Math 320 **Real Analysis I** **September 2013**

Mon Wed Fri, 9:00 – 10:00, Buchanan A102

Instructor: D. Brydges,
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Office hours: TBA

Course webpage: http://www.math.ubc.ca/~db5d/math320/assignments.html.

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.

Text: Walter Rudin, Principles of Mathematical Analysis, third edition.

Other References: Tom M. Apostol, Mathematical Analysis; Robert G. Bartle, The Elements of Real Analysis; Murray Protter and Charles Morrey, A First Course in Real Analysis.

Topics:

- Number Systems (§1): ordered fields, rational, real and complex numbers, Archimedian property, supremum, infimum, completeness
- Sequences and Series of Real Numbers (§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
- Metric Spaces (§2): metric spaces, convergence, completeness, completion, open sets, closed sets, compact sets, Heine Borel Theorem, connected sets
- Continuity (§4): functions, cardinality, continuity, continuity and compactness, existence of minimizers and maximizers, uniform continuity, continuity and connectedness, Intermediate Value Theorem, monotone functions and discontinuities
- Differentiation (§5): differentiation, Mean Value Theorem, L'Hôpital's Rule, Taylor's Theorem

Homework: Weekly assignments will be posted on the class webpage and marked for credit. Assignments are due at the beginning of class on the due dates specified on the class website. No late assignments will be accepted.

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

Friday, **Oct 11**, Friday, **Nov 15**.

Missing a test normally results in a mark of zero. 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 two working days of the missed test, and presented with a doctor's note immediately upon the student's return to UBC. When an exception is granted for a missed test, there is no make-up test, and the final exam mark will be used.

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

Final mark: The final mark will be calculated as follows:

Homework: 10%
Tests: 20% each
Final exam: 50%

Updated July 2, 2013.