HIGH POINT UNIVERSITY
THE PREMIER LIFE SKILLS UNIVERSITY
Center for Innovative Teaching and Learning

Friday Faculty Workshops

Mastery Grading

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What is mastery grading?

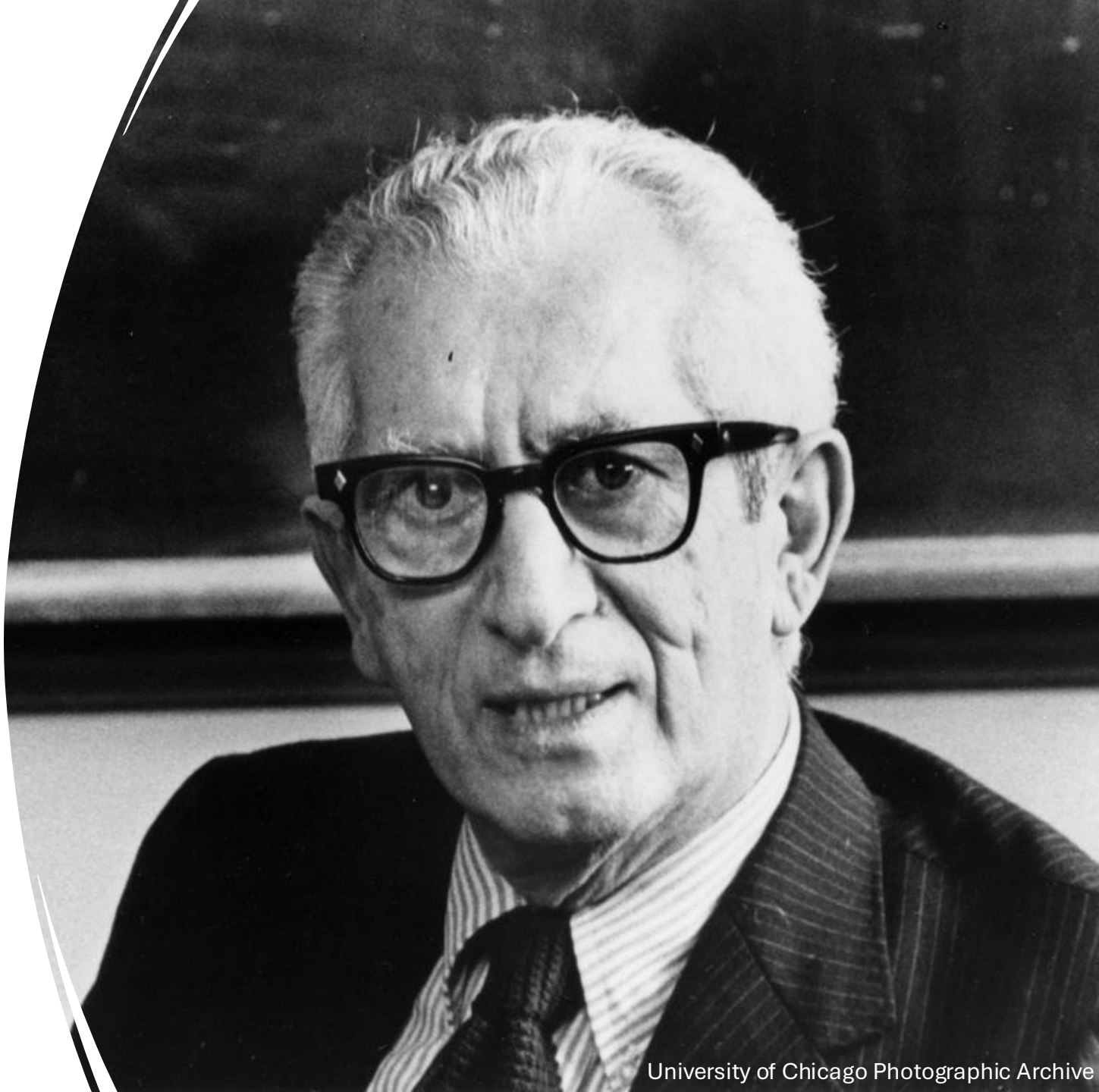
0

Nobody has responded yet.

Hang tight! Responses are coming in.

