

**DAWSON COLLEGE**  
**MATHEMATICS DEPARTMENT**  
**CALCULUS I**  
**201-NYA-05**  
**STUDY GUIDE**  
**PONDERATION 3-2-3**

**Prerequisite:** Good standing in High School Functions 506  
or CEGEP Mathematics 015

**Objectives:** This version of Calculus I is intended for Commerce students.  
As well as introducing the student to the techniques of Calculus, this course will  
also illustrate the power of Calculus in solving certain optimization problems in  
business, economics and the physical sciences.

**Text:** **Applied Calculus** for the Managerial, life and Social Sciences, Eighth Edition,  
by S.T. Tan, Brooks/Cole Publishers.

**References:**

1. Calculus with Applications, by Lial, Greenwell, Ritchey Ninth Edition,  
Addison Wesley.
2. Brief Calculus: An Applied Approach, Eighth Edition  
Ron Larson and Bruce Edwards, Houghton Mifflin.

**Methodology:** Lectures and Problem Solving Sessions.

**Evaluation:** A student's grade shall be the greater\* of:

(A) Term work for 50% and Final Exam for 50%.

or

(B) Final Exam for 100%.

*\* To qualify for (B), the student must have obtained at least 50% of the term  
marks. Term marks are based on a minimum of 4 ½ hours of tests or quizzes.*

**Final Examination:** The Final examination will be a supervised, comprehensive examination  
held during the formal examination period.

**Calculators:** A scientific calculator without text storage or graphing capabilities is required  
for class tests, quizzes and the final examination. Programmable calculators are not  
allowed for class tests or the final exam.

**Policy on Cheating and Plagiarism**

**Cheating in Examinations, Tests, and Quizzes**

Cheating includes any dishonest or deceptive practice relative to Final Exams, in-class tests, or quizzes.  
Such cheating may be detected during or after the evaluation exercise by the instructor. Cheating includes,  
but is not limited to:

- (a) copying or attempting to copy another's work.
- (b) obtaining or attempting to obtain unauthorized assistance of any kind.
- (c) providing or attempting to provide unauthorized assistance of any kind.
- (d) using or possessing any unauthorized material or instruments for information storage and retrieval devices.
- (e) taking an examination, test, or quiz for someone else.
- (f) having someone take an examination, test, or quiz in one's place.

### **Unauthorized Communication**

Unauthorized communication of any kind during an examination, test, or quiz is forbidden and subject to the same penalties as cheating.

### **Plagiarism on Assignments and the Comprehensive Assessment**

Plagiarism is the presentation or submission by a student of another person's assignments or Comprehensive Assessment as his or her own. Students who permit their work to be copied are considered to be as guilty as the plagiarizer.

### **Obligation of the Teacher**

Every instance of cheating or plagiarism leading to a resolution that impacts on a student's grade must be reported by the teacher, with explanation, in writing to the Chair of Mathematics and to the Dean of Pre-University Studies. A copy of this report must also be given to the student.

### **Penalties**

Cheating and plagiarism are considered extremely serious academic offences. Action in response to an incident of cheating and plagiarism is within the authority of the teacher. Penalties may range from zero on a test, to failure of the course, to suspension or expulsion from the college.

### **Literacy Policy**

Problem solving is an essential component of this course. Students will be expected to analyze problems stated in words, to present their solutions logically and coherently, and to display their answers in a form corresponding to the statement of the problem, including appropriate units of measurement. Marks will be deducted for work which is inadequate in these respects, even though the answers may be numerically correct.

### **Religious Holidays**

*Students who wish to observe religious holidays must inform each of their teachers in writing within the first two weeks of each semester of their intent to observe the holiday so that alternative arrangements convenient to both the student and the teacher can be made at the earliest opportunity. The written notice must be given even when the exact date of the holiday is not known until later. Students who make such arrangements will not be required to attend classes or take examinations on the designated days, nor be penalized for their absence. It must be emphasized, however, that this College policy should not be interpreted to mean that a student can receive credit for work not performed. It is the student's responsibility to fulfill the requirements of the alternative arrangement.*

### **Students' Obligations**

- (a) Students have an obligation to remain informed about what takes place in their regularly scheduled classes. Absence from class does not excuse students from this responsibility.
- (b) Students have an obligation to arrive on time and remain for the duration of scheduled classes and activities.
- (c) Students have an obligation to write tests and final examinations at the times

scheduled by the teacher or the College. Students have an obligation to inform themselves of, and respect, College examination procedures.

