NONTRADITIONAL GRADING

Why to do it and how to manage it using spreadsheets

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OVERVIEW

- What goes into choosing a grading policy?

- What different ways to grade are there?

- How do you manage grading systems which Canvas isn't built to handle?

GRADING SCHEMES WE'VE USED

<u>Introductory Physics Lab (250 Students):</u>

- Point-Based Grading

- Modified Mastery Grading (3 categories)

- Resubmission of lab reports

<u>Calculus-Based Physics (15 Students):</u>

- Point-Based Grading

- Mastery Grading

- Resubmissions. Multiple attempts on exams.

GRADING SCHEMES WE'VE USED

<u>Algebra-Based Physics Course (250 Students):</u>

- Specifications Grading

- Modified Mastery Grading on Quizzes (4 categories)

- Corrections on Quizzes

TEACHING IS AN INTENTIONAL PRACTICE

Every aspect of our course teaches students something about our subject, our expectations, and how we view learning.

This should include how we assess students.

Your grading practices should complement everything else you do in your course.

WHY DO WE GIVE GRADES?

Take a few seconds to answer this question.

Feel free to discuss with your neighbors after answering for yourself.

KEEP YOUR INTENTIONS IN MIND

The best grading system for you is the one which most closely aligns with your goals.

WHAT "GRADING" INCLUDES

There are four main aspects to consider when planning how you will grade students.

I.   How individual grades will be combined into a single course grade.

II.   What types of assignments you will give.

III.   How those assignments will be graded.

IV.   Other classroom policies related to grading.

(I) HOW TO ASSIGN COURSE GRADES

There are two main schools of thought when it comes to assigning course grades.

- **Norm-referenced grading.** Students are compared to one another, with only the highest achievers receiving A's.

- **Criterion-referenced grading.** Students are compared to objective criteria and all who meet the criteria receive that grade.

(I) HOW TO ASSIGN COURSE GRADES

Within criterion-referenced grading schemes there is variation.

- Percentage-based grades

- Point-based grades

- Standards-based grades

- Contract grading

- Specifications grading

(I) POINTS & PERCENTAGES

Mathematically, assigning grades based on points and percentages is identical.

Overall Grade Breakdown

	%
A	90.0+
B+	87.0 - 89.9
B	80.0 – 86.9
C+	77.0 – 79.9
C	70.0 – 76.9
D (not passing)	60.0 – 69.9
F (not passing)	< 60.0

Letter Grade	Minimum Points Needed
A	119*
B+	109
B	98
C+	84
C	70
D	59

It doesn't feel that way to students.

The primary difference is how grades are **_framed_**. Percentages frame grades in terms of losses. In students' minds they start with an A and must maintain it. Points can more easily be framed in terms of gains. Students start with 0 and everything they do increases their total.

Students have a better perception of grading policies and perform better in classes where grading is explicitly framed in terms of gains rather than losses (Bies-Hernandez, 2012).

This needs to be explicit because students 'naturally' think about grades in terms of losses.

(I) POINTS & PERCENTAGES 3

Another advantage of points is that you can alter the total. Grading out of 10,000 points has been shown to increase effort on "low-stakes" assignments and reduce end of semester grade haggling compared to percentages or grading out of 100 or 1,000 points (Peterson & Peterson, 2016).

Finally, percentage-based grades have been shown to have a disproportionately negative impact on students of color (Paul & Webb, 2022).

(I) POINTS & PERCENTAGES

When grading with points or percentages, you can grade whatever you want. You can change the weight of different types of assignments to suit your preferences and goals.

Grade Category Breakdown

	%
Participation	20
Assessments	15
Exams	40
Final	25

Item	#	Description/Grading	Can it be redone?	Points per item	Total points
Homework	14	3 written questions per week, graded pass/fail. 1 point for each passed question. 1 point for turning in all questions by the deadline.	**Yes,** unlimited attempts until the end of the current module, then no more.	4	56
Exams	4	2 questions, graded pass/fail. Each question worth 5 points	**Yes,** 2 attempts during office hours	10	40
Group Exams	4	Solve a hands-on problem or investigate an advanced topic together as a group	**No.** Each group hands in a write-up and group members get the same grade	10	40
Final Exam	1	4 questions, each worth 8 points	**No,** final means <u>final</u>	32	32
Weekly Journal	14	Respond adequately to reflection questions and prompts	**Yes,** one redo if the first attempt is not adequate	1	14
Weekly Quiz	14	Multiple choice/multiple response questions through Canvas	**Yes,** 2 attempts. Grade based on results of second attempt	1	14
					196

(I) POINTS & PERCENTAGES

Pros:

- Easy for students to understand. Familiar.
- Incredibly flexible in what you grade.

Cons:

- Students can focus more on the grade than they do on learning.
- It's not clear what the grade ultimately means.