Mastery learning

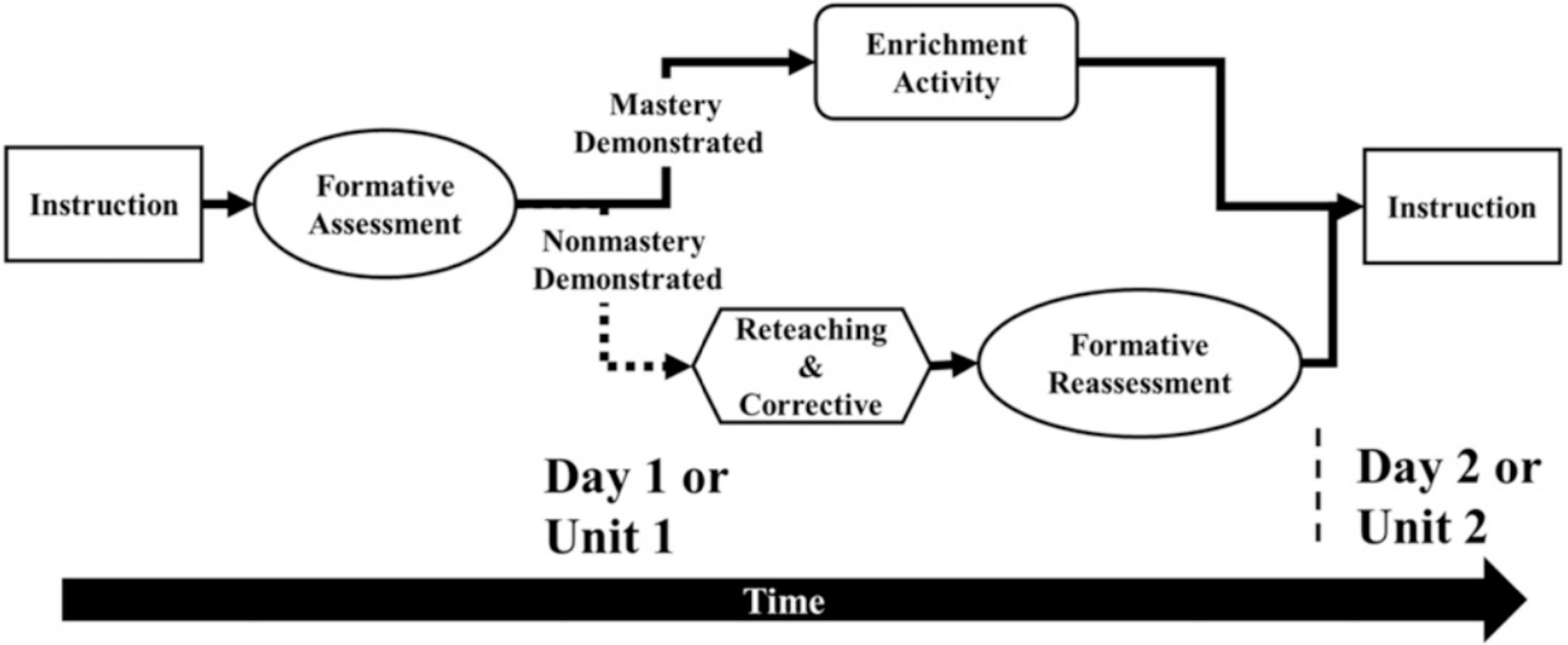
- “Mastery learning” and “grading for mastery” are ideas that date back to the 1960’s
- Pioneered by educational psychologist Benjamin Bloom (of Bloom’s taxonomy fame)
- The premise: all students can learn, but they will learn at different rates



University of Chicago Photographic Archive

Mastery grading

- Providing students with repeated opportunities to demonstrate mastery through assessments
- Key elements:
  - Provide students with learning outcomes (LOs)
  - Formative assessments that align with LOs
  - Multiple opportunities to demonstrate mastery (i.e. summative assessments)
  - Students move on to the next LOs only after demonstrating mastery
  - If they achieve the desired level, students proceed to enrichment activities



