DAWSON
COLLEGE

Mathematics Department
CALCULUS II - Commerce
201-NYB-05

COURSE OBJECTIVES

(This version of Integral Calculus is intended for Commerce students only.)
To use standard integration techniques in solving integrals involving algebraic, exponential, logarithmic and trigonometric functions.
To apply integral calculus in solving problems in business and economics.
To develop Taylor polynomial expansions for familiar functions.
To classify infinite series as divergent or convergent.

COURSE COMPETENCIES

This course will allow the student to fully achieve the competency:
022Y: To apply methods of integral calculus to the study of functional models in the field of Social Science.
This course will allow the student to fully achieve the competency:
Elements of the Competency:

1. To situate the historical context of the development of integral calculus.
2. To find the indefinite integral of a function using integration techniques.
3. To calculate the definite integral of a function on an interval and provide its interpretation.
4. To calculate the limits of a function with indeterminate forms using L'Hôpital's rule.
5. To calculate the improper integral of a function on an interval and provide its interpretation.
6. To analyze a phenomenon using differential equations with separable variables.
7. To analyze a phenomenon by checking for convergence of a series.

PRE-REQUISITE

Good standing in Differential Calculus 201-NYA-05 for Commerce or equivalent.

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 ½ 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 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 mark and must have written more than 50% of the class tests.
To pass the course, the students must obtain at least 60%.

REQUIRED TEXT AND MATERIALS

Text: The required text is 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
Seventh Edition, Addison Wesley.
(2) Brief Calculus: An Applied Approach, Sixth Edition
Ron Larson and Bruce Edwards, Houghton Mifflin

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.

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.

COURSE CONTENT & TENTATIVE SCHEDULE
(number of classes listed is approximate)

Integration (17 classes – times listed are approximate)

Chapter 6
- 6.1 Antiderivatives and the Rules of Integration
- 6.2 Integration by Substitution (plus Notes on Algebraic Substitution)
- 6.3 Area and the Definite Integral (plus Notes on Sigma Notation)
- 6.4 The Fundamental Theorem of Calculus
- 6.5 Evaluating Definite Integrals
- 6.6 Area Between Curves
- 6.7 Applications of Integration to Business and Economics

Additional Topics In Integration (12 classes)

Chapter 7
- 7.1 Integration by Parts (plus Notes on Partial Fractions)
- 7.2 Tables of Integrals
- 7.3 Numerical Integration
- 7.4 Improper Integrals (plus Notes on L'Hôpital's Rule)

Differential Equations (3 classes)

Chapter 9
- 9.1 Solutions to Differential Equations
- 9.2 Separable Differential Equations

Infinite Series (10 classes)

Chapter 11
- 11.1 Taylor Polynomial
- 11.2 Infinite Sequences
- 11.3 Infinite Series
- 11.4 Convergence Tests

Trigonometric Functions (this material will be integrated within the above topics)

Chapter 12
- 12.4 Integration of Trigonometric Functions

TOPIC	SPECIFIC COMPETENCIES	LEARNING ACTIVITIES		
		Section	Page	Problems
Antiderivatives	Work backwards from simple basic derivatives to solve simple integrals. Find general and particular solutions for simple differential equations.	6.1 12.4(trig)	398-411 789-790	1-61 odd numbers 1-10
Integration by Substitutions	Reduce a large class of complicated integrals to basic integrals by making a change of variable.	6.2 12.4	411-421 789-790	1-54 odd numbers 15-18, 24-28
	Use algebraic substitutions to solve integrals.	class notes		problem set given in class
Definite Integrals and Areas	Set up and evaluate Riemann sums to approximate the area of a region under a graph.	6.3	421-428	3-10
	Introduce sigma notation together with sequences of Riemann sums to calculate the exact area of a region under a graph.	class notes		problem set given in class
The Fundamental Theorem of Calculus	Use antiderivatives to calculate the exact value of a definite integral.	6.4 12.4	430-441 803	1-40 odd numbers 11-14, 28-30
Evaluating Definite Integrals	Use appropriate substitutions and properties to evaluate definite integrals and compute average values.	6.5 12.4	441-452 789-790	1-43, 47, 49, 53 odd numbers, 33, 35
Area Between Curves	Set up and evaluate definite integrals to calculate the area of a region bounded by two curves.	6.6 12.4	453-463 789-790	1-16, 17, 19, 21, 23, 25, 27, 29, 35-42 33-38

