

MAST 218 (MATH 264)
Multivariate Calculus I
Winter 2020

- Instructor:** Dr. D. Dryanov, Office: LB 901-16 (SGW), Phone: 514-848-2424, Ext. 3224
Email: dimiter.dryanov@concordia.ca
- Office Hours:** Wednesday, 15:30-17:00, Fridays, 10:30-12:00 in LB 901-16 (SGW).
- Text:** *Multivariable Calculus*, 8th Edition by J. Stewart, Cengage Learning, 2015.
- Prerequisites:** MATH 204 and MATH 205 or equivalent.
- WeBWorK:** Every student will be given access to an online system called **WeBWorK**. Students will use this system to do online assignments (see Assignments below).
- Assignments:** Assignments are *very important* as they indicate the level of difficulty of the problems that students are expected to solve and understand. Therefore, every effort should be made to do and understand them. Students are expected to submit assignments online using WeBWorK. Late assignments will be accepted. Assignments contribute 10% to the final grade. Students are also strongly advised to work on the suggested problems in the table on page 2.
- 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 recommended.
- Use of Computer Algebra System:** It is optional but strongly recommended to install and use Maple. The software can be used to verify and illustrate analytical results you get while doing your assignment problems.

Calculators: Only calculators approved by the Department (with a sticker attached as proof of approval) are permitted for midterms and final examinations. Preferred calculators are **SHARP EL-531** and **CASIO FX-300MS**, available at the Concordia Bookstore (a list of approved calculators can be found at <http://www.concordia.ca/artsci/math-stats.html>).

Tests: One midterm test covering the first six weeks will be given in week 8. **There is no make-up for a missed test.** The final exam is three hours long and covers the entire course.

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	Suggested problems
1	10.1	Parametric equations of curves	10.1: 8, 16, 24
	10.2	Calculus with parametric curves	10.2: 6, 16, 32, 42
2	10.3	Polar coordinates	10.3: 20, 28, 32;
	10.4	Areas and lengths in polar coordinates	10.4: 12, 26, 30, 48.
	10.5	Conic sections	10.5: 8, 30, 44.
3	10.6	Conic sections in polar coordinates.	10.6: 10, 12, 14
	12.1	Three-dimensional coordinate systems	12.1: 20, 22, 38
4	12.2	Vectors	12.2: 26
	12.3	Dot product	12.3: 22, 24, 42, 56
	12.4	Cross product	12.4: 4, 18, 44
5	12.5	Equations of lines and planes	12.5: 10, 20, 22, 34, 38, 74
	12.6	Cylinders and quadric surfaces	12.6: 14, 18
6	13.1	Vector functions and space curves	13.1: 32, 42, 50
	13.2	Derivatives and integrals of vector functions	13.2: 24, 26, 36
7	13.3	Arc length and curvature of space curve	13.3: 4, 6, 24, 30;
	13.4	Velocity and acceleration	13.4: 18 (a), 23, 24
8	14.1	Functions of several variables	14.1: 18, 30, 48
	14.2	Limits and continuity	14.2: 12, 14, 38
9	14.3	Partial derivatives	14.3: 50, 76 (d) (e) (f)
	14.4	Tangent planes and linear approximation	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		Review	

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]