

MATHEMATICS 3003 - WINTER 2021

ADVANCED DIFFERENTIAL CALCULUS

Lectures: Mondays and Wednesdays 18:05-19:35. The lectures will be delivered online via prerecorded video. Links will be posted on Culearn according to the above lecture schedule. You will be able to view the videos anytime after the links have been posted. In addition, lecture notes (pdf files) will be posted on Culearn.

Tutorial: Mondays 19:35-20:25. Prerecorded videos will be posted on Culearn according to this schedule. Videos will mostly show how to solve selected exercises from the text or otherwise, related to the lectures or homework.

Instructor: W. Jaworski, Room 4205HP
Phone: 520-2600-ext. 2127
e-mail: wjaworsk@math.carleton.ca

Office hours: Mondays and Wednesdays, 11am-12pm, or by appointment; via Zoom or phone. Instructions can be found on Culearn.

Text: M.Spivak, *Calculus on Manifolds*, Westview Press, 28th printing, 1998.

Syllabus: Material from Chapters 2-5 of the text will be covered. The idea of the course is to explain how the classical theorems of vector calculus: Green's Theorem, Divergence Theorem, and Stokes's Theorem, can be viewed, and proven, as special cases of a general theorem of Stokes about integration of differential of forms on manifolds in \mathbb{R}^n .

Prerequisites: MATH 3001 or permission of the School. Solid command of the material of Math 3001 and Math 2000 is expected.

<i>Grading scheme:</i> Term Assignments	85%
Take Home Exam (another assignment)	15%

There will be no formally scheduled Final Examination.

Homework: Homework will be assigned weekly on Wednesdays. It will be due on Wednesdays by midnight, 7 days later. You will have to upload pdf files of your completed assignments, by their due dates, into Culearn.

Recording of academic activities and use of course materials: Please note that unauthorized student recording of classroom or other academic activities (including advising sessions or office hours) is prohibited. Unauthorized recording is unethical and may also be a violation of University policy. Students requesting the use of assistive technology as an accommodation should contact the Paul Menton Centre. Unauthorized use of classroom recordings - including distributing or posting them - is also prohibited. Under the University's Copyright Policy, faculty own the copyright to instructional materials - including those resources created specifically for the purposes of instruction, such as lectures slides, lecture notes, and presentations. Students cannot copy, reproduce, display, or distribute these materials or otherwise circulate these materials without the instructor's written permission. Students who engage in unauthorized recording, unauthorized use of a recording, or unauthorized distribution of instructional materials will be referred to the appropriate University office for follow-up.

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