

**CAMOSUN COLLEGE**  
**Mathematics Department**  
**Course Outline**  
**MATH 174A Mathematics for Electronics 3**

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**Instructor:** Richard Tschritter  
Office: CBA 147 Interurban Campus  
Phone: 370-4448 (Chi Meng's phone)  
email: [Tschritter@camosun.bc.ca](mailto:Tschritter@camosun.bc.ca)  
Home 475-0659

**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,

**Classes:** Tuesday to Friday 9:30 am – 10:20 am in Tec 173.

**Prerequisite:** Math 12, by assessment or **one** of Math 173, Math 115, Math 105, Math 176 or Math 179.

**Exit Grade:** Students need a C in MATH 174A to continue into MATH 174B.

**Textbook:** [Basic Technical Mathematics with Calculus, Metric Version, 7<sup>th</sup> edition](#) by Washington. Many students will already have the textbook from having taken Math 173.

**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.

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

Homework Assignments	10%
Term work (consisting of four term tests):	40%
Final Exam:	50%

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.

**Grade Scale:**

%	Grade	Grade Point Value	Description
95 – 100	A+	9	Exceptional, outstanding or excellent performance. Student shows initiative and an insightful grasp of theory and technique.
90 – 94	A	8	
85 – 89	A-	7	
80 – 84	B+	6	Very good or good performance. Student shows a good overall grasp of theory and technique or an excellent grasp in some areas balanced by a satisfactory grasp in others.
75 – 79	B	5	
70 - 74	B-	4	
65 – 69	C+	3	Satisfactory performance. Student shows a satisfactory grasp of theory and technique. Students may experience some difficulty being successful in courses for which this course is a prerequisite.
60 - 65	C	2	
50 –59	D	1	Marginal performance. Student has a weak grasp of theory and technique, which is insufficient to take courses for which this course is a prerequisite.
0 - 49	F	0	Unsatisfactory performance. Student should either repeat the course or consider taking a course at a lower level.

**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. I will also post regular office hours 9:30-10:30 am Mondays, see me for help at other times. **Set up a regular study schedule !!** You will probably have to do between 5 and 10 hours of homework a week to keep up.

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**Course Content and Time Line:**

Hrs	Section	Title	Comments
<b>Chapter 5 Systems of Linear Equations</b>			
.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	
<b>Chapter 16 Determinants and Matrices</b>			
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	
<b>Chapter 12 Complex Numbers</b>			
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
<b>Chapter 9 Vectors and Oblique Triangles</b>			
1.0	9-5	Oblique Triangles, the Law of Sines	Review basic trig
1.0	9-6	The Law of Cosines	
<b>Chapter 20 Additional Topics in Trigonometry</b>			
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
<b>Chapter 23 The Derivative</b>			
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
<b>Chapter 19</b>		<b>Sequences and Series</b>	
0.5	19-1	Arithmetic Sequences	
0.5	19-2	Geometric Sequences	
1.0	19-3	Infinite Geometric Series	
<b>39.0</b>			