

## Paul Smith, U Washington

### How to succeed.

You want a good grade and I want to give you a good grade. I will do that if you demonstrate a reasonable degree of mastery of the material in this course. Conversely, lack of mastery will result in a poor grade. The tests I give will make it apparent how much mastery you have of the material in this course. I post some old tests and practice problems on this website so you will know the sorts of questions that will be asked. I want you to know what I want you to know.

Learning math requires more than reading books, or re-reading the notes you take in class; that is necessary of course, but not sufficient. You learn math by solving problems, doing exercises, both those I assign, and others that you find in other books. You will not master the material in this course if you do only the homework problems that I assign. This is a truth, a fact. Solving problems is the only way to learn mathematics. So, do hundreds during the ten weeks of this course. Yes, hundreds. I know your time is precious and that there are many demands on it. *But that does not change the fact that to master 3 hours of lecture material you probably need to do at least twenty problems; not twenty variations on the same problem, but twenty different problems.*

You also need to be absolutely honest with yourself, uncovering your own weaknesses and seeking help when you need to. There is no shame in struggling or making mistakes. I failed my first course on abstract algebra because I was afraid to say "I don't understand" and ask for help---I took a group theory course my first year at university and was 3 or 4 years younger than everyone else in the class, all of whom had already spent at least one year at university, and I just assumed they all knew much more than me and that they would think I was very thick if I asked a question! Now I know better---I was probably as smart as anyone in the class, just more afraid than others to admit I was lost. I hope you are better than me at asking for help. I am happy to give it.

It might be helpful for you to study with others. Check each others' solutions to problems, talk about the theorems and results. I cannot over-emphasize the need for you to uncover your own weaknesses and misunderstandings. Our powers of self-delusion are enormous and those self-delusions run in one direction: we believe we are smarter and more capable than we are.

Those who fail this course do so primarily because they think they know more than they do, not because they are intellectually deficient. Mistakes are part and parcel of learning mathematics. The more mistakes you make during the quarter, the fewer you will make on tests, provided you either discover them yourself or allow me to find them for you, and having uncovered them you must then address them. (I will get great satisfaction from helping you uncover your misunderstandings and pointing you in the right direction.) Think of this as a test of character that may serve you well in other parts of your life.