**Course Prefix, Number, and Title: STAT 152 Statistics (IAV format)**

**Section Number(s): 1001**

**Department: Math**

**Instructor: Jinho Jung**

**Academic Year: AY19-20**

**Semester: Spring**

**Is this a GenEd class? Yes\_X\_ No\_\_\_**

**Number of Students: 6**

**Complete and submit your assessment report electronically to your department chair. As needed, please attach supporting documents and/or a narrative description of the assessment activities. You may use as many or as few outcomes as necessary.**

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| **General Education Objectives** | **Class/Course Outcomes** | **Assessment Measures** | **Assessment Results** | **Outcome Results Analysis**  |
|  | In the boxes below, summarize the outcomes assessed in your class or course during the last year*.* If this is a GenEd class, include the appropriate GenEd objectives. | In the boxes below, summarize the methods used to assess course outcomes during the last year. Include the criterion you’ll use to judge whether or not students have achieved the expected outcome. | In the boxes below, summarize the results of your assessment activities during the last year. Include your judgement as to whether or not the criterion for student achievement has been met.  | In the boxes below, please reflect on this outcome’s results and summarize how you plan to use the results to improve student learning. |
| Demonstrate knowledgeOf mathematical notation system | **Outcome #1:** Use the normal distribution to interpret z-scores and compute probabilities.  | Assessment Measure: Problem #1, 2, 3, 4, 5, 6, and 7 of the final exam.Criterion for achievement:62% | Results: #1:71 %, #2:71%, #3:71%#4:71%, #5: 43%, #6: 14%#7: 71%The average = 58.9 %Criterion Met: No | 1. Results Analysis: Items #5 and #6 are the two problems that students could not achieve the criterion. These problems are regarding the empirical rule and the five-number summary.2. Action Plan: I will assign additional problems in the areas where students show weakness. |
| **Outcome #2:** Apply the concept of a sampling distribution and discuss the distribution of the sample proportion under repeated sampling (Central Limit Theorem). | Assessment Measure:Problem# 8, 9, and 10 of the final exam.Criterion for achievement:62% | Results:#8: 100%, #9:86%, #10: 57%The average = 81%Criterion Met: Yes | 1. Results Analysis:2. Action Plan: |
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| Apply mathematical concepts and operations in proper written or graphical format | **Outcome #3:** Select and produce appropriate graphical, tabular, and numerical summaries of the distributions of variables in a data set. Summarize such information into verbal and numeric descriptions.  | Assessment Measure:Problem #11, 12, and 13 of the final exam. Criterion for achievement:62% | Results:#11:57%, #12: 71%, #13:57%The average =61.7%Criterion Met: No | 1. Results Analysis: The area of the students’ weakness was finding areas under density curve and determining probabilities of the normal curve. 2. Action Plan: I will assign additional problems in the areas where students show weakness. |
| **Outcome #4:** Summarize relationships in bivariate data using graphical, tabular, and numerical methods including scatter plots, box plots, two-way tables, correlation coefficients, and linear regression.  | Assessment Measure:Problem #14 of the final examCriterion for achievement:62% | Results:#14: 71%Criterion Met: Yes | 1. Results Analysis:2. Action Plan: |
|  |  |  |  |  |
| Apply relevant mathematical skills in solving real-world problems | **Outcome #5:** Construct a model for a random phenomenon using outcomes, events, and the assignment of probabilities.  | Assessment Measure:Problem #15 and 16 of the final exam. Criterion for achievement:62% | Results:#15: 71%, #16: 43%The average =57%Criterion Met: No | 1. Results Analysis: The item #16 was the problem that students had a difficulty understanding. It is a problem regarding probability distributions and histograms. 2. Action Plan: I will assign additional problems in the areas where students show weakness. |
| **Outcome #6:**Apply methods of hypothesis testing to carry out a hypothesis about population means and population proportions and interpret the conclusion.  | Assessment Measure:Problem #17 and 18 of the final exam. Criterion for achievement:62% | Results:#17: 43%, #18: 57%The average =50%Criterion Met: No | 1. Results Analysis: The identified students weakness was finding mean and standard deviation of a sample mean. This is one of the areas of concern for students’ learning.2. Action Plan: I will assign additional problems in the areas where students show weakness. I will encourage students to use online tutoring or live tutoring from ASC and will encourage them to ask questions. |
| **Outcome #7**:Understand the dependence of margin of error on sample size and confidence level | Assessment Measure:Problem #19 and 20 of the final exam. Criterion for achievement:62% | Results:#19:43%, #20: 57%The average = 50%Criterion Met: No | 1. Results Analysis: The class overall had a difficulty in the learning outcome #7. These problems are finding the confidence interval and the margin of error. This is also an area of concern for students’ learning.2. Action Plan: I will assign additional problems in the areas where students show weakness. I will encourage students to use tutoring services and will encourage them to ask questions. |

**Notes:**

For the general education learning outcomes, the class has a satisfactory achievement on the first two general education learning outcomes; demonstrating knowledge of mathematical notation system and applying mathematical concepts and operations in proper written or graphical format. However, the class could not achieve the satisfactory achievement in the third Gen Ed outcome, applying relevant mathematical skills in solving real-world problems.

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| General Education Learning outcomes | Demonstrating knowledge of mathematical notation system: Course learning outcomes #1 and #2. | Applying mathematical concepts and operations in proper written or graphical format: Course Learning Outcomes #3 and #5 | applying relevant mathematical skills in solving real-world problems: Course Learning Outcomes #5, 6 and 7 |
| Achievement (%) | 69.95 | 66.35 | 52.33 |

Due to COVID-19, this class originally offered in an IAV format was converted to online in the middle of the semester. Both the students and the instructor had to adapt to the changes.

Although assigning additional problems will help students understand the concepts, they would be greatly helped by a better online tutoring system. The current online tutoring system, Pearson-Smarthinking, is slow to respond and the service is unacceptable. The math department is proposing that the college switch the online tutoring service for our students to improve student learning outcomes.

I have reviewed this report:

\_\_Jinho Jung\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Department Chair Dean

Date\_5/27/2020\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_­\_\_\_\_\_\_

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Vice President of Academic Affairs and Student Services

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