

Stat 215 Spring 2021 NS GER Assessment Results

Course: Stat 215 Elementary Statistical Analysis Section 201

Section 201 instructor: Stephen Augustine (course coordinator)

Section 205 instructor: [REDACTED]

Section 206 instructor [REDACTED]

Section 207 instructor [REDACTED]

Section 208 instructor [REDACTED]

Section 210 instructor [REDACTED]

Section 295 instructor [REDACTED]

NS GER Learning Outcome 1: Understand and apply the major concepts of a natural science discipline, including its breadth and its relationship to other disciplines.

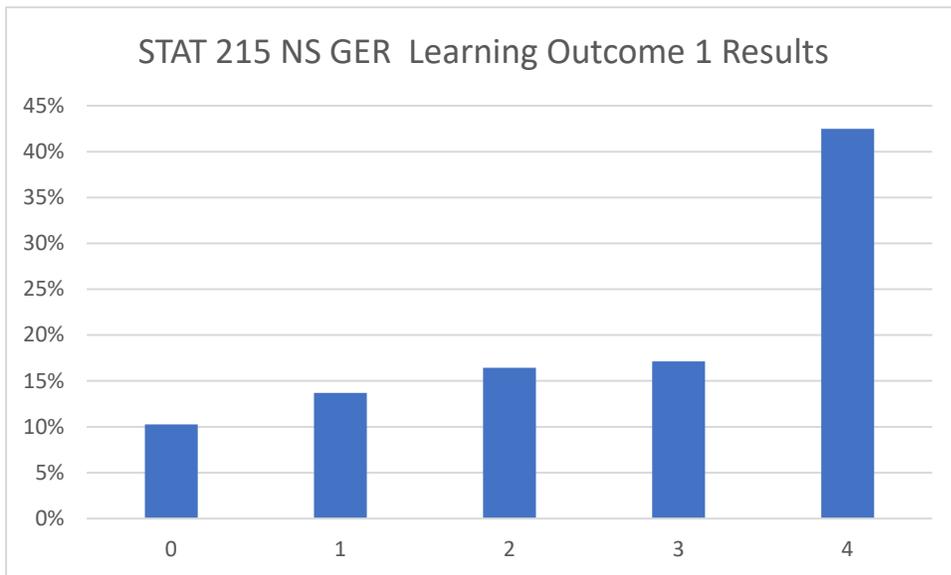
NS GER Learning Outcome 5. Apply ethical reasoning to questions, concepts, and practices within a natural science discipline.

Rubrics:

Score	Description
Score of 4 Exceeds Expectations	This score is given to student work that is A level work. The work is well organized and show mastery of the new concepts/skills. There can be minor errors/mistake.
Score of 3 Securely Meets Expectations	This score is given to student work that is B level work. The work shows almost full mastery of the new concepts/skills but there might be minor gaps.
Score of 2 Barely Meets Expectations	This score is given to student work that is C level work. The work shows enough understanding of the new concepts/skills to potentially to achieve full mastery with further study.
Score of 1 Does Not Meet Expectations but Attempted	This score is given to student work that is D or F level work. Work is mostly or completely wrong or irrelevant to the problem but shows attempt.
Score of 0 Did not Attempt	This score is given if there is nothing written done or submitted.

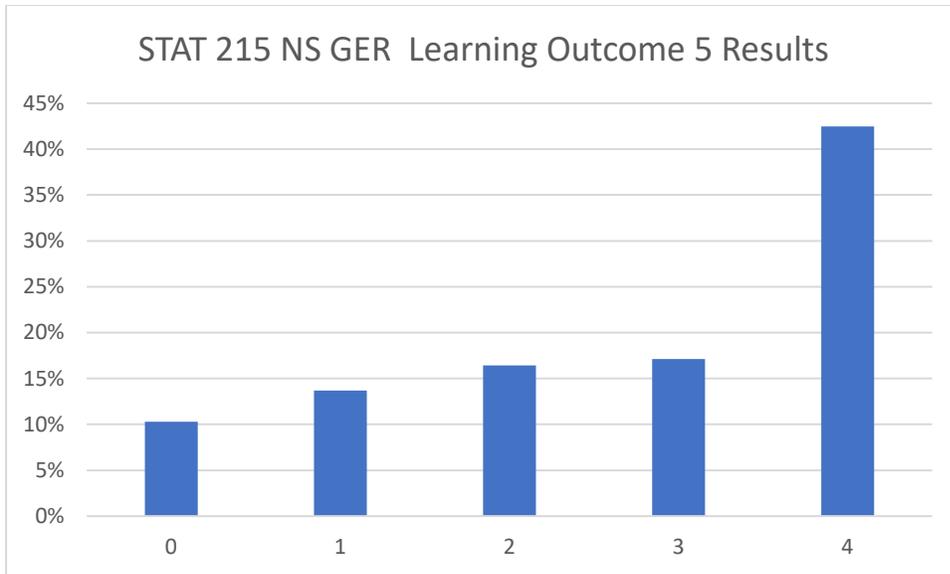
NS GER Learning Outcome 1:

