COURSE OUTLINE		
TERM: Fall 2024	**COURSE NAME**: BMTH 044	
INSTRUCTOR(S):	**COURSE TITLE**: Advanced Algebra II and Trigonometry	
CONTACT INFORMATION:	**SECTION NO(S):**	**CREDITS:** 1.00
OFFICE HOURS:		
COURSE WEBSITE:		

Capilano University acknowledges with respect the Lilwat7úl (Lil'wat), xʷmə θkʷəyəm (Musqueam), shíshálh (Sechelt), Sḵwx̱wú7mesh (Squamish), and Səlílwətaʔ/Selilwitulh (Tsleil-Waututh) people on whose territories our campuses are located.

COURSE FORMAT
There are 3 hours/week of scheduled instructor contact time and 2.5 hours/week of ad hoc instructor availability that may be scheduled at times mutually agreed upon by the instructor and the student. The scheduled time may be either classroom, online, or mixed-mode. Online assistance from the instructor is done via Zoom. Please see the course eLearn page for a Zoom link, days, and times.

For paced classes, students follow the class material at a pace set by the instructor. Students have the option of switching to self-paced at any point during the semester.

For self-paced classes, students work at their own pace. Self-paced classes allow students to either progress more quickly (finishing multiple levels in a subject during the semester) or more slowly (students may take up to 2 semesters to finish a level in a subject).

This course has content available on https://elearn.capu.ca/ and students may use eLearn asynchronously (at any time that is convenient for them). If there are any synchronous (paced) activities, such as lectures or workshops, they will be recorded and will be available on eLearn if you are unable to attend at the designated time.

Students should expect to log in 3-4 times per week and to spend 6-8 hours per week on course readings, assignments, labs, quizzes and tests.

The Fall and Spring semesters are 15 weeks long. The two Summer semesters are 7 weeks long and have double the amount of scheduled and ad hoc instructor contact time.

COURSE PREREQUISITES:
BMTH 043 (B-)

CALENDAR COURSE DESCRIPTION
This course covers functions and relations, quadratic functions, maxima and minima, transformations of relations, tangent theorems, trigonometry, right triangles, functions of angles in standard position, Sine and Cosine laws.

COURSE NOTE
This is the second of two courses required for ABE Advanced level in mathematics.

RECOMMENDED FOLLOW-UP COURSES:
BMTH 053

COURSE STUDENT LEARNING OUTCOMES
On successful completion of this course, students will be able to do the following:
- use the definition of function and the vertical line test to distinguish between functions and non-functions
- use and interpret function notation to evaluate functions for given x-values and find x-values for given function values
- determine the domain and range of a function
- use a table of values to graph linear functions and non-linear functions such as quadratic cubic, square root, reciprocal, and absolute value functions
- graph exponential functions
- analyze functions to determine line of symmetry, vertices, asymptotes, and intercepts
- understand and demonstrate transformations in graphs resulting from the following changes in the defining equation: translation, reflection, dilation
- use a graphing calculator or other appropriate technology to graph equations
- identify an appropriate graph for a given relation
- identify situations and find values for which a radical expression will be undefined
- write radicals as powers with rational exponents and vice versa
- use rational exponents to simplify radical expressions
- simplify, add, subtract, multiply and divide radical expressions (numeric or algebraic)
- rationalize denominators in fractional expressions containing radicals (including the use of conjugates)
- solve equations involving radical expressions or powers with rational exponents and check for extraneous roots
- solve formulas involving powers and square roots for a given variable
- solve applied problems which can be modeled by radical equations, and determine if solutions are reasonable given the context of the problem
- solve quadratic equations by factoring, principle of square roots, completing the square and the use of the quadratic formula
- use the discriminant to identify the number and type of solutions of a quadratic equation
- write a quadratic equation given its solutions

- solve rational and radical equations reducible to a quadratic pattern and check that answers are reasonable
- solve selected polynomial equations that can be factored simplifying to linear and/or quadratic factors
- determine whether a graph is symmetric with respect to the x-axis, y-axis, and the origin
- identify even or odd functions and recognize their symmetries
- graph quadratic functions of the form $f(x) = a(x - h)2 + k$ and demonstrate translations, reflections and stretching/shrinking resulting from changes in the function equation
- find the vertex, line of symmetry, minimum or maximum values, x- and y-intercepts, domain and range, given the function $f(x) = a(x - h)2 + k$
- rewrite $f(x) = ax2 + bx + c$ as $f(x) = a(x - h)2 + k$ by completing the square
- solve problems that can be modeled using quadratic equations such as maximum and minimum problems
- use a graphing calculator or other appropriate technology to graph and solve quadratic equations
- use the horizontal line test to determine if a function is one-to-one and therefore has an inverse that is a function
- find a formula for the inverse of a function
- find f-1(f(x)) and f(f-1(x)) for any number x in the domains of the functions when the inverse of a function is also a function
- use a graphing utility to graph functions
- graph quadratic functions and analyze graphs of quadratic functions identifying the vertex, line of symmetry, maximum/minimum values, and intercepts
- divide polynomials using long division
- graph exponential functions including functions with base e
- recognize the inverse relationship between exponential and logarithmic functions
- graph exponential and logarithmic functions including domain and range
- convert between exponential and logarithmic equations
- find common and natural logarithms using a calculator
- fuse basic and inverse properties of logarithms: logb b=1, logb 1=0, logb bx =x, blogbx =x
- label the sides of a right triangle with respect to a given angle
- determine sine, cosine, and tangent ratios of an angle in a right triangle using the side lengths
- use a scientific calculator to find the trigonometric value for a given angle and to find an angle given its trigonometric value
- solve right triangles and applied problems using the basic trigonometric ratios, the Pythagorean theorem, and sum of the angles (180°)
- use the Law of Sines and the Law of Cosines to solve non-right (oblique) triangles and applied problems

