Math 1B - Section 2959

Calculus II

TR, 5:15-8:20,

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This syllabus is subject to a time rate of change.

Course Description: This course is a study of the meaning, methods and applications of integration and infinite series. Topics include the definition of the definite integral, the Fundamental Theorem of Calculus, techniques of integration, applications of integration, first order separable differential equations, modeling exponential growth and decay, infinite series and approximation of functions using Taylor series with remainder.
Prerequisite: Math 1A.
Note: A minimum grade of C is required in this course to progress to 2A, 2B or 2C.
Credit Hours: 4

Text(s): *Calculus, Early Transcendentals*, 8th Edition
Author: James Stewart; **ISBN-13:** 9781285741550

Course Objectives:

At the completion of this course, students will be able to:

1. Construct antiderivatives graphically and numerically (using 2nd form of the Fundamental Theorem of Calculus).
2. Find antiderivatives analytically using substitution, by parts, integral tables, and partial fractions and use them to find a definite integral by the 1st form of the Fundamental Theorem of Calculus.
3. Approximate the definite integral numerically using midpoint, trapezoid and Simpson's rule and perform error analysis of these approximations.
4. Apply definite integrals to solve problems in geometry, science, probability, and social science.
5. Evaluate improper integrals.
6. Solve first order separable differential equations.
7. Model exponential growth and decay with appropriate differential equations.
8. Construct Taylor Polynomials as local approximations for transcendental functions.
9. Introduction to methods of proof by induction.
10. Determine intervals of convergence for infinite series and error bounds for Taylor Series approximations.

Course Policies:

- **Homework**

  - Homework will be assigned regularly but there is no one available to read your work on a regular basis, so you will need to keep a careful record of you problem solving in a homework notebook. We will also draw on www.MyOpenMath.com, for some limited purposes: The course ID is 20147 and the enrollment key is hypatia.

- **Calculators and Computers**

  - Computer algebra systems are encouraged, and may even be required for some assignments. Generally, however, use a CAS only as a confirmation of what you can or cannot do with pencil and paper.

  - You will need scientific calculator for some exams, but graphing calculators and calculators with CAS are not allowed.

- **Grades**

  - Grades in the **C** range represent performance that **meets minimal expectations**; Grades in the **B** range represent performance that is **substantially better** than the expectations; Grades in the **A** range represent work that is **excellent**.

  Grade Distribution:

Projects	20%
Quizzes	10%
Chapter Tests	45%
Final Exam	25%

  Letter Grade Distribution:

≥ 90.00	A	70.00 - 79.99	C
80.00 - 89.99	B	60.00 - 69.99	D
.	.	≤ 59.99	F

- **Attendance and Absences**

  - Attendance is expected and will be noted. If you're not there, you missed it.

  - Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee's responsibility to get all missing notes or materials.

Academic Honesty Policy

In addition to skills and knowledge, College of the Desert aims to teach students appropriate ethical and professional standards of conduct. The college catalog specifies that students are expected to "Integrate universally accepted values such as honesty, responsibility, respect, fairness, courage and compassion into judgments and decision-making." and that, "Students are expected to act in an honest and trustworthy manner. Work performed on examinations or other forms of evaluation must represent an individual's own work, knowledge and experience of the subject matter. Students are expected to follow the classroom rules established by each instructor." Any attempt to deceive a faculty member or to help another student to do so will be considered a violation of this standard.

Tentative Course Outline: The weekly coverage might change as it depends on the progress of the class. However, keep up with the reading assignments.

Week	Content
Week 1 Jan. 29	• §5.1-5.4: Definite & Indefinite Integrals, Fundamental Theorem.
Week 2 Feb. 5	• §5.5-6.2: Substitution, Area and Volume
Week 3 Feb. 12	• Review and Test 1
Week 4 Feb. 19	• §6.3-6.4 Volume of Washers and Shells. Work.
Week 5 Feb. 26	• §6.5-7.1: Average Value and Integration by Parts.
Week 6 Mar. 5	• Review and Test 2
Week 7 Mar. 12	• §7.2-7.4 Integration Techniques.
Week 8 Mar. 19	• §7.5-7.8 Tables, CAS and Improper Integrals
Week 9 Mar. 26	• Review and Chapter 7 Test
Week 10 Apr. 2	• §8.1-8.5: More Applications
Week 11 Apr. 9	• 10.1 Integrals with Polar and Parametric Equations
Week 12 Apr. 23	• Chapters 8 & 10 Test • §11.1-11.4 Infinite Series and Sequences • Integral Test and Estimation, Comparison. • Project 1: How to Estimate Pi with Machin's Formula
Week 13 Apr. 30	• §11.5-11.8: Altegernating Series and Convergence Tests. • Introduction to Power Series.
Week 14 May 7	• §11.9-11.11: Taylor and Maclaurin Series. • Project 2: The Buffon Needle Problem.
Week 15 May 14	• Chapter 11 Test. • Review for final exam.
Week 16	• Final Exam.