UNIVERSITY OF TORONTO
DEPARTMENT OF MATHEMATICS
MAT 235 Y - CALCULUS II
FALL-WINTER 2007-08

1. BRIEF OUTLINE:

This is a second-year Multivariable Calculus course.

An understanding of some linear algebra and analytic geometry as well as the ability to visualize and draw 3-dimensional figures are always very helpful when learning Multivariable Calculus. We will reinforce and develop such relevant foundations during the first part of the course while covering Ch. 10 "Parametric Equations and Polar Coordinates", Ch. 12 "Vectors and the Geometry of Space" and Ch. 13 "Vector Functions".

The second portion of the course is a longer period of about fourteen weeks of classes during which Ch. 14 "Partial Derivatives", Ch. 15 "Multiple Integrals" and Ch. 16 "Vector Calculus" will be covered. This is the most important part of the course because chapters 14, 15 and 16 contain the ideas and materials that are the essence of general Multivariable Calculus. Here we will generalize the fundamental concepts of elementary calculus of single variable functions as well as their most important properties and applications to functions of two and three variables.

Finally, some of the sections of Ch. 17 "Second-Order Differential Equations" will be briefly introduced during the last portion of the course.

In general, definitions, theorems and other relevant results will be stated precisely, mostly without proofs but with indications and analysis of the mathematical ideas involved, stressing geometric notions and their algebraic and analytical counterparts.

Related problems and applications to the Physical and Life Sciences will be discussed during the lectures.

2. TEXTBOOK:

"Multivariable Calculus: Early Transcendentals, Sixth Edition", by James Stewart.

The "Students Solution Manual", by Dan Clegg and Barbara Frank is also recommended.

3. LECTURES:

SECTION	DAY / TIME	ROOM	INSTRUCTOR
L-0101	MWF / 9	SS-2135	Y. Kim
L-0201	MWF / 1	SS-1073	R. Pujol
L-0301	MWF / 2	RW-110	S. Abou-Ward
L-5101	R / 6-9	LM-161	F. Recio

Fall term classes begin on September 10 and end on December 7. Winter term classes begin on January 7 and end on April 11. No classes will be held during Reading Week: February 18-22.

Lectures will closely follow the textbook. Solutions to recommended textbook exercises and problems do not have to be submitted for marking. However, students are responsible for studying the textbook sections as they are covered and for doing all of the recommended textbook exercises and problems as well as any other homework indicated by the instructors. Working with the course material on a daily basis will be essential to secure a better understanding of the lectures and to be prepared for the evaluations.

4. MARKING SCHEME:

The course mark will be computed as follows:

Best five out of six problem sets (3% each):	15%
Three term tests (15% each):	45%
Final examination:	40%
Total:	100%

5. SCHEDULE AND RECOMMENDED EXERCISES:

The following schedule (with suggested homework exercises) is only tentative. Your section may become slightly ahead or behind, and your instructor may prefer a different sequence of topics or a different selection of exercises and problems. Instructors may also include or exclude some minor topics along the course.

September 10 to October 26. Textbook chapters 10, 12 and 13.

Recommended textbook exercises:

10.1: 3, 4, 5, 9, 11, 12, 13, 21, 22, 25, 27, 31, 33 10.2: 5, 7, 11, 15, 19, 25, 29, 31, 43, 48, 51, 58, 65
10.3: 3, 5, 8, 11, 13, 16, 17, 25, 39, 45, 52, 55, 57 10.4: 3, 6, 7, 10, 11, 19, 27, 31, 36, 37, 41
10.5: 5, 14, 15, 19, 26, 27 (sketch graphs only)
12.1: 3, 6, 9, 11, 13, 15, 19, 27, 28, 31, 33, 36, 37 12.2: 3, 4, 6, 7, 11, 15, 20, 21, 25, 26, 28, 31
12.3: 1, 2, 5, 7, 12, 24, 25, 27, 39, 45, 59 12.4: 5, 9, 10, 14, 15, 18, 23, 27, 29, 34, 41, 45
12.5: 1, 3, 5, 7, 11, 12, 16, 19, 20, 23, 26, 27, 30, 31, 35, 38, 39, 47, 53, 55, 57, 59, 65, 67
12.6: 1, 4, 11, 12, 19, , 21-28, 33, 35
12.7: 1, 2, 3, 7, 8, 11, 17, 19, 23, 26, 27, 30, 31-39, 41, 43, 46, 49, 51, 55, 57, 59, 64, 65
13.1: 3, 5, 7, 9, 11, 17, 19-24, 25, 33, 35, 36, 39 13.2: 1, 3, 7, 9, 13, 17, 21, 22, 23, 25, 35, 45, 47,49
13.3: 1, 3, 9, 11, 13, 15, 17, 21, 39, 41 13.4: 3, 7, 9, 13, 15, 21, 23, 25, 27, 31, 39

October 29 to December 7 and January 7 to March 14. Textbook chapters 14, 15 and 16.

