Assessment Report: Mathematics - Statistics Option
2017-2018

Fall 2017 Assessment Results

Assessment conducted by: John Borkowski; Reviewed by Statistics Faculty

According to the below description of Statistics Programs Learning Outcomes and Assessment, 6 students declaring statistics option majors or minors were assessed for Outcomes 1 and 2 in STAT 446 based on the final sampling project as a signature assignment.

**Outcome 1:** Given a scientific question, students will design an appropriate sampling plan or experimental design (Stat 446).

Based on the Proposals submitted for the final sampling project, all six students were assessed at the Acceptable or Excellent levels for Outcome 1.

Recommendations: With 100% of students assessed at the acceptable or excellent levels, the goal of having at least 50% acceptable or excellent is satisfied.

**Outcome 2:** Given a sampling plan or experimental design, students will be able to execute the plan or design (Stat 446).

Based on the implementation of the sampling designs provided in the student Proposals submitted for the final sampling project, all six students were assessed at the Acceptable or Excellent levels for Outcome 2.

With 100% of students assessed at the acceptable or excellent levels, the goal of having at least 50% acceptable or excellent is satisfied.

Spring 2018 Assessment Results

Assessment conducted by: Andrew Hoegh; Reviewed by Statistics Faculty

According to the below description of Statistics Programs Learning Outcomes and Assessment, 10 students declaring statistics option majors or minors were assessed for Outcome 3 in STAT 408 based on Question 1 on the final exam as a signature assignment.

**Outcome 3:** Students will use appropriate technology and statistical computing skills to conduct statistical analysis.

Of the 10 students assessed for outcome 3, eight students were assessed at the Acceptable or Excellent levels, one student was assessed at a marginal level, and one student did not complete the assignment (or the class).

With 80% of students assessed at the acceptable or excellent levels, the goal of having at least 50% acceptable or excellent is satisfied.
**Recommendations:** The program is meeting its goals. The recommendation for the coming year is to continue to review the assessment plan to ensure alignment between coursework and program learning outcomes. This is the first year of the program review that uses Stat 446, Stat 408, Stat 411, and Stat 412.

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**Program Learning Outcomes**

1) Given a scientific question, students will design an appropriate sampling plan or experimental design (Stat 446).

2) Given a sampling plan or experimental design, students will be able to execute the plan or design (Stat 446).

3) Students will use appropriate technology and statistical computing skills to conduct statistical analyses (Stat 408).

4) Given a scientific question and information about the study design used to collect data, students will be able to conduct an appropriate statistical analysis (Stat 411, Stat 412).

5) Students will be able to explain and interpret the results of a statistical data analysis in a written report, and in a way that is consistent with research question and study design. (Stat 411, Stat 412)

**Curriculum Map and Assessment Schedule**

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Assessment Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 408: Stat Computing and Graph Analysis</td>
<td>X</td>
</tr>
<tr>
<td>STAT 411: Methods for Data Analysis I</td>
<td>X X</td>
</tr>
<tr>
<td>STAT 412: Methods for Data Analysis II</td>
<td>X X</td>
</tr>
<tr>
<td>STAT 446: Sampling</td>
<td>X X</td>
</tr>
</tbody>
</table>

**Rubric**

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Unacceptable</th>
<th>Marginal</th>
<th>Acceptable</th>
<th>Excellent</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Given a scientific question, students will design an appropriate sampling plan or experimental design</td>
<td>The plan is not statistically valid.</td>
<td>The plan is statistically valid but fails both of the other two criteria for excellence.</td>
<td>The plan is statistically valid but fails one of the other two criteria for excellence.</td>
<td>The plan is feasible, statistically valid and directly addresses the scientific question.</td>
</tr>
<tr>
<td>(2) Given a sampling plan or experimental design, students will be able to execute the plan or design.</td>
<td>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.</td>
<td>The student fails to follow the plan in a minor way but the result is the data is not appropriate for the study.</td>
<td>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.</td>
<td>The student collects the appropriate data according to the plan.</td>
</tr>
</tbody>
</table>
### Threshold

*At least half of the students assessed for outcomes in a particular year will be “excellent” or “acceptable.”*