# LETTERS

## DEAR EDITOR

Thanks so much for the intelligent (and strategic) review of "Reclaiming the Ivory Tower: Organizing Adjuncts to Change Higher Education" in the *2006 Thought and Action*. I must tell you that it was published not by Johns Hopkins Press, but by Monthly Review Press (in collaboration with the North American Alliance for Fair Employment, as the review notes). The error might make it harder for people to get the book, so I would greatly appreciate a correction being printed. Also, publication dates was 2005, not 2006. I have no idea how the other incorrect information crept into the otherwise totally accurate review.

*Joe T. Berry*
*Chicago, Illinois*

## DEAR EDITOR

I found "Common Errors in Calculating Final Grades" by Richard W. Francis (*Thought and Action*, Vol. 11, Fall 2006) interesting and useful. I utilized it in assigning grades last fall. However, the article doesn't mention how to handle the case in which some students have no grade for a particular assignment or test, as would happen if a student were absent for a test and did not take a make-up, or simply didn't turn in a particular homework assignment.

My question is whether there is any biasing effect that results from simply assigning zero as a grade in such cases. Further, is there any other procedure that would avoid such potential bias?

*Fernand Brunschwig*
*Master of Arts in Teaching Program*
*Empire State College, New York*

## DEAR EDITOR

Richard Francis's math is impressive, but I'm not sure about his understanding of what a final grade represents. He argues that if A has outperformed J 100 to 10 on a 100-point midterm, but J has outperformed A 200 to 155 on a 200-point final, simply adding the points, which gives A a higher grade, is unfair because the final was supposed to have greater weight. He thus recommends converting all test results to "T-scores" in order to undo the inequity. But I don't see any inequity in the case at all. If the midterm really covered 100 points worth of material, and the final covered 200 points worth of material, then A indeed answered correctly 255 points worth of material as opposed to J's mere 210 points.

On the other hand, if Francis means the 100-point and 200-point designations merely to indicate the double-weighting of the final, then A can still claim to have outperformed J in the following way: On the final, he stayed close to J, trailing J's performance by only 45 points, whereas on the midterm he blew J away by 90 points. Though the students were closely matched on the final, the midterm (it turns out) was the assignment that separated the wheat from the chaff.

The situation is similar to the Olympic decathlon. Two competitors might match each other athletically through nine events, but then, on the javelin, say, one far outperforms the other. It will turn out, then, that the javelin score is what determines the two competitors' final medal position. There's no reason, however, to say that the javelin was somehow weighted any differently; in another Olympics, it might turn out to be the discus that separates the two.

Similarly, A did no more than keep it close when racing J in the final exam, but that was all he needed to do to outperform J on the final course grade, having blown J away on the midterm.

In effect, Francis is undoing A's excellent performance on what was apparently a very difficult midterm by shrinking the distance by which A outdid J. Maybe this error should be added to Francis's own list?

*Jonathan R. Cohen*
*Associate Professor of Philosophy*
*University of Maine at Farmington*

## DEAR EDITOR

I am instituting a proposal through our Academic Senate that addresses many of the issues raised by Richard W. Francis.

The current grading system based on letter grades that is used by many universities (including my own: California State University, Fresno) is grossly unfair, and extremely inaccurate. I am proposing that the grade reporting from our faculty to the Registrar be revised from the traditional letter grade (A, B, C, D, F) to a percentage from 0 to 100 percent representing the percentage of performance in the class. This would correct serious issues of excessive reward to some student for grades that were not earned and gross unfairness to others where they are penalized by awarding them 25 percent less credit for a 1 percent difference in achievement. A percentage of performance grading system is essentially universally understood, and can be easily converted to any other grading system with no loss of accuracy.

Some examples and illustrations:

Under the current system:

A student who earns credit for 80 percent of the available content in a course and receives a grade of B is awarded 3.00 by the registrar. A student who earns credit for 79 percent of the available content in a course and receives a grade of "C" is awarded 2.00 by the registrar. This is a 25 percent difference in credit for a 1 percent difference in performance. This is an unconscionable penalty and is grossly unfair! The only justification for the continued use of the current system is that it is simple!

A student who earns credit for 100 percent of the available content in a course and receives a grade of A is awarded 4.00 by the registrar. A student who earns credit for 90 percent of the available content in a course also receives a grade of A and is awarded 4.00 by the registrar. This rewards the lower performer with a 10 percent credit that he or she did not earn. This is also patently unfair to the higher performer.

These large interval letter grades are then used as the basis for reporting grades based on a 4.0 system and the resulting grade point average is used for many very important administrative and academic decisions. In addition, grade point averages are reported to many significant digits such as 3.6225 which would imply a high degree of accuracy, and yet those numbers are based on very broad intervals for letter grades resulting in highly inaccurate grade reports. Students who move to another institution with a different grading system cannot recover any lost credit, while unearned and erroneously awarded credit will be carried forward.

