Math 151 (Calculus II) Spring 2011
Syllabus

Revised: January 2011

Prerequisite: Math 150 with minimum grade of C.

Text: The text book will be chosen by the instructor. The recommended texts are Stewart, Anton, Geveci.

Topics (text-independent):

1. **Hyperbolic and Inverse Hyperbolic Functions.**
2. **Techniques of Integration:** Integration by parts. Integration of rational functions. Improper integrals.
3. **Applications of the Integral:** Volumes by slices, disks, washers and cylindrical shells. Arc length. Area of a surface of revolution.
4. **Differential Equations:** Linear first-order differential equations. Separable differential equations.
5. **Polar Coordinates:** A brief introduction to polar coordinates (a more detailed discussion is relegated to Math 252). Polar graphs. Conic sections in polar coordinates.

Trigonometric or hyperbolic integrals and substitutions, approximate integration, applications to Physics and engineering such as work, applications to Economics, Biology and Probability are optional topics.

**Learning Goals (for Assessment Purposes)**

Calculus provides the mathematical basis of many courses in sciences and engineering. Math 151 is the second course in the series Calculus I-II-III (Math 150-151-252). Some majors require only the first semester or the first and the second semesters. There are separate calculus courses for business and life sciences majors.

The primary **learning goals** of this course are as follows:

1. Students will be equipped with further **techniques of integration** such as **integration by parts**.
2. Students will learn about **improper integrals**.
3. Students will apply their knowledge about integrals to geometric topics such as the volume of a solid of revolution and the length of the graph of a function, and some physical applications such as work or pressure.
4. Students will apply their knowledge of differential and integral calculus to linear first-order differential equations and separable differential equations.
5. Students will learn about infinite series and apply that knowledge to power series.
6. Students will learn about polar coordinates.