Course Evaluation: Math 115, Brian Munson

No student has reason to expect such a commitment from a teacher. Consider: Brian stayed long after class on Wednesdays—sometimes more than an hour—to answer student queries. Only at the end of the quarter did I realize that Brian had no official office hours on that day. But even though his official hours were well-attended, and even though he knew that we who stayed late on Wednesday could have shown up at those hours, he regularly made time for us on Wednesday. Not less importantly, his explanations at office hours (official or not) were invariably patient and lucid. He was not content to let a matter drop until it was plain that we understood it.

Crediting Brian's efforts outside of class is not to scant his performance during class. He took questions, showed us how each day's labor connected to the textbook, and (most of the time) took the detailed proofs at a reasonable pace. It's easy for students to fall silent in a math class, refusing to acknowledge their confusion even when the professor asks whether they're having problems. With that in mind, Brian did the class a service by urging them to talk back to him, to interrupt him, even to be combative. The result was a rarity: a class in which the students were relatively open about their confusion, in which they had comparatively few qualms about interrupting Brian to demand repetition or more detailed explanation.

Brian began the term at a very elementary level, with an introduction to proof strategies, and followed it with a careful explanation of the Peano Axioms. He already seems well acquainted with what I take to be an important truth about undergraduate math instruction: the professors who teach at a slow pace are the ones who get their students to master the most material. Indeed, I'm stunned to see that, starting from nothing (from basic instruction in proof strategies and then the Peano Axioms) we covered so much of the text.

But this is scarcely all. Brian's syllabus, importantly, is reasonably detailed, and it was nicely complemented by his even more detailed class web site. Problem sets and exams were turned around quickly, while they were still fresh in our minds. The answer keys that Brian wrote to the problem sets were easy to understand. And when a topic seemed especially puzzling or in need of more discussion than the textbook provided—as, for example, the convergence of p-series—Brian would write an extended treatment of it and post the treatment on his web site.

Finally, the textbook seems to be wisely chosen. I cannot compare it to other real analysis textbooks, but I can say that it was a pleasure. It has the hallmarks of a good math textbook: slow exposition at the start, meaningful answers in the back, clear indication of relatively important and unimportant points, explicit references to supporting theorems and lemmas from previous chapters, a clean and readily understandable layout, and an index that, despite its brevity, isn't useless. To boot, "this is left as an exercise for the reader"—that shameful and ubiquitous crutch—is happily absent from the book.

All of that said, the class is not yet perfect. Our march through the underpinnings of differentiation and integration was too speedy. I am not sure, though, of how to rectify this. On the one hand, the class's success does not hinge upon covering all of the material that we've covered, and indeed, I might have preferred a slightly slower pace throughout. Brian describes this class as a study of "the theory behind calculus" or "how calculus works," but it need not be that in order to be useful. (For my own studies, which are in the social sciences, the material on sequences and series is more useful. Indeed, if the department were to offer a real analysis class geared toward the social sciences, with the lion's share of attention devoted to sequences and series, I am sure that it would win a following. So long as it was properly marketed: call it "Real Analysis for Social Science," "Real Analysis for Economists," or somesuch.)

In lieu of detailed answer keys, a greater proportion of the assigned problems should be odd-numbered. Indeed, the odd-numbered problems should probably be more frequently assigned (proportionately speaking) even if detailed answer keys are always forthcoming. It's true that doing the homework is indispensable in this class, but that says too little: it's also true that looking at correct and good answers to problems we've just worked on is equally indispensable. One obvious alternative to assigning odd-numbered problems is to post problem set solutions soon after the problem sets are due (e.g., within a couple of days). But this seems like an unnecessary extra burden.

A final note: it was easy to tell which answer keys were written by Brian and which were written by the TA. The TA's weren't terrible, but Brian's were uniformly more intelligible. The difference was starkest with the hardest questions. Whether the TA's answers were harder to parse because he wasn't attending class, or for some other reason, I can't say. Either way, this is worth bearing in mind: had all answer keys been written by the TA, the class would have been worse.

But these criticisms and caveats are warts on the face of virtue. Math 115 is a triumph, and Brian is one of the finest math teachers that I've ever had.