

1. Executive Summary:

In the Academic Year 2014-2015 the IWAC conducted an assessment of the institution-wide student learning objective D, Scientific Reasoning. Data was gathered from assessments done by faculty in their courses for departmental review. Data was gathered primarily from the Science and Math department as its faculty teaches scientific reasoning to every major on campus. These courses are mostly taken by lower-division students. Assessment scores were aggregated by major, graduation year, gender, and the assessment artifact used.

Results:

The benchmark was that 70% of students receive scores of 4 or above on a 6-point rubric.

1. When aggregated by major, all majors meet the goal except FET. FET is close to the benchmark and had the smallest set of data, so this could be a statistical deficiency.
2. When aggregated by class (graduation year), all classes meet desired outcome. Upper class students had better performance.
3. When aggregated by gender, both genders meet desired outcome with little difference.
4. When aggregated by artifact (course where data comes from) the percentage of students that meet the outcome varies widely.

Recommendations:

1. The IWAC believes that the FET data should be refined with further assessment over the next year. If the benchmark is still not met (or no new data is available), the department should have conversations about how to raise their scores and/or increase participation.
2. The IWAC recommends that more data be gathered for the next Quantitative Reasoning IW-SLO assessment cycle. The data would be improved by including more upper-division courses, and by using more standardized rubrics. However, every new data point will be gathered by faculty volunteers, so care must be taken to keep the burden light to maximize participation.

5. Now What? (Plan to Improve Our Program)

	Proposed Change #1	Proposed Change #2	
a) Proposed Changes	Seek more data, that can be compared easily	Seek FET data to complete this set, verify results	
b) Rationale for Proposed Changes	Small number of courses represented. Some assessment on a 6 point scale, some on a 5 point scale.	Small number of courses represented.	
c) Proposed Completion Date	End of next 4 year IWAC cycle starting 2016-2017	Summer 2015	
d) Stakeholders Involved	Core Faculty	FET Faculty	
e) Vetting to Stakeholders	IWAC	Mike Holden	
f) Shepherding Changes	IWAC	Mike Holden	
g) Budget Integration	n/a	n/a	
h) Incorporating Changes			
i) Improvement Target Goals	Statistically valid sample sizes in all groups aggregated.	Gather departmental assessment data from FET courses if it exists. If benchmark is not met, meet with faculty to discuss improvements.	
j) Evidence of effectiveness	Number of students sampled	Number of students sampled, benchmark results with new data.	

Section 2: Description of Rubrics and Scoring Analysis

Scientific Reasoning was assessed using data from 9 courses, for a total of 362 assessment scores in the data set. The assessment was performed by the instructors and reported to the IWAC committee using a rubric designed by the IWAC committee (shown below). The committee would like to thank the faculty who submitted data.

Rubric for Assessing Scientific Reasoning Student Learning Outcomes :

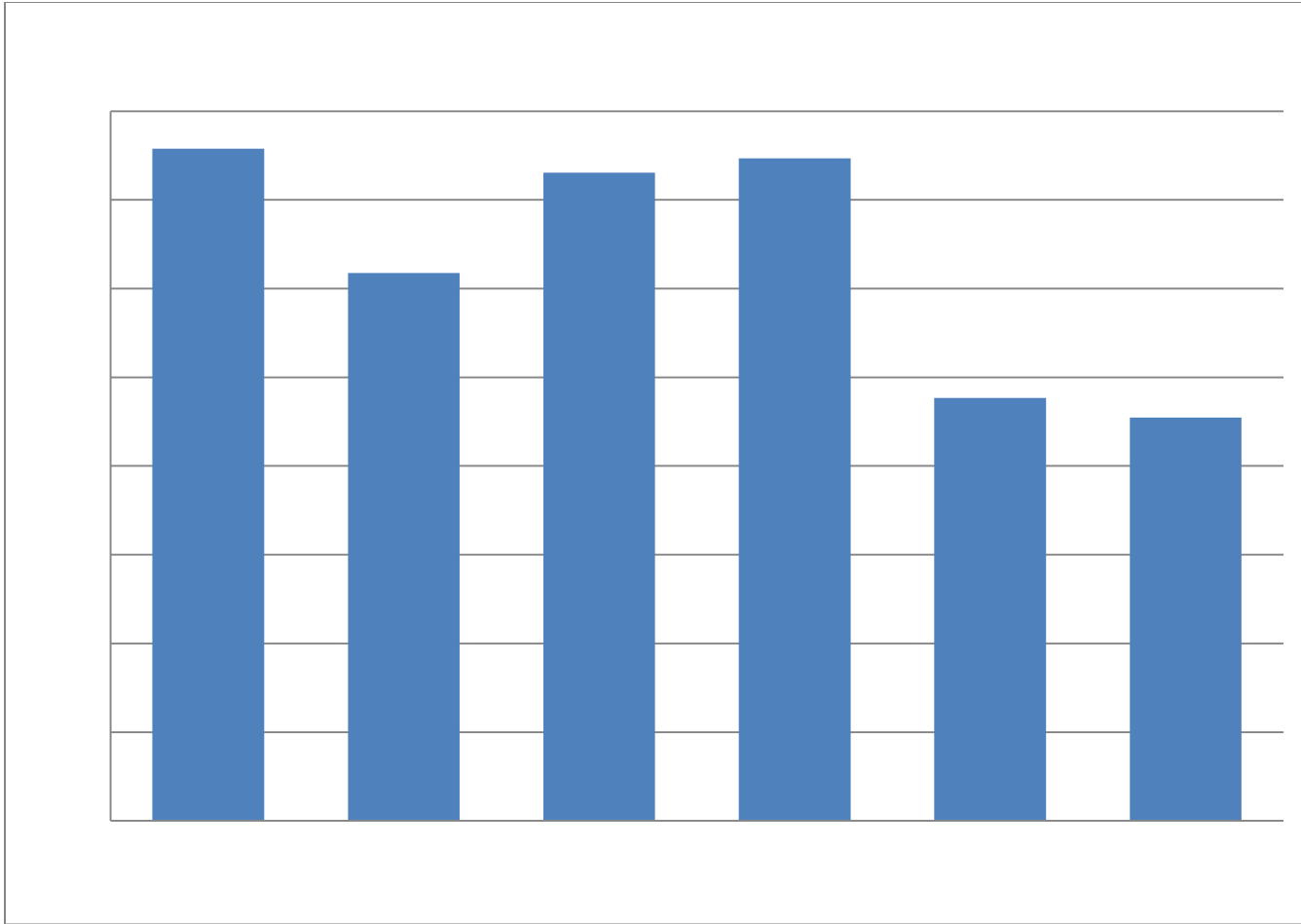
Apply scientific inquiry to understand the natural world.

Initial

Green header row						
Green	Grey	Grey	Grey	Grey	Grey	Grey
Green	White	White	White	White	White	White
Green	Grey	Grey	Grey	Grey	Grey	Grey
Green	White	White	White	White	White	White
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Green	White	White	White	White	White	White
Green	Grey	Grey	Grey	Grey	Grey	Grey
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Green header row						
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Green	White	White	White	White	White	White
Green	Grey	Grey	Grey	Grey	Grey	Grey
Green	White	White	White	White	White	White

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*Benchmark is defined as achieving a rubric score of 4 or better. Values represent the percent of total students within each major that meet this benchmark.

**BA = Business Administration; FET = Facilities Engineering Technology; GSMA = Global Studies and Maritime Affairs; MET = Marine Engineering Technology; MT = Marine Transportation; ME = Mechanical Engineering

*Benchmark is defined as achieving a rubric score of 4 or better. Values represent

