

GEORGIA PERIMETER COLLEGE  
MATHEMATICS ACADEMIC GROUP  
COMMON COURSE OUTLINE

COURSE ABBREVIATION	Math 2030
CREDIT HOURS	3
COURSE TITLE	Principles of Mathematics
PREREQUISITES	Math 1101 or Math 1111

CATALOG DISCRIPTION

This course is designed for teachers at the elementary school level; topics included are problem solving, sets, functions, reasoning, real numbers, descriptive statistics, elementary number theory, and measurement. This course is not intended for those majoring in mathematics or for those intending to teach at the middle school or high school levels.

EXPECTED EDUCATIONAL RESULTS

Upon completion of this course, students will be able to do the following:

1. develop and apply strategies to solve problems
2. use Venn diagrams to illustrate the set operations union, intersection, and complement
3. represent and interpret functions verbally, numerically, graphically and symbolically
4. distinguish between deductive and inductive reasoning and valid and invalid arguments
5. understand the role of place value and notation in various numeration systems
6. use estimation and mental arithmetic to perform whole number calculations
7. use tests for divisibility and determine prime factorization, GCF and LCM
8. use integers and rational numbers to demonstrate concepts of order and equivalence
9. use rational and irrational numbers in problem-solving settings
10. gather, organize, present and interpret data numerically, graphically and verbally
11. solve problems using linear, square and cubic units of measure

GENERAL EDUCATION OUTCOMES

- I. This course addresses the general education outcome related to effective individual and group problem-solving and critical-thinking skills as follows:
  1. Students develop their problem-solving skills individually in homework assignments, assigned group problem-solving activities, and group quizzes or project assignments.
  2. Students develop their critical-thinking skills specifically in the unit on problem solving as well as in application problems throughout the course.
- II. This course addresses the general education outcome related to use of mathematical concepts to interpret, understand, and communicate quantitative data as follows:
  1. Students learn and apply problem-solving skills in each unit, especially in applications of decimals, fractions, percents, statistics and measurement.
  2. Students must be familiar with simple data analysis tools in their study of functions and statistics.

COURSE CONTENT

- A. Problem Solving
  1. Introduction to Problem Solving
  2. Patterns and Problem Solving
  3. Technology in Problem Solving
- B. Sets, Functions, and Reasoning
  1. Sets and Counting
  2. Functions and Graphs
  3. Introduction to Deductive Reasoning

- C. Whole Numbers
  - 1. Numeration Systems
  - 2. Addition and Subtraction
  - 3. Multiplication
  - 4. Division and Exponents
- D. Number Theory
  - 1. Factors and Multiples
  - 2. Greatest Common Divisor and Least Common Multiple
- E. Integers and Fractions
  - 1. Integers
  - 2. Introduction to Fractions
  - 3. Operations with Fractions
- F. Decimals: Rational and Irrational Numbers
  - 1. Decimals and Rational Numbers
  - 2. Operations with Decimals
  - 3. Ratio, Percent, and Scientific Notation
  - 4. Irrational and Real Numbers
- G. Statistics
  - 1. Describing and Analyzing Data
  - 2. Graphing Data and Making Predictions
- H. Measurement
  - 1. Systems of Measurement
  - 2. Area and Perimeter
  - 3. Volume and Surface Area

## ASSESSMENT OF EXPECTED EDUCATIONAL RESULTS

### A. COURSE GRADE

The course grade will be determined by the individual instructor using a variety of evaluation methods. A portion of the course grade will be determined through the use of frequent assessment using such means as tests, quizzes, projects, or homework as developed by the instructor. Some of these methods will require the student to demonstrate ability in problem solving and critical thinking as evidenced by explaining and interpreting solutions. A portion of the evaluation process will require the student to demonstrate skill in writing both correct prose and correct mathematics.

### B. DEPARTMENTAL ASSESSMENT

This course will be assessed every five years. An appropriate assessment instrument will be determined by the Math 2030 course committee.

### C. USE OF ASSESSMENT FINDINGS

The Math 2030 committee, or a special assessment committee appointed by the Academic Group, will analyze the results of the assessment and determine implications for curriculum changes. The committee will prepare a report for the Academic Group summarizing its finding.

EFFECTIVE DATE: August 2006

APPROVED DATE: Spring 2006

Reviewed by Committee: February 2006