

## OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

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

<b>Course Code and Number:</b> MATH 096		<b>Number of Credits:</b> 3 <a href="#">Course credit policy (105)</a>																	
<b>Course Full Title:</b> Algebra and Trigonometry																			
<b>Course Short Title (if title exceeds 30 characters):</b>																			
<b>Faculty:</b> Faculty of Access and Continuing Education		<b>Department (or program if no department):</b> UUP																	
<b>Calendar Description:</b> <p>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.</p> <p>Note: Students with credit for MATH 094 and MATH 095 cannot take this course for further credit.</p>																			
<b>Prerequisites (or NONE):</b>		At least a C+ in MATH 085; or at least B- in Principles of Math 11, or Pre-calculus 11; or at least a C in Principles of Math 12, Pre-calculus 12, or MATH 094; or UUP assessment.																	
<b>Corequisites (if applicable, or NONE):</b>		NONE																	
<b>Pre/corequisites (if applicable, or NONE):</b>		NONE																	
<b>Equivalent Courses (cannot be taken for additional credit)</b> Former course code/number: Cross-listed with: Equivalent course(s): <b>MATH 095</b> <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>		<b>Transfer Credit</b> Transfer credit already exists: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Transfer credit requested (OREg to submit to BCCAT): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (if yes, fill in transfer credit form) Resubmit revised outline for articulation: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No To find out how this course transfers, see <a href="http://bctransferguide.ca">bctransferguide.ca</a> .																	
<b>Total Hours: 90</b> <b>Typical structure of instructional hours:</b> <table border="1" data-bbox="94 1304 797 1583"> <tr><td>Lecture hours</td><td>75</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>15</td></tr> <tr><td><b>Total</b></td><td><b>90</b></td></tr> </table>		Lecture hours	75	Seminars/tutorials/workshops		Laboratory hours		Field experience hours		Experiential (practicum, internship, etc.)		Online learning activities		Other contact hours:	15	<b>Total</b>	<b>90</b>	<b>Special Topics</b> 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 checked="" 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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<b>Total</b>	<b>90</b>																		
		<b>Maximum enrolment (for information only):</b> 24																	
		<b>Expected frequency of course offerings (every semester, annually, every other year, etc.):</b> at least twice a year																	
<b>Department / Program Head or Director:</b> Greg St. Hilaire		<b>Date approved:</b> January 2015																	
<b>Faculty Council approval</b>		<b>Date approved:</b> February 2015																	
<b>Campus-Wide Consultation (CWC)</b>		<b>Date of posting:</b> February 20, 2015																	
<b>Dean/Associate VP:</b> Dr. Sue Brigden		<b>Date approved:</b> February 2015																	
<b>Undergraduate Education Committee (UEC) approval</b>		<b>Date of meeting:</b> February 27, 2015																	

**Learning Outcomes**

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

1. Manipulate algebraic expressions and solve rational equations. (review)
2. Solve absolute value and rational inequalities. (review)
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 centre  $(0, 0)$  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  ${}_n P_r$  notation.
19. Determine the number of combinations of  $n$  elements taken  $r$  at a time to solve problems, including solving equations that involve  ${}_n C_r$  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.

The above outcomes are a more concise version of the official ABE articulated objectives found on pg. 95 of [www.aved.gov.bc.ca/abe/docs/handbook.pdf](http://www.aved.gov.bc.ca/abe/docs/handbook.pdf)

**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.

**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 (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	<input checked="" type="checkbox"/>	Brooks/Cole	2010
2.	Aufman, R., Barker, V., Nation, R.	College Algebra and Trigonometry	<input checked="" type="checkbox"/>	Brooks/Cole	2011
3.			<input type="checkbox"/>		
4.			<input type="checkbox"/>		
5.			<input type="checkbox"/>		

**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:	15%	Midterm exam:	%	Practicum:	%
Quizzes/tests:	45%	Lab work:	%	Field experience:	%	Shop work:	%
Other:	%	Other:	%	Other:	%	Total:	100%

**Details (if necessary):** Students must achieve at least 40% on the final exam in order to receive credit for this course.

**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