CALIFORNIA STATE
UNIVERSITY
E A S T B A Y

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

Program Name(s)	EETF Faculty Rep	Department Chair
Biostatistics MS	Lynn Eudey	Mitchell 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).

Last year we implemented quantitative assessment of the results of our Comprehensive Examination by mapping all of the SLO's for the Biostatistics MS program 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. Last year the course was formally selected, the rubric was developed and implemented in both Spring 2015 and Spring 2016.

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 Biostatistics MS is 75% (SD = 24%).. For Fall 2015 and Spring 2016 the pass rate for Biostatistics is 100%. Most of the students take the comprehensive examination in the Spring (Fall 2015, $n = 1$, and Spring 2016, $n = 8$ for Biostatistics).

In Spring 2015 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 for Fall 2015 and Spring 2016.

Table 1: Frequencies of Rubric Score for Biostatistics MS 2015-2016

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

Table 2 and discussion continued on the next page.

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

Statistic	SLO 1	SLO 2	SLO3
Minimum	1	3	2
Maximum	5	5	5
Mean	3.56	4.11	3.67
Standard Deviation	1.33	0.78	1.00

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 Statistics MS and Biostatistics MS, as well as by 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.