



2015-2016 CSCI EETF Assessment Year End Report, June, 2016

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[NOTE: Items A, B, C, and D are identical to your Page 2 on your Annual Report for CAPR. Please simply cut and paste from there. Item E is unique to the CSCI EETF.]

A. Program Student Learning Outcomes

Student learning outcomes for MS in Statistics are:

1. Apply statistical methodologies, including a) descriptive statistics and graphical displays, b) probability models for uncertainty, stochastic processes, and distribution theory, c) hypothesis testing and confidence intervals, d) ANOVA and regression models (including linear, and multiple linear) and analysis of residuals from models and trends.
2. Derive and understand basic theory underlying these methodologies
3. Formulate and model practical problems for solutions using these methodologies
4. Produce relevant computer output using standard statistical software and interpret the results appropriately
5. Communicate statistical concepts and analytical results clearly and appropriately to others; and
6. Understand theory, concepts, and terminology at a level that supports lifelong learning of related methodologies.

B. Program Student Learning Outcome(s) Assessed

For MS in Statistics we assessed SLO's 1, 2, 3, 4, and 6.

C. Summary of Assessment Process

We have long used the culminating experience of the Comprehensive Examination along with feedback from alumni and community industry leaders in assessing our programs. Student learning outcomes and institutional learning outcomes were previously identified and mapped to specific courses for all three programs (in Spring 2014, refer to program curriculum maps).

In 2014-2015 we implemented quantitative assessment of the results of our Comprehensive

Examination by mapping all but one of the SLO's for each of the MS programs to specific course problems on the MS exam. The comprehensive examination has a common (to both programs) 4-hour closed book examination and, four days later, program-specific 4-hour open book examinations. Questions on the examinations are identified with the required graduate courses. Rubrics were established for the outcomes in Spring 2015 and implemented both in Spring 2015 and 2015-2016.

The SLO that was not evaluated by the Comprehensive Examination involve communication skills (SLO #5 for Statistics MS). It was decided that this SLO is better addressed by term projects that involve communication (either a written project or presentation that is worth considerable weight in the grading scheme of the course). For the Statistics MS SLO #5, STAT 6509 "Theory and Application of Regression" will be used for assessment. Last year the course was formally selected and the rubric developed but not yet implemented.

All implementations of academic assessment took place after the last faculty meeting of the academic year, hence faculty review and any changes to the curriculum will be done in the future. This year we transformed both of our MS programs for the semester conversion.

D. Summary of Assessment Results

Our comprehensive examination is our primary method of assessing both master's degree programs. The tests are written to test knowledge from the required core courses for each program. Typically our pass rate is 75% or higher. Combined over the past few years, the average pass rate for Statistics MS is 79% (SD = 16%). For Fall 2015 and Spring 2016 the pass rate for Statistics is 75.8%. Most of the students take the comprehensive examination in the Spring (Fall 2015, $n = 15$ and Spring 2016, $n = 47$ for Statistics).

Last year we initiated the use of a rubric to assess the individual ILO's as described above. Rubrics used were on a 5-point scale with 5 denoting exemplary demonstration of the SLO involved and 1 denoting no or very poor demonstration of the SLO involved. The results for Statistics MS program for 2015-2016 are shown in Table 1 on the next page.

Discussion and tables continued on the next page.

Table 1: Frequencies of Rubric-Scores for Statistics MS 2015-2016

		SLO 1	SLO 2	SLO3	SLO 4	SLO6
Rubric Score	0	2	1	5	2	4
	1	1	2	6	1	3
	2	3	7	13	3	16
	3	12	18	20	12	18
	4	26	18	14	26	13
	5	18	16	4	18	8
Total		62	62	62	62	62

Table 2: Summary Statistics of Rubric Scores for Statistics MS 2015-2016

Statistic	SLO 1	SLO 2	SLO3	SLO 4	SLO6
Minimum	0	0	0	0	0
Maximum	5	5	5	5	5
Mean	3.82	3.58	2.71	3.82	2.92
Standard Deviation	1.15	1.18	1.32	1.15	1.33

The Statistics and Biostatistics Department evaluates the results of the comprehensive examination twice per year. This information, along with student feedback, alumni feedback, and information about current industry demands for specific statistical skills has led to our recent modernizing of our curriculum. Last year (2014-2015), two new courses were offered: in Winter, STAT 6610 “Data Visualization” and in Spring, STAT 6620 “Statistical Learning with R.” Professor Eric Suess developed and taught both courses. This year (2015 – 2016), both courses were very well received and in heavy demand (two sections were given for each course and all four sections were well attended). These courses were taken by students in both programs, Statistics MS and Biostatistics MS, as well as students outside the program.

This year we incorporated the information learned from the assessment of the individual rubrics from the tools used last year in our transformation of both programs for semester conversion