

# Statistics Learning Outcomes Assessment

## Spring 2012

### Spring 2012 Assessment Results:

According to the below description of Learning Outcomes and Assessment Contexts, in Spring 2012, six students were assessed for Outcomes 4 and 5 using signature assignments from STAT 412. For Outcome 4, three students were rated "Excellent" and three rated "Acceptable", meeting our threshold of all students performing at an acceptable level or higher. For Outcome 5, two students were rated "Excellent" and four rated "Acceptable", again satisfying our program learning objectives.

### Learning Outcomes and Assessment Contexts:

**Outcome 1:** Given a scientific question, design an appropriate sampling plan.

**Indicator:** Signature assignment from Stat 446

**Rubric:**

**Excellent** - The plan is feasible, statistically valid and directly addresses the scientific question.

**Acceptable** - The plan is statistically valid but fails one of the other two criteria for excellence.

**Marginal** - The plan is statistically valid but fails both of the other two criteria for excellence.

**Unacceptable** - The plan is not statistically valid.

**Threshold:** On average, students will perform at an acceptable level or higher.

**Outcome 2:** Given a simple sampling plan, students will be able to execute the plan.

**Indicator:** Signature assignment from Stat 446

**Rubric:**

**Excellent** - The student collects the appropriate data according to the plan.

**Acceptable** - The student collects the appropriate data but fails to follow the plan exactly. The failure to follow the plan is a minor problem that does not invalidate the resulting data.

**Marginal** - The student fails to follow the plan in a minor way but the result is the data is not appropriate for the study.

**Unacceptable** - The student fails to follow the plan in such a way they show they do not understand what the plan is asking them to do. The resulting data is not appropriate for the study.

**Threshold:** On average, students will perform at an acceptable level or higher.

**Outcome 3:** Students will display competency in basic data analysis using SAS or R.

**Indicator:** Signature assignment from Stat 408.

**Rubric:**

**Excellent** - The student misses no more than one of the major features of the data.

**Acceptable** - The student misses no two or three of the major features of the data.

**Marginal** - The student misses no more than half of the major features of the data.

**Unacceptable** - The student misses more than half of the major features of the data.

**Threshold:** On average, students will perform at an acceptable level or higher.

**Outcome 4:** Given a scientific question and data, students will be able to run and analyze the appropriate statistical analysis.

**Indicator:** Signature assignment from one of the following classes: Stat 408, Stat 410, Stat 412, Stat 436, Stat 437, Stat 439, Stat 448

**Rubric:**

**Excellent** - The student recognizes the best statistical method to use, chooses the correct approach to analyze the data, and arrives at the correct answer.

**Acceptable** - The student does not recognize the best statistical method but chooses one that can be considered reasonable. They implement the method they have chosen correctly and arrive at the correct answer for their method.

**Marginal** - The student may recognize the best statistical method or chose a sub optimal but appropriate method, however they implement the method they have chosen incorrectly and arrive at an incorrect answer.

**Unacceptable** - The student fails to recognize any appropriate method for question and data. The implementation does not matter.

**Threshold:** On average, students will perform at an acceptable level or higher.

**Outcome 5:** Students will be able to explain and interpret the results of a statistical data analysis in awritten report.

**Indicator:** Signature assignment from one of the following classes: Stat 408, Stat 410, Stat 412, Stat 436, Stat 439, Stat 448

**Rubric:**

**Excellent** - The report is clear and concise. It is correct in terms of the statistical results, scope of inference, and vocabulary. It has minimal writing errors (grammar, spelling, etc.).

**Acceptable** - There may be minor flaws in terms of the statistical results, scope of inference, and vocabulary, but nothing that invalidates the conclusions. It may not be concise and it may have several writing errors but overall it is easily readable.

**Marginal** - There may be flaws in terms of the statistical results, scope of inference, and vocabulary that invalidates some of the conclusions. The student displayed an understanding of what needed to be done but the execution was flawed. The report may ramble and have several writing errors but it is readable.

**Unacceptable** - Major flaws in terms of the statistical results, scope of inference and vocabulary which invalidate the conclusions, or the report is so poorly written that it is very difficult to read and extract the relevant information. The student did not display an understanding of what needed to be done.

**Threshold:** On average, students will perform at an acceptable level or higher.