Douglas College

EFFECTIVE: SEPTEMBER 2010
CURRICULUM GUIDELINES

A.	Division:	Education	Effective Date:		September 2010	
B.	Department / Program Area:	Mathematics/ Science & Technology	Revision	X	New Course	
			If Revision, Section(s) Revised:		F, L, P, Q	
			Date of Previous Revision:		May 2005	
			Date of Current Revision:		April 2010	

C: MATH 1105 (Subject & Course No.) **D:** Algebra & Trigonometry (Descriptive Title) **E:** 3 (Semester Credits)

F: Calendar Description:

This one-semester course covers the essentials of functions (linear, quadratic, polynomial, logarithmic, exponential, and trigonometric), graphing, solving equations and inequalities, systems of equations, and sequences and series. It is designed to meet the needs of students who plan to go on to take Precalculus (MATH 1110), Business Calculus (MATH 1125) or Statistics (MATH 1160), or who require a Math 12-level course to transfer to technical or vocational programmes.

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

Primary Methods of Instructional Delivery and/or Learning Settings:

Lecture

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

4

Number of Weeks per Semester:

15

H: Course Prerequisites:

Math 1101 or DVST 0411 or BUSN 1330
or Principles of Math 11 with a DC Mathematics Assessment Test score of 20 or better
or Principles of Math 12 with a DC Mathematics Assessment Test Score of 17 or better.

See the DC Calendar for information on eligibility to write the Mathematics Assessment Test.

I: Course Corequisites:

J: Course for which this Course is a Prerequisite

Math 1110, Math 1125, Math 1160

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:

- solve word problems involving linear and quadratic equations (applications will include: geometry problems, work problems, motion problems, mixture problems)
- graph relations and functions on the Cartesian coordinate system (including linear, quadratic, polynomial, y=1/x, logarithmic, exponential, trigonometric, absolute value, radical and piecewise functions)
- define a function
- determine domains and ranges of functions and represent them using interval notation
- use the vertical line test to determine whether a relation is a function
- classify functions as periodic, one-to-one, piece-wise, or continuous
- identify maxima, minima, and intervals of increase/decrease by looking at the graph of a function
- apply function transformations (translations, dilations and reflections)
- find and/or graph the inverse of a function
- evaluate composite functions
- use linear functions which model real-life situations to solve problems
- find the vertex of a parabola by completing the square
- use quadratic functions which model real-life situations to solve problems including optimization problems
- solve quadratic inequalities both analytically and graphically, and express the solution in interval notation
- graph polynomial functions
- demonstrate an understanding of the Remainder and Factor Theorems
- divide polynomials using long division and synthetic division
- solve factorable polynomial equations
- graph exponential and logarithmic functions with any base and be able to identify axis-intercepts, asymptotes, domain and range
- understand the inverse relationship between exponential and logarithmic functions
- convert between logarithmic and exponential forms
- evaluate simple logarithms without using a calculator
- change logarithms from one base to another
- use the properties of logarithms to simplify expressions
- solve logarithmic and exponential equations with any base
- define sine, cosine, tangent, secant, cosecant and cotangent in terms of: right triangles, points-in-the-plane and unit circles
- use a calculator to find the trig values for any acute angle, and given the function value for an acute angle, find the angle
- solve right-triangles and word problems involving right-triangles using trigonometry
- convert from degree measure to radian measure and vice versa
- identify special angles on a unit circle
- use reciprocal and Pythagorean identities to simplify trigonometric expressions
- solve simple trigonometric equations giving only the acute angle solution
- graph the sine and cosine functions
- from the graph of a trig function determine the period, amplitude, domain, range and phase-shift
- solve systems of equations in two variables using substitution or elimination methods
- solve systems of equations in three variables using the substitution method
- distinguish between sequences and series, arithmetic sequences, arithmetic series, geometric sequences, geometric series, infinite geometric sequences, recursively defined sequences
- describe a given sequence algebraically
- use formulas to find terms, positions of terms in sequences or series, arithmetic or geometric means, sums of series and sums of infinite series
- use sigma notation to describe series
- evaluate series designated in sigma notation

N: Course Content:

1. Review of equations and inequalities
2. Functions
3. Quadratic Functions
4. Polynomial Functions
5. Exponential and Logarithmic Functions
6. Trigonometric Functions
7. Systems of Equations
8. Sequences & Series

O: Methods of Instruction

Lecture

P: Textbooks and Materials to be Purchased by Students

College Algebra and Trigonometry, Lial, Margaret, Hornsby, John, Schneider, David, Pearson Education, Inc., Current edition.

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. Evaluation will be based on some of the following:

1. Weekly tests (0 – 40%)
2. Midterm tests (20 – 70%)
3. Assignments (0 – 15%)
4. Attendance (0 – 5%)
5. Participation (0 – 5%)
6. Final Examination (30 – 40%)

Note: All sections of a course with a common final examination will have the same weight given to that examination.

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

N/A

Course Designer(s): Allan Majdanac

Education Council / Curriculum Committee Representative

Dean / Director: Thor Borgford

Registrar: Ted James