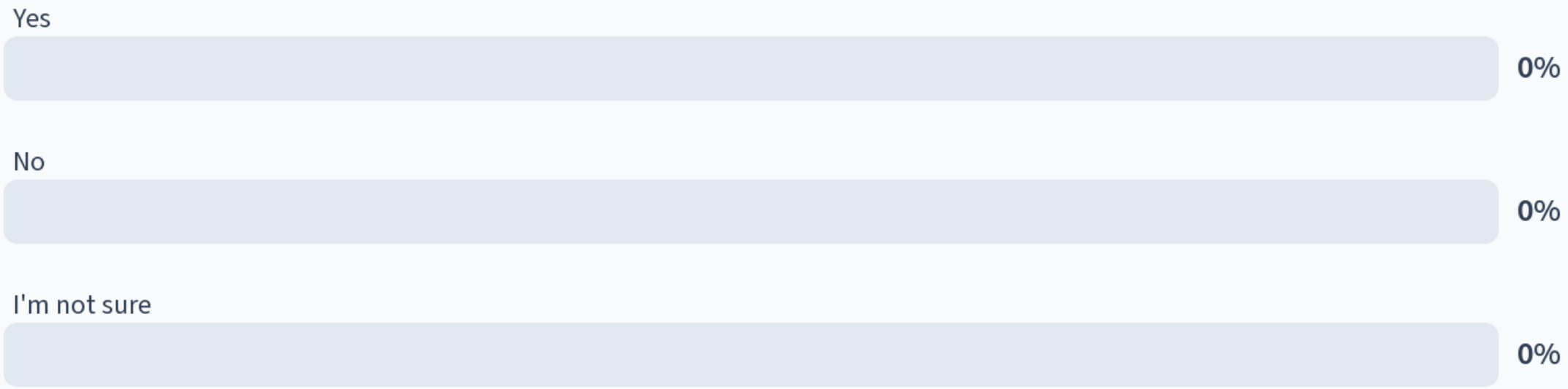
Winget & Perksy (2022)

Mastery grading

"assessment techniques that provide students with repeated opportunities to attempt problems in a given topic area and allows students to improve poor grades in initial attempts with by demonstrating improvement in subsequent attempts"

Ranalli & Moore (2015)

Have you ever been in a mastery learning/grading classroom as a student?



Evidence for mastery grading:

- Whiting and Persky (1987) showed an average GPA improvement of almost 1.5 grades (e.g. C to a B+) in classes taught by mastery learning (n = 7179)
- A 1990 meta-analysis of findings from 108 controlled evaluations showed that mastery learning improve examination performance of students in colleges, high schools, and the upper grades in elementary schools. (Kulik & Kulik 1990)
  - The strongest effects were seen for the weakest students in the class.

My inspiration

Intentional Teaching is a podcast aimed at educators to help them develop foundational teaching skills and explore new ideas in teaching. Hosted by...

Intentional Teaching

Mastery Assessment with Eden Tanner

September 05, 2023 • Derek Bruff • Episode 20

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Show Notes Transcript

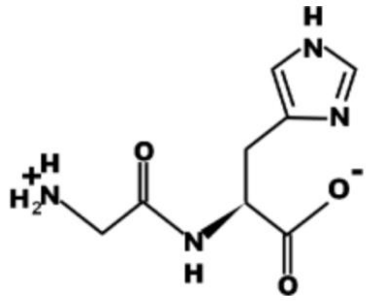
My attempts to implement mastery grading in Biochemistry courses

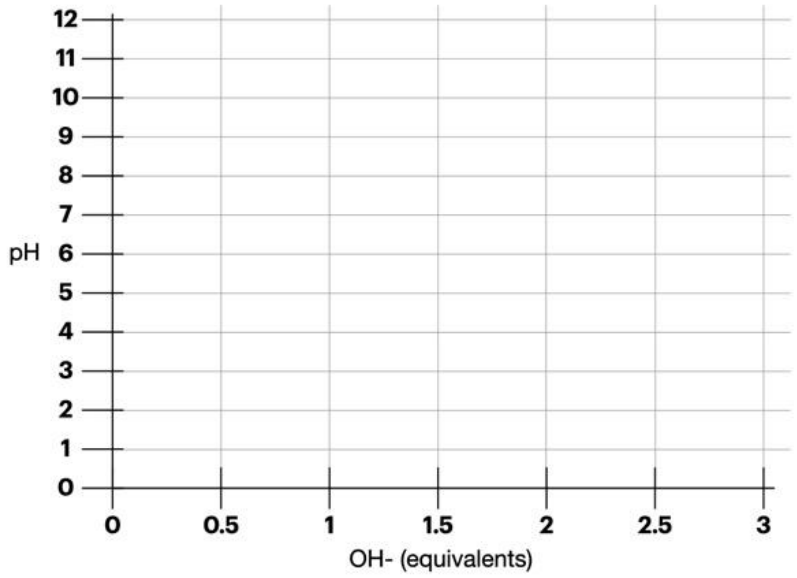
- BCH3010, Fall 2024
  - Formative assessment: full-length practice exam
  - Summative assessment: MC & SA exam
  - Second opportunity: every exam could be re-taken once to completely replace the original score (only if the second score was higher)
  - 93% of students re-took at least 1 exam
  - 21% of students re-took every exam
  - On average, students re-took 2.2/4 exams
  - Median score change w/ retake: +9.75 pts

