

CURRICULUM GUIDELINES

A: Instructional Division

Date: June 7, 1999

B: Faculty of Science & Technology

New Course Revision

If Revision, Section(s) Revised: F, H, L, M, N, Q

Date: June 1991

C: Math 191

D: Mathematics for Teachers

E:

4

Subject and Course Number

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.

G: Allocation of Contact Hours to Types 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
6

Number of Weeks per Semester 14

H: Course Prerequisites

BC Principles of Math 11 (C or better) *DUST 411 C*

or equivalent

DUST 412 C+

I: Course Corequisites

None

J: Courses for which this Course is a Prerequisite

None

K: Maximum Class Size

35

L: PLEASE INDICATE:

- Non-Credit
- College Credit Non-Transfer
- College Credit Transfer: requested/granted (circle)

If transfer has been granted, specify course equivalents, unassigned credit or block-transfer component, as appropriate:

SFU: Math 190 – 4 credits UBC: Math – 3 credits UNBC: Math – 3 credits
 (precludes taking Math 335) (not for credit towards a major)

UVIC: Math 160A – 1.5 credits Other: See Transfer Guide

M: Course Objectives/Learning Outcomes

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

-employ pattern recognition and other critical thinking strategies to solve word 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 191 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 fun, creative, and beautiful side of mathematics

N: Course Content

1. Critical Thinking and Inductive Reasoning
2. Strategies for Problem Solving
3. Sets
4. Whole Number Operations
5. Integers and Operations
6. Divisibility, Primes, Composites and Factorization
7. Rational Numbers and Operations
8. Decimals and Percent
9. Integer Exponents

10. Points, Lines and Planes 11. Polygons and Polyhedra 12. Measurement 13. Areas and Volumes 14. Cylinders, Cones and Spheres 15. Motion Geometry 16. Symmetry 17. Congruence of triangles 18. Similarity														
O: Methods of Instruction Lectures, group work														
P: Textbooks and Materials to be Purchased by Students Wheeler, Ruric E. and Wheeler, Ed. <u>Modern Mathematics</u> , Brooks/Cole Publishing Company, 1995.														
Q: Means of Assessment The following is a recommended course evaluation breakdown. 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. <table border="0" style="margin-left: 20px;"> <tr> <td>a. Weekly Assignments</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>b. Midterm 1</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>c. Midterm 2</td> <td style="text-align: right;">20%</td> </tr> <tr> <td>d. Term Project</td> <td style="text-align: right;">5%</td> </tr> <tr> <td>e. Participation</td> <td style="text-align: right;">5%</td> </tr> <tr> <td>f. Final Exam</td> <td style="text-align: right;"><u>30%</u></td> </tr> <tr> <td>TOTAL</td> <td style="text-align: right;">100%</td> </tr> </table> <p>Note: Students must achieve a minimum score of 45% on the final exam in order to receive a C- grade or better for the course.</p>	a. Weekly Assignments	20%	b. Midterm 1	20%	c. Midterm 2	20%	d. Term Project	5%	e. Participation	5%	f. Final Exam	<u>30%</u>	TOTAL	100%
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TOTAL	100%													
R: Prior Learning Assessment and Recognition: specify whether course is open for PLAR None														

Susan Oestere
Course Designer(s)

Education Council/Curriculum Committee Representative

Leonard Wilson
Faculty Dean

P. H. Jones
Registrar