

MAST 218
Multivariate Calculus I
Fall 2018

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Text: *Multivariable Calculus*, 8th Edition by J. Stewart, Cengage Learning, 2015.

Assignments: Assignments are *very important* as they indicate the level of difficulty of the problems that the students are expected to solve. Therefore, every effort should be made to **do and understand the assignment problems**. The assignments will be corrected and graded.

Web Resources: Many excellent animated illustrations to the text of the book are collected at the site www.stewartcalculus.com, see TEC (Tools for Enriching Calculus) for the edition 6. Regular use of this resource is much recommended.

Calculators: Electronic communication devices (including cell phones) are not allowed in the examination rooms. Only "Faculty Approved Calculators" **SHARP EL-531** or **CASIO FX-300MS** are allowed in the examination rooms during the midterm exam and the final exam.

Test: Midterm exam covering the first six weeks will be given in week 8.

Final Grade: The highest of the following:

- 90% final exam, 10% assignments.
- 30% midterm, 10% assignments, and 60% final exam.

If the grading scheme for this course includes graded assignments, a reasonable and representative subset of each assignment may be graded. Students will not be told in advance which subset of the assigned problems will be marked and should therefore attempt all assigned problems.

Week	Sections	Topics	
1	10.1, 10.2	Parametric equations of curves.	10.1: 8, 16, 24 10.2: 6, 16, 32, 42
2	10.3, 10.4, 10.5	Areas and lengths in polar coordinates. Conic sections.	10.3: 20, 28, 32. 10.4: 12, 26, 30, 48. 10.5: 8, 30, 44.
3	10.6, 12.1	Conic sections in polar coordinates. Three-dimensional coordinate systems.	10.6: 10, 12, 14 12.1: 20, 22, 38
4	12.2, 12.3, 12.4	Vectors. Dot product. Cross product.	12.2: 26 12.3: 22, 24, 42, 56 12.4: 4, 18, 44.
5	12.5, 12.6	Equations of lines and planes. Cylinders and quadric surfaces.	12.5: 10, 20, 22, 34, 38, 74 12.6: 14, 18.
6	13.1, 13.2	Vector functions and space curves. Derivatives and integrals of vector functions.	13.1: 32, 42, 50, 13.2: 24, 26, 36
7	13.3, 13.4	Arc length and curvature of space curve. Velocity and acceleration.	13.3: 4, 6, 24, 30, 13.4: 18a), 23, 24.
8	14.1, 14.2	Functions of several variables, their limits and continuity.	14.1: 18, 30, 48, 14.2: 12, 14, 38
9	14.3, 14.4	Partial derivatives. Tangent planes and linear approximation.	14.3: 50, 76 (d,e,f only). 14.4: 6, 16, 26.
10	14.5, 14.6	Chain rule. Directional derivatives and gradient vector.	14.5: 8, 12, 34, 46 14.6: 6, 32, 46.
11	14.7	Maximum and minimum values.	14.7: 20, 32, 36, 52.
12	14.8	Lagrange multipliers.	14.8: 1, 4, 6, 8, 16, 18, 32, 42;
13		Overview	

Academic Integrity and the Academic Code of Conduct

This course is governed by Concordia University's policies on Academic Integrity and the Academic Code of Conduct as set forth in the Undergraduate Calendar and the Graduate Calendar. Students are expected to familiarize themselves with these policies and conduct themselves accordingly. "Concordia University has several resources available to students to better understand and uphold academic integrity. Concordia's website on academic integrity can be found at the following address, which also includes links to each Faculty and the School of Graduate Studies: concordia.ca/students/academic-integrity." [Undergraduate Calendar, Sec 17.10.2]