Scores	Number of students	Percentage
LO1 response 0	15	10%
LO1 response 1	20	14%
LO1 response 2	24	16%
LO1 response 3	25	17%
LO1 response 4	62	42%
Total	146	100%



NS GER Learning Outcome 5:

Scores	Number of students	Percentage
LO5 response 0	15	10%
LO5 response 1	20	14%
LO5 response 2	24	16%
LO5 response 3	25	17%
LO5 response 4	62	42%
Total	146	100%



Reflection:

This assessment was done in June, after final exams were graded and final grades processed. The assessment tool used was the final exam. Three specific problems were selected for assessment, one that would represent important topics that were also assessed on each of the 3 unit exams in the course. *The student's performance was assessed holistically across each problem, considering both LO1 and LO5 together.* These topics were linear regression (also on unit exam 1), use of the standard normal distribution to determine probabilities of occurrence of ranges of values of a normally-distributed variable (also on unit exam 2), and construction of 2-sided confidence intervals for a single population mean (also on unit exam 3).

I (*Steve Augustine, course coordinator*) did the assessment for all students in all sections of the course, except for the two sections taught by [REDACTED]. These sections were not included since [REDACTED] was given permission to use techniques of his own development to teach the course and then assess in a way different from the schedule the rest of the sections followed, but corresponding to a teaching system [REDACTED] has been developing as part of his Ph. D. process.

The results of this assessment were discussed with Suzanne Boyd and Xianwei Van Harpen. I had no significant difficulties in performing the assessment.

A majority of the students performed at least at a B level on the assessed problems. I used an overall assessment of their performance on all 3 problems sampled as opposed to picking which of the 3 problems each student performed best on. I felt this gave me a fair picture of how students performed on concepts from all parts of the course, and was

pleased to see how many students not only performed well on the math concepts but also used the proper problem organization techniques and proper notation we preach in the course.

Students who received a grade of zero were those who did not submit a final exam, and my assumption was that many of those students had given up on the course well before the final exam date. Only 10 percent of the students fell into this category, which means that out of a typical section with 30 students enrolled, three of them do not finish the course. This likely falls within typical expectations for a college statistics course, but hopefully a return to the classroom for most sections can reduce this attrition.

Of the 16% of the students who performed at a C level, the common trait seemed to be the lack of proper problem organization and lack of use of proper notation. Both of these failings often led students to begin a problem correctly but then quickly move in an incorrect direction during the problem-solving process. Some of these students, ironically, performed well overall on the final exam but were weak or sloppy in their work on one or more of the assessed problems. Correspondingly, some students who did well with the assessed problems performed at a low-B to high-C level on the final exam overall. We will have to continue to stress the need for proper problem organization and application of notation in all problem-solving situations.

I was pleased overall to see how many of our students bought into the problem organization skills and use of proper notation that we expect them to use in the course. We will have to continue to stress both of these ideas, so that more of the students who fall into Category 2 can move themselves into Categories 3 or 4. Those that fell into Category 1 usually did so because it was obvious they just hadn't put much effort into learning the statistical concepts and the right way to do the mathematics of statistics. We can hopefully shrink the number of students who fall into this group, but the results of the assessment are not out of line with what we see in any given semester for the percent of students who really don't want to put in the effort to pass the class.

I think we could use similar assessment problems in the fall, since these problems were very easy for me to sample from all the final exams and reflect the students' ability to master important concepts and tasks from each third of the course.