MATH 217: Multivariable and Vector Calculus - Fall 2017

Textbook *Multivariable Calculus* by J. Stewart, any edition. The current edition of the textbook is the 8th edition. Older editions of the textbook are fine, though please be aware that there are slight content differences, the section numbering varies slightly, and the exercises are different

Syllabus The course will cover Chapters 12 (Vectors and the Geometry of Space), 13 (Vector Functions), 14 (Partial Derivatives), 15 (Multiple Integrals), 16 (Vector Calculus) of the textbook. See next page for more details.

Exams and Grades

WeBWorK - Online Homework	10%
Quizzes	15%
Midterm	25%
Final Exam	50%

- WeBWorK online homework will be assigned weekly. There will be no extensions.
- The quiz and midterm dates are posted on the course website.
- There will be a common 2.5 hour final exam in the December examination period.

Course Policies

- Grades may be scaled if necessary, to ensure fairness.
- Missing a homework, quiz, or midterm normally results in a mark of 0. Exceptions may be granted in two cases: prior consent of the instructor or a medical emergency. In the latter case, the instructor must be notified within 48 hours of a missed midterm or homework, and presented with a physician's note within 7 days. Failure to comply with these time limits will result in a mark of 0. A physician's note should specifically state that the student was medically unfit to write the missed midterm on that day. Absence of this exact information will result in a mark of 0.

  If a student misses a midterm for a legitimate, well documented reason, then a makeup midterm may be scheduled, or, the remaining midterm and the final exam may be given more weight in the grading scheme for that student. There will be no makeup quizzes, and no makeup homework or homework extensions. If a student misses a homework with a valid reason, that assignment will be dropped.
- No books, notes, formula sheets, calculators or other electronic devices are permitted for use during the midterms or final exam.
- Students must bring their UBC ID to all exams.

Drop-in help for Math 217: In addition to the office hours of your instructor, please take advantage of the free DROP-IN HELP for Math 217 at the Math Learning Centre (MLC): http://www.math.ubc.ca/~MLC/

Topics

1. Vectors and the Geometry of Space ($\sim$ 1.5 weeks)

Section	Description
12.1	Three-dimensional coordinate systems
12.2	Vectors
12.3	The dot product
12.4	The cross product
12.5	Equations of lines and planes
12.6	Cylinders and quadric surfaces

2. Vector functions ($\sim$ 1 week)

Section	Description
13.1	Vector functions and space curves
13.2	Derivatives and integrals of vector functions
13.3	Arc length and curvature
13.4	Motion in space:velocity and acceleration

3. Partial Derivatives ($\sim$ 3 weeks)

Section	Description
14.1	Functions of several variables
14.2	Limits and continuity
14.3	Partial derivatives
14.4	Tangent planes and linear approximations
14.5	The chain rule
14.6	Directional derivatives and the gradient vector
14.7	Maximum and minimum values
14.8	Lagrange multipliers

4. Multiple Integrals ($\sim$ 3 weeks)

Section	Description
15.1	Double integrals over rectangles
15.2	Double integrals over general regions
15.2	Double integrals in polar coordinates
15.4	Applications of double integrals
15.5	Surface area
15.6	Triple integrals
15.7	Triple integrals in cylindrical coordinates
15.8	Triple integrals in spherical coordinates
15.9	Change of variables in multiple integrals

5. Vector Calculus ($\sim$ 3.5 weeks)

Section	Description
16.1	Vector fields
16.2	Line integrals
16.3	The fundamental theorem for line integrals
16.4	Green's Theorem
16.5	Curl and divergence
16.6	Parametric surfaces and their areas
16.7	Surface integrals
16.8	Stokes' Theorem
16.9	The Divergence Theorem
16.10	Summary