Class Outline for Mechanical Engineering Technology - Math 185

Camosun College 1st Quarter 2004

Course Description

This course is one of the first-year components of the Civil and Mechanical Engineering Technology programs at Camosun College. Topics include: linear equations, linear systems, Cramer's rule, vectors, the inner product, matrix algebra, solving linear systems using matrices, the derivative, applications of the derivatives, and differentiation of transcendental functions.

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Office hours:	M-Th 1:30-2:00, W 11:30-12:30

Organization

In-class workload:	5 hours lecture
Out-of-class workload:	5 to 10 hours per week
Prerequisites:	Math 115 or 179 or a B in either Math 12 or an A in Applications of Math 12 or assessment

Texts

Trushel, P. J., *Topics in Linear Algebra for Math 185*, Camosun College, revised June 2002

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

Recommended Calculator

Texas Instruments TI-89 or TI-89 Titanium.

Assessment

4 Term Tests:	50% of Final Mark	**Final Exam:**	50% of Final Mark

Term Test Dates

Term-Tests will be held in your classroom for all sections on the following Tuesdays. Tests will be one hour and run from 11:25 am to 12:25 pm or from 12:25 pm to 1:25 pm depending on your normal class time.

12 October, 2004	Test 1
26 October, 2004	Test 2
9 November, 2004	Test 3
23 November, 2004	Test 4

Course Outline

Linear Equations and Linear Systems

hours	section (week)	Topic
read	1 (1)	Linear Equations
1	2 (1)	Linear Systems
2	3 (1)	Cramer's rule for Linear Systems

Vectors

hours	section (week)	Topic
1	4 (1)	Vector Operations and Vector Spaces
1	5 (1)	Inner Product
1	6 (2)	Properties and Applications of the inner product

Matrices and Applications

hours	section (week)	Topic
1	7 (2)	Matrices and Matrix Algebra
2	8 (2)	Solving Systems Using Augmented Matrices
1	9 (2)	Matrices and Matrix Multiplication
		Thanksgiving Day 11 October 2004
1	class (3)	**Test #1 12 October 2004**
2	10 (3)	The Inverse of a Matrix
2	11 (3)	Solving Linear Systems by Inverse Matrices

Three-Dimensional Geometry and Vectors

hours	section (week)	Topic
2	12 (4)	Three-Dimensional Vectors
2	13 (4)	Planes and Lines in 3 Space

Applications

hours	section (week)	Topic
2	14 (5)	Linear Transformations and Operators in the Plane and in Three Space
1	15 (5)	Least Squares Solutions
1	Web Notes (5)	Constructing Curves and Surfaces through Specified Points
1	class (5)	**Test #2 26 October, 2004**

The Derivative

hours	section (week)	Topic
1	Wash 23-1 (6)	Limits
1	Wash 23-2 (6)	The Slope of a Tangent to a Curve
2	Wash 23-3 (6)	The Derivative
1	Wash 23-4 (6)	Instantaneous Rate of Change
1	class (7)	**Test #3 9 November, 2004**
		Remembrance Day 11 November, 2004
1	Wash 23-5 (7)	Derivatives of Polynomials
1	Wash 23-6 (7)	Derivatives of Products and Quotients
1	Wash 23-7 (7)	Derivative of a Power of a Function and the Chain Rule
2	Wash 23-8 (8)	Differentiation of Implicit Functions

Applications of the Derivatives

hours	section (week)	Topic
1	Wash 24-1 (8)	Tangents and Normals
1	Wash 24-2 (8)	Newton's Method for Solving Equations
1	Wash 24-3 (8)	Curvilinear Motion
2	Wash 24-4 (9)	Related Rates
1	class (9)	**Test #4 23 November, 2004**
1	Wash 24-5 (9)	Using Derivatives in Curve Sketching
1	Wash 24-6 (9)	More on Curve Sketching
2	Wash 24-7 (10)	Applied Maximum and Minimum Problems

Differentiation of Transcendental Functions

hours	section (week)	Topic
1	Wash 27-1 (10)	Derivatives of the Sine and Cosine Functions
2	Wash 27-2 (10)	Derivatives of the Other Trigonometric Functions
2	Wash 27-5 (11)	Derivatives of the Logarithmic Function
2	Wash 27-6 (11)	Derivative of the Exponential Function

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 65	C
50 to 59	D
below 50	F