

### Mathematics Department Calculus I 201-NYA-05 Section 4 Winter 2012

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	The solutions to the quizzes and tests as well as additional examples are posted on the website. The material of previously taught courses is also available		
Taabar A aaag	is also available.		
Teacher Access	sability: For out of class communication please see the during my onice nours.		
Term Work:	(possibly worth 50% of final grade, see Grading Policy):		
3 Class Tests*	worth a total of $40\%$ on:		
	Test 1Wednesday February 29th in room 4C.1		
	Test 2Wednesday April 4th in room 4C.1		
	Test 3 Wednesday May 2nd in room 4C.1		
Quizzes**	worth a total of 10% on:		
	every Wednesday except on test days		

\* Each class test is an hour and half in duration.

\*\* Each quiz is 15 minutes in duration. The content of the quizzes is mostly taken from the assigned excercises of previous lectures.

### **Important:**

- There will be no make-up tests or quizzes. If a valid medical note is presented the weight of the quiz or test will be transferred to the weight of the final examination.
- Students who will be absent for any predictable reason on a quiz/test day must inform their teacher in writing within the first two weeks of the semester of their intent to be absent so that alternative arrangements can be made at the earliest opportunity. The written notice must be given even when the exact date is not known until later.
- Please note that I do **not** use Omnivox MIO, and messages sent to MIO are unfortunately ignored.



# Mathematics Department Calculus I – Regular-Social Science 201-NYA-05

# **COURSE OBJECTIVES**

Calculus stands as one of the greatest achievements of human intellectual endeavour. The discovery of calculus in the seventeenth century immediately led to the solutions of problems in physics and metaphysics that had baffled mankind for thousands of years. Since that time calculus has found applications to virtually every branch of science, social science. The objective of this course is to introduce the student to these profound ideas, and to give the student the basic skills to apply these concepts to other disciplines.

# **COURSE COMPETENCIES**

This course will allow the student to fully achieve the competency:

022X: To apply methods of differential calculus to the study of functional models in the field of Social Science.

#### **Elements of the Competency:**

- 1. To situate the historical context of the development of differential calculus.
- 2. To recognize and describe the characteristics of algebraic, exponential, logarithmic and trigonometric functions expressed in symbolic or graphic form.
- 3. To analyze the behaviour of a function represented in symbolic or graphic form using an intuitive approach to the concept of limits.
- 4. To define the derivative of a function, to interpret it and apply derivative techniques.
- 5. To analyze the variations of a function using differential calculus.
- 6. To solve optimization and rate of change problems.

# **PRE-REQUISITE**

Good standing in High School Functions or the equivalent CEGEP Mathematics course (Math 201-015-50).

### **PONDERATION**

3-2-3

# **EVALUATION SCHEME AND SCHEDULE**

The Institutional Student Evaluation Policy (ISEP) is designed to promote equitable and effective evaluation of student learning and is therefore a crucial policy to read and understand. The policy describes the rights and obligations of students, faculty, departments, programs, and the College administration with regard to evaluation in all your courses, including grade reviews and resolution of academic grievance. ISEP is available on the Dawson website.

# **Term Work**

The term work is based on a minimum of 4 1/2 hours of tests/quizzes. A minimum of 3 class tests will be given.

# **Final Examination**

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

# **Grading Policy**

A student's grade shall consist of 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.

To pass the course the students must obtain at least 60%.

# **REQUIRED TEXT AND MATERIALS**

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

### **<u>References</u>**:

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

**<u>Calculators</u>**: A scientific calculator, which has no text storage or graphing capabilities, is allowed for class tests and the final exam.

# **TEACHING METHODS**

Lectures and problem sessions.

# ATTENDANCE AND COURSE PARTICIPATION REQUIREMENTS

Students should refer to the Institutional Student Evaluation Policy (ISEP section III-C) regarding attendance. *Attendance is recommended for the successful completion of the course.* 

# LITERACY STANDARDS

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.

### **STUDENT OBLIGATIONS**

- (a) Students have an obligation to arrive on time and remain in the classroom for the duration of scheduled classes and activities.
- (b) 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.
- (c) 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.
- (d) Electronic/communication devices (including cell phones, mp3 players, etc.) have the effect of disturbing the teacher and other students. All these devices must be turned off and put away. Students who do not observe these rules will be asked to leave the classroom.

Everyone has the right to a safe and non-violent environment. Students are obliged to conduct themselves as stated in the Student Code of Conduct and in the ISEP section on the roles and responsibilities of students. (ISEP section II-D)

# **ACADEMIC INTEGRITY**

### Cheating in Examinations, Tests, and Quizzes

Cheating includes any dishonest or deceptive practice relative to formal final examinations, in-class tests, or quizzes. Such cheating is discoverable during or after the exercise in the evaluation process by the instructor. Such 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 which can be used as 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 Examination

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.

### 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 in the course, to suspension or expulsion from the college.

According to ISEP, the teacher is required to report to the Sector Dean all cases of cheating and plagiarism affecting a student's grade. (see ISEP section IV-C.)

# **INTENSIVE COURSE CONFLICTS & POLICY ON RELIGIOUS OBSERVANCE**

If a student is attending an intensive course, the student must inform the teacher, within the first two weeks of class, of the specific dates of any anticipated absences.

Students who wish to observe religious holidays must also 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 who intend to observe religious holidays or who take intensive courses must inform their teachers in writing as prescribed in the ISEP Policy on Religious Observance. (ISEP Section III-D).

A form for this purpose is available at the end of this document.

# MATH TUTORIAL ROOM

Volunteer math teachers are available for help in room 7B.1 from 10:00 to 16:00 (Monday through Friday) and from 17:00-18:00 (Monday through Thursday).

# **COURSE CONTENT & Tentative SCHEDULE**

(the number of classes listed is approximate)

Pre-calculus Review (6 classes)	Section	Pages	Exercises
Reviewing of basic Algebra, function and graphing		06-14	7-73
Solving polynomial equations	class note	S	
Functions and Graphs	2.1	50-59	1-49
Mathematical Models (algebraic functions)	2.3	75-91	1-23, 51-75
Limits and Continuity (5 classes)			
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
Differentiation (12 classes)			
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
Applications of the Derivatives (10 classes)			
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 note	S	
Antiderivatives (2 classes)			
Indefinite Integrals	6.1	398-407	1-49

# **RELIGIOUS OBSERVANCE/ INTENSIVE COURSES FORM**

Students who intend to observe religious holidays or who take intensive courses must inform their teachers in writing as prescribed in the ISEP Policy on Religious Observance. (ISEP Section III-D)

The following form must be submitted within the first two weeks of classes.

Name:		
Student Number:		
Course:		
Teacher:		
Date:	Description:	