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Course Outline for MATH 107B

PRE-ALGEBRA B

Effective: Fall 2018

I. CATALOG DESCRIPTION:
MATH 107B — PRE-ALGEBRA B — 2.00 units

This course is intended to serve as a bridge between arithmetic and Elementary Algebra. It includes a review of concepts covered in the second half of Mathematics 107 Pre-Algebra, including: decimals, graphs of simple linear equations, percent and proportion, introduction to statistics, geometry and measurement, and application problems.

1.50 Units Lecture 0.50 Units Lab

Prerequisite
MATH 107A - Pre-Algebra A
with a minimum grade of C
or

Corequisite
MATH 107F - Pre-Algebra B Co-Requisite Support

Grading Methods:
Letter or P/NP

Discipline:
- Mathematics

	MIN
Lecture Hours:	27.00
Lab Hours:	27.00
Total Hours:	54.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

Before entering the course a student should be able to:

A. MATH107A

IV. MEASURABLE OBJECTIVES:

Upon completion of this course, the student should be able to:

A. Perform accurate computations with whole numbers, fractions and decimals, signed and unsigned, without using a calculator;
B. Simplify and evaluate variable expressions;
C. Demonstrate a knowledge of ratios, proportions, percentages and their applications by setting up and solving relevant equations;
D. Identify geometric figures and their parts to find Perimeter, Area, Volume and Surface Area using their respective formulas;
E. Demonstrate conversion between the English and metric units of length, area, volume, mass, and temperature, and the ability solve applied problems involving those units;
F. Solve linear equations involving multiple steps;
G. Analyze and construct graphs of data;
H. Construct graphs of linear equations in two variables in a rectangular coordinate system;
I. Calculate mean, median and mode from a set of data;
J. Apply the concepts learned to specific real-life applications, such as, simple interest, business and finance, restaurants, bank statements etc.

V. CONTENT:
A. Review material from Math 107A
B. The real number system
   1. Addition, subtraction, multiplication and division of signed decimals
C. Percent
   1. Ratio and proportion
   2. Solving percent problems with equations
   3. Application Problems: Examples include, but are not limited to:

a. Percentages: Compute sale price or amount of a sales tax
b. Rate: use unit pricing to determine the best buy

D. Geometric figures and formulas
1. Perimeters
2. Area
3. Volume
4. Triangles: Similar and Right
5. Pythagorean Theorem and square roots
6. Application Problems: Examples include, but are not limited to:
a. Similar triangles, for example, measuring the height of a tree
b. Solving for the unknown length given a right triangle situation
c. Computing the cost of building a home or carpeting a room

E. The English and metric systems
1. Length
2. Area
3. Volume
4. Mass
5. Time
6. Temperature

F. Statistics and graphing
1. Mean, median and mode
2. Interpret graphs

G. Linear Equations in Two Variables
1. Solutions of linear equations in two variables
2. Table of Solutions
3. Graphing by point-plotting

VI. METHODS OF INSTRUCTION:

A. Computer assisted instruction (e.g., ALEKS or My Math Lab)
B. **Lab** - activities
C. **Classroom Activity** - Lectures and Tutorials. Collaborative exercises on designated content.
D. **Discussion** - Classroom or small group discussion.

VII. TYPICAL ASSIGNMENTS:

A. Lab Activities/Computer Assisted Instruction
1. Find a partner in the class and measure your heights two ways, one with a tape measure and two using similar triangle and shadows.

B. Homework-typical problems
1. The population of a town increased from 3500 to 4200. Find the percent of increase in population.

C. Collaborative learning exercises collected at the end of class
1. A piece of land, to be used as a park, has been donated to the school. You are a member of the Student Design Committee, which will be responsible for the layout and design of the park.
a. Use the diagram of the park on page 2 to make your plans as you work with the committee to answer the questions in Part I.
b. Part II will be the final report from the design committee.

VIII. EVALUATION:

A. **Methods**

1. Exams/Tests
2. Class Work
3. Home Work
4. Other:
a. Collaborative Learning Activities

B. **Frequency**

1. Exams/Tests:
a. Three or more exams
b. Cumulative Final exam covering content from Math 107A and Math 107B
2. Class work weekly
3. Homework
a. Assigned for each section covered
b. Collected regularly
4. Collaborative learning Activities
a. At the discretion of the instructor

IX. TYPICAL TEXTS:

1. Martin-Gay, Elayn. *Prealgebra.* 7th ed., Pearson, 2015.
2. Hutchison, Donald, Barry Bergman, and Stefan Barrato. *Prealgebra, Media Enhanced Edition.* 7th ed., McGraw Hill, 2016.
3. Hestwood, Diana, and Margaret Lial. *Prealgebra.* 7th ed., Pearson, 2017.

X. OTHER MATERIALS REQUIRED OF STUDENTS:

A. Students will purchase an access code to an online software package that will provide them with access to an online mathematics homework, tutorial, and assessment system. The access code can be bundled with the text at a small cost to the student. Math software and required free plugins will need to be installed on both student and instructor computers.