- (d) Students have an obligation to show respectful behavior and appropriate classroom deportment. Should a student be disruptive and/or disrespectful, the teacher has the right to exclude the disruptive student from learning activities (classes) and may refer the case to the Director of Student Services under the Student Code of Conduct.
- (e) Cellular phones, pagers and musical listening devices have the effect of disturbing the teacher and other students. All these devices should be turned off. Students who do not observe these rules will be asked to leave the classroom.
- (f) Cell phones must also be put away. Text messaging is not allowed in class.

## COURSE CONTENT

<u>Topic</u>	<u>Specific Competencies</u>	<u>Learning Activities</u>		
		<u>Section</u>	<u>Pages</u>	<u>Exercises</u>
<b>Pre-calculus Review (6 classes)</b>				
	Reviewing of basic Algebra, function and graphing	1.1	06-14	7-73
	Solving polynomial equations	class notes		
	Functions and Graphs	2.1	50-59	1-49
	Mathematical Models (algebraic functions)	2.3	75-91	1-23, 51-75
<b>Limits and Continuity (5 classes)</b>				
	The definition of the limit of a function			
	Techniques for evaluating limits	2.4	97-113	1-65
	One-sided Limits and Continuity	2.5	117-132	1-60
<b>Differentiation (12 classes)</b>				
	Definition of the derivative and the Tangent Line	2.6	133-154	1-27, 35, 37
	Basic Rules of Differentiation	3.1	157-168	1-51, 67
	The Product and Quotient Rules	3.2	171-179	1-59
	The Chain Rule	3.3	182-190	1-53, 61-65
	Rate of Change: Marginal's	3.4	194-207	3-17, 23-33
	Higher Order Derivatives	3.5	208-212	1-27
	Implicit Differentiation & Related Rules	3.6	215-224	9-33, 41-47
	Differentials (formulas only)	3.7	227-233	1-13
Chapter 3:		Review Exercises	239-240	1-55

<u>Topic</u>	<u>Specific Competencies</u>	<u>Learning Activities</u>		
<b>Applications of the Derivatives (10 classes)</b>				

Application of the First Derivative	4.1	244-259	1-10, 13-73, 85
Application of the Second Derivative	4.2	264-279	1-8, 11-73, 85
Curve Sketching	4.3	283-294	1-29, 33-44
Optimization I: Absolute Extrema	4.4	298-308	1-59
Optimization II: Optimization Problems	4.5	312-320	1-19, 25
Chapter 4:	Review Exercises	324-325	1-34, 38-40

### **Exponential and Logarithmic Function (6 classes)**

Exponential Functions and their Graphs	5.1	330-334	1-25
Logarithmic Functions	5.2	338-344	1-43
Differentiation of Exponential Functions	5.4	360-368	1-53, 63
Differentiation of Logarithmic Functions	5.5	372-377	1-63

### **Trigonometric Functions (4 classes)**

Radian Measure	12.1	760-764	1-25
The Trigonometric Functions	12.2	765-771	1-21
Differentiation of Trigonometric Functions	12.3	773-782	1-31, 41-47
Inverse Sine & Inverse Tangent Functions			class notes

### **Antiderivatives (2 classes)**

Indefinite Integrals	6.1	398-407	1-49
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\* **The times indicated are approximate**

**Dawson College  
Department of Mathematics  
Course Outline for Calculus I  
201-NYA-05 Section 08  
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**Evaluation**

Term work (possibly worth 50% of the final grade, see Grading Policy) will consist of:

- Three tests worth 40% held on February 25, April 1 and April 29
- Assignments and/or quizzes worth 10%.

A final grade of 60% or higher is required for successful completion of the course.

**Student Responsibilities**

1. Regular attendance. Tardiness will not be tolerated.
2. Cell phone interruptions will not be tolerated. Cell phones must be turned off for the duration of the class.
3. As a rule, a medical note is required to avoid a penalty for missed tests. An unexplained absence will result in a grade of zero.
4. Students have an obligation to inform themselves about Dawson's policy on cheating and plagiarism.

**Class Participation requirements**

No additional requirement.