CAMOSUN COLLEGE
School of Arts & Science
Department of Mathematics & Statistics

MATH-115-002
Precalculus
Winter 2018

COURSE OUTLINE

The course description is online @ http://camosun.ca/learn/calendar/current/web/math.html

Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.

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1. Instructor Information

(a) Instructor	Dr. Garret Flowers		
(b) Office hours	Mon, Wed (2:30 – 3:20) ; Tues, Thurs (5:30 – 6:20)		
(c) Location	Ewing 250		
(d) Phone	250-370-3321	**Alternative:**	
(e) E-mail	flowersg@camosun.ca		
(f) Website	D2L (online.camosun.ca)		

2. Intended Learning Outcomes

Upon completion of this course the student will be able to:

1. Read and write mathematics at a level sufficient for entry into first-year calculus.
2. Write equations of circles and ellipses in standard form and graph these relations. Expand binomials using Pascal's triangle. Factor and simplify expressions with rational exponents. Solve polynomial and rational inequalities. State the Remainder, Factor and Rational Zeros Theorems and use these theorems to factor polynomials and find their real zeros.
3. Define the term function. Find the domain of functions. Compose and decompose functions. Construct algebraic functions to model simple real-life problems. Solve optimization problems modelled with quadratic functions.
4. Identify the graphs of common algebraic functions. Evaluate and graph piecewise defined functions. Interpret and graph multiple transformations of functions. Analyze and graph polynomial and rational functions.
5. Find inverse functions algebraically and graphically. Explain the relationship between exponential and logarithmic functions. Graph exponential and logarithmic functions and their transformations. Prove the properties of logarithms and use these properties to simplify expressions and solve equations. Solve applied problems involving pH, the Richter scale, decibels, compound interest, exponential growth, exponential decay and logistic growth.
6. State the right triangle definitions for the trigonometric functions. Use reference triangles to find exact values of trigonometric functions of special angles. Define a radian and work with radian measure. State the unit circle definitions for the sine and cosine functions. Graph the six trigonometric functions and transformations of these functions. Analyze sinusoidal graphs and construct possible equations. Graph the inverse sine, cosine and tangent functions. Find exact values for compositions of trigonometric and inverse trigonometric functions. Write compositions as algebraic expressions.
7. Derive the Pythagorean identities, the sum and difference identities, the double angle identities, the power reducing identities, and the half angle identities. Use these identities to simplify expressions and verify other identities. Find exact and approximate solutions of trigonometric equations, including equations involving identities and multiples of angles.

8. Identify patterns in sequences and write formulas for the general terms. Simplify and evaluate basic sums of sequences. Derive formulas for the nth terms of arithmetic and geometric sequences and for the sums of the first n terms of these sequences. Solve word problems involving arithmetic and geometric sequences and series.
9. Evaluate limits graphically, numerically and algebraically. Use the definition of a derivative to differentiate basic polynomial, rational and radical functions. Differentiate polynomials using standard rules. Demonstrate an understanding of both the geometrical and physical interpretations of derivatives.

3. Required Materials

(a) At least one of the following:

- *Algebra & Trigonometry (10th ed)* by Michael Sullivan
- *Math 107/115 Lecture Notes* by Garret Flowers (a coursepack available in the Camosun bookstore, or for free online)

Students may choose to use either of the above resources, or both if desired. In the past, most students have preferred using the lecture notes.

(b) Calculator: EL-531X or EL-531XG are the standard calculators required for all Camosun math courses. Other variations *may* be accepted, but only after gaining the approval of the instructor.

4. Basis of Student Assessment (Weighting)

10% - Quizzes
40% - Midterms (4 midterms at 10% each)
50% - Final Exam

Quizzes: There will be weekly quizzes at the start of class for approximately 15 minutes. The quizzes are open-notes and may be completed in small groups.

Midterms: There are four midterms. The dates are:

Wednesday, January 31
Wednesday, February 28
Wednesday, March 21
Wednesday, April 11

Final Exam: The final exam is 3 hours in length and occurs after courses have ended.

5. Grading System

Standard Grading System (GPA)

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

6. College Supports, Services and Policies

Immediate, Urgent, or Emergency Support
If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ http://camosun.ca/about/mental-health/emergency.html or http://camosun.ca/services/sexual-violence/get-support.html#urgent

College Services
Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at http://camosun.ca/

College Policies
Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at http://camosun.ca/about/policies/. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at http://camosun.ca/about/policies/index.html for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	*In progress*: A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	*Compulsory Withdrawal*: A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.