
Objective 6	Use the fundamental property of fractions and prime factorizations to write equivalent fractions.
Objective 7	Apply the basic operations to solve application problems that involve integer numbers, decimals, mixed numbers and rational numbers.
Objective 8	Apply the order of operations to simplify expressions involving several operations using rational numbers, mixed numbers and decimals.
Objective 9	Use rounding and estimation to solve problems involving rational numbers, mixed numbers and decimals.
Objective 10	Employ decimal notation and place value to compare, order, and round numbers.
Objective 11	Use the concept of ratio or rate involving both rational numbers, mixed numbers and decimals to determine the solution to a proportion problem.
Objective 12	Apply methods of conversion between percents, decimals, and fractions.
Objective 13	Determine the solution to equations involving percents by deductive reasoning.
Objective 14	Recognize and convert between units of measurements in the American and metric systems involving rational numbers, mixed numbers and decimals using conversion factors or proportions.
Objective 15	Use unit measure appropriately in applications involving rational numbers, mixed numbers and decimals.
Objective 16	Use concepts and formulas from geometry.
Objective 17	Compute square roots of natural numbers, fractions and decimals; and use the Pythagorean Theorem to solve simple right triangle problems.
Objective 18	Locate integer numbers, rational numbers, mixed numbers and decimals on the real number line.
Objective 19	Understand the concept of a variable and how a variable can be used to represent an unknown quantity.
Objective 20	Distinguish between various subsets of the rational numbers including natural numbers, whole numbers, and integers.
Objective 21	Apply the commutative, associative, distributive, inverse and identity properties to simplify algebraic expressions involving fraction, mixed number and decimal coefficients.
Objective 22	Use the properties of natural number exponents to simplify algebraic expressions.
Objective 23	Evaluate an algebraic expression via substitution of rational numbers, mixed number and decimals; and determine if a given value is a solution to an algebraic equation.
Objective 24	Explain the concepts of terms, factors, variable and coefficient.

**Student Learning Outcomes**

	<b>Upon satisfactory completion of this course, students will be able to:</b>
Outcome 1	Combine the abilities to judge relative sizes of numbers, perform computations with numbers in different representations, and assess the reasonableness of results in order to demonstrate number sense.
Outcome 2	Use the information obtained in application problems to estimate a reasonable solution, determine appropriate methods of solution that involve arithmetic and algebraic computations, execute those methods of solution, and compare the results to the estimate.
Outcome 3	Apply algebraic principles and deductive reasoning to perform computations with symbolic expressions.
Outcome 4	Use proportional reasoning to describe relationships between quantities and determine the values of unknown quantities.

**Methods of Instruction**

Method	Please provide a description or examples of how each instructional method will be used in this course.
Laboratory	Lab will be used, in groups or individually, for student exploration of the topics of the course.
Discussion	Discussion will be used to review, analyze, and evaluate various methods of solution.
Lecture	Lecture will be used for introduction on explanation of course topics.

**Methods of Evaluation**

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Written homework	Students will be evaluated by homework assignments covering topics from lecture. Students are not allowed to use calculator to complete the homework assignments. Students will typically be assigned 5-6 hours of homework per week.	Out of Class Only
Mid-term and final evaluations	Students will be evaluated by examinations involving problems that require the application of studied principles and skills to new situations as well as problems that mimic those done on homework and in class. Students are not allowed to use calculator to complete the mid-term and evaluations.	In Class Only
Computational/problem-solving evaluations	Students will be evaluated by completing challenging problem sets requiring careful reasoning and application of a variety of course topics. Students are not allowed to use calculator to complete the assignments.	In Class Only
Student participation/contribution	Students will be evaluated by their participation in lab activities and may be required to turn in write-ups of these activities.	In Class Only
Mid-term and final evaluations	Students will be evaluated by a comprehensive two-hour final exam. Students are not allowed to use calculator to complete the final exam.	In Class Only
Student participation/contribution	Students will be expected to read the textbook before coming to class as well as reviewing their notes after class. Students will be evaluated on their preparation and review by their performance on homework and exams. Students should typically spend an average of 1-2 hours per week on preparation and review.	Out of Class Only

**Assignments**
**Other In-class Assignments**

1. Attending classroom lectures and taking notes.
2. Participate in classroom discussions to review, analyze, diagnose and evaluate various methods of solution used on their homework.

**Other Out-of-class Assignments**

1. Reading textbook and supplementary assignments.
2. Review notes.
3. Complete assigned homework including exercises designed to improve problem solving, computational skills and mathematical understanding. Complete assigned homework including exercises designed to improve problem solving, computational skills and mathematical understanding.

**Grade Methods**

Letter Grade Only

## MIS Course Data

**CIP Code**

27.0101 - Mathematics, General.

**TOP Code**

170100 - Mathematics, General

**SAM Code**

E - Non-Occupational

**Basic Skills Status**

Basic Skills

**Prior College Level**

Three levels below transfer

**Cooperative Work Experience**

Not a Coop Course

**Course Classification Status**

Credit Course

**Approved Special Class**

Not special class

**Noncredit Category**

Not Applicable, Credit Course

**Funding Agency Category**

Not Applicable

**Program Status**

Stand-alone

**Transfer Status**

Not transferable

**Allow Audit**

No

**Repeatability**

No

**Materials Fee**

No

**Additional Fees?**

No

## Approvals

**Curriculum Committee Approval Date**

11/15/2018

**Academic Senate Approval Date**

11/29/2018

**Board of Trustees Approval Date**

12/14/2018

**Chancellor's Office Approval Date**

1/07/2019

**Course Control Number**

CCC000599885