Information on the Midterm

The midterm in MATH 490 is on Friday, March 25 in class.

For the midterm, you should review and be able to do all your homework problems, including computations in p-adic arithmetic. You should be able to give examples with short proofs of concepts like 'a null sequence' or 'a sequence converging to 3 in the 5-adic norm' or determining if a rational number is or is not a p-adic integer. You should be able to write the canonical p-adic expansions of numbers.

The exam will cover material up through Theorem 1.39 (Hensel's Lemma) and its consequences (Theorems 1.42 and 1.43). You need to know the basic definitions by heart, as well as the statements of Proposition 1.10 (Equivalent norms), Theorem 1.30 (canonical p-adic expansion), Proposition 1.36 (criterion for being a unit in $\mathbb{Z}_p$), Proposition 1.37, Theorem 1.38 ($r \in \mathbb{Q} \subset \mathbb{Q}_p \iff r$ had canonical p-adic expansion which is eventually periodic to the left), and Theorem 1.39 (Hensel's Lemma).

The exam will be one hour in length, and you may have a grace period of ten minutes if needed. The goal is to test that you have understood the basics of the p-adic numbers and the analysis of p-adic norms.