(I) SPECIFICATIONS/CONTRACT GRADING 1

This type of grading policy clarifies what it takes to earn specific grades beyond just 'doing well on assignments.'

Instructor decides, either alone (specifications grading) or with student input (contract grading), what constitutes each letter grade.

Each letter grade has its own benchmarks which students can aim for to 'customize' their experience in the course.

Benchmarks can be anything you want.

(I) SPECIFICATIONS/CONTRACT GRADING 2

	Quizzes	MC Homework	Problem Sets	Exams	Participation	Learning Surveys
	10 total	180 points	10 total	90 points	23 total	12 total
A	8 at DM	160 points	8 submitted, 3 satisfactory	75 points	Attended 20 LGMs	10 submitted
B+	8 at AM or higher, 4 at DM	150 points	8 submitted, 2 satisfactory	65 points	Attended 19 LGMs	9 submitted
B	8 at AM	140 points	7 submitted, 1 satisfactory	55 points	Attended 18 LGMs	9 submitted
C+	8 at NI or higher, 5 at AM	130 points	7 submitted	45 points	Attended 17 LGMs	8 submitted
C	8 at NI or higher, 3 at AM	120 points	7 submitted	35 points	Attended 16 LGMs	8 submitted
D	7 at NI	100 points	6 submitted	30 points	Attended 15 LGMs	7 submitted

(I) SPECIFICATIONS/CONTRACT GRADING 3

Pros:

- More transparent about how grades are calculated.

- Gives students more control over the final grade they achieve.

Cons:

- Feels unforgiving to students.

- More complicated to keep track of progress.

- Does not respond well to unavoidable changes in plans.

(II) PERFORMANCE/MASTER GOALS

There are two types of goals which we can use for assignments.

Performance Goals. Goal which require students to just do something (attendance, submitting homework, etc.)

Mastery Goals. Goals which require students to demonstrate mastery of skills or course content (essays graded for content and accuracy, exams, etc.)

(II) PERFORMANCE/MASTER GOALS

Reinforcing performance goals with grades can reward and reinforce behaviors professors value that students may not, but there are risks.

Relying on performance goals can lower intrinsic motivation (Xiang & Lee, 2003), encourage algorithmic thinking (McGraw & McCullers, 1979), and reduce creativity (Amabile, Hennessey, & Grossman, 1986).

(I) STANDARDS-BASED GRADING

Standards-based grading is based on using **only** mastery goals for grading. Based on the belief that a grade should reflect only how much content a student has mastered.

Assignments are graded based on how well students demonstrate mastery of course standards or learning objectives.

Final course grade is determined by how many standards students have mastered over the semester, not scores on individual assignments.

(I) STANDARDS-BASED GRADING

Pros:

- Places emphasis on learning content.
- Course grade has very clear meaning.
- Changes how students discuss grades with you.

Cons:

- Requires redesigning all assessments from the ground up.
- Very different from what students are used to.
- Not compatible with Canvas (Canvas' SBG is purely cosmetic)

(III) WAYS TO GRADE ASSIGNMENTS

In addition to how course grades are determined, you also need to think about how individual assignments are graded:

Assignments can be graded using points, letter grades, rubrics, or can be graded for mastery.

Mastery grading involves grading assignments pass/fail (or meets/does not meet expectations). Typically done with specifications grading, contract grading, and standards-based grading (where individual standards within assignments are graded rather than the assignment as a whole).

(III) MASTERY GRADING

Mastery grading involves grading assignments pass/fail (or meets/does not meet expectations).

Typically done with specifications grading, contract grading, and standards-based grading (where individual standards within assignments are graded rather than the assignment as a whole).

It is much faster than trying to grade other ways.

It is also incredibly punishing if students do not have opportunities to revise and resubmit their work.

(IV) OTHER GRADING POLICIES

Dropping assignments. Can make it easier for students to get the grades they want but sends the message that not all of our assignments are important. Only makes sense for percentage-based grading.

Revisions/resubmission. Providing opportunities for students to correct past work makes feedback meaningful. Students can learn from their mistakes. Allows stricter grading.

TRACKING SHEETS

For anything more complicated than percentage-based grading, provide students with **tracking sheets** to monitor their own progress.

Point-Based Tracking Sheet	Specifications Grading Tracking Sheet

DEALING WITH RESUBMISSIONS

In our Calculus-Based Physics class Canvas is not used due to the high number of resubmissions.

Instructor keeps separate spreadsheets to track Homework and Exam grades, which feed into a spreadsheet which calculates Final Course Grades.

ASSIGNING SPECIFICATIONS GRADES

In our Algebra-Based Physics class we use Canvas as a repository for all student grades.

At the end of the semester the gradebook is exported, and final grades as assigned using this spreadsheet.

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