

Mathematics 267

University Calculus II

Calendar Description: H(3-1T-1.5)

Sequences and series, techniques of integration, double integration, applications; parametric equations.

Prerequisite(s): Mathematics 249 or 265 or 275 or 281 or Applied Mathematics 217.

Antirequisite(s): Credit for more than one of Mathematics 267, 277, 349, or Applied Mathematics 219 will not be allowed.

Syllabus

<u>Topics</u>	<u>Number of Hours</u>
Techniques of integration	6
Applications of integration: volume, arc length, surface area	4
Parametric equations	3
Partial Differentiation and Double Integral	10
Sequences and Series, Taylor series	13
TOTAL HOURS	36

See accompanying page for a detailed breakdown of instructional hours.

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Detailed breakdown of instructional hours

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	Hours
TECHNIQUES OF INTEGRATION	
Review: Indefinite integral, u-substitution	(0.5)
Integration by parts	(1.5)
Trigonometric integrals	(1)
Trigonometric substitutions	(1)
Integral of rational functions using partial fractions	(2)
APPLICATIONS OF INTEGRATION	
Review: Area, Riemann sum and the definite integral, Area between curves	(1)
Volume of solid – Slicing	(1)
Volume of solid of revolution – Shell method	(1)
Length of arc	(0.5)
Area of surface of revolution	(0.5)
PARAMETRIC EQUATIONS	
Parametric equations	(1)
Calculus of parametric equations	(2)
PARTIAL DIFFERENTIATION AND DOUBLE INTEGRATION	
Functions of several variables and partial derivatives	(2)
Partial differentiation and the Chain rule	(2)
Double integral, iterated integration (Rectangular coordinates)	(3)
Double Integration in polar coordinate system	(3)
SEQUENCES AND SERIES	
Sequences and convergence	(1)
Monotone Convergence Theorem	(1)
Infinite series, convergence, geometric series, n-th term test	(1)
Series of positive terms. Integral test. Harmonic p-series	(1)
Series of positive terms. Comparison test and Limit Comparison Test	(1.5)
Series of positive terms. Ratio test and Root test	(1.5)
Alternating series test	(1)
Absolute convergence and conditional convergence	(1)
Power series, Radius of convergence, interval of convergence	(1)
Manipulating power series, differentiation and integration	(1)
Taylor series and Maclaurin series	(1)
Applications	(1)

Total = (36)