

COURSE IMPLEMENTATION DATE: September 2012  
 COURSE REVISED IMPLEMENTATION DATE: September 2013  
 COURSE TO BE REVIEWED: September 2019  
*(six years after UEC approval)* *(month, year)*

**OFFICIAL UNDERGRADUATE COURSE OUTLINE INFORMATION**

Students are advised to keep course outlines in personal files for future use.  
 Shaded headings are subject to change at the discretion of the department – see course syllabus available from instructor

<b>MATH 096</b>	Faculty of Access and Open Studies/ UUP	4
COURSE NAME/NUMBER	FACULTY/DEPARTMENT	UFV CREDITS
Algebra and Trigonometry		
COURSE DESCRIPTIVE TITLE		

**CALENDAR DESCRIPTION:**

This is a fast-paced course, recommended for upgrading students who need to complete their grade 12 requirements in one semester. MATH 096 serves as an equivalent to Principles of Math 12 or Pre-calculus 12.

In this course, students will examine various functions (polynomial, rational, radical, exponential, logarithmic, trigonometric, and inverse trigonometric) and operations on functions with emphasis on notation and graphs; solve a variety of equations and practical problems; solve combinatorial problems including using the Binomial Theorem; and evaluate sums of finite or infinite series, using summation notation.

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

**PREREQUISITES:** One of the following: Principles of Math 12, Pre-calculus 12, or MATH 094; or at least a C+ in one of MATH 085, Principles of Math 11, or Pre-calculus 11; or UUP assessment.  
 Note: As of September 2014, prerequisites will change to the following: 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.

**COREQUISITES:**  
 PRE or COREQUISITES:

<b>SYNONYMOUS COURSE(S):</b>	<b>SERVICE COURSE TO:</b> <i>(department/program)</i>
(a) Replaces: _____	_____
(b) Cross-listed with: _____	_____
(c) Cannot take: <u>MATH 094/MATH 095</u> for further credit.	_____

<b>TOTAL HOURS PER TERM:</b> <u>90</u>	TRAINING DAY-BASED INSTRUCTION:
<b>STRUCTURE OF HOURS:</b>	Length of course: _____
Lectures: <u>75</u> Hrs	Hours per day: _____
Seminar: _____ Hrs	
Laboratory: _____ Hrs	
Field experience: _____ Hrs	<b>OTHER:</b>
Student directed learning: _____ Hrs	Maximum enrolment: <u>24</u>
Other (specify): <u>15</u> Hrs	Expected frequency of course offerings: _____
	<i>(every semester, annually, every other year, etc.)</i>

WILL TRANSFER CREDIT BE REQUESTED? (lower-level courses only)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
WILL TRANSFER CREDIT BE REQUESTED? (upper-level requested by department)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
TRANSFER CREDIT EXISTS IN BCCAT TRANSFER GUIDE:	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Course designer(s): <u>Anna Kuczynska, Judy Larsen, Greg St. Hilaire</u>	Date approved: <u>February 2013</u>
Department Head: <u>Trudy Archie</u>	Date of meeting: <u>February 29, 2013</u>
Campus-Wide Consultation (CWC)	Date approved: <u>April 12, 2013</u>
Curriculum Committee chair: <u>Anna Kuczynska</u>	Date approved: <u>April 12, 2013</u>
Dean/Associate VP: <u>Sue Brigden</u>	Date of meeting: <u>May 24, 2013</u>
Undergraduate Education Committee (UEC) approval	

**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 objectives 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)

**METHODS:** (Guest lecturers, presentations, online instruction, field trips, etc.)

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.

**METHODS OF OBTAINING PRIOR LEARNING ASSESSMENT RECOGNITION (PLAR):**

- Examination(s)       Portfolio assessment       Interview(s)
- Other (specify):       PLAR cannot be awarded for this course for the following reason(s):

**TEXTBOOKS, REFERENCES, MATERIALS:** [Textbook selection varies by instructor. An example of texts might be:]

“Algebra and Trigonometry” 2<sup>nd</sup> edition, J.Stewart, L.Redlin, S.Watson, Brooks/Cole, 2010, or  
“College Algebra and Trigonometry”, 7<sup>th</sup> edition, R. Aufman, V. Barker, R. Nation, Brooks/Cole, 2011

**SUPPLIES / MATERIALS:**

Graphing calculator TI83 Plus  
WebAssign access

**STUDENT EVALUATION:** [An example of student evaluation for this course might be:]

Assignments	15%
Quizzes	10%
Tests	35%
Final exam	40%

Students must achieve at least 40% on the final exam in order to receive credit for this course.

**COURSE CONTENT:** *[Course content varies by instructor. An example of course content might be:]*

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