- BCH3520, Spring 2025
  - 86% of students re-took at least 1 exam
  - 38% of students re-took every exam

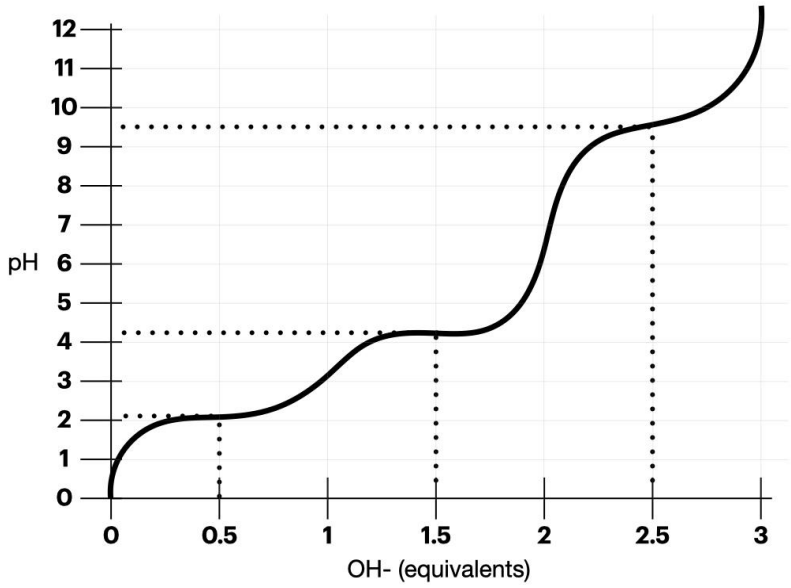
LO: By the end of this unit, student will be able to draw and interpret titration curves.

Draw the titration curve for this dipeptide.

