DAWSON COLLEGE
MATHEMATICS DEPARTMENT

COURSE OUTLINE for CALCULUS I (201-103-DW)

Ponderation: 3-2-3

Prerequisite: Good standing in High School Functions 436, 536 or equivalent

Objectives: This version of Calculus 1 is intended for Social Science and Commerce students. As well as introducing the students to the techniques of Calculus, this course will also illustrate the power of Calculus in solving certain optimization problems in business and economics.

Text: **Applied Calculus for the Managerial, Life and Social Sciences (7th Edition)**
by S. T. Tan. (Thomson Brooks/Cole Publishers)

References: 1. Calculus with Applications (7th edition) by Lial, Greenwell and Ritchey
(Addison Wesley Publishers)
2. Brief Calculus: An Applied Approach (6th Edition)
by Ron Larson and Bruce Edwards (Houghton Mifflin Publishers)

Methodology: Lectures, Problem Solving Sessions and Computer Labs.

Evaluation: A student's grade shall consist of:

1. Term Mark (tests, computer quizzes, assignments)   60%
2. Final Examination   40%

Class tests shall consist of a minimum of 4½ hours of testing time.

Standard of Performance: In order to pass this course the student must obtain a final grade of at least 60%.

Calculators: A calculator without text storage or graphing capabilities is allowed for class tests and the final examination.

Final Examination: The Final examination will be a supervised, comprehensive examination held during the formal examination period. **There are no exemptions.**

Literacy Policy: Problem solving is an essential component of this course. Students are expected to analyze problems stated in words, to present their solutions in a logical and coherent manner and to make conclusions based on the numeric results. Even though the solutions to the problems may be numerically correct, marks will be deducted for work that is inadequate in these respects.

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 be 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 must be turned off and put away. Students who do not observe these rules will be asked to leave the classroom.

Policy on Cheating and Plagiarism

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 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.

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

COURSE CONTENT   [**Note** – **the Self-Check Exercises found in each section are an excellent supplement to the class lectures.**]

Topic Specific Competencies	Learning Activities		

Limits and Continuity (8 classes*)	**Section**	**Pages**	**Exercises**
The Definition of Limit Techniques for Evaluating Limits	2.4	97-110	17-20, 23-68, 73-80
One-sided Limits	2.5	119-20	1-28, 33-38
Continuity	2.5	120-3	39-54, 57-60
The Derivative	2.6	135-40	9-20

Differentiation (15 classes*)	**Section**	**Pages**	**Exercises**
Basic Rules of Differentiation	3.1	160-6	1-36, 41-46, 51-74

	Section	Pages	Exercises
The Product and Quotient Rules	3.2	174-6	1-30, 35-46
General Power Rule	3.3	187-9	1-48, 61-64
Marginal Functions in Economics	3.4	197-203	3-17
Higher Order Derivatives	3.5	212-4	1-28
Implicit Differentiation	3.6	221-4	1-16, 21-22, 25-26, 29-37
Differentials (definition only)	3.7	234	1-14

Applications of Derivatives (14 classes*)	**Section**	**Pages**	**Exercises**
Applications of 1st Deriv. (polyn's)	4.1	248-56	1-8,11-22,35-40,47-50,53-60
Applications of 2nd Deriv. (polyn's)	4.2	267-71	1-8, 17-18, 21-26, 41-46, 49
Curve Sketching (polynomials only)	4.3	290-1	37-44
Optimization I (function given)	4.4	300-5	9-10, 13-26, 35-36, 40, 45-54
Optimization II (function <u>not</u> given)	4.5	315-7	1-10 (and supplementary notes)

Transcendental Functions (5 classes*)	**Section**	**Pages**	**Exercises**
Differentiation of Exponential Fcn.s	5.4	360-3	1-32
Differentiation of Logarithmic Fcn.s	5.5	371-6	1-46
Differentiation of Trigonometric Fcn.s (sine, cosine and tangent only)	12.3	785-9	1-7, 9-11, 13-15, 19-27

Antiderivatives (3 classes*)	**Section**	**Pages**	**Exercises**
Indefinite Integrals	6.1	396-400	9-26, 31-43, 46, 48
Integration by Substitution	6.2	410-2	1-10

* The times indicated are approximate.