Syllabus for Number Systems: Math 330, Section 2 Spring 2011

Professor: Diane Vavrichek

Email: vavrichek@math.binghamton.edu
Course website: www.math.binghamton.edu/vavrichek/math330.html
Office: 2239 Library North
Office hours: MW 10:40-11:40, Th 11:30-12:30, or by appointment

Coarse meetings: MWF 9:40-10:40 in RC 203, Th 10:05-11:30 in FA 244

Course description: "Careful discussion of the real numbers, the rational numbers and the integers, including a thorough study of induction and recursion. Countable and uncountable sets. The methodology of mathematics: basic logic, the use of quantifiers, equivalence relations, sets and functions. Methods of proof in mathematics. Training in how to discover and write proofs." (University Bulletin)

Text: *The Art of Proof: Basic Training for Deeper Mathematics*, by Matthias Beck and Ross Geoghegan.

Grading policy: Your grade in this course will be based as follows on the midterm and final exams, as well as your "in-class" work (homework assignments, quizzes, participation, etc.):

Midterm: 30%
Final exam: 35%
In-class work: 35%

However, attendance is required, so you may be penalized for excessive absences.

Exam dates:

Midterm: Wednesday, March 16, in class
Final exam: TBA

All students enrolled must plan to take exams at their scheduled times. Travel plans will *not* be considered an excuse to take an examination on a different date.

Prerequisite: Calculus II (Math 222). It is highly recommended, however, that you not take this course unless you earned a grade of "C" or better in Math 222.

In-class work policies: The in-class component of your grade will be based on quizzes, homework and so on.

Quizzes will usually be announced, but we may also have some "pop" quizzes. Except in very extreme cases, there will be no make-up quizzes.

The homework policy in this course will be rather unorthodox, since this is a course in which you will learn how to discover and write mathematical proofs—skills that take much practice to acquire. You will be assigned homework problems during class, and I *strongly* encourage you to do all or most of each assignment before the next class. However, correctness is even more important that promptness. During the beginning of the semester, you will receive full credit for any homework problem you turn in that is *completely correct*, within two weeks of the date it was assigned. In order to assure that your answer is completely correct, you may turn in your attempts to me as many times as you would like, without penalty, during those two weeks. (I will read your argument, and if I come to an incorrect statement then I will underline the statement, stop reading and return your argument to you.)

In my experience, it often takes students at least four or five tries to get a proof completely correct, so waiting until the last minute on assignments is *not* a good idea! Remember, *there will be no partial credit* on proofs, even if you have much of a proof correct!

In order to be counted as correct, a proof must be written in clear, correct English.

As the semester progresses, the homework grading policy may evolve. (For example, your final grade on a homework problem may begin to depend on the number of attempts you make.) I will of course announce any change in policy ahead of time in class.

Because proof-writing can be tough to get the "hang" of, I especially encourage you to take advantage of my office hours. You are welcome to drop by to discuss your progress on homework problems or course material in general.

Absences: If you have any reason to think that an illness might affect your ability to take an exam, you must inform me (by email or in person) prior to the exam. If an unanticipated emergency arises immediately before an exam that affects your ability to take the exam, then you must either send me an email prior to the exam informing me of your situation, or you must alert me to the situation as soon after the exam as possible and present a record of hospital admittance or police contact.

Academic Honesty: All students are expected to adhere to the Student Academic Honesty Code. In particular, no form of cheating will be tolerated. I would like to be particularly explicit about the issue of copying, either from books or from your peers.

Because this course is so focused on learning the process of doing math, you will probably never have reason to refer to any books for this class, other than the course text. (If you think you do have a reason, come see me–together we can probably improve your math study skills.) Copying or adapting proofs from

books or any other source is not allowed on homework problems.

At some points in the course, you will be encouraged to discuss homework problems with each other and sketch out preliminary versions of proofs together. However, *you must write your final proofs to hand in separately.* In particular, you may not use another student's final work as a "model", and you may not allow other students to study your final work. Copying of homework will result in penalties for both the copier and the copied.

If you have any questions regarding what is acceptable, please ask me.

Miscellaneous: Cell phone usage during class or exam time is not permitted.