MATH 317 (Winter 2021), Honors Advanced Calculus, II

Instructor
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Office hours
By appointment only and via Google Meet.

Course content
1. local properties of $C^1$-functions, the Implicit Function Theorem, Lagrange Multipliers;
2. the Change of Variables Theorem (with proof);
3. integration along curves and over surfaces, the classical integration theorem by Green, Stokes, and Gauß;
4. integrations of differential forms and Stokes’ Theorem for differential forms;
5. infinite series, improper integrals;
6. pointwise convergence, uniform convergence, power series, Fourier series.

Texts
There is no required text, but

3. James S. Muldowney, Advanced Calculus Lectures Notes for MATH 217–317, Part II,
   https://cloudfront.ualberta.ca/-/media/science/departments/math/undergrad-resources/lecture-notes/math317.pdf,

are recommended.

The course will based on Chapters 5 to 9 of
I will continue revising these notes as we are progressing through the course. In particular, there will be a new chapter (on Stokes’ Theorem for differential forms).

Grading

The mark will be based on (approximately) weekly homework assignments (30%), a midterm on February 26 (20%), and a final (50%). A total mark of 50% will yield a letter grade of D or better, and a total mark of 90% will yield a grade of A (or better). Prior to both the midterm and the final, a practice midterm/final will be made available. If the midterm is missed for a valid reason according to the calendar, its weight will be transferred to the final; if the final is missed for a valid reason according to the calendar, a deferred exam will be given at a time and place to be announced. The homework assignments, solutions to them, to the practice exams, and to the actual exams will be made available through e-class and the course webpage at

https://sites.ualberta.ca/~vrunde/math317.html.

As in MATH 217, there will be one bonus problem on each assignment, and of the n best assignments given only the n − 1 best ones will count towards your grade. As last year, all exams will be given on the dates announced in a take home format over a 24 hour period on the dates announced. Again, you will be allowed to use the online course notes, but nothing else. All your solutions must be submitted via Assign2.

Statements required by calendar

- Policy about course outlines can be found in §23.4(2) of the University Calendar.

- The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.governance.ualberta.ca) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

- Audio or video recording of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Recorded material is to be used
solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the instructor.

**Particular issues arising through remote delivery of instruction**

It should be clear that the stands regarding academic honesty are not invalidated by the fact that we are in the midst of a global pandemic. I do not consider networking on the homework as cheating—in fact, I encourage it. However, I expect you to do the exams on your own at the times announced. You are required to be alone in your room and not to interact with anybody else during the examination periods. You are allowed to use the online course notes, but you are not allowed to access the internet during those examinations (*Please!!!*, stay away from the website **chegg.com**: it got a lot of students into trouble last winter, and they are also—to put it politely—incompetent.)

All forms of dishonesty are unacceptable at the University. Any offence will be reported to the Associate Dean of Science who will determine the disciplinary action to be taken. Cheating, plagiarism and misrepresentation of facts are serious offences. Anyone who engages in these practices will receive at minimum a grade of zero for the exam or paper in question and no opportunity will be given to replace the grade or redistribute the weights. As well, in the Faculty of Science, the sanction for cheating on any examination will include a disciplinary failing grade (*no exceptions!!!*), and senior students should expect a period of suspension or expulsion from the University of Alberta.