

Mathematical Methodology, Spring 1997Organizational matters.

- You will be treated as grown-ups, i.e. it is your responsibility to check that you understand what is going on in class. If I use a word you don't recognize or a sentence you cannot attach a meaning to, it is your duty to ask for clarification. If I go too fast, it is your duty to slow me down.
- During the semester I shall not check your progress. If I give homework, I give you tasks of which I believe that working on them is very instructive for you. Since first-class students can learn a lot from each other, I urge you to try to do the homework in little groups.
- At the end of the semester there is an oral examination for each of you, the principle being that, after having followed my thoughts for a full semester, you are entitled to two hours of my undivided attention.
- Once a grade has been given, there is no arguing about it. For those that

wonder whether this should make them uncomfortable, it might help to know that I now operate that way for more than 30 years and can remember only one or two conflicts.

- Handouts, if any, will lie on the corner of the table nearest to the entrance of the seminar room. Please take one.
- I will not use the overhead projector.

Matters of Substance

I intend to present mathematics not as the "abstract science of space, number, and quantity" (C.O.D.) but as the art and science of effective reasoning. (This view is not new, for it had its champions in the 19th century; it is not universally adopted either, as was shown recently by the anonymous referee who wrote "simplicity is not a scientific concern".)

I expect to cover roughly 3 areas.

- (i) the structure of the highly effective argument without avoidable complications

- (ii) the design, with a minimum of detours, of such crisp arguments
- (iii) the adequate presentation of such arguments.

I shall not try to turn all of you in a single semester into brilliant, expert mathematicians, but what I can probably achieve is showing most of you how to become mathematically much more effective, because the other courses in mathematics may teach you mathematics, but rarely teach you how not to waste your time. I hope to achieve more, but even if you only learn to avoid the most common complications of arguments, the most common pitfalls in design and the most common forms of obscurity in presentation, the semester will be worth the trouble.

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