Alexander College
YOUR ROAD TO UNIVERSITY STARTS HERE!

CURRICULUM GUIDE: OFFICIAL COURSE OUTLINE

<table>
<tr><td>Course Code</td><td>MATH 100</td><td>Course Title</td><td colspan="4">Precalculus</td></tr>
<tr><td>Credit Value</td><td>3</td><td>Department</td><td colspan="4">Mathematics and Science</td></tr>
<tr><td rowspan="2">No. of weeks</td><td rowspan="2">14</td><td rowspan="2">Hrs. per week</td><td>Lecture</td><td>Tutorial</td><td>Laboratory</td><td>Total</td></tr>
<tr><td>4</td><td>0</td><td>0</td><td>4</td></tr>
<tr><td>Course Description</td><td colspan="6">Algebraic, exponential, logarithmic and trigonometric functions and their graphs. Conic sections, applications.</td></tr>
<tr><td>Prerequisite(s)</td><td colspan="6">ENGL 088, MATH 11 (B) or MATH 12 (C) or MATH 099 (C)</td></tr>
<tr><td rowspan="2">Initial Articulation Targets</td><td>UBC</td><td>SFU</td><td>UVic</td><td>UNBC</td><td colspan="2">TRU</td></tr>
<tr><td>MATH 1st (3)</td><td>MATH 100 (3) – Q.</td><td>MATH 120 (1.5)</td><td>MATH 115 (3)</td><td colspan="2">MATH 1000 (3)</td></tr>
<tr><td colspan="6">For updated information on the transferability of this course, please consult the BC Transfer Guide, www.bctransferguide.ca</td></tr>
<tr><td>Learning Outcomes</td><td colspan="6">Upon successful completion of this course, the student will be able to:
Explain the fundamental concepts of a mathematical function and make connections between the graphical, tabular, verbal, and symbolic representations of a function.
Find domain and range of a function and perform addition, subtraction, multiplication, division, and composition of functions.
Analyze, graph, and apply transformations to basic functions used in calculus (polynomial, absolute value, square root, rational, exponential, logarithmic, and trigonometric functions).
Apply properties of basic functions to solve specific equations and applications.
Verify trigonometric identities and solve basic equations by using fundamental trigonometric identities, double angle, half angle, product-to-sum, and sum-to-product formulas.
Solve application problems using the Law of Cosines, the Law of Sines, and Right Triangle Trigonometry.
Identify connections between the mathematics at this level and the real world.</td></tr>
<tr><td>Content</td><td colspan="6">Core topics – all of the following will be covered:
Fundamental Concepts of Algebra (review)
Graphs, Functions, and Models
Graphs
Lines and slopes
Distance and midpoint formulas
Basics of functions
Graphs of functions
Transformations of functions</td></tr>
</table>

Alexander College
Main Campus 4805 Kingsway, Burnaby, BC V5H 4T6
www.alexandercollege.ca

	○ Combinations of functions; composite functions ○ Inverse functions • Polynomial and Rational Functions ○ Quadratic functions ○ Polynomial functions and their graphs ○ Dividing polynomials; remainder and factor theorem ○ Rational functions and their graphs ○ Polynomial and rational inequalities • Exponential and Logarithmic Functions ○ Exponential functions ○ Logarithmic functions ○ Properties of logarithms ○ Exponential and logarithmic equations • Trigonometric Functions ○ Angles and their measure ○ Trigonometric functions: the unit circle ○ Right triangle trigonometry ○ Trigonometric functions of any angle ○ Graphs of since and cosine functions ○ Graphs of other trigonometric functions ○ Inverse trigonometric functions • Analytic Trigonometry ○ Verifying trigonometric identities ○ Sum and difference formulas ○ Double-angle and half-angle formulas ○ Trigonometric equations Additional topics may also be covered, at the discretion of the instructor: • The Law of Sines • The Law of Cosines
Methods of Instruction	Lectures, problem sessions and assignments
Required Textbook(s)	The following textbook(s) is/are required, or approved equivalent(s). Abramson, Jay. Algebra and Trigonometry. OpenStax, 2021 Blitzer, Robert. Precalculus. 6th Ed. Pearson Publishing, 2018. Marecek, Lynn and Andrea H. Mathis. Intermediate Algebra. 2nd Ed. OpenStax, 2022.

<table>
<tr><td></td><td colspan="3">Stewart, James and Lothar Redlin. Precalculus: Mathematics for Calculus. 7th Ed. Cengage Learning, 2016.</td></tr>
<tr><td>Required Equipment and Technology</td><td colspan="3">Students are required to have a computer with internet access.
The following resources are provided by the College:
• Office 365
• Student email</td></tr>
<tr><td>Homework Hours</td><td colspan="3">At minimum, students can expect one hour of homework for every hour of instructional time.</td></tr>
<tr><td rowspan="5">Evaluation</td><td>Component</td><td colspan="2">% Value</td></tr>
<tr><td>Assignments, in-class activities, participation</td><td colspan="2">10-30%</td></tr>
<tr><td>Quizzes (weekly, biweekly, module, chapter)</td><td colspan="2">10-30%</td></tr>
<tr><td>Midterm examination</td><td colspan="2">20-30%</td></tr>
<tr><td>Final examination</td><td colspan="2">30-35%</td></tr>
<tr><td>Completion Requirements</td><td colspan="3">The minimum grade to pass this course is D (50%). Unless otherwise stated, a minimum grade of C- (55%) is required for this course to fulfil a prerequisite.</td></tr>
<tr><td>Course Designer(s)</td><td>Len Berggren, Ph.D., Department of Mathematics, Simon Fraser University</td><td>Consultant(s), if applicable</td><td></td></tr>
<tr><td>Dean’s Approval</td><td>Barbara Moon, Ph.D., Dean of Arts and Sciences, Alexander College</td><td>Dean’s Approval Date</td><td>September 27, 2006</td></tr>
<tr><td>Curriculum Committee Approval Date</td><td>September 27, 2006</td><td>First Term Offered</td><td>Spring 2010</td></tr>
<tr><td>Last Review Date</td><td>March 1, 2023</td><td>Next Review Date</td><td>March 1, 2027</td></tr>
<tr><td>Revision History</td><td colspan="3">October 24, 2012-New prerequisite, MATH 12 (C-)

October 2013-MATH 12 (C-) prerequisite removed (MATH 099 permanently cancelled). Students with no math background may proceed to MATH 100.

May 1, 2014 - All MATH and STAT courses will be 4 hours, commencing Fall 2014. SASC

January 5, 2015-Revised by Len Berggren, Mathematics instructors

January 2018-MATH 099 re-activated and prerequisites for MATH 100 revised accordingly. Math 11 added as a prerequisite alternative. New prerequisites: ENGL 097, MATH 11 (B) or MATH 12 (C) or MATH 099 (C)

March 1, 2023-Minor updates (e.g., textbooks) by Kelly Cheung, Krishna Subedi and Michael Monaghan</td></tr>
</table>

Alexander College
Main Campus 4805 Kingsway, Burnaby, BC V5H 4T6
www.alexandercollege.ca