# Single Variable Calculus II Late Transcendentals

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| **C-ID Number** | MATH 221 |
| **Discipline** | Mathematics |
| **Date Approved** | March 31, 2011 |

## General Course Description

A second course in differential and integral calculus of a single variable: integration; techniques of integration; infinite sequences and series; polar and parametric equations; applications of integration.  Primarily for Science, Technology, Engineering and Math Majors.

## Minimum Units

4.0

## Any rationale or comments

## Advisories/Recommendations

## Course Content

Derivatives and integrals of inverse functions and transcendental functions such as trigonometric, exponential or logarithmic; Indeterminate forms and L'Hopital's Rule; Additional techniques of integration including integration by parts and trigonometric substitution; Numerical integration; trapezoidal and Simpson's rule; Improper integrals; Additional applications such as work, volumes, arc length, area of a surface of revolution, moments and centers of mass, separable differential equations, growth and decay; Introduction to sequences and series; Multiple tests for convergence of sequences and series; Power series, radius of convergence, interval of convergence; Differentiation and integration of power series; Taylor series expansion of functions; Parametric equations and calculus with parametric curves; and Polar curves and calculus in polar coordinates.

## Laboratory Activities

## Course Objectives

Upon successful completion of the course, students will be able to: Evaluate indeterminate forms using L'Hopital's Rule; Find derivatives of transcendental functions; Evaluate definite and indefinite integrals using a variety of integration formulas and techniques; Use integration to solve applications such as work or length of a curve; Evaluate improper integrals; Apply convergence tests to sequences and series; Represent functions as power series; an Graph, differentiate and integrate functions in polar and parametric form.

## Prerequisites

## Corequisites

Single Variable Calculus I Late Transcendentals (Math 211, CAN 18).

## Methods of Evaluation

Tests, examinations, homework or projects where students demonstrate their mastery of the learning objectives and their ability to devise, organize and present complete solutions to problems.

## Sample Textbooks

A college level textbook designed for science, technology, engineering and math majors, and supporting the learning objectives of this course.

## Notes