Under the proposed system:

Grades are reported as a percent of the maximum level of achievement. This allows for the accurate reporting of small differences in performance, and provides a very high level of precision. Grades can be calculated to one or even two decimal places if desired. (This could be useful in extremely large classes where it is desirable to differentiate between levels of achievement with the highest level of precision.)

Grades for individual classes would be recorded on the transcript as a percentage of maximum credit. A student's overall grade point should be expressed as a percent. The overall grade point would be weighted in the same manner as is used in the calculation under the 4.0 system. That is the percent credit for each class is multiplied by the credit hours for that course. The total of all those products would be divided by the total number of credit hours attempted. The result is an overall percent score for all courses, and could then be transformed into an overall 4.00 grade point if necessary.

When transferring to another institution or pursuing an advanced degree, grades would be converted to the new grading system on a class-by-class basis so there would be complete accuracy in the conversion with no gain or loss in applied credit. This would apply for the traditional A, B, C system as well as the A+, A, A-, B+, B, B- system. It would also apply easily to a 3.0 system, as well as a 5.0 system.

A suggested method of scoring for many courses would be to award points for each activity and then calculate an overall percentage of points earned compared to the maximum points available for that student. This would likely address all of the issues discussed in the article by professor emeritus Francis. nea

*James M. Henson, Professor*
*Information Systems and Decision Sciences*
*California State University, Fresno*

## DEAR EDITOR

Richard W. Francis gives a useful warning about the unexpected effects of combining scores on tests whose score ranges are both broad and narrow, because the broad-ranged test variation can swamp the narrow-ranged test variation.

However, I think he overlooks the possibility that a test with a broad range of scores should indeed have more weight. I know that sometimes I (unintentionally, of course) write a test that fails to discriminate well between weak and strong students. The range of scores will consequently be narrow, but not because the test validly indicates the students all learned nearly as well. I incline to think that often

enough it is desirable to let a test with a wide range of scores carry greater weight in the final grade.

*Thomas Zaslavsky*
*Professor of Mathematics*
*Binghamton University (SUNY) Binghamton, N.Y.*

## DEAR EDITOR

There was a great article on grading in the newest issue. The only problem was that in the final table the author assigned grades to the data and did not explain how he did this. I have done the calculations, understand the concept, but now need to understand how to get to the grade. For example, the data on the first line of Table 2 results in a combined and weighted T-score of 44.95 but the author lists the final T-score of 67.57. The T-scores that I calculated result in the same final ranking; it's just that they are off by about 40 points.

*Dan Becque*
*Dept. of Kinesiology*
*Southern Illinois University Carbondale*

## DEAR EDITOR

Mr. Francis' topic was thought provoking. Fairness to student ranking is important, and I would like to apply the approach to my courses. I tried to duplicate the calculations in the article, but failed to get the same results as article. Hopefully, Mr. Francis may be able to see the error in my calculations.

*Mark Grooms*
*Fullerton College*
*Fullerton, CA*

## RICHARD FRANCIS REPLIES:

In regard to Fernand Brunschwig's question about the effect of a student not taking a test, the biasing effect is there if you grade each assignment or test: A, B, C, D, or F. With T-Scores, the biasing is removed. In my article (page 16) I mentioned that in a class of 68 students, one student moved 32 ranks. That student did not take one test and would have had a rank of 35 if graded A, B, C, etc. However, using T-Scores his/her rank was 63, using total points, the rank was 67, and using percent the rank was 65.

Giving a zero for a missed assignment or test is appropriate.

Jonathan Cohen suggests the interesting analogy of an Olympic decathlon. In a decathlon, the event scores are converted to a type of standard score so they can be combined with other events. Similarly, the two tests in my article are on different measurement scales because the standard deviations are not equal. They must

be converted to standard scores in the same manner as IQ Scores, SAT Scores, GRE Scores, and other such tests.

Just as it would not make sense to combine the raw scores in the 10 events of the Olympic decathlon, it also does not make sense to combine raw scores from different metrics for students grades-even if we have done this for years.

James Henson's percent correct method of grading is a big improvement over letter grading, but there are still two mathematical errors and one measurement error that I described as the "Average Speed Error" (page 16), the Weight Problem (pages 17) and the Mars Climate Orbiter Miscalculation (page 19) in my article. If the instructor develops numerical grades for each assignment and converts each assignment to T-Scores, then the total T-Score is an accurate grade.

With respect to Thomas Zaslavsky's comment, in measurement, we are trying to separate and identify student abilities. On the other hand, we have to be able to combine grading assignments that have differing variabilities. When the standard deviations of assignments differ, they are on different measurement scales. T-Scores, therefore, are the best solution for this mathematical and measurement problem.

Finally, I'd like to apologize to Dan Beck and Mark Grooms for the confusion I created. I should have used .33 and .67 as multipliers of the T-Scores. Since there only two tests and the second test was worth twice as much the first, I used 1 and 2 as the multipliers. nea