**MATHEMATICS 226 Section 101**

**ADVANCED CALCULUS I**

**Prerequisite:** Either (a) a score of 68% or higher in MATH 121 or (b) a score of 80% or higher in one of MATH 101, MATH 103, MATH 105, SCIE 001.
**Corequisite:** One of MATH 152, MATH 221, MATH 223.

**INSTRUCTOR:**


- Mike Bennett, email : bennett@math.ubc.ca
- Math building room 222A
- Phone : 822-2251
- http://www.math.ubc.ca/~bennett/

- office hours: Monday 1-2, Thursday 10-12 (Zoom)

**TEXT:**

**Robert A. Adams and Christopher Essex, Calculus: A complete course**. Pearson, 9th edition.

**OTHER REFERENCES:**

**James Stewart, Multivariable Calculus**, (sixth edition). Brooks Cole, 2007.
I will post all handouts, problem sets, etc. on the web at
http://www.math.ubc.ca/∼bennett/math226/

**TOPICS:**

1. Brief Introduction to Vectors (§10.1–10.4): vectors in $\mathbb{R}^2$ and $\mathbb{R}^3$, inner product, cross product, lines and planes.
2. Differentiation (§12.1–12.3, §12.5–12.8, §12.4, §12.9): limits, partial derivatives, tangent planes, chain rule, gradient, directional derivatives, implicit functions, higher order derivatives, equality of mixed partials, Taylor's theorem.
3. Maxima and Minima (§13.1–13.3): local and absolute extrema, classification of critical points, Lagrange multipliers.
4. Integration (§14.1–14.6): double integrals, iteration, improper integrals, polar coordinates, triple integrals, cylindrical and spherical coordinates.

**GRADING:**

- There will be two midterms (tentatively scheduled for Wednesday, October 5 and Wednesday, November 2) accounting for about 40% of the final mark.
- There will be bi-weekly problem sets accounting for about 10% of the final mark.
- The final exam will account for about 50% of the final mark.
- Grades **will** probably **be scaled**.

**Schedule of Problem Sets and Midterms**

| | Mon | Wed | Fri |
|---|---|---|---|
| Sept | 5<br>no class | 7 | 9 |
| | 12 | 14<br>Problem Set I | 16 |
| | 19 | 21 | 23 |
| | 26 | 28<br>Problem Set II | 30<br>no class |
| Oct | 3 | 5<br>Midterm I | 7 |
| | 10<br>no class | 12 | 14 |
| | 17 | 19<br>Problem Set III | 21 |
| | 24 | 26 | 28 |
| | 31 | 2<br>Midterm II | 4 |
| Nov | 7 | 9<br>no class | 11<br>no class |
| | 14 | 16 | 18 |
| | 21 | 23<br>Problem Set IV | 25 |
| | 28 | 30 | 2<br>Problem Set V |