



CALCULUS II – Spring 2009

Subject Code: AMAT 122

Number of periods per week: 3

Number of total weeks: 13

Office: Room 203, New Building

Office Hours: Monday 14:00-15:00, Tuesday 13:00-14:00, Thursday 13:00-15:00

Lecturer: Panagiota Konstantinou

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Course Outline:

- Review of the definite and indefinite integrals and the fundamental Theorem of Calculus.
- Applications of the Definite Integral: Areas between Two Curves, Volumes by the methods of Slices and Cylindrical Shells, and Areas of Surfaces of Revolution
- Inverse Trigonometric and Hyperbolic Functions. Derivatives and integrals.
Techniques of Integration: Integration by Parts, Trigonometric Integrals, Reduction Formulae for Sines, Cosines, Tangents and Secants, Integrating Powers of Sines and Cosines, Tangents and Secants, integration of rational functions by partial fractions, Trigonometric Substitutions, Differential Equations.
- Series: Infinite Series, Power Series, Taylor and MacClaurin Series, Tests of convergence.
- Introduction to Double Integrals.
- Polar Coordinates: Polar Coordinates and conversion of Cartesian to Polar Coordinates. Areas in polar coordinates.
- An introduction to complex variables: Analytic functions, definitions and properties, Geometric interpretation, Polar Form, Exponential Form, Powers and Roots.

Assessment:

- Final exam 60%
- Coursework 40%
 - Test 1: 18/3/09 40% of coursework
 - Test 2: 13/5/09 40% of coursework
 - Quizzes: Every week on Wednesdays (with the exception of the midterm weeks) 20% of coursework

Textbooks:

- Anton H., Bivens I, and Davis S: "Calculus", 7th Edition, John Wiley & Sons, 2002

References:

- C. Henry Edwards, David E. Penney, Calculus, Matrix Version, Pearson Education; 6 edition, August 2002.
- James Stewart, Calculus: Concepts and Context, Thomson Learning; 3rd Bk & CD edition, November 1, 2004.
- Murray R. Spiegel, "Advanced Mathematics for Engineers and Scientists", Schaum's Outline Series.
- Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 8th Edition, October 1998

Prerequisites: Calculus I, AMAT 111