MATH 221 Analytic Geometry and Calculus II

Required of ARE, BAE, CE, CHE, CS, CMPEN, DEN, EE, IE, ME

Catalog Description: (4) I, II, S. Continuation of MATH 220 to include transcendental functions, techniques of integration, and infinite series.

Prerequisites: C or better in MATH 220

Textbook: *Calculus*, Larson, Hostetler, Edwards, Houghton-Mifflin, Seventh Edition.

Course Objectives: Cover the calculus of exponential and logarithmic functions and present some applications to the sciences. Cover techniques of anti-differentiation and the calculus of power series. Cover polar coordinates and conic sections.

Sessions: Two 50 minute lectures and two 50 minute recitations per week.

Chapter	Topics	Sessions
6	Volumes by the Methods of Cross Sections and Cylindrical Shells	2
	Arc Length and Surface Area of Revolution	2
7	The Natural Logarithm	2
	The Exponential Function	2
	General Exponential and Logarithmic Functions	2
	Natural Growth and Decay	2
8	Inverse Trigonometric Functions	2
	Indeterminate Forms, l'Hôpital's Rule, and Additional Indeterminate	2
	Hyperbolic Functions and Inverse Hyperbolic Functions	2
9	Integral Tables and Simple Substitutions	2
	Integration by Parts	2
	Trigonometric Integrals	2
	Rational Functions and Partial Fractions	2
	Trigonometric Substitutions	3
	Integrals Containing Quadratic Polynomials	2
	Improper Integrals	2
10	Polar Coordinates	3
	Area Computations in Polar Coordinates	3
11	Infinite Sequences	3
	Infinite Series and Convergence	3
	Taylor Series and Taylor Polynomials	2
	The Integral Test	2
	Comparison Tests for Positive Term Series	2
	Alternating Series and Absolute Convergence	2
	Power Series	3
Reviews		5
Total		61

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