TOPIC	SPECIFIC COMPETENCIES	LEARNING ACTIVITIES		
		Section	Page	Problems
Applications of Definite Integrals to Business and Economics	Set up and evaluate definite integrals to calculate consumer's and producer's surplus, present and future values of continuous income streams and to analyze income distributions.	6.7	464-476	1-23 odd numbers problem set given in class
Chapter 6 Review Exercises			479-482	1-35, 45-57 odd numbers
Integration By Parts	Adapt the product rule to solve a certain class of integrals.	7.1 12.4	484-490 789-790	1-35, 39-43 odd numbers 31, 32
Integration Using Partial Fractions	Break rational functions down into partial fractions in order to integrate.	class notes		problem set given in class
Integration Using Tables of Integrals	Select and adapt formulas in tables to solve integrals.	7.2	491-497	1-32 odd numbers
Numerical Integration	Use the Trapezoidal Rule and Simpson's Rule to approximate the value of definite integrals.	7.3	497-511	1-28 odd numbers, 36
L'Hôpital's Rule	Use L'Hôpital's Rule to evaluate limits of indeterminate forms □/□ or 0/0.	class notes		problem set given in class
Improper Integrals	Use basic techniques and L'Hôpital's Rule to evaluate improper integrals.	7.4	511-520	1-45 odd numbers
Chapter 7 Review Exercises			529-530	1-25 odd numbers, 26

TOPIC	SPECIFIC COMPETENCIES	LEARNING ACTIVITIES		
		Section	Page	Problems
Differential Equations	Verify proposed solutions to differential equations.	9.1	611-618	1-18 odd numbers
	Solve first order separable differential equations.	9.2 12.4	619-624 789-790	1-27, 31, 35 odd numbers 45
Taylor Polynomials	Construct Taylor Polynomials to approximate familiar functions.	11.1	690-700	1-27 odd numbers
Infinite Sequences	Classify sequences as divergent or convergent and evaluate convergent sequences using basic techniques as well as L'Hôpital's Rule.	11.2	701-708	1-43 odd numbers problem set given in class
Infinite Series	Use partial sums and properties of geometric series to identify divergent series and to evaluate convergent series.	11.3	709-720	1-34 odd numbers
Convergence Tests	Use various convergence tests to classify series as divergent or convergent.	11.4	720-730	1-51 odd numbers
Chapter 11 Review Exercises			757	1-32
Chapter 12 Review Exercises			794	23-33 odd numbers

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:**
_____	_____
_____	_____
_____	_____
_____	_____

DAWSON
COLLEGE

Mathematics Department
Calculus II
201-NYB-05 Section 13
Winter 2012

Instructor:	James Requeima
Office:	7B.9
Office Hours:	Office hours are posted beside the door of office 7B.9 and on the website www.obeymath.org
Telephone:	(514) 931-8731 Ext. 1774
E-mail:	jrequeima@dawsoncollege.qc.ca
Website:	http://www.obeymath.org The solutions to the quizzes and tests and any other class materials are posted on the website.
Teacher Accessability:	For out of class communication please see me during my office hours.

Term Work: *(possibly worth 50% of final grade, see Grading Policy)*:

3 Class Tests	worth a total of 40%	on:
	Test 1	**Thursday February 23rd**
	Test 2	**Thursday March 29th**
	Test 3	**Thursday May 3rd**
Quizzes	worth a total of 10%	on: **every Thursday class except during the first and last week of class and on test days**

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 other tests, quizzes and examinations.
- 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 so please do not contact me using MIO.