Recommended textbook exercises:

14.1: 1, 5, 9, 11, 15, 19, 21, 25, 27, 29, 34, 35, 37, 38, 39, 43, 45, 53-58, 59, 60
14.2: 2, 5, 9, 13, 14, 15, 19, 23, 27, 29, 35, 37, 38, 39
14.3: 3, 9, 17, 19, 21, 25, 29, 31, 35, 37, 41, 43, 46, 47, 51, 53, 57, 67, 69, 71
14.4: 1, 3, 11, 13, 17, 19, 25, 29 14.5: 1, 3, 7, 11, 13, 17, 21, 23, 35, 39, 41, 49, 51
14.6: 1, 5, 7, 9, 11, 15, 19, 25, 27, 33, 35, 41, 43,49, 53, 57, 59
14.7: 1, 3, 9, 11, 13, 17, 27, 28, 37, 41, 45 14.8: 3, 7, 9, 15, 25, 37, 39
15.1: 1, 5, 7, 9 15.2: 3, 5, 11, 12, 15, 17, 19, 21, 25, 27, 29, 33
15.3: 1, 5, 9, 11, 12, 15, 17, 20, 25, 31, 37, 39, 41,42,43, 45, 49, 50, 54, 55, 57
15.4: 1-6, 7, 9, 15, 19, 21, 23, 26, 28, 29, 31, 35, 36 15.5: 1, 3, 5, 7, 11, 13
15.6: 1, 3, 5, 9, 11, 21, 23, 14 15.7: 5, 7, 9, 11, 13, 19, 25, 26, 31, 33, 37, 47
15.8: 1, 3, 4, 5, 6, 7, 11, 13, 15, 17, 19, 21, 23, 25, 27, 33, 35, 39
15.9: 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 22, 23, 24
16.1: 1, 3, 5, 7, 11-18, 21, 23, 25, 29, 30, 31, 32 16.2: 3, 5, 7, 15, 17, 20, 21, 31, 33, 37, 43
16.3: 3, 9, 11, 13, 17, 19, 21, 23, 27 16.4: 1, 3, 7, 9, 13, 15, 17, 19, 21, 22, 23, 27
16.5: 3, 5, 12, 15, 19, 21, 22, 25, 31, 33
16.6: 1, 11, 12-17, 21, 23, 31, 33, 35, 37, 39, 43, 45, 56(a)(c)
16.7: 5, 7, 11, 13, 17, 21, 24, 27, 35, 39, 43 16.8: 1, 3, 5, 7, 11(a), 13, 15, 17, 19
16.9: 1, 3, 5, 7, 9, 13, 15, 19, 21, 24, 25, 29

March 17 to March 28. Textbook chapter 17.

Recommended textbook exercises:

17.1: 3, 9, 11, 13, 17, 19, 21, 23, 25, 27 17.2: 1, 3, 7, 9, 13, 15, 17, 19, 21, 23, 25, 27

March 31 to April 11. Reserve and review.

Notes:

a) Questions from the above lists of recommended textbook exercises will be included in each of the term tests. Such questions will be worth at least 30 % of the whole value of each of these tests.
b) Additional information or changes to this plan will be announced in class by the instructors and posted in this webpage.

6. ABOUT PROBLEM SET #1 AND TERM TEST #1:

Problem Set #1 (PS1) is due on October 4. The questions for PS1 will be posted on September 20.
There will be a designated box in room SS1071 (Math Aid Centre) where the submitted solutions to problem sets should be placed before 6 p.m. on the due date. Late problem sets will not be accepted.
The date and time for Term Test #1 (TT1) is November 1 from 6 p.m. to 8 p.m. Students with timetable conflicts will write the test on the same date from 4 p.m. to 6 p.m. The topics to be covered in TT1 as well as the locations for this test will be announced in class by the instructors during the third week of October and posted in this webpage. No aids will be allowed during any of the tests and no make-ups will be held for any of them. Students missing any test should immediately submit to their instructors the proper documents justifying the absence. The value of a properly justified missed test will be added to the value of the final exam. Special arrangements will be considered for students missing mote than one term test.

7. SOME IMPORTANT DATES:

September 10:	First day of classes.
September 20:	Posting of PS1.
October 4:	PS1 due. Posting of PS2.
October 8:	Thanksgiving Day. No classes.
October 18:	PS2 due.
November 1:	Term test #1.
November 8:	Posting of PS3.
November 22:	PS3 due. Posting of PS4.
December 7:	Last day of classes for the fall term.
January 7:	First day of classes for the winter term.
January 10:	PS4 due.
January 24:	Term test #2.
January 31:	Posting of PS5.
February 14:	PS5 due. Posting of PS6.
February 18 to 22:	Reading week. No classes.
March 6:	PS6 due.
March 20:	Term test #3.
March 21:	Good Friday. No classes.
April 11:	Last day of classes.
April 14 to 18:	Study period.
April 21 to May 9:	Final exams period.

8. TUTORIALS AND ADDITIONAL HELP:

There will be tutorial help available every Wednesday from 11 a.m. to 1 p.m. and every Thursday from 4 p.m. to 6 p.m. These tutorial sessions, which are optional and only for MAT235Y1 students, will run from the second week of classes (first tutorial on September 19) until the last week of classes (last tutorial on April 10). Some additional tutorial sessions will be added during the week preceding each of the term tests. Location for the tutorial sessions as well as any related information will be announced in class by the instructors and posted in this webpage. There are also several drop-in Math Aid Centres which provide tutorial services for any first or second year courses. Some of the available locations are: New College, St. Michael's College, Trinity College, Victoria College, University College, Woodsworth College and Sidney Smith Building. Students can also obtain additional help during the weekly office hours scheduled by each of the instructors.

Note:

If you have a problem of administrative nature, please try to resolve it directly with your instructor before contacting F. Recio (office: NC-064, phone: 978-2438, e-mail: recio@math.utoronto.ca), who is the coordinator for this course.