

Academic Orientation for Fall Semester Freshman Lecture Courses

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What follows is what an entering freshman should hear about the academic side of university life [in mathematics (and the sciences)]. It is distilled from what I've learned and written concerning the need for academic orientation.

The underlying premise, whose truth is very easy to demonstrate, is that most students who are admitted to a university like JHU were being taught in high school well below their level. The intent here is to reduce the time it takes for the student to appreciate this and to help him or her adjust to the demands of working up to level in the college environment.

1. **You are no longer in high school.** The great majority of you, not having done so already, will have to discard high school notions of teaching and learning, and replace them by university-level notions. This may be difficult, but it must happen sooner or later, so sooner is better. Our goal is for more than just getting you to reproduce what was told to you in the classroom.
2. Expect to have material covered at *two to three* times the pace of high school. Above that, we aim for greater command of the material, esp. the ability to apply what you have learned to new situations (when relevant).
3. Lecture time is at a premium, so must be used efficiently. You cannot be "taught" everything in the classroom. **It is your responsibility to learn the material.** Most of this learning must take place **outside** the classroom. It is reasonable to put in two hours outside the classroom for each hour of class.
4. The instructor's job is primarily to provide a framework, with *some* of the particulars, to guide you in doing your learning of the concepts and methods that comprise the material of the course. It is not to "program" you with isolated facts and problem types, nor to monitor your progress.
5. You are expected to read the textbook for comprehension. It gives the detailed account of the material of the course. It also contains many examples of problems worked out, and these should be used to supplement those you see in the lecture. The textbook is not a novel, so the reading must often be slow-going and careful. However, there is the clear advantage that you can read it at your own pace. Use pencil and paper to work through the material, and to fill in omitted steps.
6. As for *when* you engage the textbook, you have the following dichotomy:
 - a) [*recommended for most students*] Read, for the first time, the appropriate section(s) of the book *before* the material is presented in lecture. That is, come prepared for class. Then, the faster-paced college-style lecture will make more sense.
 - b) If you haven't looked at the book beforehand, try to pick up what you can from the lecture. Though the lecture may seem hard to follow (cf. #2), absorb the general idea and/or take thorough notes, hoping to sort it out later, while studying from the book outside of class.
7. It is the student's responsibility to communicate clearly in writing up solutions of the questions and problems in homework and exams. The rules of language still apply in mathematics, and apply even when symbols are used in formulas, equations, etc. Exams will consist largely of fresh problems that fall within the material that is being tested.

[A version of the above appears in the August 1996 issue of the Notices of the American Mathematical Society, as an appendix to an article of mine on education. I doubt there is a junior or senior in good standing at Hopkins who would find fault with the above seven items. On the other hand, most entering students would probably find them startling.]