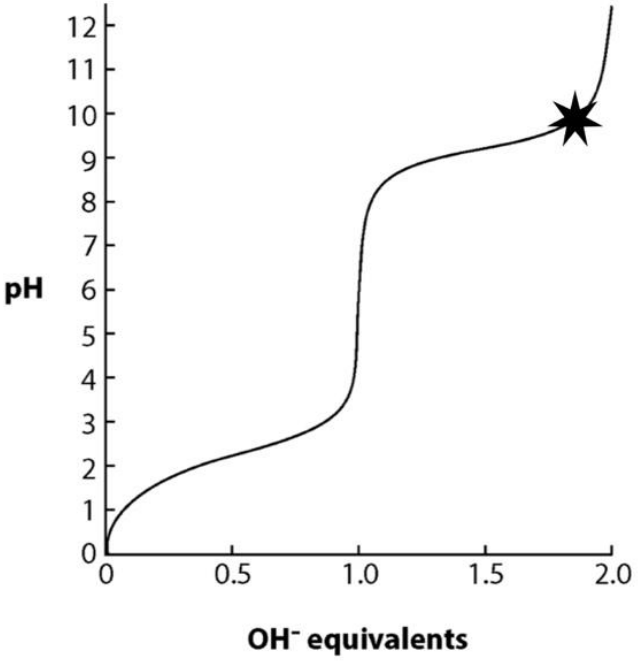


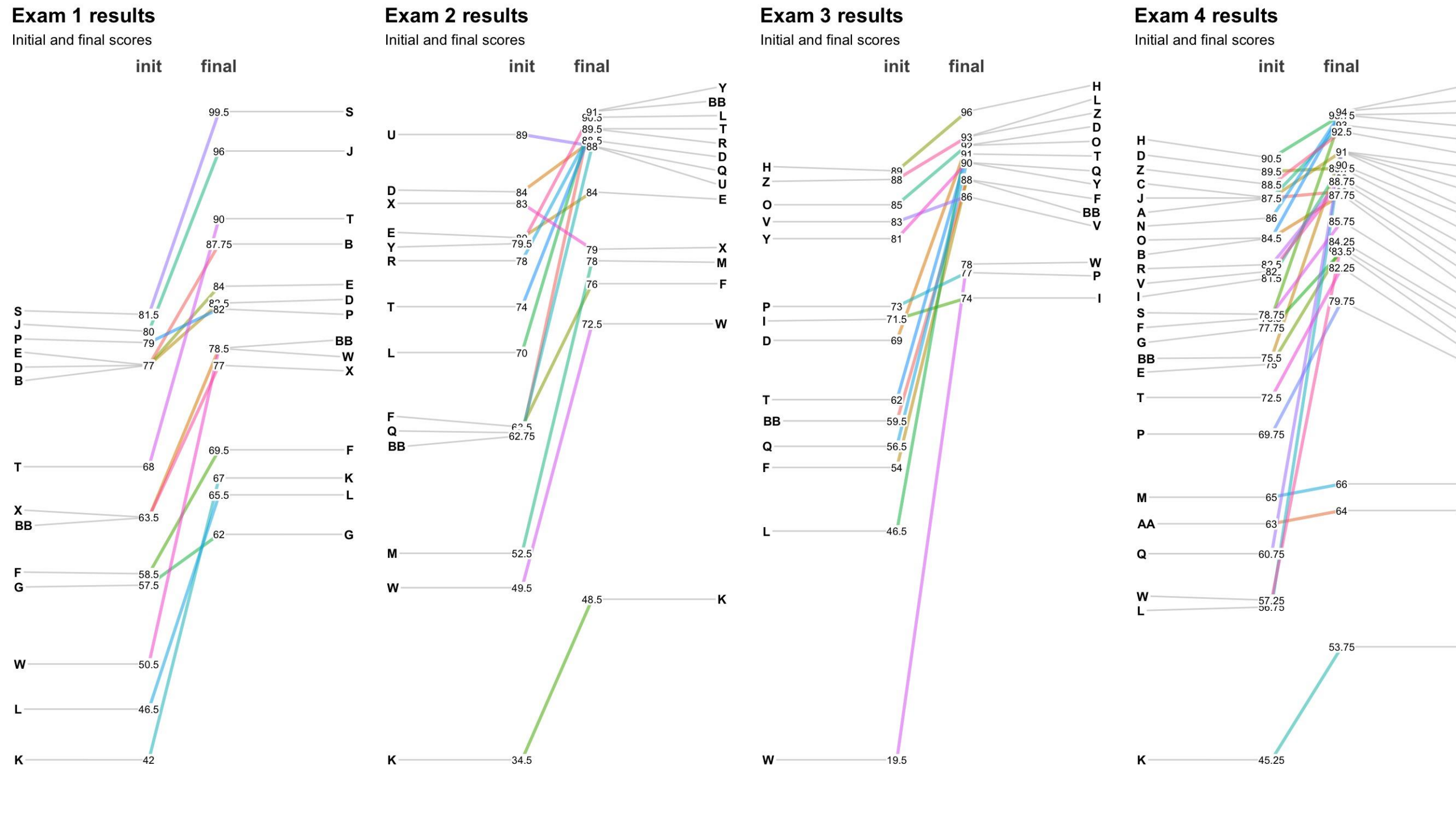


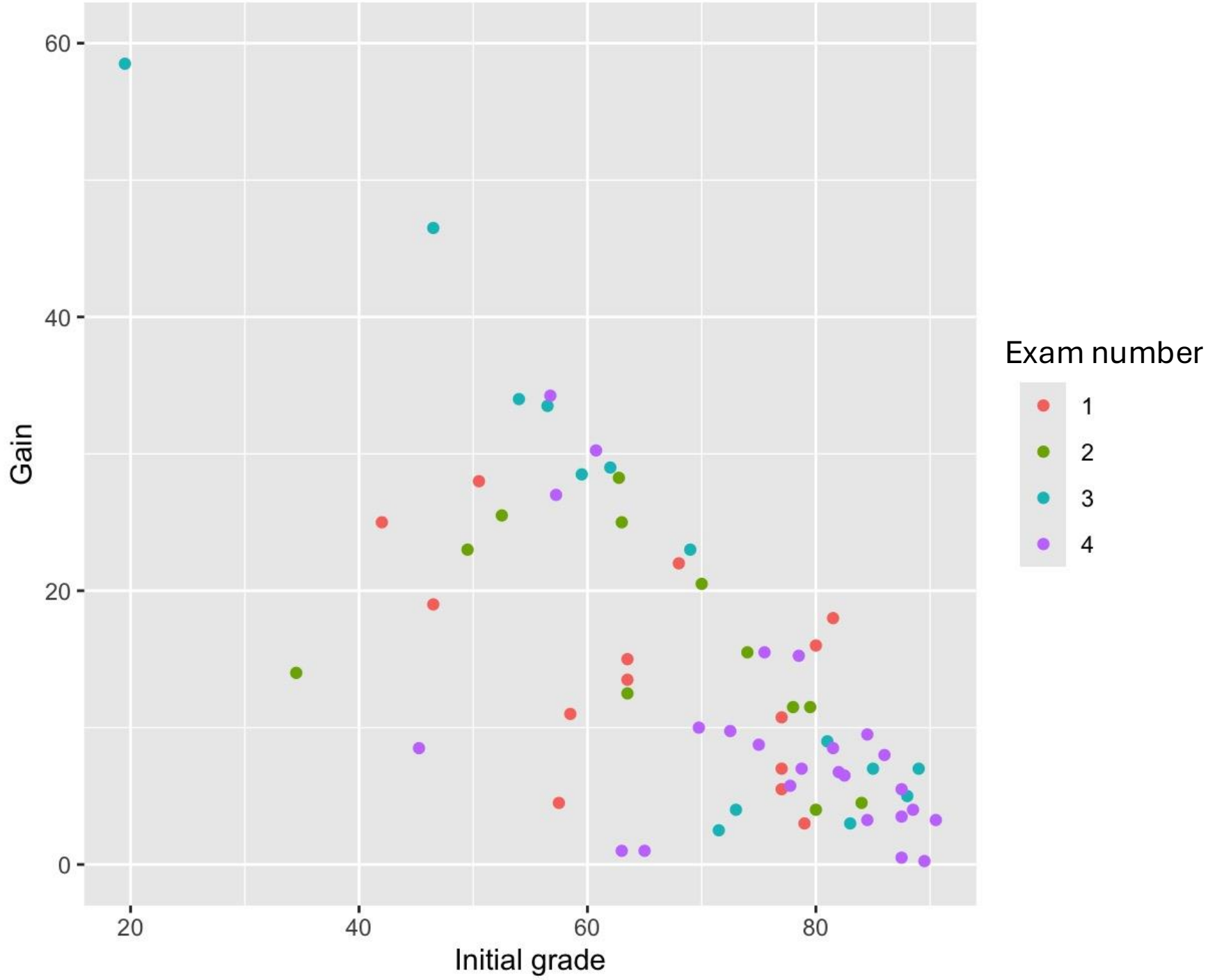
The titration curve for an amino acid is shown below. Which amino acid is it?



Shown below is a titration curve for glycine. Which form of glycine predominates at the point on the curve indicated by a star?




