

MATH 152 – Calculus II

Course Description from Bulletin: Transcendental functions and their calculus. Integration techniques. Applications of the integral. Indeterminate forms and improper integrals. Polar coordinates. Numerical series and power series expansions. (4-1-5) (C)

Enrollment: Required for AM majors and all engineering majors

Textbook(s): Stewart, *Calculus*, 6th ed., Brooks/Cole

Other required material: Maple

Prerequisites: Grade of "C" or better in MATH 151 or MATH 149 or Advanced Placement

Objectives:

1. The student should acquire a sound understanding of the common transcendental functions.
2. The student should become proficient in the basic techniques of integration for the evaluation of definite, indefinite, and improper integrals.
3. The student should learn to solve first-order separable and linear differential equations with initial values.
4. The student should learn parametric curves and polar curves and their calculus.
5. The student should learn infinite series, power series and Taylor polynomial and series, and their convergence properties.
6. The student should be able to utilize the computer algebra system Maple to explore mathematical concepts, illustrate them graphically, and solve problems numerically or symbolically.
7. The student should become a more effective communicator by developing his/her technical writing skills in the preparation of several Maple lab reports.

Lecture schedule: Three 67 minute lectures and one 75 minute TA session (Maple computer lab and recitation) per week

Course Outline:

	Hours
1. Inverse Functions and their derivatives; Exponential and logarithmic functions; Indeterminate forms and L'Hospital's rule	12
2. Techniques of integration; Improper integrals	12
3. Differential equations: Euler's method; 1 st order separable DE's, exponential growth and decay; The logistic equation; 1 st order linear DE's	8
4. Parametric equations and polar coordinates for plane curves	10
5. Sequences; Numerical series; Convergence tests; Power series; Taylor series; Applications of power/Taylor series	12
6. Complex numbers	3

Assessment:	Homework/Quizzes	10-20%
	Maple Lab/Recitation	5-15%
	Tests	40-50%
	Final Exam	25-30%

Syllabus prepared by: Xiaofan Li and Dave Maslanka

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