

Math 175 Mathematics for Electronics 5

Topics include: methods of integration, Maclaurin and Taylor series, differential equations, Laplace transform, and Fourier series.

Organization

In-class workload:	6 hours lecture per week
Out-of-class workload:	6 to 10 hours per week
Prerequisites:	Math 174B

Text

Washington, Allyn J., Basic Technical Mathematics with Calculus, 7th Edition, Addison-Wesley Publishing Company.

Trushel, P. J., *Laplace Transforms for Electronics*, Camosun College.

Trushel, P. J., *Introduction to Fourier Series*, Camosun College.

Tentative Course Outline

Methods of Integration

Hours	Reference (week)	Topic
1	28-1(1)	The General Power Formula
1	28-2(1)	The Basic Logarithmic Form
1	28-3(1)	The Exponential Form
1	28-4 (1)	Basic Trigonometric Forms
2	28-5 (2)	Other Trigonometric Forms
1	28-6 (2)	Inverse Trigonometric Forms
2	28-7 (2)	Integration by Parts
1	28-8 (3)	Integration by Trigonometric Substitution
2	28-9 (3)	Integration by Partial Fractions (nonrepeated linear)
1	28-10 (3)	Integration by Partial Fractions (other cases)
1	28-11(3)	Integration by the Use of Tables

Expansion of Functions in Series

Hours	Reference (week)	Topic
1	29-1 (4)	Infinite Series
1	29-2 (4)	Maclaurin Series
1	29-3 (4)	Certain Operations with Series
2	29-4 (4)	Computations by Use of Series Expansions
1	class (4)	Test 1 (The material of weeks 1, 2 and 3 is covered.)
2	29-5 (5)	Taylor Series

Differential Equations

Hours	Reference (week)	Topic
1	30-1 (5)	Solutions of Differential Equations
1	30-2 (5)	Separation of Variables
1	30-3 (5)	Integrable Combinations
2	30-4 (5)	The Linear Differential Equation of the First Order
2	30-5 (6)	Elementary Applications
1	30-6 (6)	Higher-Order Homogeneous Equations
1	30-7 (6)	Auxiliary Equations with Repeated or Complex Roots
1	class (6)	Test 2 (The material of weeks 4 and 5 is covered.)
1	30-8 (7)	Solutions of Non-homogeneous Equations
2	30-9 (7)	Applications of Second-Order Equations (simple examples)

Laplace Transforms

Hours	Reference (week)	Topic
2	Laplace (7)	Laplace Transforms
2	Laplace (7)	Step and Impulse Functions
2	Laplace (8)	Laplace Transform Theorems
1	class (8)	Test 3 (The material of weeks 6 and 7 is covered.)
3	Laplace (9)	Laplace Transforms and Differential Equations
2	Laplace (9)	Laplace Transforms of Combinations of Step and Ramp Functions
2	Laplace (9)	Laplace Transforms and RLC Circuits
2	Laplace (10)	Laplace Transforms of Periodic Functions
2	Laplace (10)	Convolution Theorem
1	class (10)	Test 4 (The material of weeks 8 and 9 is covered.)

Fourier Series

Hours	Reference (week)	Topic
2	Fourier (11)	Fourier Series
3	Fourier (11)	Fourier Series Expansions of Square and Triangular Wave Functions

Calculator Policy

Only regular scientific (non programmable, non-graphing) calculator is allowed in term tests and final examination.

Assessment

Assignments (10%): Problems will be assigned for each section (they will be posted at the class's website); they are due at the beginning of the class on Wednesdays (starting April 14, 2003). **Papers turned in late by the end of the due date will get a penalty of 25% off.** 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 – penalty applies to “sloppy papers”. Complete solutions will be posted online at <http://www.camosun.bc.ca/~lai>.

Test (40%): There will be 4 one-hour tests (tentatively scheduled on **Friday April 30, Friday 14 May, Friday May 28** and **Friday June 11**). There is NO makeup (medical excuse must be accompanied by a physician's note). Complete understanding of the problems of the assignments will be essential for success on the term tests. Complete solutions will be posted online at <http://www.camosun.bc.ca/~lai>.

Final Exam (50%): There is NO makeup.

Assignments	Tests (40%)				Final Exam.
	Test 1	Test 2	Test 3	Test 4	
10%	12%	10%	10%	8%	50%

(If final exam mark is higher than the term mark, final exam is taken as 100% of Mark.)

Percentage to Letter Grade Conversion

A+	95-100%	A	90-94	A-	85-89
B+	80-84	B	75-79	B-	70-74
C+	65-69	C	60-64	D	50-59
F	0-49				

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	Monday	Tuesday	Wednesday	Thursday	Friday
07:30-08:20					
08:30-09:20	Class		Class		Class
09:30-10:20	Class		Class		Class
10:30-11:20					
11:30-12:20	Office Hour	Office Hour		Office Hour	Office Hour
12:30-13:20	Office Hour	Office Hour			Office Hour
13:30-14:20					
14:30-15:20					
15:30-16:30					