# MATH 274
# Calculus II (4 units)

## Course Outline

| Sections | Topics | # of weeks |
|---|---|---|
| 2.1–2.7 | **Applications of Integration:** Areas between curves; volumes of revolution; arclength and surface area | 3.0 |
| 3.1–3.7 | **Techniques of Integration:** Integration by parts; trigonometric integrals; trigonometric substitutions; integration of rational functions by partial fractions; numerical integration; improper integrals. | 3.0 |
| 4.1 & 4.3 | **Differential Equations:** Basic modeling and separable equations. | 1.0 |
| 5.1–5.6 | **Sequences and Series:** Divergence and integral tests; comparison tests; alternating series; ratio and root tests. | 2.0 |
| 6.1–6.4 | **Power Series:** Power series and their properties; representations of functions as power series; Taylor series and Taylor polynomials. | 2.0 |
| 7.1–7.4 | **Parametric Equations and Polar Coordinates:** Parametric curves and their calculus; polar coordinates and polar curves. | 2.0 |
| | **Tests** | 1.0 |

**Textbook:** *OpenStax Calculus Volume 2*, 2016 edition, by Gilbert Strang, et al..

**Other Comments:**

The interplay between algebra and geometry should be emphasized as early as possible. To this end, graphing calculators may be used at the discretion of the instructor.

It is important that instructors complete all sections of the course outline. Instructors in the subsequent courses will not reteach material from this course. Instructors must make sufficient allowances for unforeseen class cancellations (e.g., due to weather) so that the entire course outline will still be covered.

It should be emphasized that the *Mathematica* labs are an integral part of the course and that satisfactory participation in the labs is a required for the course. Students can download the laboratory material from the department home page. It is recommended that the *Mathematica* labs count for 15% of the course grade. It is also recommended that students who do not **attempt** at least 70% of the labs not receive a grade of C or higher.

This Core Curriculum course is designed to meet the following four learning goals and the instructor should keep these goals in mind as he/she teaches the course:

- Students will construct and evaluate logical arguments.

- Students will apply and adapt a variety of appropriate strategies to solve mathematical problems.

- Students will recognize and apply mathematics in contexts outside of mathematics.

- Students will organize and consolidate mathematical thinking through written and oral communication.

Adopted: Fall 2007;    Revised: Spring 2010, Fall 2012, Spring 2019.