**A.** Division: Instructional  
**Effective Date:** May 2006

**B.** Department / Program Area: Mathematics/ Faculty of Science & Technology  
Revision: X New Course  
If Revision, Section(s) Revised: F,G,H,J,M,N,O,P,Q  
Date of Previous Revision: September 2004  
Date of Current Revision: September 9, 2005

**C:** MATH 1125  
**D:** Calculus for the Social Sciences  
**E:** 3

<table>
<thead>
<tr>
<th>Subject &amp; Course No.</th>
<th>Descriptive Title</th>
<th>Semester Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F:</strong> Calendar Description:</td>
<td>This course is an introduction to differential calculus for students in business, social sciences and biological sciences. Topics include limits, differentiation techniques for algebraic, logarithmic, exponential and trigonometric functions, mathematical modeling, applications to graphing and optimization, implicit differentiation and differentials.</td>
<td></td>
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<tr>
<td><strong>G:</strong> Allocation of Contact Hours to Type of Instruction / Learning Settings</td>
<td>Primary Methods of Instructional Delivery and/or Learning Settings: Lecture, tutorial</td>
<td></td>
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<tr>
<td>Number of Contact Hours: (per week / semester for each descriptor)</td>
<td>4 hours lecture + 1 hour tutorial /week</td>
<td></td>
</tr>
<tr>
<td>Number of Weeks per Semester:</td>
<td>15</td>
<td></td>
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<tr>
<td><strong>H:</strong> Course Prerequisites:</td>
<td>MATH 1105 or MATH 1110 or a &quot;B&quot; grade or better in Principles of Math 12 or an approved equivalent</td>
<td></td>
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<tr>
<td><strong>I:</strong> Course Corequisites:</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td><strong>J:</strong> Course for which this Course is a Prerequisite</td>
<td>MATH 1225</td>
<td></td>
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<td><strong>K:</strong> Maximum Class Size:</td>
<td>35</td>
<td></td>
</tr>
</tbody>
</table>

**L:** PLEASE INDICATE:  
Non-Credit  
College Credit Non-Transfer  
X College Credit Transfer:  
SEE BC TRANSFER GUIDE FOR TRANSFER DETAILS (www.bctransferguide.ca)
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

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:

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                             |                                  |

<table>
<thead>
<tr>
<th>Course Designer(s)</th>
<th>Aubie Anisef</th>
<th>Education Council / Curriculum Committee Representative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dean / Director</td>
<td>Des Wilson</td>
<td>Registrar Trish Angus</td>
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</tbody>
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