UNIVERSITY OF CALGARY

FACULTY OF SCIENCE
Department of Mathematics and Statistics

MATHEMATICS 283
"HONOURS CALCULUS II"

Calendar Description: H(3-1T-1)
Methods of integration, improper integrals. Sequence and series, Taylor series, functions defined by series. Ordinary differential equations. Partial derivatives.

Prerequisite: Mathematics 281 or a grade of B+ or better in Mathematics 249 or 251 or Applied Mathematics 217 or equivalent.

Syllabus

Topics	**Number of Hours**
Methods of integration: Integration by parts including reduction formulas, Trigonometric integrals, Inverse trigonometric substitutions, Partial fractions.	6
Improper integrals	2
Applications to length of curves, area, and volume	4
Sequences and convergence: Cauchy sequences, Monotone Convergence Theorem. Completeness	6
Infinite sequences and series: Convergence and convergence tests. Absolute and conditional convergence	6
Power series, Taylor Series and functions defined by series	4
Ordinary differential equations: Solution. Initial value problems, Integration curves	1
Separable equations, First-order homogeneous equations, Exact equations, Integrating factors, First-order linear equations. Second-order linear equations with constant coefficients. Method of undetermined coefficients, variation of parameters	6
Partial derivatives. Existence and uniqueness theorem for first-order ODEs	1
TOTAL HOURS	**36**

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