Pure Math 450/650, Winter 2012

COURSE OUTLINE

Lecturer Information

NAME:	Nico Spronk		
OFFICE:	MC 5078	OFFICE HOURS:	M 11am-noon, W 3:30-5pm
TELEPHONE:	519-888-4567 X35559	E-MAIL:	nspronk@uwaterloo.ca
URL:	http://www.math.uwaterloo.ca/∼nspronk/math450/math450.html		
	(or Google Nico Spronk, hit PMath 450/650 on my website)		

Grade Distribution

Homework assignments	=	20%
Midterm exam	=	30%
Final exam	=	50%

Homeworks assignments will be given out on a weekly/fortnightly basis.

Syllabus

Measure and Integration (about 5 weeks)

- Riemann integration
- Lebesgue measure on the real line
- measurable sets, Borel sets
- measurable functions, Lebesgue integration
- Monotone and Lebesgue Dominated Convergence Theorems
- L^p-spaces

Midterm exam

Fourier Analysis (about 5 weeks)

- periodic functions and Fourier series
- convolutions
- Dirichlet kernel, Banach-Steinhaus Theorem: failure of convergence of Fourier series
- Fejer kernel: success of convergence of Cesaro means of Fourier series
- spaces of Fourier coefficients, Riemann-Lebesgue Lemma
- localization, pointwise convergence
- Gibb's phenomenon

Hilbert Spaces (about 2 weeks)

- orthonormal bases, Parseval's Formula
- Hilbertian Fourier analysis
- the Fourier algebra

Final Exam

Text

Real Analysis, A.M. Bruckner, J.B. Bruckner and B.S. Thomson, Prentice Hall, 1997. (See course website for ordering information.)

You will be responsible only for material covered in the lectures here and for some material from Pure Math 351; thus the book is not mandatory.

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.

[Check `www.uwaterloo.ca/academicintegrity/` for more information.]

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4,
`http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm`.
When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing academic offenses and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the undergraduate associate dean. For information on categories of offenses and types of penalties, students should refer to Policy 71, Student Discipline,
`http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm`.
For typical penalties check Guidelines for the Assessment of Penalties,
`http://www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm`.

Appeals: A decision made or penalty imposed under Policy 70, Student Petitions and Grievances (other than a petition) or Policy 71, Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72, Student Appeals,
`http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm`.

Note for students with disabilities: The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.