Exam 1 results
Initial and final scores
init
final
S 81.5 99.5 S
J 80 96 J
P 79 T
E 77 87.75 B
D 84 E
B 82 D
78.5 P
77 BB
W
X
T 68 69.5 F
67 K
65.5 L
X 63.5
BB
62 G
F 58.5
G 57.5
W 50.5
L 46.5
K 42
Exam 2 results
Initial and final scores
init
final
U 89 Y
BB
L
T
R
D
Q
U
E
D 84 84
X 83
E 79.5 X
Y 79 M
R 78 78 F
T 74 76 W
72.5
L 70
F 62.5
Q 62.75
BB
M 52.5
W 49.5
48.5 K
K 34.5
Exam 3 results
Initial and final scores
init
final
H 89 96 H
Z 88 L
Z
O 85 D
V 83 O
Y 81 T
Q
Y
F
BB
V
78 W
77 P
74 I
P 73
I 71.5
D 69
T 62
BB 59.5
Q 56.5
F 54
L 46.5
W 19.5
Exam 4 results
Initial and final scores
init
final
H 90.5 94.5 H
D 89.5 92.5 D
Z 88.5 91 Z
C 87.5 C
J 88.75 J
A 86 87.75 A
N 85.75 N
O 84.5 O
84.25
B 83.5 B
R 82.5 82.25 R
V 81.5 V
I I
S 78.75 79.75 S
F 77.75 F
G G
BB 75.5 BB
E E
T 72.5 T
P 69.75 P
66
M 65 M
64
AA 63 AA
Q 60.75 Q
W 57.25 W
L L
53.75
K 45.25 K


60
40
20
0
Gain
20
40
60
80
Initial grade
Exam number
1
2
3
4

Student feedback

- “…I also enjoyed the re-take ability of this course. It helped calm my test anxiety and encouraged me to actually learn the material and not memorize just to get a good grade.”

My next step: “enrichment activities” unlocked by scoring well on the first version of the exam

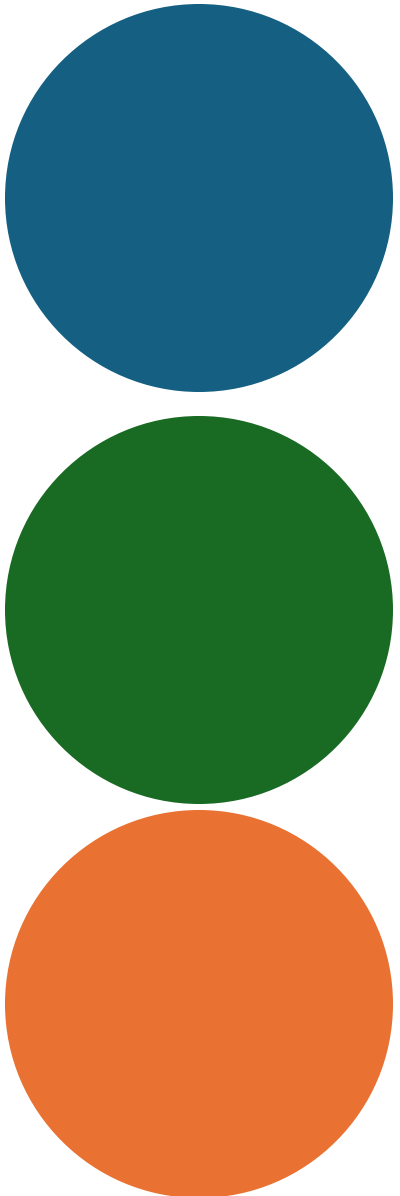
- Challenge problems on Blackboard?
- Case studies on Achieve?
- Incentivize with points towards the final exam

Making mastery grading sustainable…

- Create/source a DEEP bank of exam questions
  - AI & colleagues can help
- Use software to speed or even automate grading
  - e.g. Gradescope
- Put limits on when and how many times students can re-test
- Every assessment has to count for *something*

Incorporating mastery grading in your classroom…

- 10 minutes of solitary work on the worksheet
- 10 minutes of discussion with your neighbor
- 10+ minutes of sharing out with the group.



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Extra slides

Whiting & Persky (1987)

TABLE 1
Average Grades Before and After Implementation of Mastery Learning

Class	*n*	Before	After
CB/CS	795	2.36	3.88
DE 1	754	2.11	3.92
DE 2	344	2.33	3.95
Bus law	186	2.61	3.94
Econ	194	2.64	3.90
Coop G	46	1.62	3.89
Total	2,319	$\bar{x} = 2.28^{a}$	$\bar{x} = 3.92^{b}$

Learning outcomes should be SMART

- Specific
- Measurable
- Achievable
- Realistic
- Timely

Example: By the end of this unit, student will be able to draw and interpret titration curves.

Mastery Grading

CITL Faculty Workshop

Grace Hamilton, Ph.D.

September 26, 2025