

University of Toronto Scarborough
COURSE INFORMATION
MATB43 – Introduction to Analysis

Course homepage:

<http://www.math.toronto.edu/lgoldmak/B43W13/>

Instructor: Leo Goldmakher (I prefer to be called by my first name)

Office: IC 497

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Office hours: Tuesdays & Thursdays 2:30–4:00; additional office hours by appointment.

Lectures: Tuesdays 10:10–11:00 & Thursdays 9:10–11:00 in IC 220

Textbook: A. N. Kolmogorov and S. V. Fomin, *Introductory Real Analysis*, translated by R. Silverman, Dover edition.

Syllabus: **Set theory** (cardinals and ordinals, ordered sets, the Cantor-Bernstein-Schröder theorem, the axiom of choice and equivalent statements), **sequences and series** (limits, the Monotone Convergence theorem, the Bolzano-Weierstrass theorem, limsup and liminf, Cauchy's criterion, tests for convergence / divergence of series), **metric spaces** (point-set topology, the Cantor set, completeness, Baire's theorem, contractions and fixed points), and **topological spaces** (axioms of separation, homeomorphisms, compactness, the Heine-Borel theorem). Time-permitting, we may also discuss Fourier analysis, linear operators, and differential equations.

Marking scheme:

Your mark will be calculated based on several components:

1. Problem sets – 40%

These are to be turned in within the first five minutes of your tutorial; late assignments will not be accepted under any circumstances. Your lowest score will be dropped before calculating the contribution to your final mark. Please note that numerical answers alone will not be given any credit, whether or not they are correct; you *must* show work to receive credit. Further note that *the marking scheme for the assignments is determined by your TA*. This means that questions about homework marks should be addressed to your TA, rather than to me.

2. Midterm test – 20%
3. Final exam – 30%
4. Quizzes – 10%

Quizzes will take place during your tutorial. You will be asked to state and prove a theorem covered in the reading or lecture (announced ahead of time).

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TUTORIALS

Tutorials will begin on Monday, January 14th. You must be enrolled in a tutorial to take this course. Moreover, homework and quizzes cannot be handed in except during your own tutorial.

COMPUTER POLICY

Computers and phones are not to be used at any time in the lecture room, as this is distracting both for you and for your fellow students. If you have something you need to do urgently on your computer or phone, take it outside the classroom and do it there.

TEAM WORK AND PLAGIARISM:

The problem sets in this course will be challenging, and I encourage you to work together on them. However, each student must work out and write up their final solutions individually and independently. Moreover, please **write up your problems sets in physical isolation**.

Although the internet is a great resource, I urge you to use it wisely. In particular, I ask you not to search for the problems appearing on the assignments. **Looking up definitions is OK, looking up (or asking about) problems is not.**

When using ideas which are not your own, please indicate your source. You will *not* be penalized for collaborating with another student unless:

- (1) your work is identical to that appearing elsewhere (again, write up HW in isolation!); or
- (2) you explicitly use an idea without attributing the source.

Both (1) and (2) may have serious consequences. See

<http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize>

for further information.

MISSED MIDTERM TEST:

Students who miss the midterm test for reasons entirely beyond their control may, within one week of the missed test, submit the instructor a written request for special consideration explaining the reason for missing the test, and attaching appropriate certification, such as medical certificate or a College Registrar's note. A student whose explanation is accepted will have their final exam weighted 10% more, and their quizzes 10% more, than the weights indicated above.

The academic regulations of the University are outlined in the Code of Behavior on Academic Matters which can be found at

<http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>