School of Arts & Science **Department of Mathematics & Statistics** **MATH 250A** **Intermediate Calculus 1** **Winter 2017**

COURSE OUTLINE

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

Ω *Please note: the College electronically stores this outline for five (5) years only.*
*It is **strongly recommended** you keep a copy of this outline with your academic records.*
You will need this outline for any future application/s for transfer credit/s to other colleges/universities.

1. Instructor Information

(a)	Instructor:	Gilles Cazelais		
(b)	Office Hours:	http://pages.pacificcoast.net/~cazelais/schedule.html		
(c)	Location:	CBA 158		
(d)	Phone:	370-4495		
(e)	Email:	Cazelais@camosun.bc.ca		
(f)	Website:	http://pages.pacificcoast.net/~cazelais/250a.html		

2. Intended Learning Outcomes
(No changes are to be made to these Intended Learning Outcomes as approved by the Education Council of Camosun College.)

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

1. Differentiate inverse trig functions.
2. Integrate polynomials, trigonometric and inverse trigonometric functions, and exponential and logarithmic functions.
3. Evaluate limits of indeterminate forms, and calculate improper integrals.
4. Use integration to find area, volume, arc length, surface area of revolution, work, moments and centroids.
5. Integrate using substitution, parts, trigonometric integrals, trigonometric substitution, and partial fractions.
6. Test a sequence for convergence and explain the difference between convergence of a sequence and convergence of a series.
7. Test series for convergence using the integral test, p-test, comparison tests, alternating series test and ratio test and explain the difference between convergence and absolute convergence.
8. Estimate the error in approximating a series using improper integrals and the alternating series remainder.
9. Calculate Taylor polynomials, power series, Taylor series, and MacLaurin series and estimate the error in an approximation using Taylor's Theorem.
10. Determine the interval of convergence of a power series.
11. Graph and analyze parametric and polar curves and find their first and second derivatives.
12. Perform integration computations with parametric and polar curves to compute area, arc-length, volume and surface area.
13. Sketch, differentiate, and integrate vector-valued functions to find velocities, accelerations, tangents, and normals.

3. Required Materials

Edwards and Penney, *Calculus Early Transcendentals*, 7th edition.

4. Course Content and Schedule

1. Review
  Limits and Continuity (2.2 - 2.4)
  Differentiation Rules (3.2 - 3.4)
  Trigonometric, Logarithmic, and Exponential, Functions (3.7 - 3.8)
  Implicit Differentiation (3.9)

Integration (5.6 - 5.8)
Inverse Trigonometric Functions (6.8)

2. Limits
   Indeterminate Forms and l'Hopital's Rule (4.8)
   More Indeterminate Forms (4.9)

3. Integration Techniques, l'Hopital's Rule, and Improper Integrals
   Integral Tables and Simple Substitutions (7.2)
   Integration by Parts (7.3)
   Trigonometric Integrals (7.4)
   Rational Functions and Partial Fractions (7.5)
   Trigonometric Substitution (7.6)
   Integral Involving Quadratic Polynomials (7.7)
   Improper Integrals (7.8)

4. Polar Coordinates and Parametric Curves
   Analytic Geometry and the Conic Sections (9.1)
   Polar Coordinates (9.2)
   Area Computations in Polar Coordinates (9.3)
   Parametric Curves (9.4)
   Integral Computations with parametric Curves (9.5)
   Conic Sections and Applications (9.6)

5. Infinite Series
   Introduction (10.1)
   Infinite Sequences (10.2)
   Infinite Series and Convergence (10.3)
   Taylor Series and Polynomials (10.4)
   The Integral Test (10.5)
   Comparison Tests for Positive-Term Series (10.6)
   Alternating Series and Absolute Convergence (10.7)
   Power Series (10.8)
   Power Series Computation (10.9)

6. Vectors and Curves
   Vectors in the Plane (11.1)
   Three-Dimensional Vectors (11.2)
   The Cross Product of Vectors (11.3)
   Lines and Planes in Space (11.4)
   Curves and Motion in Space (11.5)
   Curvature and Acceleration (11.6)

5. Basis of Student Assessment (Weighting)

Test Dates   Test 1 – Feb 3   Test 2 – March 3   Test 3 – March 17 Test 4 – April 7

(a) Four tests   50%
(b) Final exam   50%*

6. Grading System
(No changes are to be made to this section unless the Approved Course Description has been forwarded through the Education Council of Camosun College for approval.)

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	Minimum level of achievement for which credit is granted; a course with a "D" grade cannot be used as a prerequisite.	1
0-49	F	Minimum level has not been achieved.	0

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 E-1.5 at **camosun.ca** 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, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. *(For these courses a final grade will be assigned to either the 3rd course attempt or at the point of course completion.)*
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.

7. **Recommended Materials or Services to Assist Students to Succeed Throughout the Course**

LEARNING SUPPORT AND SERVICES FOR STUDENTS

> There are a variety of services available for students to assist them throughout their learning.
> This information is available in the College calendar, at Student Services, or the College web site at
> camosun.ca.

STUDENT CONDUCT POLICY

> There is a Student Conduct Policy **which includes plagiarism**.
> It is the student's responsibility to become familiar with the content of this policy.
> The policy is available in each School Administration Office, at Student Services,
> and the College web site in the Policy Section.

ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED