

Introduction

Course: MA 116: Introduction to Scientific Programming
 Test average: # of skills demonstrated out of 16

Skills	Can be shown on any of...
1-4	Midterm 1, 2, 3, 4 and the final
5-8	Midterm 2, 3, 4 and the final
9-12	Midterm 3, 4 and the final
13-16	Midterm 4 and the final

There is no penalty for late mastery.

Moodle Needs: For each skill, we need...

I. Quizzes and the Question Bank: One Moodle quiz pulling questions from a question bank (each student gets a random selection).

II. Moodle Gradebook Setup: Organize and round each student's score

..... up to 1 if the skill threshold (usually 80%) is reached
 down to 0 if the threshold is not (yet) reached

III. Quiz vanishes with mastery: The skill's quiz only appears on a given test day if the student hasn't yet mastered the skill.

IV. Automatically updated bookkeeping: Until the skill is mastered, it appears in a personalized list of remaining skills for each student.

★**Main idea:** once a student masters a skill, it disappears from their list and their future tests on Moodle.★

I. Quizzes and the Question Bank

Each skill is tested with a Moodle quiz. There are 16 total quizzes stored one section in Moodle.

Each quiz pulls its own questions randomly from the bank below:

- Skill Questions (117) Skills 1-16
 - Skill 1 (1)
 - Fill in the blank (auto graded) (10)
 - Upload (manually graded) (13)
 - Skill 2 (1)
 - miscellaneous (10)
 - Prime questions (11)
 - Series type questions (10)
 - Skill 3 (2)
 - general matrix ops (9)
 - min, max type (11)
 - Skill 4 (2)
 - 2D plots (11)
 - 3D plots (11)
 - Skill 5 (1) function m files
 - Anonymous functions, general function questions (11)
 - Function m file (fill-in) (11)

Poster and graphics: maultsby.wordpress.ncsu.edu/mastery_poster

II. Moodle Gradebook Setup

Step 1: Create a category called Skills with subcategories called Skill 1, Skill 2, etc. Each subcategory contains only the skill's quiz.

Step 2: Quiz settings: keep only the highest score...

Step 3: Add a custom formula... their raw quiz score is 0-100. However, we want the feedback to be either 0 or 1:

↓ **Edit calculation:** manually creates the right grade

- "+ 0*[[attendance]]" forces the initial score 0 (placeholder)
- any raw score ≥ 80 (adjustable) rounds up to 1
student has demonstrated mastery, no need to try again
- any raw score < 80 rounds down to 0
student will need to try again

Step 4: Students do not see their raw score. In quiz settings...

Step 5: Check your work. My view (left) vs the student view...

★**The good news:** duplicating this Moodle each semester means this setup is only done once.★

III. Quiz vanishes with mastery

Three controls put on each quiz in the quiz settings (one for mastery):

IV. Automatically updated bookkeeping

One challenge with mastery-based grading is student bookkeeping.

Step 1: Create a section in Moodle called "Which skills am I missing?"

Step 2: Add an activity or resource → Label (for each skill)

Step 3: For the label, use Restrict Access...