



ORIGINAL COURSE IMPLEMENTATION DATE: September 2009
 REVISED COURSE IMPLEMENTATION DATE: January 2019
 COURSE TO BE REVIEWED: (six years after UEC approval) September 2020
 Course outline form version: 09/15/14

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 business applications. Students will solve small linear systems of equations, examine linear, quadratic, cubic, rational, exponential, logarithmic, and logistic models and their graphs, and study various measures of change. Practical applications in business, economics, and the social sciences 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 Pre-calculus 11) or (C or better in one of Principles of Mathematics 11, or Pre-calculus 12, or MATH 085) or (one of Principles of Mathematics 12, MATH 092, or MATH 096) or (a score of 17/25 or better on Part A of the MSAT).																
Corequisites (if applicable, or NONE):	NONE																
Pre/corequisites (if applicable, or NONE):	NONE																
Equivalent Courses (cannot be taken for additional credit) Former course code/number: Cross-listed with: Equivalent course(s): MATH 110 <i>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.</i>	Transfer Credit Transfer credit already exists: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Transfer credit requested (OREg to submit to BCCAT): <input type="checkbox"/> Yes <input type="checkbox"/> No (if yes, fill in transfer credit form) Resubmit revised outline for articulation: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No To find out how this course transfers, see bctransferguide.ca .																
Total Hours: 50 Typical structure of instructional hours: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr><td>Lecture hours</td><td style="text-align: center;">50</td></tr> <tr><td>Seminars/tutorials/workshops</td><td></td></tr> <tr><td>Laboratory hours</td><td></td></tr> <tr><td>Field experience hours</td><td></td></tr> <tr><td>Experiential (practicum, internship, etc.)</td><td></td></tr> <tr><td>Online learning activities</td><td></td></tr> <tr><td>Other contact hours:</td><td></td></tr> <tr><td style="text-align: right;">Total</td><td style="text-align: center;">50</td></tr> </table>	Lecture hours	50	Seminars/tutorials/workshops		Laboratory hours		Field experience hours		Experiential (practicum, internship, etc.)		Online learning activities		Other contact hours:		Total	50	Special Topics Will the course be offered with different topics? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, different lettered courses may be taken for credit: <input type="checkbox"/> No <input type="checkbox"/> Yes, repeat(s) <input type="checkbox"/> Yes, no limit <i>Note: The specific topic will be recorded when offered.</i>
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Seminars/tutorials/workshops																	
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Other contact hours:																	
Total	50																
Maximum enrolment (for information only): 36																	
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
7. Using graph, data, equation, or application, identify the following models: linear, quadratic, cubic, exponential, logarithmic, logistic
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.

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 th ed.	<input type="checkbox"/>	Pearson	2009
2.		<input type="checkbox"/>		
3.		<input type="checkbox"/>		
4.		<input type="checkbox"/>		
5.		<input type="checkbox"/>		

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:**

- (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

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

6. Introduction to calculus

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