User Guide for School Grade Book Spreadsheet

Description of the School Grade Book

The model uses information about assignments, students, and students' grades on the assignments to compute the grade point average for each student and some measures of the assignments themselves.

The model computes a final grade and a measure of the consistency of each student's performance.

- For each student, the final grade is the ratio of "quality points" earned / the total quality points for all assignments. That is, the final grade is a weighted average of grades, weighted by the type of assignment.
  - For each student, the total number of "quality points" earned and the number of quality points earned on each assignment. Quality points = grade x assignment weight x attendance.
  - For each student, the total number of "quality weight" points for all assigments, and the number of quality weight points for each assignment. Quality weight points = assignment weight x attendance.
- For each student, the weighted standard deviation of the grades. A lower (higher) standard deviation indicates more steady (more uneven) performance by that student.
- For each class section, a summary page of results (optional)

You enter the following information about the assignments (in the cells shaded darker blue.)

- A list of the individual assignments that are graded.
- A list of the types of assignments, such as 'homework', 'report', 'quiz', 'half test', 'test'.
- For each assigment, the type of assignment.
- For each type of assigment, a numerical weight. For example, a test has a much higher weight than a typical homework assignment.

You enter the following information about the students.

- A list of the names of students (or other identifiers of students), optionally grouped into class sections.
- A table of numerical grades achieved by each student on each assignment.
- To indicate that a student did not participate in an assignment, enter any negative number as the grade .

Optional advanced features include:

- Grading on a curve
  - For any assignment(s), you specify an average grade for all students and the spread (standard deviation) of all grades.
  - The model shifts and stretches the distribution of grades for specified assignment(s) to fit the specified distribution of grades.
- Tracks student fees assessed and paid.

Instructions for Using School Grade Book Spreadsheet

1 Let the Spreadsheet Tell You How It Works

The spreadsheet has four main facilities to help you learn how it works.

- Throughout the spreadsheet, section titles, variable names and Excel comments provide information about the spreadsheet and the computations behind it. The Excel comment for each variable is repeated for each display instance of a variable.

- Worksheet “Labels” contains a glossary of variables and dimensions in the spreadsheet.

- It lists all the variables in the model, accompanied on the right by the explanatory comment for each variable.
- It lists all the dimensions and their dimension items, accompanied on the right by the explanatory comment for each dimension.

• The Excel workbook contains Excel collapsible groups that you can open to see detailed information or close to get an overview of the information on each worksheet.

• Worksheet “Formulas” contains a list of the symbolic formulas that define values of variables in terms of numerical constants and other variables.

The spreadsheet is derived from these symbolic formulas by ModelSheet. Although these formulas are not executable in Excel, they often provide the quickest route to understanding what the computations are doing, avoiding the need to decode dozens of Excel formulas written in terms of cell addresses.

Of course, you can read the Excel cell formulas.

2 Editing Data in the Spreadsheet

You can enter input data in shaded input cells (usually dark blue). Most of the input data is on worksheet 'Inputs'. You can edit display names of variables and dimension items on worksheet 'Labels' (and in some spreadsheets the input cell for Model Start Date is located at the top of worksheet 'Labels'). Putting most inputs in one or two places eliminates the need to search the workbook for input cells.

Some of the input cells for the School Grade Book spreadsheet are located on worksheet 'Labels'.
• Edit the names of Assigment Types in the dimension 'Assign Types', in the blue cells in column B.
The assignment type determine the weighting of each assignment in averages and other performance measures.
• Enter the names of Assignments in the dimension 'Assignments', in the blue cells in column B.
• Enter the names of students in the dimension 'Students', in the blue cells in column B.

3 Customizing the Excel Spreadsheet

You can customize the workbook further on the worksheet “Labels”.

- Change the display name of any variable, dimension or dimension item.
- Edit the comment associated with any variable or dimension. The new comments will not propagate through the workbook.

If you want to include these changes in future versions of the spreadsheet, you can re-import them into ModelSheet, which will include them in any future version of the spreadsheet exported from ModelSheet.

4 Further Customizations

ModelSheet Software can extend the model in new directions to meet your requirements, on a project basis.

Technical notes

The model computes two measures of students' responses to each assignment.

1. The average grade earned by participating students for each assigment. This is an indication of the difficulty of the assignment.
   – For each assignment, the total number of "quality points" earned by all students, and the number of quality points earned by each student.
   – For each assignment, the total number of "quality weight" points for all students, and the number of quality weight points for each student.

2. The standard deviation of the distribution of grades for each assignment. Always positive or zero. Roughly speaking, about 2/3 of the grades are within +/- standard deviation points of the mean grade.

The Advanced version (but not the Standard version) computes the average grade, standard deviaion and two additional measures for each assignment.

3. The skewness of the distribution of grades for each assignment. (A normal distribution has skewness = 0.)
   – If skewness <0, the distribution has some very low grades and the mean grade < 50th percentile grade. A few students may be unable to keep up with the middle of the class.
   – If skewness >0, the distribution has some very high grades and the mean grade > 50th percentile grade. A few very good students may be far ahead of the midde of the class.

4. The kurtosis of the distribution of grades for each assignment. (A normal distribution has kurtosis = 0.)
   – If kurtosis <0, the distribution has a sharper, narrower peak, and many very high and very low grades. The class may have a wider a range of performance than is optimal.
   – If kurtosis >0, the distribution has a flatter, wider peak, and fewer very high and very low grades. The class probably is targeting nearly all students well, leaving few students far behind and few far ahead.

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customerservice@modelsheetsoft.com