

## Standards-based grading proposal

*CSCI 3358 – Foundations of algorithmic (un)fairness**J. Finocchiaro*

**Background** Standards-based grading has been long advocated for by educational researchers on the basis of improving equity in the classroom [Feldman \[2023\]](#); [Lewis \[2020\]](#); [Link and Guskey \[2022\]](#).

My implementation draws inspiration from [\[Chen et al., 2022\]](#), who I worked with at Colorado, and got to hear some of the first-hand experiences in their growing pains. Because this course is project-based, I have modified their system into a “quota” system which now looks more like a hybrid between their method and traditional grading.

**Individual assignments** Individual assignments will be scored on a scale from 0-4. Roughly: 0 – no attempt, 1 – major gaps in understanding, 2 – progress, 3 – proficient, 4 – near perfect.

A score of 3 or 4 will be considered as “attaining a standard,” while 0–2 will not. Scores of 3 vs 4 will differentiate between +/– grades.

**Desired standards** The standards throughout the class will have a few opportunities to attain them. However, the final project and case study, because of their nature as group projects, will have standards that can only be attained through those specific tasks.

For your final project, it will be up to your group to propose which 4–5 standards you want to demonstrate.

- General standards (first attained through homework, with opportunities for re-attempts)

- ☐ Probability (technical)
- ☐ Probability assumptions of CS/DS
- ☐ Group fairness metrics
- ☐ Individual fairness metrics
- ☐ Multicalibration
- ☐ Compatibility of fairness metrics
- ☐ Feedback loops
- ☐ Social choice
- ☐ Welfare-based fairness notions
- ☐ Fairness vs. equity
- ☐ Legal restrictions on algorithms
- ☐ Participation (Departmental citizenship/CS experience)
- ☐ Participation (Notes/communicating confusion)

- Final project standards

- ☐ Propose
- ☐ Propose
- ☐ Propose
- ☐ Propose
- ☐ If solo: Propose If team: Teamwork and contribution
- ☐ Project reporting / updating
- ☐ Technical communication
- ☐ Non-technical communication (final presentation)

- Case study standards

- ☐ [Topic of study](#)
- ☐ Limitations of modeling
- ☐ Outcome vs procedural fairness, greater social context
- ☐ Annotated bibliography

**Translation to final grades** There are 25 standards to attain on this list. Grades follow:

A	$\geq 22$ standards, at least 13 with 4
A-	$\geq 22$ standards, $\leq 12$ with 4
B+	19–21 standards, at least 12 with 4
B	19–21 standards, 8–12 with 4
B-	19–21 standards, $\leq 7$ with 4
C+	15–18 standards, at least 10 with 4
C	15–18 standards, 8–10 with 4
C-	15–18 standards, $\leq 7$ with 4
D+	12–14 standards, at least 8 with 4
D	12–14 standards, 5–7 with 4
D-	12–14 standards, $\leq 4$ with 4
F	$\leq 11$ standards

## References

- L. Chen, J. A. Grochow, R. Layer, and M. Levet. Experience report: Standards-based grading at scale in algorithms. In *Proceedings of the 27th ACM Conference on on Innovation and Technology in Computer Science Education Vol. 1*, ITiCSE 2022. ACM, July 2022. doi: 10.1145/3502718.3524750. URL <http://dx.doi.org/10.1145/3502718.3524750>.
- J. Feldman. *Grading for equity: What it is, why it matters, and how it can transform schools and classrooms*. Corwin Press, 2023.
- D. Lewis. Gender effects on re-assessment attempts in a standards-based grading implementation. *Primus*, 30(5):539–551, 2020.
- L. J. Link and T. R. Guskey. Is standards-based grading effective? *Theory Into Practice*, 61(4):406–417, 2022.