Mathematics 3001: Real Analysis II (Convergence of Series and Sequences) – Fall 2005

Slots: 03
Classrooms: Lecture HH-3017, Lab HH-3026
Time: Lecture MWF 10:00 - 10:50 pm, Lab T 13:00 - 13:50
Instructor: Dr. Margo Kondratieva
Email: mkondra@math.mun.ca
Office: HH-3008
Phone: 737-8074
web page: http://www.math.mun.ca/ mkondra

Prerequisite:

The prerequisites are Math-2001(Real Analysis-I).

Getting Help:

There are few ways of getting help. First, I'll have **office hours from 11:00am-12:00 on Monday and Wednesday**, so feel free to come to them. If you need to speak to me outside of those times please make an appointment. If you have a quick question or remark send me an e-mail. This also can be done via the new discussion board on my web page.

Marking Scheme:

There will be an assignment almost every week which I'll usually hand out on Wed. They'll usually be due a week later on Wed in class or assignment box before 4pm. Late assignments will not be accepted. The **assignments** will be worth *only* **10**% of your final mark, *but doing them is extremely important for your understanding and success in the course!*

There will also be **one term test** tentatively on Fri. **October 28**. The test will be worth **30**% of your final mark.

The **final exam** will cover the entire course. It will be worth **60**% of your final mark.
Note: If you miss an assignment or term test for an acceptable reason, write me a note explaining the circumstances and I'll shift the weighting for the missed work to the final exam. Such notes should be submitted within a week of the missed event.

Missing the final exam is a much more serious matter. It can be deferred if you have three exams all scheduled within a 24 hour period, or if you suffer bereavement or serious medical problems. Deferrals must be officially applied for using forms that you can obtain from the General Office (HH-3003).

Calculators:

Graphing calculators such as the TI81,82,83,84,85,86 are allowed during tests and the final exam. However, calculators that can do symbolic manipulations such as the TI89, TI92, or HP48G are not allowed. If you use your calculator to store notes or formulas, you must delete this material before the start of any test, or exam. Bringing electronic notes into an exam is the equivalent of bringing in a cheat sheet, and will be dealt with in the same way (see MUN calendar).

Text and Course Outline:

The official text is <u>Elements of real analysis</u> by H.S. Haskill and P.P. Narayanaswami. You are advised to read an appropriate section before starting doing your homework assignment.

We'll cover the following material, which is organized into four units (the class schedule is tentative and may vary):

Unit 1	Number sequences and application.	book ref	class
1.1	Convergence. Monotonicity. Cauchy criterion	3.3	Sept 7
1.2	Subsequences. Limit superior and inferior	3.4	Sept 9
1.3	The *sequence* of upper/lower Darboux sums	5.2	Sept 12
1.4	Definition of the Riemann integral on a finite interval	5.2	Sept 14,16
Unit 2	**Number Series**	book ref	class
2.1	Convergence of a series	6.1	Sept 19
2.2	Series of non-negative terms	6.2	Sept 21
2.3	Absolute convergence	6.3	Sept 23
2.4	Conditional convergence. Rearrangements	6.3	Sept 26
2.5	Multiplication of series	6.4	Sept 28,30
Unit 3	**Sequences of Functions**	book ref	class
3.1	Pointwise convergence	7.1	Oct 3, 5
3.2	Uniform convergence	7.2	Oct 7, 12
3.3	Sequences of continuous functions	7.3	Oct 14
3.4	Sequences of integrable functions	7.3	Oct 17
3.5	Sequence of derivatives	7.3	Oct 19
	Review for test		Oct 26
	Midterm test		Oct 28
Unit 4	**Series of Functions**	book ref	class
4.1	Pointwise and uniform convergence	8.1	Nov 2
4.2	Weierstrass's M-test	8.1	Nov 4
4.3	Abel's test	8.1	Nov 7
4.4	Dirichlet's test	8.1	Nov 9
4.5	Series of continuous/integrable functions	8.1	Nov 11
4.6	Series of derivatives	8.1	Nov 14
4.7	Power series	8.2	Nov 16, 18
4.8	Taylor series. Real analytic functions	8.3	Nov 21,23
4.9	Weierstrass's approximation theorem	8.4	Nov 25, 28
4.10	Fouries series	Notes	Nov 30, Dec 2
	Review for final- will be scheduled before exam		
	Final exams		Dec. 7-16