123 – Applied Mathematics

Course Description from Bulletin: Basic concepts of calculus of a single variable; limits, derivatives and integrals. Applications. Systems of linear equations and matrices. Linear programming. Credit may not be granted for both MATH 122 and MATH 123. (4-0-4)

Enrollment: This course does not count for graduation in any engineering, mathematics, natural science or computer science degree program

Textbook(s): Goldstein, Lay & Schneider, *Calculus & Its Applications*

Other required material: None

Prerequisites: None

Objectives:

1. Students will learn to compute derivatives using the basic formulas.
2. Students will learn to compute tangent lines to graphs as local linear approximations.
3. Students will learn to find extreme points of functions.
4. Students will learn to compute basic antiderivatives.
5. Students will learn to compute partial derivatives. 6.
6. Students will learn to solve systems of linear equations using matrix algebra.
7. Students will learn to solve linear inequalities graphically and by using the simplex method.

Lecture schedule: 4 50 minute (or 3 75 minute) lectures per week

Course Outline: Hours

1. Basic properties of functions and graphs of straight lines
2. Derivatives – meaning and rules for computation
3. Applications of derivatives
4. Chain rule and implicit differentiation
5. Antiderivatives and definite integrals
6. Applications
7. Functions of several variables
8. Partial derivatives
9. Taylor polynomials and infinite series 10.
10. Matrix algebra
11. Elementary linear programming techniques

Assessment:	Homework/Quizzes	20-30%
	Computer Programs/Projects	10-20%
	Tests	40-50%
	Final Exam	20-30%

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