

Opinion

Lab courses at MIT; junior year is too late for enthusiasm. People are turned off from a discipline if it is presented in a dry, textbook style. Science is *real*; its about time we teach it that way.

Physics, chemistry, biology are first and foremost *empirical* sciences; they are experimental first, and theoretical second. Or rather, it is impossible to separate the theory from the experiment. Shame that the first year has no laboratory component; there should be a freshman lab component that would bring reality to the theoretical work.

My understanding of Maxwell's equations comes from my physics class. I *felt* Faraday's law when I actually built and ran the electromagnetic motor. I did not know the mathematical forms of Maxwell's equations, but I felt that I *understood* them! Now that I know div, grad, curl, and all that, I feel the true mathematical beauty and power of Maxwell's equations. But divorced from the experimental underpinnings, it seems only as a mere mathematical curiosity. I have to think back to my experience with Applebaum's high school class about actually *feeling* the laws!

This should not be happening at a place like MIT, whose motto is *mind* and *hands*. What happened to the hands part? There are steps being taken, such as the interactive media learning, take home experiments in 8.01X, and the proposed plan to have an interactive physics room, but these have not gone far enough. Media technology is *never* a replacement for real physical experiments; it can only be a very powerful supplement. Lets get the *hands* part of our motto into our freshman curriculum!