On successful completion of this course, students will be able to meet the learning outcomes found in the ABE Articulation Handbook located at bctransferguide.ca, 2017-18 Archive.

REQUIRED TEXTS, RESOURCES, AND TECHNOLOGY
Texts/Resources:

- Yoshiwara, Katherine and Bruce Yoshiwara. *Modeling, Functions and Graphs: Algebra for College - 3rd edition.* Brooks/Cole Publishing Co, 2001.
- Gordon B. *Introductory Trigonometry: A Triangular Approach with Applications*. 49th Avenue Press, 2000.
- A TI Graphing calculator

  The Capilano Bookstore has instructions on how to purchase this book online or in-person https://www.capilanou.ca/student-life/campuscommunity/bookstore/

Recommended Technology for Remote Learning

To participate in this course, you will need to have access to a device (laptop, tablet or computer) and WiFi.

- **Zoom** is used online coaching times with your instructor, you will need speakers and a microphone. The earphones from your mobile device may be an option. Use of video is optional. **Download and tutorial information for Zoom**
- You can access the eLearn web site using your favourite browser. There is also a **mobile app available for eLearn**.
- The Capilano University Security Safe App may also be useful to you if you are attending campus: download the **CapU Mobile Safety App**

COURSE CONTENT

UNIT 1	Chapter 7	Exponential and Logarithmic Functions
UNIT 2	Chapter 8	Polynomials and Rational Functions
UNIT 3	Chapter 10	More About Functions
UNIT 4	Trigonometry Booklet	Trigonometry

EVALUATION PROFILE

Unit Tests (4 x 15%)..............................60%
Final Test 35%
Quizzes 5%
TOTAL 100%

GRADING PROFILE

A+	=	90-100	B+	=	77-79	C+	=	67-69	D	= 50-59
A	=	85-89	B	=	73-76	C	=	63-66	F	= 0-49
A -	=	80-84	B -	=	70-72	C -	=	60-62	NC*	

* Students may be assigned "NC" (No Credit) following their first attempt of a self-paced course if they require more time to finish the course.

Incomplete Grades

Grades of Incomplete "I" will not be assigned in this course.

Late Assignments
Not applicable.

Missed Exams/Quizzes/Labs
Make-up exams, quizzes and/or tests are given at the discretion of the instructor. They are generally given only in medical emergencies or severe personal crises. Some missed labs or other activities may not be able to be accommodated. Accommodations can be made to honour community needs and traditional practices.

Attendance
Regular attendance is crucial for student success and course completion.
In an online environment, students should expect to log in 3-4 times per week and to spend 6-8 hours per week on course readings, assignments, quizzes, practice tests, and tests.
Online coaching hours are hosted on Zoom, see the course eLearn page for link, days and times.

Participation
Where participation forms a part of the evaluation profile, the grade for the participation component of the course is based on participation in the classroom and/or eLearn course forums. The mark is based on both the frequency and the quality of the student's comments, questions, and observations, with the emphasis on quality. The quality is determined by, among other things, the relevance, insight, and clarity of remarks.

English Usage
Students are expected to proofread all written work for any grammatical, spelling and stylistic errors. Marks will be deducted for incorrect grammar and spelling in written assignments.

Electronic Devices
Students may use electronic devices during class for course related purposes only.

Online Communication, Behaviour And Expectations
> **Online Communication**
> Please be sure to check your official Capilano University email regularly as all official communication will be sent via this email address only.

> **Online Behaviour**
> - Adhere to the same standards of behaviour online that you follow in real life
> - Keeping an open-mind and be willing to listen to the ideas of others
> - Respect other people's time and bandwidth
> - Respect other people's privacy (recording or screen shots without permission are not appropriate)

> **Online Expectations**
> What you can expect from your instructor:
> - Respond to messages/emails within 24 hours, Monday through Friday
> - To be available during student coaching hours to support your learning

- To be responsive to your feedback about the course

What your instructor can expect from you:
- Interact respectfully with peers and faculty
- Regularly log into and complete course material
- To ask questions and seek help when appropriate

UNIVERSITY OPERATIONAL DETAILS

Tools for Success
Many services are available to support student success for Capilano University students. A central navigation point for all services can be found at: https://www.capilanou.ca/student-life/

Capilano University Security: download the **CapU Mobile Safety App**

Policy Statement (S2009-06)
Capilano University has policies on Academic Appeals (including appeal of final grade), Student Conduct, Academic Integrity, Academic Probation and other educational issues. These and other policies are available on the University website.

