Department of Mathematics & Statistics
Concordia University

MAST 219 (MATH 265)

Multivariate Calculus II

Fall 2020

Preface: **Due to exceptional circumstances, this course will be taught and all assessments will be done completely ONLINE. Given the subject matter and nature of this course, at least one of the exams, including the midterm and/or the final exam will be given online through the Concordia Online Exams (COLE) platform with online proctoring. For more details see the ADDENDUM at the end of this course outline.**

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Prerequisites: MATH 264/MAST 218. If your grade in MATH 264/MAST 218 is less than or equal to D+, it is recommended that you retake the prerequisite before taking this course.

Text: *Multivariable Calculus*, 8th Edition by J. Stewart, (Cengage Learning, © 2016).
The digital version of the textbook will be available at:
https://www.co-opbookstore.ca/service/textbooks/
The print version of the textbook will be available at:
https://www.bkstr.com/concordiastore/home
Note: Students should order textbooks as early as possible, especially for print versions in case books are backordered or there are any shipping delays.

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 not 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. The assignments will be submitted online using **WeBWorK.**

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 8E. Regular use of this resource is highly recommended.

Use of Computer System: It is optional but strongly recommended to install and use Maple. The **Algebra** software can be used to verify and illustrate analytical results you get while doing your assignment problems.

Calculators: Only calculators approved by the Department are permitted in the class test and final examination. The preferred calculators are the **SHARP EL-531** and the **CASIO FX-300MS.** A list of approved calculators can be found at http://www.concordia.ca/artsci/math-stats/services.html#calculators

Tests: One class midterm test covering the first six weeks will be given in week 7. **There is no make up for a missed test.**
The final examination will cover material from the entire course.

Final Grade: The higher of the following:
- 90% final exam, 10% assignments, or
- 30% midterm, 10% assignments, and 60% final.

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.

Plagiarism: Cases of plagiarism (including the assignments, the midterm test and the final exam) will be treated according to the **University policy**. (See below)

Week	Sections	Topics	Suggested Problems
1	15.1	Double integrals over rectangles Fubini's Theorem	p.1039: 4,10,12, 22, 24, 32 ,34 38,39,42,43
2	15.2 15.3	Double integrals over general regions Double integrals in polar coordinates	p.1048:10,16,18,20,28,30,54,56 p.1054: 6, 8,11,14
3	15.3 15.4	Double integrals in polar coordinates (part 2) Applications of double integrals	p.1054: 17, 20, 26, 29, 36,39 p.1065: 6, 8, 16,24,28,30
4	15.5 15.6	Surface area Triple Integrals	p.1068: 4, 6, 8,14,23 p.1077: 2, 6, 12, 16, 20, 22
5	15.7 15.8	Triple integrals in cylindrical and spherical coordinates	p.1083: 8, 19, 20, 24 p.1090: 8, 10, 22, 30, 36, 42
6	15.9	Change of variables in multiple integrals Review: Chapter 15	p.1100: 15, 16,18, 23, 25
7	16.1 16.2	Vector fields. Line integrals **Mid-term exam** (Chapter 15)	p.1113: 4, 6, 23,24,33
8	16.2 16.3	Line integrals (continuation) Fundamental theorem for line integrals	p.1124: 8, 14, 22, 36,39, 40 p.1134: 2, 8, 14, 17, 24

9	16.4 16.5	Green's Theorem; Curl and Divergence	p.1142: 8, 12, 18, 22, 24 p.1149: 6, 10, 12, 16, 21,22,25
10	16.6	Parametric surfaces	p.1160: 4, 6, 14, 20, 23, 26, 33, 35,40, 42, 49
11	16.7	Surface integrals	p.1172: 4, 6, 10, 18, 22, 24, 26, 31,40,49
12	16.8 16.9	Stokes' Theorem; Divergence Theorem	p.1179: 2, 5, 7, 9,14,16,19 p.1185: 4,10,12 ,18,19,24
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].*

Content belonging to instructors shared in online courses, including, but not limited to, online lectures, course notes, and video recordings of classes remain the intellectual property of the faculty member. It may not be distributed, published or broadcast, in whole or in part, without the express permission of the faculty member. Students are also forbidden to use their own means of recording any elements of an online class or lecture without express permission of the instructor. Any unauthorized sharing of course content may constitute a breach of the Academic Code of Conduct and/or the Code of Rights and Responsibilities.

Disclaimer: In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in the course is subject to change.

Addendum: This course will be taught and all assessments will be completely online. A midterm and/or a final online exam will be provided through the Concordia Online Exams (COLE) platform with online proctoring (also known as auto-proctoring). More information about the COLE system may be found at the COLE website.

Please note the following respect to online proctored exams:

- That the exam will take place during the exam period at the designated date and time set by the professor (midterm) or the Exams office (final). All exam times will be set to Eastern Standard/Daylight Time.
- That your image, voice and screen activity will be recorded throughout the duration of the exam.
- That you must show your Concordia University Identification card to validate your identity. Alternative government issued photo identification will be accepted, though it is not recommended. Only identification in English or French will be accepted.
- That any recording made will only be viewed by authorized university personnel (no external entity has authorization to review the recording).
- That you will be responsible for ensuring appropriate, properly functioning technology (webcam, a microphone, appropriate browser and an ability to download any necessary software, as well as a reliable internet connection with a minimum of a 3G connection).

- That you are very **strongly recommended** to enter the virtual test site found at the COLE website and become familiar with the software that will be used for your exam before starting the exam.
- That you will need a quiet place within which to take the exam. Earplugs or noise-cancelling headphones that are not connected to a device may also be used to allow you to focus for the duration of the exam.

Students who are unable to write an exam because they are unable to meet the above conditions and requirements are advised that they will need to drop the course. More information can be provided on the next offering of this course by consulting the Department. Students are advised that the drop deadline (DNE) for this course is September 21, 2020.

Students who require additional accommodations for their exams due to a documented disability should contact the Access Centre for Students with Disabilities as soon as possible (acsdinfo@concordia.ca).

If you face issues during the exam, you should inform your professor of those issues immediately. Please note that there are in-exam supports you should spend time getting to know. Visit the COLE website for more information.