Spring 2023 Assessment Report
First-Year Physics Labs

NMT

Submitted September 28, 2023

The New Mexico General Education Curriculum contains essential skills for various content areas. First-year Laboratory courses fall under the area of Science, for which the Essential Skills are Critical Thinking, Quantitative Reasoning, and Personal and Social Responsibility. Each Essential Skill is further comprised of Component Skills [1] . We have incorporated some of these skill components in the Assessment of our Labs. Although some aspects of the Assessment rely on the instructor's observations throughout the semester, the primary data source corresponds to the last Laboratory Report submitted by the students.

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[1]For more information see https://hed.nm.gov/resources-for-schools/public_schools/general-education

Assessment Results

Critical Thinking. Skill 3: Evidence Evaluation.

Evaluate evidence/data for credibility (e.g. bias, reliability, and validity), probable truth, and relevance to a situation.

Performance indicator. Based on student's last Laboratory Report.

Students show and discuss multiple measurements of the same quantity as evidence of their confidence in the data.
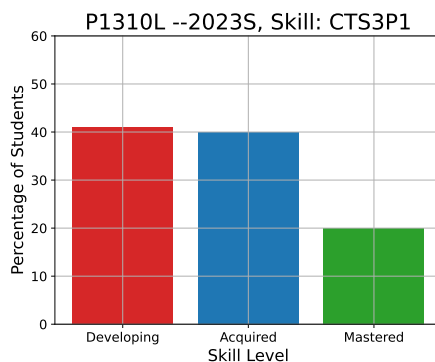
Performance levels:

Developing: multiple measurements are included, but they are not discussed as evidence for confidence.

Acquired: multiple measurements are included along with an attempt to present them as a measure of confidence in the data.

Mastered: multiple measurements are included, along with a clear explanation of why they are believable.
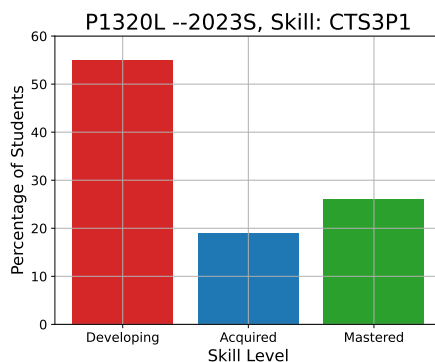
P1310L –CTS3P1

Skill Level	2023S
Developing	33
Acquired	32
Mastered	16
Total Count	81

P1320L –CTS3P1

Skill Level	2023S
Developing	52
Acquired	18
Mastered	25
Total Count	95

Critical Thinking. Skill 4: Reasoning/Conclusion.

Develop conclusions, solutions, and outcomes that reflect an informed, well-reasoned evaluation.

Performance indicator. Based on Student's last Laboratory Report.

In the conclusion section, the student evaluates if the theory reasonably predicts the results.
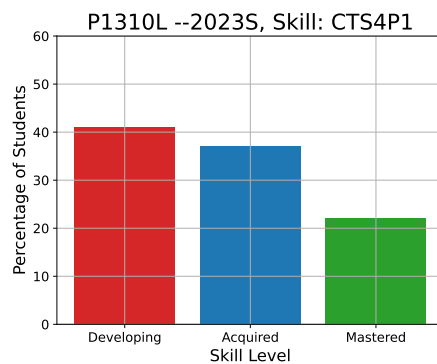
Performance levels:

Developing: A basic comparison between theory and results is included.

Acquired: A basic comparison is included, and the student attempts to explain the differences.

Mastered: A basic comparison is included, and possible sources for the discrepancies are given. The student concludes whether or not the predictions are reasonable.
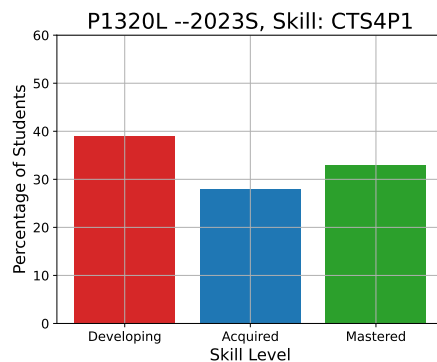
P1310L –CTS4P1

Skill Level	2023S
Developing	33
Acquired	30
Mastered	18
Total Count	81

P1320L –CTS4P1

Skill Level	2023S
Developing	37
Acquired	27
Mastered	32
Total Count	96

Quantitative Reasoning. Skill 1: Communication/Representation of Quantitative Information.

