Mathematics 3700H – Metric geometry and topology
Trent University, Fall 2014 *[In Peterborough!]*

Instructor

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Fall hours: Tuesday 12:00-12:50, Wednesday, Thursday, and
    Friday 11:00-11:50, or by appointment, or just drop by!
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Department of Mathematics

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Prerequisite

MATH 2200H with 60% or higher.

Text

Metric Spaces: Iteration and Application, by Victor Bryant.
Cambridge University Press, 1985, ISBN 0-521-31897-1.

Meetings

Lectures: Tuesday 09:00-09:50 in BL 402, Friday 09:00-09:50 in GCS 345, and Friday 13:00-13:50 in ECC 207.
Seminars: Friday 10:00-10:50 in ECC 207.

Marking Scheme

There will be at least six assignments and a take-home final examination. The assignments will normally be due every other Friday, and the final examination will be distributed on Tuesday, 18 November, and will be due on Wednesday, 17 December. The final mark will be calculated as follows:

Best 5 assignments (5 @ 13% ea.)	65%
Final examination	35%

Assignments will not normally be accepted after the due date. Students who cannot submit work on time for reasons beyond their control should contact the instructor as soon as possible. Note that work worth at least 25% of the course will be marked and returned by the final date (Tuesday, 4 November, 2014) to withdraw from Fall term half-courses without academic penalty.

This scheme may be modified for students in *exceptional* circumstances. Any such modification will require the agreement of both the student and the instructor.

Content & Outcomes

Upon successful completion of this course, a student should be able to:

1. understand the concept of a metric on a space, and be able to write proofs that a function is a metric;
2. understand the notions of a continuous function on a metric space;
3. understand the notions of a topology on a space, particularly one generated by a metric;

4. understand the notions of completeness, compactness and connectedness, and be able to read and write basic proofs concerning these concepts;
5. be familiar with abstract spaces such as product spaces and function spaces, and the properties of metrics on these spaces; and
6. understand the contraction mapping theorem and selected applications.

Please see the handout *Readings & Schedule* for a tentative week-by-week schedule.

The text takes an uncommon approach to the subject, centred on sequences, especially those generated by some iterative process. From time to time the instructor will indicate what the more conventional definitions and approaches are, and these may be developed here and there on the assignments.

Academic Integrity

Academic dishonesty, which includes plagiarism and cheating, is an extremely serious academic offence and carries penalties varying from a 0 grade on an assignment to expulsion from the University. Definitions, penalties, and procedures for dealing with plagiarism and cheating are set out in Trent University's Academic Integrity Policy. You have a responsibility to educate yourself – unfamiliarity with the policy is not an excuse. You are strongly encouraged to visit Trent's Academic Integrity website to learn more – `www.trentu.ca/academicintegrity`

For clarity, the following guidelines will apply in MATH 3700H:

You are permitted and encouraged to work together and ask anyone willing (especially the instructor!) for explanations, hints, and suggestions on the assignments, and to consult whatever sources you wish, with the exception that **you may not consult anyone who has taken a similar course recently or their work**. However, **all work submitted for credit must be written up entirely by you, giving due credit to all relevant sources of help and information**. The restrictions for the take-home final exam will be spelled out on the exam. Except as noted on particular assignment questions, and with the restrictions noted above, you may use whatever aids you wish.

Access to Instruction

It is Trent University's intent to create an inclusive learning environment. If a student has a disability and/or health consideration and feels that he/she may need accommodations to succeed in this course, the student should contact the Student Accessibility Services Office (SAS), Blackburn Hall Suite 132, 705 748-1281, `accessibilityser-vices@trentu.ca`*. For Trent University in Oshawa Student Accessibility Services Office contact 905 435-5102, ext. 5024. Complete text can be found under Access to Instruction in the Academic Calendar.*

Web Page

This course will make little, if any, use of Blackboard. Information about the course and all handouts to date will be posted to: `euclid.trentu.ca/math/sb/3700H/`

Last modified 2014.09.04.