

Marine Science
 Programmatic Assessment
 April 2023

SLO7: Write a testable hypothesis.

SLO9: Choose and use appropriate statistical methods to analyze experimental data.

Artifact: MARE 350 (Coastal Methods and Analyses) and MARE 353 (Pelagic Methods and Analyses) midterm exams from Spring 2020, Fall 2020, and Spring 2021 (n=54). These were online exams given during the COVID lockdowns. On the exam, students are given a scenario and asked to write the null hypothesis (SLO7) and what statistical test(s) would they use to test their hypothesis (SLO9).

Method: Two Marine Science faculty evaluated their responses.

Rubric Used:

Score	SLO7: Hypothesis	SLO9: Statistical Method
3= Highly developed	Correctly written hypothesis that states the response(s) and/or factors	Correct statistical test and post-hoc test, if applicable
2= Minimum competency	Correctly written hypothesis includes key information, but not clearly written	Correct statistical test, but lacking qualifying information and post-hoc test
1= Needs Improvement	Hypothesis missing essential information, or not written as a hypothesis	Wrong statistical test

Data:

Course	Semester	SLO7 Score		SLO9 Score	
		Reader 1	Reader 2	Reader 1	Reader 2
MARE350	Fall2020	3	3	2	2
MARE350	Fall2020	2	3	2	2
MARE350	Fall2020	2	3	2	2
MARE350	Fall2020	1	3	2	2
MARE350	Fall2020	2	3	2	2
MARE350	Fall2020	3	3	1	1
MARE350	Fall2020	1	1	2	1
MARE350	Fall2020	2	3	2	2
MARE350	Fall2020	3	3	2	2
MARE350	Fall2020	1	1	2	1
MARE350	Fall2020	3	3	2	2
MARE350	Fall2020	3	3	2	2
MARE350	Fall2020	2	3	2	2
MARE350	Fall2020	2	3	2	2
MARE350	Fall2020	3	3	2	2
MARE350	Fall2020	1	3	2	2
MARE350	Fall2020	2	3	2	2
MARE350	Fall2020	3	3	2	2

Course	Semester	SLO7 Score		SLO9 Score	
		Reader 1	Reader 2	Reader 1	Reader 2
MARE353	Spring2020	3	3	2	2
MARE353	Spring2020	3	3	2	2
MARE353	Spring2020	2	3	2	3
MARE353	Spring2020	1	1	3	3
MARE353	Spring2020	3	3	2	2
MARE353	Spring2020	3	3	3	3
MARE353	Spring2020	2	3	2	2
MARE353	Spring2020	3	1	2	2
MARE353	Spring2020	2	3	2	1
MARE353	Spring2020	3	3	2	2
MARE353	Spring2020	1	1	2	2
MARE353	Spring2020	2	3	3	3
MARE353	Spring2020	2	3	2	2
MARE353	Spring2020	3	3	2	2
MARE353	Spring2020	1	2	2	2
MARE353	Spring2020	3	3	2	2
MARE353	Spring2020	3	3	1	1
MARE353	Spring2021	3	3	2	1
MARE353	Spring2021	3	3	2	2
MARE353	Spring2021	1	1	2	2
MARE353	Spring2021	1	1	2	2
MARE353	Spring2021	2	2	1	1
MARE353	Spring2021	3	3	3	3
MARE353	Spring2021	2	2	3	3
MARE353	Spring2021	3	3	2	2
MARE353	Spring2021	1	1	2	3
MARE353	Spring2021	1	1	2	2
MARE353	Spring2021	3	3	2	1
MARE353	Spring2021	1	1	1	1
MARE353	Spring2021	1	1	1	1
MARE353	Spring2021	3	3	2	2
MARE353	Spring2021	2	3	2	2
MARE353	Spring2021	2	1	3	3
MARE353	Spring2021	3	3	1	1
MARE353	Spring2021	3	3	3	3
MARE353	Spring2021	2	3	2	2
	Mean:	2.2	2.5	2.0	2.0
	n:	54	54	54	54
	Score=1	13	12	6	11
	Score=2	17	3	41	34
	Score=3	24	39	7	9

Observations:

SLO7- Write a Hypothesis: 77% of students met or exceeded competency in writing a hypothesis. Reader 1 was more particular over word choice between scoring a 2 or 3, but felt that competency was demonstrated.

SLO9- Statistical Method: 84% of students met or exceeded competency in choosing the appropriate statistical method(s). However, only 15% answered the question totally correct; the majority of students did not include the post-hoc test.

Assessment:

This artifact is a good representation of our students midway through this junior-level course. This is not the last time students work on hypothesis writing and statistical methods. These concepts are discussed, reviewed, and graded as part of another assignment in this class and in some senior-level courses. This will allow students to continue to improve on these SLOs.