ORIGINAL COURSE IMPLEMENTATION DATE: September 2012

REVISED COURSE IMPLEMENTATION DATE: September 2021

COURSE TO BE REVIEWED (six years after UEC approval)**:** March 2026

Course outline form version: 05/18/2018

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

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

Course Code and Number: MATH 096	**Number of Credits:** 3 Course credit policy (105)

Course Full Title: Algebra and Trigonometry

Course Short Title:

(Transcripts only display 30 characters. Departments may recommend a short title if one is needed. If left blank, one will be assigned.)

Faculty: Faculty of Access and Continuing Education	**Department (or program if no department):** Upgrading and University Preparation

Calendar Description:

Students examine an extensive variety of functions and operations on functions with emphasis on notation and graphs; solve a variety of equations and practical problems; solve combinational problems; and evaluate sums of finite or infinite series using summation notation.

Note: Students with credit for MATH 094 and MATH 095, or MATH 092 and MATH 093 cannot take this course for further credit.

Prerequisites (or NONE):	One of the following: (C+ or better in MATH 085), (B- or better in one of Principles of Mathematics 11 or Pre-calculus 11), (C or better in one of Principles of Mathematics 12, Pre-calculus 12, MATH 092, or MATH 094), or Upgrading and University Preparation assessment.
Corequisites (if applicable, or NONE):	NONE
Pre/corequisites (if applicable, or NONE):	NONE

Antirequisite Courses *(Cannot be taken for additional credit.)*

Former course code/number: **NONE**

Cross-listed with: **NONE**

Dual-listed with:

Equivalent course(s): **MATH 094 & MATH 095 together**

or **MATH 092 & MATH 093 together**

(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)

Typical Structure of Instructional Hours

Lecture/seminar hours	60
Tutorials/workshops	
Supervised laboratory hours	
Experiential (field experience, practicum, internship, etc.)	
Supervised online activities	
Other contact hours: individual and small group work (in class)	30
Total hours	**90**

Labs to be scheduled independent of lecture hours: ☒ No ☐ Yes

Special Topics *(Double-click on boxes to select.)*

This course is offered with different topics:

☒ No ☐ Yes *(If yes, topic will be recorded when offered.)*

Independent Study

If offered as an Independent Study course, this course may be repeated for further credit: *(If yes, topic will be recorded.)*

☒ No ☐ Yes, repeat(s) ☐ Yes, no limit

Transfer Credit

Transfer credit already exists: *(See **bctransferguide.ca**.)*

☒ No ☐ Yes

Submit outline for (re)articulation:

☒ No ☐ Yes *(If yes, fill in transfer credit form.)*

Grading System

☒ Letter Grades ☐ Credit/No Credit

Maximum enrolment (for information only): 24

Expected Frequency of Course Offerings:

at least twice a year *(Every semester, Fall only, annually, etc.)*

Department / Program Head or Director: Greg St. Hilaire	**Date approved:**	October 9, 2020
Faculty Council approval	**Date approved:**	October 9, 2020
Dean/Associate VP: Dr. Sue Brigden	**Date approved:**	October 9, 2020
Campus-Wide Consultation (CWC)	**Date of posting:**	November 20, 2020
Undergraduate Education Committee (UEC) approval	**Date of meeting:**	December 18, 2020

Learning Outcomes:

Upon successful completion of this course, students will be able to:

1. Manipulate algebraic expressions and solve rational equations.
2. Solve absolute value and rational inequalities.
3. Perform operations on functions including compositions and analyze domains and ranges.
4. Analyze the effects of transformations, such as vertical and horizontal translations, dilations, and reflections through *x*-axis, *y*-axis, and the diagonal *y* = *x* on the graphs of functions and their related equations.
5. Find inverses of relations and functions and analyze their properties and graphs.
6. Simplify logarithmic expressions, using definition and properties of logarithms.
7. Solve exponential and logarithmic equations.
8. Graph and analyze exponential and logarithmic functions.
9. Solve applied problems, using exponential and logarithmic concepts.
10. Factor polynomials of degree greater than 2, using the Factor Theorem and the Remainder Theorem.
11. Graph and analyze polynomial, rational, and radical functions.
12. Develop the equation of the circle with center (0, 0) and radius *r* and apply the circle to describe the six trigonometric ratios in terms of *x*, *y*, and *r*.
13. Solve problems, using the six trigonometric ratios for angles expressed in radians and degrees.
14. Simplify trigonometric expressions and verify trigonometric identities, using fundamental identities, including sum, difference, and double-angle identities.
15. Solve first- and second-degree trigonometric equations in degrees and radians, including determining the general solution.
16. Graph and analyze the trigonometric functions, including determining the characteristics and transformations of graphs to solve problems.
17. Apply the Fundamental Counting Principle to solve problems.
18. Determine the number of permutations of *n* elements taken *r* at a time to solve problems, including solving equations that involve nPr notation.
19. Determine the number of combinations of *n* elements taken *r* at a time to solve problems, including solving equations that involve nCr or $\binom{n}{r}$ notation.
20. Expand natural powers of binomials, using Binomial Theorem.
21. Analyze and evaluate sums of finite or infinite series, using summation notation.
22. Use technology to enhance understanding of topics in this course.

After completion of MATH 096, students will meet outcomes identified for Provincial Level – Algebra and Trigonometry in the 2020-2021 Adult Basic Education Articulation Guide available at http://www.bctransferguide.ca/search/abe (accessed September 2020).

Prior Learning Assessment and Recognition (PLAR)

☒ Yes ☐ No, PLAR cannot be awarded for this course because

Typical Instructional Methods *(Guest lecturers, presentations, online instruction, field trips, etc.; may vary at department's discretion.)*

Lectures with problem practice sessions and guided individual and small group work. Graphing calculators are used to aid in the understanding of topics. Homework may have a web-assisted component.

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

Typical Text(s) and Resource Materials *(If more space is required, download Supplemental Texts and Resource Materials form.)*

	Author (surname, initials)	Title (article, book, journal, etc.)	Current ed.	Publisher	Year
1.	Stewart, J., Redlin, L., Watson, S.	Algebra and Trigonometry	☒	Brooks/Cole	
2.	Aufman, R., Barker, V., Nation, R.	College Algebra and Trigonometry (print/digital)	☒	Brooks/Cole	
3.			☐		
4.			☐		
5.			☐		

Required Additional Supplies and Materials *(Software, hardware, tools, specialized clothing, etc.)*

Graphing calculator T183 Plus and WebAssign access.

Typical Evaluation Methods and Weighting

Final exam:	40%	Assignments:	20%	Field experience:	%	Portfolio:	%
Midterm exam:	30%	Project:	%	Practicum:	%	Other:	%
Quizzes/tests:	10%	Lab work:	%	Shop work:	%	Total:	100%

Details (if necessary):

Typical Course Content and Topics

1. Operations on and compositions of functions
2. Transformations of graphs
3. Trigonometric functions and equations
4. Exponential and logarithmic functions and equations
5. Polynomial functions
6. Rational functions
7. Radical functions
8. Combinatorics
9. Binomial Theorem