

 ORIGINAL COURSE IMPLEMENTATION DATE:
 Septem

 REVISED COURSE IMPLEMENTATION DATE:
 January

 COURSE TO BE REVIEWED: (six years after UEC approval)
 Septem

 Course outline form version: 09/15/14
 Septem

September 2009 January 2019 September 2020

# OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: MATH 140			Number of Credits: 3 Course credit policy (105)			
Course Full Title: Algebra and Functions for Business Course Short Title (if title exceeds 30 characters): Algebra & Functions for Business						
Faculty: Faculty of Science			Department (or program if no department): Mathematics and Statistics			
Calendar Description:						
Develops mathematical skills and techniques necessary for the study of calculus with bus linear systems of equations, examine linear, quadratic, cubic, rational, exponential, logar and study various measures of change. Practical applications in business, economics, ar					ith business applications logarithmic, and logistic ics, and the social science	. Students will solve small models and their graphs, ces are emphasized.
Note: Students with credit for MATH 110 cannot take this course for further credit.						
Prerequisites (or NONE): One of the following: (C+ or better in one of Principles of Principles of Mathematics 1 Part A of the MSAT).				or better in one of Pre-calculus 11 or Calculus 12) or (C or of Mathematics 11, Pre-calculus 12, or MATH 085) or (one of 12, MATH 092, or MATH 096) or (a score of 17/25 or better on		
Corequisites (if applicable, or NONE):	NONE					
Pre/corequisites (if applicable, or NONE): NONE						
Equivalent Courses (cannot be taken for additional credit)				Transfer Credit		
Former course code/number:				Transfer credit already exists: 🛛 Yes 🗌 No		
Cross-listed with:				Transfer credit requested ( $OPeq$ to submit to $BCCAT$ ):		
Equivalent course(s): MATH 110				Transfer credit requested (Oneg to submit to BCCAT). $\Box$ Ves $\Box$ No. (if yes, fill in transfer credit form)		
Note: Equivalent course(s) should be included in the calendar description by way of a note that students with credit for the equivalent course(s) cannot take this course for further credit.				Resubmit revised outline for articulation: Yes No		
				Special Topics		
Lotal Hours: 50				Special Topics Will the course be offered with different topics?		
Lecture hours		50	1	$\square$ Yes $\square$ No		
Seminars/tutorials/workshops		00				
			If yes, different lettered courses may be taken for credit:			
Field experience hours						
Experiential (practicum, internship, etc.)				Note: The	e specific topic will be record	led when offered.
Online learning activities				Movimu	m oprolmont /for inform	ation only 26
Other contact hours:				waxiinu	in enronnent (för införm	ation only). So
Total 50				Expected frequency of course offerings (every semester, annually, every other year, etc.): Every semester		
Department / Program Head or Director: Ian Affleck					Date approved:	September 2017
Faculty Council approval					Date approved:	September 8, 2017
Campus-Wide Consultation (CWC)				Date of posting:	October 13, 2017	
Dean/Associate VP: Lucy Lee					Date approved:	September 8, 2017
Undergraduate Education Committee (UEC) approval				Date of meeting:	October 27, 2017	

Learning Outcomes					
upon successful completion of this course, students will be able to:					
1. Perform arithmetic combinations of polynomial and rational expressions					
2. Factor quadratic and some cubic expressions					
3. Solve linear and quadratic equations, linear inequalities, and inequalities involving absolute values					
4. Solve small systems of linear equations algebraically and graphically					
5. Demonstrate appropriate use and interpretation of function notation					
6. Sketch the graph of a given function and analyse a given graph of a function					
<ol> <li>Using graph, data, equation, or application, identify the following models: linear, quadratic, cubic, exponential, logarithmic, logistic</li> </ol>					
8. Use technology to construct regression equations for the above models from data, including piecewise-defined models					
9. Compute and interpret inverses of linear, exponential, and logarithmic functions					
10. Solve exponential and logarithmic equations					
11. Translate between graph, point-slope form, and slope-intercept form of a line					
12. Compute and interpret difference quotient and average rate of change of a function and secant slope on a graph					
13. Interpret all results in the field of interest from which the model being analyzed arose					
Prior Learning Assessment and Recognition (PLAR)					
Yes No, PLAR cannot be awarded for this course because					
Course Challenge					
Typical Instructional Methods (guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion)					
Students will learn to use graphing calculators as a tool for plotting and analyzing functions.					

University of the Fraser Valley Official Undergraduate Course Outline

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Grading system: Letter Grades: Credit/No Credit: Labs to be scheduled independent of lecture hours: Yes No

## NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Typical Text(s) and Resource Materials							
	Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year		
1.	Bittinger et al	Precalculus: Graphs and Models, 4 <sup>th</sup> ed.		Pearson	2009		
2.							
3.							
4.							
5.							
Re	Required Additional Supplies and Materials (software, hardware, tools, specialized clothing, etc.)						

A Texas Instruments graphing calculator (TI-83, TI-83Plus, TI-84, TI-85, or TI-86) is required

#### Typical Evaluation Methods and Weighting

Final exam:	40%	Assignments:	10%	Midterm exam:	%	Practicum:	%
Quizzes/tests:	50%	Lab work:	%	Field experience:	%	Shop work:	%
Other:	%	Other:	%	Other:	%	Total:	100%

Details (if necessary):

\* Students must obtain at least 40% on the final exam to pass the course, regardless of term grades.

# **Typical Course Content and Topics**

1. Algebra:

**MATH 140** 

- (a) Real numbers and their properties, intervals, absolute value
- (b) Integer exponents, order of operations
- (c) Polynomial arithmetic and basic factoring
- (d) Rational expressions: domain, arithmetic, simplification
- (e) Radical notation and rational exponents
- (f) Solving linear and quadratic equations, linear inequalities

# 2. Linear systems:

(a) Solving 2-variable linear systems algebraically and graphically

(b) Solving 3-variable linear systems algebraically and with the use of technology

## **MATH 140**

#### 3. Functions:

- (a) Linear, quadratic, cubic, exponential, logarithmic, logistic, simple rational functions
- (b) Function notation
- (c) Graph of a function
- (d) Using functions to relate mathematical equations to real situations
- (e) Piecewise-defined functions
- (f) Combinations, compositions, and transformations of functions
- (g) Inverse functions: finding them graphically and algebraically, understanding their uses

#### 4. Modeling and regression:

- (a) How to choose and build linear, exponential, logarithmic, logistic, polynomial models using technology
- (b) Constructing piecewise-continuous models using technology

#### **5.** Applications in business and the social sciences (a) Population growth compound interest depreciation dou

- (a) Population growth, compound interest, depreciation, doubling time, and halving time
- (b) Supply and demand equilibrium, break-even point
- (c) Cost, revenue, profit as functions of production level

### 6. Introducation to calculus

- (a) Difference quotients, secant slopes, average rate of change
- (b) Introduction to tangent lines and the instantaneous rate of change