Academic Integrity (S2017-05)
Any instance of academic dishonesty or breach of the standards of academic integrity is serious and students will be held accountable for their actions, whether acting alone or in a group. See policy and procedures S2017-05 Academic Integrity for more information: https://www.capilanou.ca/media/capilanouca/about-capu/connect-with-capu/governance/policies-amp-procedures/senate-policies-amp-procedures/Academic- https://www.capilanou.ca/about-capu/governance/policies/

Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances, are prohibited and will be handled in accordance with the Student Academic Integrity Procedures.

Academic dishonesty is any act that breaches one or more of the principles of academic integrity. Acts of academic dishonesty may include but are not limited to the following types:

Cheating: Using or providing unauthorized aids, assistance or materials while preparing or completing assessments, or when completing practical work (in clinical, practicum, or lab settings), including but not limited to the following:
- Copying or attempting to copy the work of another during an assessment;
- Communicating work to another student during an examination;
- Using unauthorized aids, notes, or electronic devices or means during an examination;
- Unauthorized possession of an assessment or answer key; and/or,
- Submitting of a substantially similar assessment by two or more students, except in the case where such submission is specifically authorized by the instructor.

Fraud: Creation or use of falsified documents.

Misuse or misrepresentation of sources: Presenting source material in such a way as to distort its original purpose or implication(s); misattributing words, ideas, etc. to someone other than the original source; misrepresenting or manipulating research findings or data; and/or suppressing aspects of findings or data in order to present conclusions in a light other than the research, taken as a whole, would support.

Plagiarism: Presenting or submitting, as one's own work, the research, words, ideas, artistic imagery, arguments, calculations, illustrations, or diagrams of another person or persons without explicit or accurate citation or credit.

Self-Plagiarism: Submitting one's own work for credit in more than one course without the permission of the instructors, or re-submitting work, in whole or in part, for which credit has already been granted without permission of the instructors.

Prohibited Conduct: The following are examples of other conduct specifically prohibited:
- Taking unauthorized possession of the work of another student (for example, intercepting and removing such work from a photocopier or printer, or collecting the graded work of another student from a stack of papers);
- Falsifying one's own and/or other students' attendance in a course;
- Impersonating or allowing the impersonation of an individual;
- Modifying a graded assessment then submitting it for re-grading; or,
- Assisting or attempting to assist another person to commit any breach of academic integrity.

Sexual Violence and Misconduct
All Members of the University Community have the right to work, teach and study in an environment that is free from all forms of sexual violence and misconduct. Policy B401 defines sexual assault as follows:

> Sexual assault is any form of sexual contact that occurs without ongoing and freely given consent, including the threat of sexual contact without consent. Sexual assault can be committed by a stranger, someone known to the survivor or an intimate partner.

Safety and security at the University are a priority and any form of sexual violence and misconduct will not be tolerated or condoned. The University expects all Students and Members of the University Community to abide by all laws and University policies, including B.401 Sexual Violence and Misconduct Policy and B.401.1 Sexual Violence and Misconduct Procedure (found on Policy page https://www.capilanou.ca/about-capu/governance/policies/)

Emergencies: Students are expected to familiarise themselves with the emergency policies where appropriate and the emergency procedures posted on the wall of the classroom.

DEPARTMENT/COURSE OPERATIONAL DETAILS

Progress
There is an expectation that students finish the course level for which they registered during the semester; however, students may re-register in a course a second time if they need additional time to complete the course material. If students require more than 2 semesters to complete a course, further registration requires instructor permission, which will only be granted if students have made acceptable progress in the previous semester.

Class Recordings
This course or portions of this class may be recorded by the instructor for educational purposes. These recordings will be shared only with students enrolled in the course. This is intended to supplement the course experiences.

Privacy
Capilano University is committed to preserving your right to privacy. We ensure that the confidentiality of your information is maintained and the collection, use and disclosure of your information is in compliance with the Freedom of Information and Protection of Privacy Act (FIPPA). The personal information collected by online tools licensed by the University for delivering courses are not distributed to any private organizations or used for commercial marketing.

Inclusivity
In this course you will be treated with respect. I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences. All members of this course are expected to contribute to a respectful, welcoming and inclusive environment for learning.

Student Support Resources
Learn more about the many services, resources and personal supports you can access on-campus (and virtually) at Capilano University. Whether you're searching for academic advising, on-campus housing, accessibility services for academic accommodations and disability funding, career counselling or options for new and Indigenous students, you'll find it at: https://www.capilanou.ca/student-life/

Student Digital Ambassadors
The Student Digital Ambassadors provide peer-to-peer support for students navigating the online environment and the educational technology tools such as eLearn and Zoom used at CapU. Ambassadors are available online. For more information visit https://sda.capilanou.ca