Instructor: Benoit Charbonneau
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Office: MC 4035 [until October X]
       MC 5090 [after October X]

Prereq: (AMATH 231 [Calculus 4] or MATH 247 [Calculus 3 Advanced Level]) and MATH 235 or 245 [Linear Algebra 2]

Course Website: Learn.

Class schedule: Monday–Wednesday–Friday, 8:30–9:20, in PHY 313.


Textbook: The required textbook for this course is


The book is available on the library website as a pdf. You can also purchase a paperback copy at the University Book Store for $65.95 (if they replenish their inventory) or on Amazon.ca for $52.34.

Additional references

- John Lee, Introduction to Smooth Manifolds (available online through the library)
- Michael Spivak, A Comprehensive Introduction to Differential Geometry; Volume 1 (on reserve)
- Frank Warner, Foundations of Differentiable Manifolds and Lie Groups (on reserve)

Assignments: On most weeks, there will be a homework assignment. Before seeking help, make an honest effort to solve each problem on your own. If you received help from fellow students, you must write down the names of those students on the first page of your handwritten assignment. This acknowledgment will not affect your assignment grade.

At times you may be tempted to blindly copy someone else’s assignment solutions without any attempt to understand the material. Don’t do it, for this is an act of academic offence!

Submitting your assignments late is not an option.

Midterm exams: The midterm exam will occur during class time on Friday October 17th.

There will be no opportunity for a make-up midterm test. A student who misses the midterm test without a valid, acceptable excuse (accompanied by documented proof, such as a medical note) will receive a score of zero on the test. Students who miss the midterm for valid reasons will have their midterm grade computed according to the formula

\[
(\text{midterm class mean}) + \frac{(\text{final exam student grade}) - (\text{final exam class mean})}{(\text{final exam class standard deviation})}(\text{midterm class standard deviation}).
\]

Marking Scheme: Let \( n \) be your number of missed assignments, \( A \) be your grade (out of 1) on the assignments, \( M \) be your grade (out of 1) on the midterm, and \( F \) be your grade (out of 1) on the final. Your grade \( A \) on the
assignments will be computed using the best \( m - 1 \) out of \( m \) assignments. Then your final grade \( G \) will be initially computed as

\[
g_1 := \frac{2}{10} A + \frac{2}{10} M + \frac{6}{10} F.
\]

Under special circumstances, you are eligible for the “forgiving scheme”. Your final grade will be

\[
g := \begin{cases} 
\max(g_1, F), & \text{if } A, F > \frac{1}{2} \text{ and } n \leq 2, \\
g_1, & \text{otherwise.}
\end{cases}
\]

**Academic Integrity:** In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.

**Academic Integrity Office (UW):** A resource for students and instructors

**Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Students who decide to file a grievance should refer to University of Waterloo Policy 70 (Student Petitions and Grievances). When in doubt please be certain to contact the department’s administrative assistant who will provide further assistance.

**Discipline:** A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about “rules” for group work/collaboration should seek guidance from the course professor, academic advisor, or the Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under the University of Waterloo Policy 71 (Student Discipline). For typical penalties check the Guidelines for the Assessment of Penalties.

**Grievance:** A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. For students who decide to file a grievance, students should refer to University of Waterloo Policy 70 (Student Petitions and Grievances).

**Appeals:** A decision made or penalty imposed under Policy 70, Student Petitions and Grievances (other than a petition) or Policy 71, Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals).

**Note for students with disabilities:** The AccessAbility Services (AS) Office, located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AS Office at the beginning of each academic term.