

M: Course Objectives / Learning Outcomes

Upon completion of MATH 1125 the student should be able to:

- evaluate elementary limits involving algebraic, exponential, logarithmic and trigonometric functions
- describe the concept of continuity and determine intervals upon which a function is continuous
- apply the intermediate value theorem
- find average and instantaneous rates of change
- find derivatives and relate them to tangent lines and instantaneous rates of change
- use differentiation rules to compute the derivatives of algebraic functions
- compute the derivatives of exponential, logarithmic and trigonometric functions
- compute derivatives using implicit differentiation
- formulate and solve problems involving marginal analysis, elasticity, points of diminishing returns, and other forms of economic modeling
- apply the concepts of differentials and linear approximations
- use Newton's method to determine points of intersection
- sketch graphs of functions by applying first and second derivative techniques as well as analysis of vertical, horizontal and slant asymptotes
- use differentiation to determine the local and absolute extrema of functions

Additional topics that may be included in the course material may be chosen from:

- apply the concept of an annuity to loans, mortgages and investments
- solving problems involving Markov Chains, Linear Programming and Game Theory
- compute the definite and indefinite integral of a function
- use integration techniques (substitution, integration by parts and others) to compute integrals
- apply the integral to problems in Business and the Social Sciences

N: Course Content:

1. Limits and Limit Laws
2. Continuity
3. Tangent Lines and the Derivative
4. Differentiation Rules and Implicit Differentiation
5. Related Rates
6. Marginal Analysis and Differentials
7. Applications to Graphing Functions
8. Determining the Extrema of Functions
9. Additional techniques of Business Analysis

O: Methods of Instruction

Lectures, tutorials, problem sessions and assignments

P: Textbooks and Materials to be Purchased by Students

Hoffmann, Bradley and Rosen, Applied Calculus, 8th Edition, McGraw Hill, 2005
Student Solution Guide, McGraw Hill, 2005

Q: Means of Assessment

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:

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| 1. Weekly tests | 0 – 40 % |
| 2. Term tests | 20 – 70% |
| 3. Assignments | 0 – 20% |
| 4. Attendance/participation | 0 – 5% |
| 5. Tutorials | 0 – 10% |
| 6. Final Examination | 30 – 40% |

R: Prior Learning Assessment and Recognition: specify whether course is open for PLAR

None

Course Designer(s) Aubie Anisef

Education Council / Curriculum Committee Representative

Dean / Director Des Wilson

Registrar Trish Angus