Setting up a Moodle Gradebook with Natural Weighting

Natural weighting functions as a sum of grades, as detailed in grade aggregation (https://wp.stolaf.edu/it/?page_id=10043). In addition, however, users can configure natural weighting to take advantage of additional features, such as weighting grades. Natural weighting can produce either a sum or a mean, with or without weights, depending on instructor needs. As such, natural weighting serves as a single aggregation method that can supercede sum of grades, mean of grades (with or without extra credit), and both weighted mean and simple weighted mean of grades. The following guide will show how to use natural weighting in all its forms.

Is it recommended to migrate to natural weighting, even if I like my current scheme?

Creating a gradebook can take a lot of time and effort, so if your current scheme works well and you are pleased with it, then continuing to use it is an option. However, Moodle is on a trajectory to deprecate alternative aggregation schemes other than natural weighting. When this change ultimately will happen remains unclear, but it might be worthwhile to consider natural weighting.

What will a gradebook with natural weighting look like?

The picture below is one example of what a gradebook could look like. Note that all grade items are grouped into categories.

Name	Weights ⓘ	Max grade	Actions	Select
📁 Sample Course: Music 3xx		⁻	Edit ▾	All / None
⬩ 📁 Assignments	☐ 63.612	⁻	Edit ▾	All / None
⬩ ☑ Brass Basics	☐ 22.881	54.00	Edit ▾	☐
⬩ ☑ Oral Presentation	☐ 19.068	45.00	Edit ▾	☐
⬩ ☑ Haydn Trumpet Concerto Paper	☐ 31.78	75.00	Edit ▾	☐
⬩ ☑ Final Paper	☐ 26.271	62.00	Edit ▾	☐
Σ Assignments total		236.00	Edit ▾	
⬩ 📁 Performance	☐ 30.997	⁻	Edit ▾	All / None
⬩ ☑ Medieval excerpts	☑ 20.0	25.00	Edit ▾	☐
⬩ ☑ Baroque Excerpts	☑ 20.0	25.00	Edit ▾	☐
⬩ ☑ Classical Excerpts	☑ 20.0	25.00	Edit ▾	☐
⬩ ☑ Romantic Excerpts	☑ 20.0	25.00	Edit ▾	☐
⬩ ☑ Contemporary Excerpts	☑ 20.0	15.00	Edit ▾	☐
Σ Performance total		115.00	Edit ▾	
⬩ 📁 Participation	☐ 5.391	⁻	Edit ▾	All / None
⬩ ☑ Introductions and the Use of Brass	☐ 40.0	10.00	Edit ▾	☐
⬩ ☑ In class discussion	☑ 50.0	10.00	Edit ▾	☐
⬩ ☑ Applied course content to lessons	☐ 50.0	10.00 +	Edit ▾	☐
Σ Participation total		20.00	Edit ▾	
Σ Course total		371.00	Edit ▾	

(https://i0.wp.com/wp.stolaf.edu/it/wp-content/blogs.dir/12/files/2016/08/setting-up-with-natural-weighting-example-1.jpg?ssl=1)

(Click on image to view full-size version.)

This gradebook displays the flexibility of natural grading with the follow details:

- The weights of the three categories reflect the points in each category in comparison to the total points in the course. About 64 percent of the final grade will come from assignments, 31 percent from performance, and 5 percent from participation. The final grade will be calculated with the **sum of grades**.
- In the Assignments category, note that weights are left to automatic calculation. This means the category grade will be calculated as the sum of points earned divided by the points possible. This is natural weighting in its automatic form as the **sum of grades**.
- In the Performance category, note that all weights have been edited to the same value. This imitates finding the mean of the scores, all taken into account equally. For example, if the scores were .9, .9, .83, .95, and .87, the category grade would be 89 percent. This is the same as taking the **mean of grades**.
- In the Participation category, note that the weight for "In class discussion" has been edited. The other required assignment, "Introductions," had its weight automatically adjusted to 40 for a sum of 100. The extra credit assignment "Applied course content" is denoted as extra credit by a plus sign. The category grade here will be calculated as the **weighted mean of grades with extra credit**.

How do I reproduce these common gradebook scenarios using natural weighting?

Natural weighting as a sum of grades

By default, natural weighting produces a sum of points earned. Moodle adds up a student's earned points on items and reports the total out of the maximum points possible. The weights column displays the relative weights of the items (as percentages) based on each item's maximum points. **Weights are automatically set**, and if they are changed, the gradebook will no longer function as sum of grades. Weights are simply for informational purposes only when the sum of grades method method is used. For more information on how natural weighting calculates grades when weights are left on automatic, visit grade aggregation strategies (https://wp.stolaf.edu/it/?page_id=10043).

Natural weighting as a sum of grades with custom weights

If you have used the weighted mean of grades in the past, natural weighting can achieve the same outcome. Instructors can **override grade items' default weights** and enter alternate weights instead. (Check the box next to any of the weights to do so.) Weights indicate percent of the category that the item will be worth. This will calculate the grade the same way as simple weighted mean of grades, described in grade aggregation strategies (https://wp.stolaf.edu/it/?page_id=10043).

When the instructor overrides any of the default weights, the other weights in the category automatically adjust to compensate so that the total of all the items remains 100 percent.

Natural weighting as a sum of grades, plus extra credit

This is a new capability: previously you could not assign extra credit in a sum of grades. When the natural aggregation strategy is used, a grade item can act as extra credit for the category. This means that the grade item's maximum grade will not be added to the category total's maximum grade, but the item's grade will. To set a grade item as extra credit, select the **Edit** menu for the item in **Gradebook Setup**. From this page, you can select the item as extra credit in **Parent category**.

Note that this is not a solution for providing extra credit within a grade item, say, for an extra credit question on an automatically graded quiz. It only functions by adding extra credit as a separate grade item.

Natural weighting as a mean of grades

To have natural weighting function as a mean of grades, the instructor can **override the weights so that they are all equal**. For example, setting all weights to a value of 1 in a category would weight all items equally. When the changes are applied with the **Save Changes** button, Moodle converts the numbers into the appropriate percentages. For more on how the mean of grade strategy calculates grades, visit grade aggregation (https://wp.stolaf.edu/it/?page_id=10043).

Natural weighting as a mean of grades with extra credit

To have natural weighting function as a mean of grades with extra credit, an instructor can proceed as above for mean of grades, but also **check "act as extra credit"** on one or more items. Extra credit items do not contribute to the total from which the mean is calculated, but add to the total points earned by a student. This will calculate the grade the same way as a mean of grades with extra credit, described in [grade aggregation strategies (https://wp.stolaf.edu/it/?page_id=10043)](https://wp.stolaf.edu/it/?page_id=10043).

Setting up a gradebook with natural weighting is easy, as it is the default grading scheme. Setting up with weighted categories may be slightly more difficult, as it requires some customization.