Part I, Express quantitative information symbolically, graphically, and in written or oral language.

Performance indicator. Based on Data Section of Student's last Laboratory Report.

Data is organized in tables that contain headers and units.
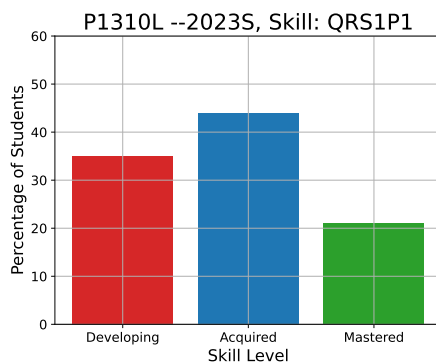
Performance levels:

Developing: Data is presented in tables, but some headers or units are missing.

Acquired: Data is presented in tables when appropriate; headers are used, and all units are included.

Mastered: Data is presented in appropriate tables, with headers and units; the table is named for reference within the report.
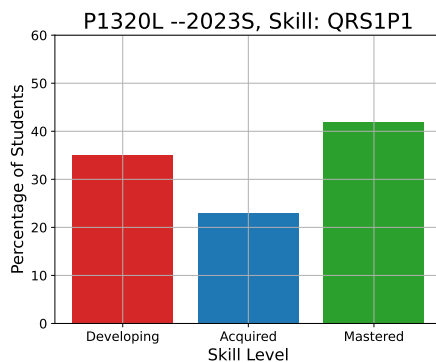
P1310L –QRS1P1

Skill Level	2023S
Developing	28
Acquired	36
Mastered	17
Total Count	81

P1320L –QRS1P1

Skill Level	2023S
Developing	34
Acquired	22
Mastered	40
Total Count	96

Quantitative Reasoning. Skill 1: Communication/Representation of Quantitative Information.

Part II, Express quantitative information symbolically, graphically, and in written or oral language.

Performance indicator. Based on Data Section of Student's last Laboratory Report.

Figures are labeled correctly, including units for the axes.
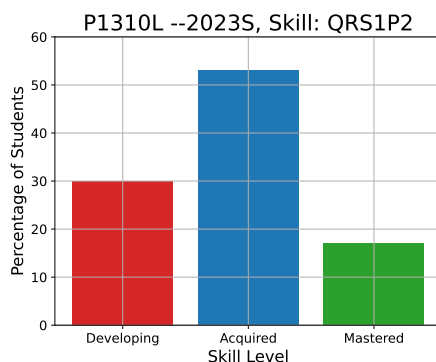
Performance levels:

Developing: Figures are included, but labels are missing.

Acquired: Figures are included and labeled appropriately.

Mastered: Figures are included and labeled appropriately; The figure is captioned and named for reference in the report.
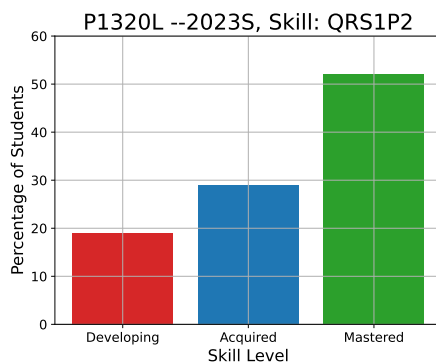
P1310L –QRS1P2

Skill Level	2023S
Developing	24
Acquired	43
Mastered	14
Total Count	81

P1320L –QRS1P2

Skill Level	2023S
Developing	18
Acquired	28
Mastered	50
Total Count	96

Quantitative Reasoning. Skill 1: Communication/Representation of Quantitative Information.

Part 3, Express quantitative information symbolically, graphically, and in written or oral language.

Performance indicator. Based on Student's last Laboratory Report.

The report is written in paragraph style, easy to read, and with minimal grammar or spelling errors.
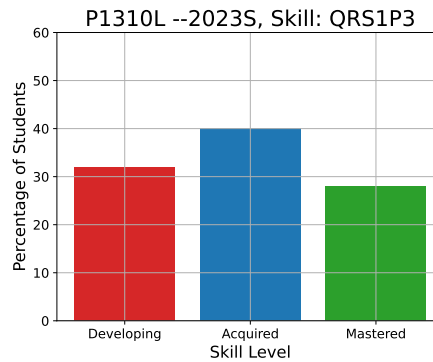
Performance levels:

Developing: The report is hard to read and contains multiple grammar or spelling errors, or the equations are not part of complete sentences.

