



Mathematics 283 **Honours Calculus II**

Methods of integration, improper integrals. Sequence and series, Taylor series, functions defined by series. Ordinary differential equations. Partial derivatives.

Course Hours: H(3-1T-1)

Prerequisite(s): [Mathematics 281](#) or a grade of B+ or better in [Mathematics 249](#) or [251](#) or [Applied Mathematics 217](#) or equivalent.

Antirequisite(s): Credit for more than one of [Mathematics 253](#) or 263 or [283](#) or [Applied Mathematics 219](#) will not be allowed.

Syllabus

<u>Topics</u>	<u>Number of Hours</u>
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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