Assessing Student Learning
Using a Digital Grading Platform

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Student Learning Objectives

What should students learn in this course?

- Articulate skills and dispositions – not course content
- Identify measurable behaviors/outcomes – not broad platitudes
- Share early and often with students

Examples:
By the end of this course, students should be able to...

- *apply mathematical and graphical techniques to determine how prices are set in a market*
- *qualitatively interpret quantitative/analytic results*
- *articulate the benefits and limits of the economic models covered in class for addressing real-world policy questions*

Assessment Techniques

- **OK**: end-of-term student surveys
  - Pros: low time commitment, easily manageable quantity of data
  - Cons: biased self-assessments, lack of baseline, student fatigue
- **Good:** regular student feedback
  - Pros: student-specific comparisons possible, feedback "normalized"
  - Cons: biased self-assessments, student fatigue, more instructor work
- **Better**: dedicated instructor analysis
  - Pros: objective analysis of student learning, instructor focused on SLOs
  - Cons: (potentially) massive instructor time commitment, requires fine-tuning
- **Best**: integrated assessment
  - Pros: students provide assessment data <u>while</u> completing assignments or exams, instructors focused on SLOs throughout the term
  - Cons: planning required, (potentially) time-consuming

Example of Integrated Assessment

- (new) Introductory Data Science course at UC Berkeley
- 400+ students
- Team of instructors and teaching assistants with one primary instructor
- 12 student learning objectives focused on computer science and statistics skills
- Online grading tool: gradescope.com

"Tagging" assignment questions with SLOs

2: Investigating Poverty — 9 points

2.1: Histogram of incomes for households — 1 point
`CODE` `GRAPHS`

2.2: Histogram of number of people per household — 2 points
`CODE` `GRAPHS`

2.3: The ahs_poverty table — 2 points
`CODE`

2.4: The poverty_counts table — 1 point
`CODE`

2.5: Bar chart of poverty rates — 1 point
`CODE` `CALCULATE` `GRAPHS`

2.6: Evidence that poverty is related to / caused by location — 2 points
`INFERENCE` `APPROPRIATE`

Assessment Data (example)

Table: Assignments 1-4 (First Half of Semester)

Learning Objective	Assignment 1		Assignment 2		Assignment 3		Assignment 4	
	Points	% Correct	Points	% Correct	Points	% Correct	Points	% Correct
1. Write programs	8	87	15	89	13	94	14	91
2. Extend a program	8	87	7	92	1	95	–	–
3. Calculate statistics	2	96	14	89	3	91	5	79
4. Identify sources of randomness	6	87	–	–	–	–	–	–
5. Form a null hypothesis	–	–	–	–	–	–	–	–
6. Statistically test a hypothesis	–	–	–	–	–	–	–	–
7. Form correct conclusions	11	84	–	–	2	84	2	88
8. Identify appropriate analyses	9	84	–	–	–	–	2	88
9. Note benefits/limits of computing	–	–	–	–	–	–	1	80
10. Generate graphs	2	83	–	–	–	–	11	82
11. Make predictions	–	–	2	78	–	–	–	–
12. Assess prediction accuracy	–	–	–	–	–	–	–	–

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Try gradescope.com for free as an instructor:
Invite code: **AAEA2016**