

**MATH 174A Mathematics for Electronics 3**

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**Office hours:** As posted or by appointment

	Monday	Tuesday	Wednesday	Thursday	Friday
08:30-09:20		Lecture	Lecture	Lecture	Lecture
09:30-10:20					
10:30-11:20					
11:30-12:20					
12:30-13:20					
13:30-14:20					
14:30-15:20					
15:30-16:20					

This course is one of the first-year components of the Electronics Engineering Program. Topics include an introduction to matrices, determinants, vectors and oblique triangles, complex numbers, the differential Calculus. As time permits, review material includes the binomial theorem, graphs of trigonometric functions, exponential and logarithmic functions, and trigonometric functions of any angle.

**Organization**

In-class workload: 4 hours lecture per week  
 Out-of-class workload: 4 to 8 hours per week  
 Prerequisites: Math 12 or by assessment or one of Math 173 or 115 or 179

**Text** (Bring this to the class)

Basic Technical Mathematics With Calculus, (7th Edition, Metric Version), A.J. Washington, Addison Wesley, 2000.

**Assignment:** Problems will be assigned every class; they are due at the beginning of the class on Wednesdays (starting October 2, 2002). This counts for 10% of the evaluation. You need to show all your work. NO late papers will be accepted. Solutions should be presented in a neat and clear fashion and the paper should be well organized (and stapled if there is more than one page).

**Term Test:** There will be 4 tests (Friday Oct. 11, Friday Oct. 25, Friday Nov. 15 and Friday Dec. 6). They count for 8%, 8%, 12% and 12% respectively (and hence a total of 40%) of the final mark. There is NO makeup. Medical excuse must be accompanied by your physician's note.

**Final Exam:** To be held in the week Dec 9 – Dec 13. This counts for 50% of the final mark. There is NO makeup.

**Assessment**

Assignment	10% of Final Mark
4 Term Tests:	40% of Final Mark
Final Exam:	50% of Final Mark

**Percentage to Letter Grade Conversion**

Percentage	Letter Grade
95 to 100	A+
90 to 94	A
85 to 89	A-
80 to 84	B+
75 to 79	B
70 to 74	B-
65 to 69	C+
60 to 64	C
50 to 59	D
below 50	F

**Hints:**

1. Attend all classes.
2. Start working on the exercises as soon as a section is covered.
3. Studying in groups is an efficient way to learn mathematics; on the other hand, learn to solve problems yourself.
4. Interurban Math Lab: Technology Centre TEC142. This drop-in center is freely available for your use to work on math homework and to seek help from the tutor on staff (see hours posted on door).

Name	Phone No.	Name	Phone No.

**Math 174A outline**

The course will follow the textbook fairly closely, covering the following topics:

Chapter 5 - Systems of Linear Equations

Hours	Reference	Topic
1	5-1 & 5-2	Linear Equations and Graphs of Linear Equations
1	5-3	Solving 2x2 Linear Systems Graphically
1	5-4	Solving 2x2 Linear Systems Algebraically
1	5-5	Solving 2x2 Linear Systems by Determinants
2	5-7	Solving 3x3 Linear Systems by Determinants

Chapter 16 - Determinants and Matrices

Hours	Reference	Topic
1	16-1	Determinants: Expansion by Minors
1	16-2	Some Properties of Determinants
1	16-3	Matrices: Definitions and Basic Operations
1	16-4	Multiplication of Matrices
2	16-5	Finding the Inverse of a Matrix
1	16-6	Matrices and Linear Equations

Chapter 9 - Vectors and Oblique Triangles

Hours	Reference	Topic
1	9-5	Oblique Triangles, the Law of Sines
1	9-6	The Law of Cosines

Chapter 20 - Additional Topics in Trigonometry

Hours	Reference	Topic
1	20-1	Fundamental Trigonometric Identities
1	20-2	The Sum and Difference Formulas
1	20-3	Double-Angle Formulas
1	20-4	Half-Angle Formulas
1	20-5	Trigonometric Equations
2	20-6	Inverse Trigonometric Functions

Chapter 23 - The Derivative

Hours	Reference	Topic
1	23-1	Limits
1	23-2	The Slope of a Tangent to a Curve
2	23-3	The Derivative
1	23-4	Instantaneous Rate of Change
1	23-5	Derivatives of Polynomials
1	23-6	Derivatives of Products and Quotients
2	23-7	Derivative of a Power of a Function
2	23-8	Differentiation of Implicit Functions

Chapter 12 - Complex Numbers

Hours	Reference	Topic
1	12-1 & 12-2	Basic Definitions & Basic Operations
1	12-3, 12-4, 12-5	Graphical Representations and Polar & Exponential Forms
1	12-6	Products, Quotients, Powers, and Roots
1	12-7	Alternating Current (ac) circuits

Chapter 19 - Arithmetic & Geometric Sequences, and Infinite Geometric Series

Hours	Reference	Topic
1	19-1 & 19-2	Arithmetic Sequences and Geometric Sequences
1	19-3	Infinite Geometric Series