

## Linear Grade Curving

In a perfect world, all class grades would have an even distribution of a normal curve. Statistically this bell curve is an ideal benchmark that is practically unachievable; however, given scenarios of unexpected errors in some grading events, it becomes necessary to use this benchmark in order for more accurate data to be balanced.

The process of accurately curving grades to this benchmark requires a lot of mitigating calculations, and while possible, is often extremely confusing to those who don't understand all the mathematical work behind it. Some grading systems have integrated curving calculators, and others (such as Microsoft Excel), can be set up to run the calculations by list.

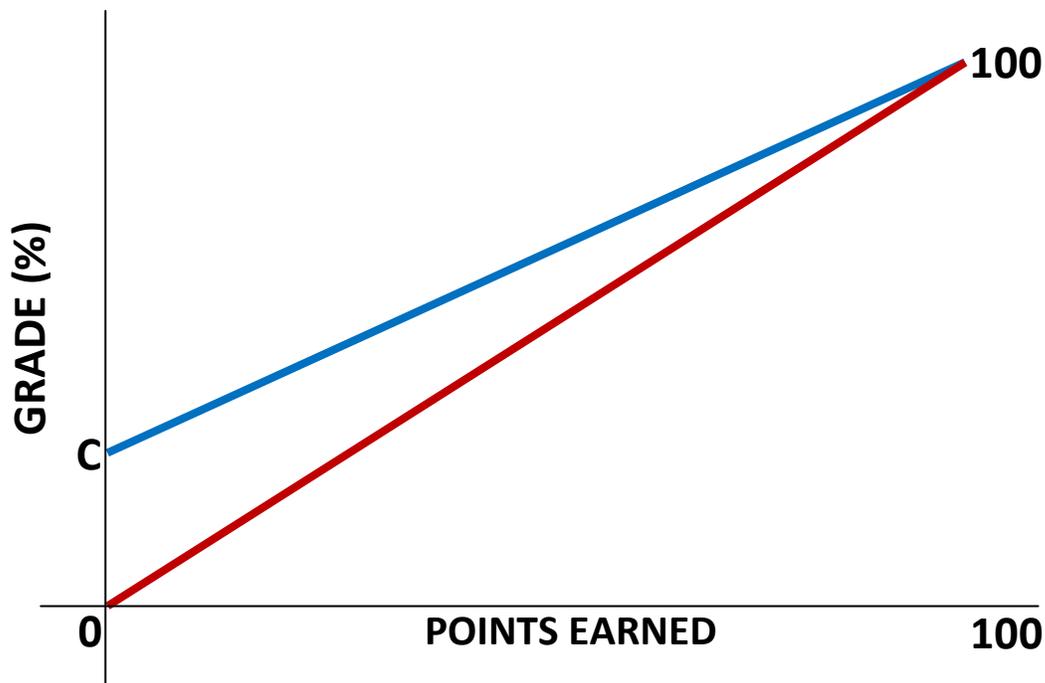
The current Blackboard system does not support proper distribution curves in any way. However, using Calculated Columns and weights, it is possible to create a linear grade curve in similarity to the traditional method. It is less precise, but for most applications within Blackboard, the error is negligible.

Please note that curving grades, either linearly, or along the bell-normality, is used under extreme cases only and should not be a first-attempt to resolve grade issues. These shifts only remain fair to students with events that affect all scores within the curve and should never be used to compensate for margins or partitions of classes. It is also critical to mention the depreciation of standards curve grading does to the educational margins; if used too frequently, curved grades can give a poor result across the population outside the individual class.

Should you find that a linear curve is not accurate enough for your data (either due to a large number of students, say, over 100, or by precision needs), then consider finding other methods to curve your roster such as histogram sliders.

What you, as an instructor must determine, is how much linear shift you wish to apply to your grades. This is called the percentage shift value (PSV). This value will determine the absolute maximum grade enhancement any one score receives.

Consider the Graph below for any single student's score on an assignment. Let C on the vertical axis be the Percentage Shift Value for any assignment to be curved. The red (lower) line shows the uncurved (raw) score any student would receive, ranging from a zero to a perfect score. The blue (upper) line represents that same grade after a linear curve shift. The minimum score they receive is the same as your PSV. The better their score, the less effect the curving has on their grade, and they will never exceed 100% of the initial grade value.



So if you applied a 20% PSV then they will receive a 0-20% boost to their grade for doing well or poorly (respectively).

### **Calculating Linear Curves in Blackboard:**

There are a total of three columns required to linearly curve grades in blackboard listed as follows:

Raw Grade: this column holds the list of untouched assignment grades.

Perfect Score: this column gives everyone a perfect score for any amount of points possible; note the total points possible must be the SAME as the *Raw Grade* column.

Curved Grade: this is a calculated column which will combine the previous two into a final shifted grade.

Create your two basic columns *Raw Grade* and *Perfect Score* first, applying the original assignment scores to the first one, and filling the second with perfect scores for every student (remember to keep the total points possible for both of these the same).

The “Show this column to Students” option should be set to ‘No’ for both of them seeing as they are not visibly important grades. This also prevents confusion when students view their grades online.

Create a Calculated-Weighted column (*Curved Grade*). Select your previous two columns individually from the item field; weighing your *Perfect Score* column with your Percentage Value Shift as discussed earlier. The weight for your *Raw Grade* column should be whatever remains for the total percentage to add up to 100%. Any more or less will cause cataclysmic errors in the calculations.

At this point it may be beneficial to close any loose ends this curving may have created. Any columns involving totals or weights should exclude the *Raw Grade* and *Perfect Score*, and include the *Curved Grade* column. Also consider things like column management, visibility, and function when covering all loose references.

*Display Example:*

<i>Example Test</i>	<i>Points Possible: 150</i>	<i>PSV: 20%</i>
<b>RAW GRADE</b>	<b>PERFECT SCORE</b>	<b>CURVED GRADE</b>
150	150	150.0
40	150	62.0
0	150	30.0
88	150	100.4
35	150	58.0
75	150	90.0
29	150	53.2