MATH 4130 SYLLABUS 2010

Note: some of the information in this document has not yet been finalized.

General information Your instructor is Dr. R. Vale, Malott Hall room 583. Email at rvale@math.cornell.edu. The TA is Tianyi Zheng, tzheng@math.cornell.edu. The class meets Tuesday and Thursday 0840-0955 in MT (that means Malott Hall) room 203. The webpage is accessible from the Cornell Mathematics Department website and is located at:

http://www.math.cornell.edu/∼rvale/math4130.html

Textbook: Robert Strichartz, The Way of Analysis (revised edition), Jones and Bartlett, 2000 (ISBN: 0-7637-1497-6)

Lecture plan We may not follow this plan exactly but it gives a rough idea of what will be taught when.

- Week 1: Revision; proof techniques; cardinality.
- Week 2: Chapter 1 of textbook.
- Week 3-4: Construction and basic algebraic properties of the real numbers.
- Week 5: Metric properties of $\mathbb{R}$.
- Week 6: Continuous functions.
- Week 7-8: Definition and basic properties of the derivative.
- (Spring Break)
- Week 9: Intermediate Value Theorem; Mean Value Theorem; Rolle's Theorem.
- Week 10: Inverse Function Theroem; Taylor's Theorem.
- Week 11-12: The Riemann Integral.
- Week 13-14: Sequences and series of functions; power series.

Coursework There will be a weekly homework assignment due on Thursday in class. To earn full credit, your reasoning must be correct and your proofs presented in a clear and

rigorous manner. No homework will be due in the first week. *Homework which is late for any reason will not be accepted.* If you think you will not be able to submit the homework in time for some reason, please see one of us in advance.

Exams and grading There was a prelim in class before Spring Break. There will be a take-home prelim towards the end of the course. The course grade will be weighted roughly as follows

- Homework 40 %
- Prelim 1 10 %
- Prelim 2 10 %
- Final 40 %

There may also be occasional quizzes during class. Active participation in class will be taken into account when determining your final grade, but note that you will not be penalized if you sit there silently and choose not to participate!

Academic integrity You are encouraged to discuss the theory and problems from the course with your classmates. However, directly copying from other students is not allowed. You are obliged to abide by the Code of Academic Integrity.

Help and feedback I encourage you to approach me or the TA if anything is unclear. Questions affecting a sizeable part of the class will be discussed in the lecture. I will welcome any feedback you have about my teaching or any concerns about the course. If there is anything that you feel can be improved (eg. the lecturer is standing in front of the blackboard and it is hard to take notes) it is much better to discuss it during the course than to wait until the end!