

Credit value: 3

Instructors:

Section 101: Dr. G. Slade, MATX 1211, 604-822-3781, slade@math.ubc.ca.

Section 102: Dr. A. Fraser, MATX 1226, 604-822-2785, afraser@math.ubc.ca.

Office hours: See course webpage.

Course webpage: <http://www.math.ubc.ca/~slade/math320/320-web-19.html>

Text: Walter Rudin, “Principles of Mathematical Analysis” 3rd edition, McGraw Hill, 1976.

Solutions manual is here: <http://digital.library.wisc.edu/1793/67009>.

Other references:

Tom M. Apostol, “Mathematical Analysis”

Maxwell Rosenlicht, “Introduction to Analysis”

Arthur Mattuck, “Introduction to Analysis”

Kenneth Ross, “Elementary Analysis: The Theory of Calculus”

William F. Trench, “Introduction to real analysis” http://ramanujan.math.trinity.edu/wtrench/texts/TRENCH_REAL_ANALYSIS.PDF.

Topics: The course will be based primarily on topics from the first five chapters of Rudin:

1. Number Systems (Chapter 1): ordered fields; rational, real and complex numbers; Archimedean property; supremum, infimum, completeness.
2. Metric Spaces (Chapter 2): metric spaces; convergence, completeness, completion; open sets, closed sets, compact sets, Heine Borel Theorem; connected sets.
3. Sequences and Series of Real Numbers (Chapter 3): limits of sequences; algebra of limits; Bolzano–Weierstrass Theorem; Cauchy sequences, liminf, limsup; limits of series, convergence tests, absolute and conditional convergence; power series.
4. Continuity (Chapter 4): functions, cardinality; continuity; continuity and compactness, existence of minimizers and maximizers, uniform continuity; continuity and connectedness, Intermediate Value Theorem; monotone functions and discontinuities.
5. Differentiation (Chapter 5): differentiation; Mean Value Theorem; L’Hôpital’s Rule; Taylor’s Theorem.

Evaluation: There will be homework assignments, two tests, and a final exam.

Homework: Nine assignments will be given and marked for credit. Assignments are due at the beginning of class on the due date. *No late assignments will be accepted.* The assignment schedule is as follows:

<u>Assignment given</u>	<u>Assignment due</u>
September 6	September 13
September 13	September 20
September 20	September 27
September 27	October 4
October 11	October 18
October 18	October 25
October 25	November 1
November 1	November 8
November 15	November 22

Tests: There will be two 50-minute tests held during the regularly scheduled class hours on the following dates:

Wednesday, October 9, Wednesday, November 13.

Final exam: There will be a final examination during the December examination period.

Final mark: The final mark will be calculated (subject to possible scaling) as follows:

Homework: 10% (best 8 assignment marks)

Tests: 20% each

Final exam: 50%

Prerequisites: Either (a) a score of 68% or higher in MATH 226 or (b) one of MATH 200, MATH 217, MATH 226, MATH 253, MATH 263, and a score of 80% or higher in MATH 220.

Course policies: The midterms and final exam are closed book: no calculators, formula sheets, or other aids are permitted.

Missing a test without a valid reason results in a mark of zero. Missing a test for a valid reason normally results in the weight of that midterm being transferred to the final exam. Examples of valid reasons include illness and travel to play a scheduled game for a varsity team. Examples of reasons that are not valid include conflicts with personal travel schedules or conflicts with work schedules. Any student who misses a test is to present to their instructor the Department of Mathematics self-declaration form for reporting a missed assessment within 72 hours of the midterm date. The form is here: http://www.math.ubc.ca/~slade/Academic_Concessions_Self_Declaration_2019.pdf. This policy conforms with the UBC Vancouver Senate's Academic Concession Policy V-135 and students are advised to read this policy carefully: <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,329,0,0>.

University policies: UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available on the UBC Senate website <https://senate.ubc.ca/policies-resources-support-student-success>.

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