A. Division _____**ACADEMIC**_____   Date___**November 14, 1990**___

B. Department___**SCIENCE AND MATHEMATICS**_____   New Course _____

Revision of Course **MAT 250**

Dated___**August, 1977**_____

C.___**MAT 125**_____	D.___**CALCULUS FOR THE SOCIAL SCIENCES**___	E.____**3**____
Subject and Course No.	Descriptive Title	Semester Credits

F. Calendar Description

This course is an introduction to differential calculus for students in business, social sciences and biological sciences. Topics include limits, differentiation techniques for algebraic functions, applications to graphing and optimization, implicit differentiation, differentials, differentiation of log and exponential functions, and an introduction to partial derivatives and multivariable calculus.

Summary of Revisions:

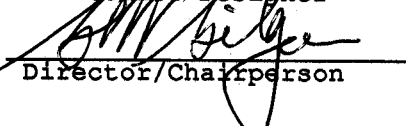1990-09-14
Section C, D, F, H, J, P and R

G. Type of Instruction   Hrs./Week/Semester

Lecture	**4** Hrs.
Laboratory	____Hrs.
Seminar	____Hrs.
Clinical	____Hrs.
Field Exp.	____Hrs.
Practicum	____Hrs.
Shop	____Hrs.
Studio	____Hrs.
S.D.L.	____Hrs.
Other	____Hrs.
Total	**4** Hrs.

H. Course Prerequisites:
   MAT 115 or a grade of B in Algebra 12

I. Course Corequisites:

J. Courses for which this Course is a Pre-requisite

   MAT 225 or MAT 450

K. Maximum Class Size
      35
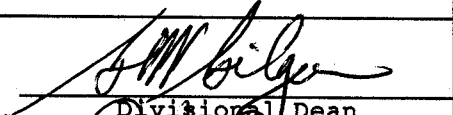
L. College Credit Transfer

   Yes

   Non-Transfer

   Non-Credit

M. Transfer Credit:
      Requested ☒
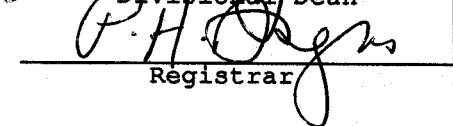
      Granted ☐

Course Equivalent:
U.B.C. **Math 140 (1.5)**
S.F.U. **Math 157 (3)**
U.Vic **Math 102 (1.5)**
Other

_____
Course Designer

_____
Director/Chairperson

_____
Divisional Dean

_____
Registrar

N. Textbook and Materials to be Purchased by Students:

Barnett & Ziegler, **Applied Mathematics For Business, Economics, Life Sciences, and Social Sciences**, 3rd Edition, Dellen Publishing Company

O. Course Objectives:

Upon completion of this course, the student should be able to:

1. Compute elementary limits; understand the basis of derivatives; be able to calculate derivatives of algebraic and transcendental functions (exp(x) and ln(x)); and find derivatives implicitly.

2. Sketch graphs of functions by applying first and second derivative techniques; and be able to locate the extrema of functions.

3. Solve problems with simple economic modelling theory, involving such concepts as marginals, revenue and profit maximization, points of diminishing returns, and elasticity.

4. Understand the elements of partial derivatives and solve simple two-variable problems to optimize demand and revenue functions.

P. Course content:

1. Limits; introduction to continuity; rates of change; derivative definition; tangent lines; rules and techniques for differentiating; marginal analysis.

2. First derivative and graphs; second derivative; application to graphs optimization problems; curve sketching; differentials

3. Derivative of exponential and logarithmic functions; implicit derivatives; related rates; elasticity of demand; other applications to the mathematics of finance.

4. Functions of several variables; partial derivatives; graphical meaning of partial derivatives; maximum/minimum problems in several variables; Lagrange multipliers; applications to simple two-variable optimization; least square method.

Q. Method of Instruction

Lectures, problem sessions and assignments.

R. Evaluation

Evaluation will be carried out in accordance with Douglas College policy. The instructor will present a written course outline with specific evaluation criteria at the beginning of the semester. Evaluation will be based on some of the following:

1. Weekly tests   (0 - 40%)
2. Midterm tests   (20 - 70%)
3. Assignments   (0 - 15%)
4. Attendance   (0 - 5%)
5. Class participation   (0 - 5%)
6. Final examination   (30 %)