

Curving Exam Grades Dr. McGahagan - Jan. 2007

Unless otherwise announced in class, I will curve all grades on major exams (not on quizzes or other assignments) in classes with an enrollment of 30 or more by a two-step procedure:

1. I will convert all grades to a percentage of an index score. The index score will be chosen by me; I will regard the top five scores as guidelines, but I reserve the right to choose a higher score than the top score as the index. Most commonly I will choose a lower score than the top score as the index, but this is NOT guaranteed. If you receive 75 points on the exam and the index is 90, your curved score will be $(75 / 90) = 83.33$ percent.

2. If the first step does not result in what I regard as a satisfactory overall curve (median score less than 70, but with the median paper of C quality in my judgement), I will adjust the scores so that the median takes on a specified value. Most commonly, I will try to ensure that the median falls into the C range. I will typically choose 70 if the actual median grade seems to me of only marginally C quality, and 75 if the actual median grade is of solid C quality.

The procedure I will follow in this second step is based on one suggested by the Amherst College Information Technology department (<http://www.amherst.edu/it/software/excel/excel-grading/excel-grades/>), using a piecewise linear approximation to their nonlinear grading curve. First, the difference between the desired median (say 75) and the actual median (say 65) is computed. Then, the points added to each score are computed. The points added to the actual median would be given by the difference between the actual and desired median ($75 - 65 = 10$ in the example). The number of points added to other grades will decline with their distance from the median -- zero points will be added to grades of zero and zero points will be added grades of 100 or above. [Note that given the curving procedure in step 1, it is possible to get scores higher than 100].

The exact formula, and an example with the above numbers, will be:

$$\text{Diff} = \text{curved median} - \text{actual median} = 75 - 65 = 10$$

$$\text{Points added if score below the median} = (X / \text{Actual Median}) * \text{Diff}$$

For example, with a score of 40, you would find that

$$\text{points added} = (40 / 65) * 10 = 6.15, \text{ so that the curved score would be } 46.15.$$

$$\text{Points added if score above the median} = \text{Diff} (1.0 - Z) \text{ where the adjustment}$$

$$\text{factor } Z = (X - \text{Actual Median}) / (100 - \text{Actual Median})$$

With an initial score of 75, we would have $Z = 10 / 35$, so $1 - Z = 25/35$, and the number of points added would be $(25/35) * \text{Diff} = 250/35 = 7.14$, for a curved score of 82.14.

Given that grades curved with this procedure are doubly curved, I will be strict in interpreting the language of the syllabus which specifies 65 as the passing line for curved grades. I will return papers with scores of between 60 and 65 marked as D/F to indicate a borderline status, and to encourage just the bit of extra effort needed to pass. However, a final average of under 65 will be considered failing rather than as a D-minus.