CAMOSUN COLLEGE	***School of Arts & Science*** ***MATHEMATICS DEPARTMENT*** **MATH 174A-section XO1** **Mathematics for Electronics 3** **2007Q1**

COURSE OUTLINE

Course Description This course is one of the first year components of the Engineering Technology Program. Topics include an introduction to matrices, determinants, vectors and oblique triangles, complex numbers, the differential calculus and applications of derivatives. Review material includes the binomial theorem, graphs of trigonometric functions, exponential and logarithmic functions and trigonometric functions of any angle,.

1. Instructor Information

(a)	Instructor:	Bogdan Verjinschi		
(b)	Office Hours:	posted on course website (see below)		
(c)	Location:	CBA 151		
(d)	Phone:	4490	Alternative Phone:	
(e)	Email:	verjinschi@camosun.bc.ca		
(f)	Website:	http://verjinschi.disted.camosun.bc.ca/		

2. Intended Learning Outcomes

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

1. Perform basic operations on matrices.
2. Evaluate determinants by using the definition or the properties of determinants.
3. Find inverses of matrices by the Gauss-Jordan method.
4. Solve linear system problems using the Cramer's Rule, the Gauss-Jordan Elimination Method and the Inverse Matrix Method.
5. Solve a triangle by using the Law of Sines and the Law of Cosines.
6. Simplify expressions by using trigonometric identities (including the sum and difference formula, the double angle formula, and the half-angle formula).
7. Simplify expressions involving trigonometric functions and/or inverse trigonometric functions.
8. Perform basic operations on complex numbers represented using graphical form, rectangular form, polar form and exponential form.
9. Find the powers and roots of complex numbers by using De Moivre's Theorem.
10. Solve problems related to alternating current series circuit by using complex numbers.
11. Evaluate finite arithmetic series.
12. Evaluate finite and infinite geometric series.
13. Evaluate limits.
14. Find the derivatives of functions by using the definition.
15. Find the derivatives of functions by applying the power rule, the power rule, and the quotient rule.
16. Perform implicit differentiation.
17. Solve problems related to applications of derivatives.

3. Required Materials

(a) Text Basic Technical Mathematics with Calculus, Metric Version, 8th edition by Washington. Many students will already have the textbook from having taken Math 173.

(b) **Calculator Policy:** You will need a scientific calculator (Sharp EL520 recommended) for this course. Only ordinary scientific calculators (i.e. non-graphing and non-programmable) are permitted

4. Course Content and Schedule

Hrs	*Chapter/Section*	*Title*	*Comments*
	Chapter 5	**Systems of Linear Equations**	*Times are approximate*
.5	5-1	Linear Equations	
.5	5-2	Graphs of Linear Equations	
1.0	5-3	Solving 2X2 Systems Graphically	
1.0	5-4	Solving 2X2 Systems Algebraically	
1.0	5-5	Solving 2X2 Systems by Determinants	
2.0	5-7	Solving 3X3 Systems by Determinants	
	Chapter 16	**Determinants and Matrices**	
1.0	16-1	Determinants: Expansion by Minors	
1.0	16-2	Some Properties of Determinants	Cut off for Test 1
1.0	16-3	Matrices: Definitions and Basic Operations	
1.0	16-4	Multiplication of Matrices	
2.0	16-5	Finding the Inverse of a Matrix	
1.0	16-6	Matrices and Linear Equations	
	Chapter 12	**Complex Numbers**	
1.0	12-1 & 12-2	Basic Definitions and Basic Operations	
0.5	12-3	Graphical Representation	
0.5	12-4 & 12-5	Polar and Exponential Forms	
1.0	12-6	Products, Quotients, Powers and Roots	
1.0	12-7	Alternating Current (ac) Circuits	Cut off for Test 2
	Chapter 9	**Vectors and Oblique Triangles**	
1.0	9-5	Oblique Triangles, the Law of Sines	Review basic trig
1.0	9-6	The Law of Cosines	

	Chapter 20	**Additional Topics in Trigonometry**	
1.0	20-1	Fundamental Trigonometric Identities	
1.0	20-1	The Sum and Difference Formulas	
1.0	20-3	Double Angle Formulas	
1.0	20-4	Half Angle Formulas	
1.0	20-5	Trigonometric Equations	
2.0	20-6	Inverse Trigonometric Functions	Cut off for Test 3
	Chapter 23	**The Derivative**	
1.0	23-1	Limits	
1.0	23-2	The Slope of a Tangent to a Curve	
2.0	23-3	The Derivative	
1.0	23-4	Instantaneous Rate of Change	
1.0	23-5	Derivatives of Polynomials	
1.0	23-6	Derivatives of Products and Quotients	
2.0	23-7	Derivative of a Power of a Function	
2.0	23-8	Differentiation of Implicit Functions	Cut off for Test 4
	Chapter 19	**Sequences and Series**	
0.5	19-1	Arithmetic Sequences	
0.5	19-2	Geometric Sequences	
1.0	19-3	Infinite Geometric Series	
39.0			

5. Basis of Student Assessment (Weighting)

Grade Calculation: The final grade will be calculated as follows:

Assignments (best three out of four) 10%

Test (best three out of four term tests): 40%

Final Exam: 50%

TESTS: The lowest test grade will be dropped when calculating the average of your tests. This allows a student to be absent on any one test day for any reason, including illness, without penalty. **There is no provision for "making up" a missed test.**

Assignments: The lowest assignment grade will be dropped when calculating the average of your assignments. This allows a

student to miss any one assignment for any reason, including illness, without penalty.

Late Policy: Assignments that are late by one day will be given a 25% penalty. After that, late assignments will not be accepted.

The final exam will cover the entire course and will be 3 hours long. It will be written during the week following the end of classes. The time and place will be scheduled by the College**.**

If your final exam grade is better than your term work grade and your term work is judged to be satisfactory (passing, 50% or better), then the final exam grade may count for 100% of your grade.

Attendance: It is very difficult to be successful if you miss many classes. If you must miss classes due to illness or other reasons, let me know and I can give you an idea of what work was covered. If you must miss a test due to illness, it is very important that you contact me by phone or e-mail so that we can make appropriate accommodations.

Resources: Math Lab, TEC 142. This is a drop-in centre where you can get help with your math homework. The hours will be posted on the door

Set up a regular study schedule !! *You will probably have to do between 5 and 10 hours of homework a week to keep up.*

6. 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	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 on the College web site in the Policy Section.