Douglas College

A.	Division:	Instructional		Effective Date:	May 2006

B. Department / Program Area: Mathematics Faculty of Science & Technology

Revision **X**   New Course ☐

If Revision, Section(s) Revised: F, N, P
Date of Previous Revision: September 2004
Date of Current Revision: May 24, 2005

C: MATH 1191   **D**:   Mathematics for Teachers   **E:**   4

Subject & Course No.	Descriptive Title	Semester Credits

F: Calendar Description:

This is a one semester course which explores the basic mathematical concepts which are taught in the elementary school curriculum. Topics will include sets, whole numbers and integers, arithmetic operations, rational and real numbers and the study of informal geometry including curves, angles, area and volume, symmetry, congruence and motion geometry. Students are advised that this course requires a considerable time commitment.

G: Allocation of Contact Hours to Type of Instruction / Learning Settings

Primary Methods of Instructional Delivery and/or Learning Settings:

Lectures and in-class lab activities

Number of Contact Hours: (per week / semester for each descriptor)

6

Number of Weeks per Semester:

15

H: Course Prerequisites:

BC Principles of Math 11 (C or better) or equivalent

I: Course Corequisites:

None

J: Course for which this Course is a Prerequisite

None

K: Maximum Class Size:

35

L: PLEASE INDICATE**:**

☐   Non-Credit

☐   College Credit Non-Transfer

X   College Credit Transfer:

SEE BC TRANSFER GUIDE FOR TRANSFER DETAILS (www.bctransferguide.ca)

M: Course Objectives / Learning Outcomes

At the end of the course, the successful student should be able to:

-employ pattern recognition, Polya's method and other critical thinking strategies to solve word problems

-understand and apply the concepts of set union, intersection and the Cartesian product

- use Venn diagrams to solve problems

-demonstrate addition, subtraction, multiplication and division of integers using a variety of appropriate models (e.g. sets, the real number line, tree diagrams, arrays)
-explain and apply the properties of the real numbers (e.g. commutative law, associative law, etc.)

-explain and apply the rules required to evaluate expressions involving integer exponents

-explain and use the Fundamental Theorem of Arithmetic and the Sieve of Eratosthenes

-demonstrate equivalence, addition, subtraction, multiplication, and division of fractions and decimals using a variety of appropriate models

-find and explain how to find greatest common factors and least common multiples

-convert and explain how to convert numbers from decimal to fractional or percentage form and vice versa

-solve problems involving applications of percent

-define and solve problems using commonly used terms of informal geometry: collinear, parallel, perpendicular, skew, triangle, circle, polygon, parallelogram, trapezoid, rectangle, rhombus, square

-define and solve problems using terms used in the description of angles: supplementary, complementary, adjacent, vertical, alternate, acute, obtuse

-explain and apply the basic properties of measurement to determine length, area and volume (i.e. the covering property, the congruence property, the additive property, the comparison property)

-convert between different units of measurement

-explain how geometric constructs separate the plane or space

-prove simple statements of geometry using deductive reasoning

-solve problems that require applying the concepts of symmetry, reflection and translation

-determine and explain how to determine if given triangles are similar, congruent or neither

-define terms and solve problems related to the geometry of triangles: equilateral, isosceles, scalene, acute, obtuse

NOTE TO INSTRUCTORS:

While teaching Math 1191 the instructor's objectives should be:
-to spark and nurture a positive attitude towards mathematics
-to help students to reach a level of mathematical competence which will allow them to function effectively as mathematics teachers in an elementary school setting
-to expose students to the beauty of mathematics, along with its fun and creative sides

N: Course Content:

1. Critical Thinking and Inductive Reasoning
2. Strategies for Problem Solving
3. Sets
4. Whole Number Operations
5. Properties of Operations on Sets
6. Integers and Operations
7. Divisibility, Primes, Composites and Factorization
8. Rational Numbers and Operations
9. Decimals and Percent
10. Integer Exponents
11. Points, Lines and Planes
12. Polygons and Polyhedra
13. Measurement
14. Areas and Volumes
15. Cylinders, Cones and Spheres
16. Motion Geometry
17. Symmetry
18. Congruence of triangles
19. Similarity

O: Methods of Instruction

Lectures, group work

P: Textbooks and Materials to be Purchased by Students

Wheeler and Wheeler, <u>Modern Mathematics for Elementary Educators</u>, 12th Edition, Kendall-Hunt Publishing, 2005.

Q: Means of Assessment

Evaluation will be carried out in accordance with Douglas College policy. The instructor will present a written course outline with specific evaluation criteria at the beginning of the semester.

a. Weekly Assignments	15 – 20%
b. Term Tests	30 – 50%
c. Term Project	0 – 10%
d. In-Class Assignments/Groupwork	0 – 5%
e. Participation/Attendance	0 – 5%
f. Final Exam	30%

Note: Students may be required to pass the final exam in order to be eligible to pass the course.

R: Prior Learning Assessment and Recognition: specify whether course is open for PLAR

None

Course Designer(s)   Natasha Davidson

Education Council / Curriculum Committee Representative

Dean / Director   Des Wilson

Registrar   Trish Angus