Re: Math 217

From: Mark Feldman

October 31, 20LL 1:48 AM

To: Johnson, Jay

Cc: Donald Getty; Chair, Math Und. Committee

Subject: Math 217

Dear Jay,

I'm concerned about some of the students in Math 217. Hopefully, if I let you know what the problems are and give you some general information about what I'm trying to do in the course, you can pass this on to the engineering advisors.

On the first test, I gave three written problems. Two of these were directly from the MIT homework with solutions online. The first could probably be done by any good student, even if they didn't do the HW. That is not so for the second. ft would be easy for any student who did it (and any student should have been able to do it), but, probably, quite difficult for any student who didn't do it. have attached a

graph of the distribution on this problem. you will- see that the distribution is extremely bimodal with about half of the class getting an A for the problem (70 got 100?), and, about a third making less than or equal to 30% (most of those making less than 30%). What concerns me even more than the performance of the lower third is that (a) almost all the students turned in this HW problem for fuI1 credit, which is supposed to mean that it 1s their own work, no matter where they got their understanding. (I tell them to consider the MIT solutions as a friend when necessary. ); (b) one of my graders was distraught when he observed that about half the students were following the spirit of the

instructions, but another half wasn't. This seems to be in fine with what I saw on the test.

I quite commonly put HW problems on the first exam in order to encourage them to do all the work in the course. This strategy almost always works well - getting students to apply themselves diligently - but it initially did not seem to be working with this class. After the first exam, I even told t.hem that if they improve on the next three tests, I will discount the first test in the final grade. Even this did not

seem to work for many students. After the second test, I did a quick and dirty study to see how students who do their HW perform on the test. Without boring you with the details, those who seem to be doing the HW had a median of an A- on the second test, and those who appear not to be doing the HW had a median of D-. Similar, though not as extreme, correlations seem to apply for those who attend class versus those who don’t.

Now, for the good news. in order to encourage some of the students to apply themselves more diligently, I have told them that f will replace the lowest of the first two test scores with the average of the final- two scores - if it is higher. I then let the class know that my TA (who is outstanding) would be reviewing the first half of the material. The response seems to be excellent. About 100 students showed up to the review section. In the past, only about 10 have showed up for his reviews and help sessions, and he usually doesn't get anyone during his office hours. Also, more students seem to be coming to class regularly.

I made this course the way it is, and decided to encourage the students to apply themselves diligently, after seeing in a report. from the Dean of Engineering that the engineering students here have the capability to be as good as those at MIT. (I recall that the average Math SAT was 740.) I am doing everything I can to make this material as accessible as possible to them, and to give them the background to become outstanding engineers. I'm sure you will be pleased with the final results

Finally, I would like to reassure you that almost all the students are learning the basics. If I assign grades in what seems to be the customary manner here the students will do well-. For example, with the customary grading on the customary problems (the first multiple choice exam), 60% would have A's and over 80% A's and B's, and about 6% below C. Given that I don't allow calculators or "cheat sheets", I'm quite pleased with how they are doing on the basics. But I'm much more pleased that they will be well- prepared for their engineering courses and that most will have , in addition, the conceptual tools that they will need to be outstanding engineers.

Thanks,

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