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Interdisciplinary courses are becoming more common in STEM fields as mathematics moves from catering more to service departments to other subjects. To understand the nature of interdisciplinary STEM courses, we conducted an ethnographic case study on two sections of bio-calculus courses. After over 200 hours of participant observation, which we supplemented by interviews with instructors and students, we found that the practice of precision teaching can be used to assess students' prior knowledge before class, which allowed instructors to focus the instructional periods on the students' weak points. This focus along with group activities after lectures led to students gaining a deeper, richer understanding and connection between mathematics and biology. (Received September 21, 2010)