Acquired: The report is somewhat easy to read.

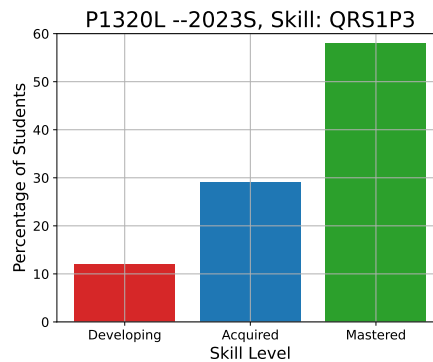**Mastered:** The report is written in paragraph style, easy to read, and with minimal grammar or spelling errors.

P1310L –QRS1P3

Skill Level	2023S
Developing	26
Acquired	32
Mastered	23
Total Count	81

P1320L –QRS1P3

Skill Level	2023S
Developing	12
Acquired	28
Mastered	56
Total Count	96

Quantitative Reasoning. Skill 3: Application of Quantitative Models.

Apply appropriate quantitative models to real world or other contextual problems.

Performance indicator. Based on Analysis Section of Student's last Laboratory Report.

Using the appropriate models, the student shows the derivation of the results starting from the collected data.
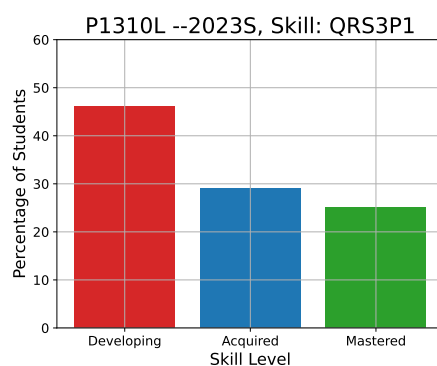
Performance levels:

Developing: Student shows the data and the results but does not show examples of the derivations.

Acquired: Student shows the data and the results, but the derivation of the results is sketchy.

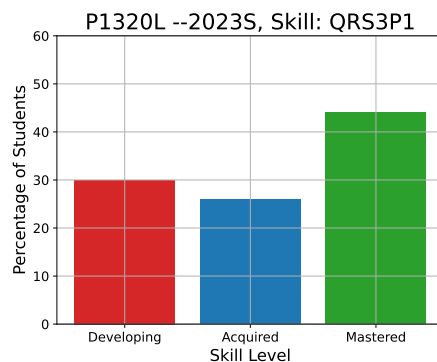**Mastered:** Student shows the data and the results; derivations are clear.

P1310L –QRS3P1

Skill Level	2023S
Developing	37
Acquired	23
Mastered	20
Total Count	80

P1320L –QRS3P1

Skill Level	2023S
Developing	29
Acquired	25
Mastered	42
Total Count	96

Personal and Social Responsibility. Skill 4

Part I, Collaboration skills, teamwork and value systems.

Performance indicator. From observations made by the instructor during the lab sessions throughout the semester.

The student collaborate during the data collection.
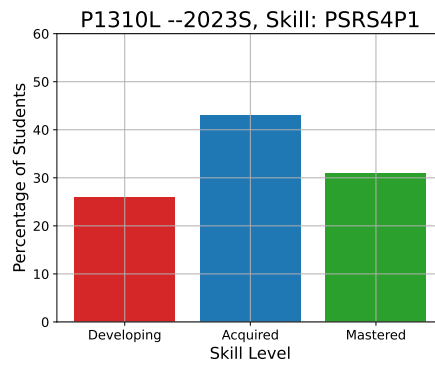
Performance levels:

Developing: The student participates reluctantly.

Acquired: The student engages with their team to perform their tasks.

Mastered: The student takes leadership of the team.

P1310L –PSRS4P1

Skill Level	2023S
Developing	21
Acquired	35
Mastered	25
Total Count	81

P1320L –PSRS4P1

Skill Level	2023S
Developing	11
Acquired	33
Mastered	52
Total Count	96