



2014-2015 CSCI EETF Assessment Year End Report, June, 2015

Program Name(s)	EETF Faculty Rep	Department Chair
Biostatistics MS	Lynn Eudey	Eric Suess/Mitch Watnik

[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 Biostatistics are:

1. Apply biostatistical methods to data, including (a) descriptive statistics, probability and graphical displays, (b) distributions, hypothesis testing and confidence intervals, and (c) uncertainty, likelihood, modeling and error analysis;
2. Derive basic theory and communicate to others results involving biostatistical data analysis;
3. Formulate problem solutions, produce appropriate computer code and to interpret results.

B. Program Student Learning Outcome(s) Assessed

For MS in Biostatistics we assessed SLO's 1, 2, and 3

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).

This year 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 and implemented.

The SLO's that were not evaluated by the Comprehensive Examination involve communication

skills (SLO #2 for Biostatistics MS). It was decided that these SLO's are 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 Biostatistics MS SLO #2, BSTA 6653 "Clinical Trials in the Pharmaceutical and Biomedical Industries" is used for assessment. This year the course was formally selected, the rubric was developed and implemented.

For the Statistics BS program STAT 4601 "Regression" was formally identified as the course to use for end-of-program assessment. Although this is the course selected for the Statistics MS program, it is a required course for Biostatistics MS as well.

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. We anticipate that any changes we decide upon will be implemented in the semester conversion process as we transform the programs.

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 80% (SD = 18%) and the average pass rate for Biostatistics MS is 76% (SD = 31%). For Spring 2015 the pass rate for Biostatistics is 94.4%. Most of the students take the comprehensive examination in the Spring (Spring 2015, $n = 18$ for Biostatistics).

This 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 tables below summarize the results of the Biostatistics MS assessment.

Tables and discussion continued on the next page.

Table 1: Frequencies of Rubric Score for Biostatistics MS 2015

		SLO 1	SLO 2	SLO3
Rubric Score	0	0	0	0
	1	6	0	0
	2	5	0	1
	3	5	2	7
	4	2	7	4
	5	0	9	6
Total		18	18	18

Table 2: Summary Statistics of Rubric Scores for Biostatistics MS 2015

Statistic	SLO 1	SLO 2	SLO3
Minimum	1	3	2
Maximum	4	5	5
Mean	2.17	4.39	3.83
Standard Deviation	1.04	0.70	0.99

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. This year, 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. Both courses were very well received and in heavy demand (a second section of STAT 6620 was added due to student demand, and STAT 6610 had over 40 students). These courses were taken by students in both programs, Statistics MS and Biostatistics MS.

Next year we will incorporate the information learned from the assessment of the individual rubrics from the tools used this year.