COMMITTEE ON ACADEMIC PLANNING AND REVIEW
ANNUAL PROGRAM REPORT

College	CoS
Department	Statistics and Biostatistics
Program Unit	
Reporting for Academic Year	2013-2014
Department Chair	Eric Suess / Lynn Eudey (Acting)
Date Submitted	5/15/2014

1. SELF-STUDY (about 1 page)

A. Five-year Review Planning Goals

The five year review includes planning goals for curriculum (3.1), students (3.2), faculty (3.3), and resources (3.4). To summarize, the curriculum plans include:
1. Updating our MS programs' curriculums
2. Offer required MS courses as graduate-only courses
3. Continue offering two sections of core graduate courses and grow our graduate program
4. Update our MS options to reflect demand
5. Enhance our BS program to reflect our SLO's and industry demands
The student plans include:
1. Grow our MS programs
2. Enhance and grow our BS program
3. Recruit community college students into our BS program
4. Increase the use of computation in courses (at all levels)
5. Continue teaching schedules that accommodate working students
6. Raise funds to increase our scholarship and leadership funds
Faculty plans include:
1. Anticipation of our junior faculty receiving tenure/promotion so that they can devote more time to program development and enhancement
2. Hire tenure-track faculty to replace recent attrition due to retirement and resignation
3. Hire faculty with expertise reflecting industry demands in Statistical Computation, Large Data Analysis, and Data Analytics
4. Increase our number of long-term lecturers
Resource plans include:
1. Upgrade computers for tenured/tenure-track faculty and lecturers
2. Explore the use of "clickers" in introductory statistics courses
3. Increasing our current 1.0 staff support to our former level of 1.75 staff support.

B. Five-year Review Planning Goals Progress

(Regarding 3.1) We once again offered the non-parametrics course (STAT 6872) as a "Seminar", tiered with the undergraduate course. We also offered a seminar course on "R Programming" in the Winter (STAT 6861); this course has been proposed as a regular course (STAT 6260) beginning in AY 2014-5. In addition, we are proposing two additional new courses: Data Visualization (STAT 6270) and Machine Learning and Data Mining (STAT 6650). In a concurrent change, the Department Faculty voted to remove STAT 6401 and the choice of MATH 3100 or 3300 from the required core for MS Statistics. Some of these courses are now required for some of the options. STAT 6401 was also removed from the required course list for MS Biostatistics.   The new courses were added to the list of elective courses for these degree programs. In light of these changes, a course number for a graduate non-parametric statistics was not added, as the Faculty felt the aforementioned additions would diminish the demand for it.

We continue to advise using Blackboard messages to majors and have orientation sessions with new and continuing students. This year, with Prof. Watnik serving as Senate Chair, Professor Eudey served as graduate advisors for MS Statistics; Professors Fan and Suess served as advisors for MS Biostatistics. Prof. Watnik continues to handle grad checks for all students. The Department successfully completed its hire, selecting Dr. Ayona Chatterjee, who will be begin on the tenure-track (with 2 years of service credit) in the Fall. Dr. Chatterjee has been a lecturer in the Department for the past 2 years.

For the undergraduate program, STAT 4910 continues to be "tiered" with 6250 in the Fall Quarter.

(Regarding 3.2) We continue to have a single 1.0 staff person. Ann Cambra is a 0.25 retired annuitant, working on special programs for the Department. Our graduate program enrollment again dropped between 2012-3 and 2013-4, as we admitted fewer students.

C. Program Changes and Needs

We anticipate implementing some of the curricular changes envisioned in the five-year plan this coming year, including, but not limited to, the establishment of a separate course number for graduate-level non-parametric statistics and changing of the prerequisites to STAT 4601 (undergraduate regression).

2. SUMMARY OF ASSESSMENT (about 1 page)

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.

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.

Student learning outcomes for BS in Statistics are:
1. Apply basic computational skill in descriptive statistics and graphical displays; hypothesis testing and confidence intervals; modeling and error analysis
2. Communicate to others results involving descriptive statistics and graphical displays; hypothesis testing and confidence intervals; modeling and error analysis
3.Analyze data using appropriate statistical computer software and to interpret the results covering descriptive statistics and graphical displays; hypothesis testing and confidence intervals; modeling and error analysis

B. Program Student Learning Outcome(s) Assessed

For both graduate degrees we use the MS Comprehensive Examination for assessment. This assessment address all of the SLO's for each of the programs.

C. Summary of Assessment Process

We assess our graduate program using the MS Comprehensive Exam. This exam is analogous to a "program final" and tests materials from the learning outcomes from our programs. The faculty has long, detailed discussions about the results of the exams. Nonetheless, the Faculty are going to pursue assessment in STAT 6509 for the MS Statistics program, BSTA 6653 for the MS Biostatistics program, and STAT 4601 for the BS Statistics program.

D. Summary of Assessment Results

Four years ago, the Department began using SAS in its graduate-level regression (6509) course. Beginning in 2011-2, SAS was also used in the earlier analysis of variance (6305) course.

Though the instructors for both courses changed in 2012-3, SAS continued to be used as there was consensus that increased use of SAS was beneficial to the students.

Our department regularly assesses introductory courses. In 2011-2, we attempted to integrate the multiple choice assessment into the web-based homework package. However, for some students, the plots did not appear on the screen properly and it was clear that some students were collaborating while taking the test. This year, the assessments were done in class. The introductory course assessment is a legacy from many years ago and the faculty has decided it needs a modernization. The Department updated the assessment slightly and anticipates broader changes next year.

3. STATISTICAL DATA (about 1 page)

Planning and Institutional Research produce program statistics annually in standard format. These statistics will be attached to the Annual Report of the Program Unit. This statistical document is expected to be approximately one page long and will contain the same data as required for the five-year review including student demographics of majors, student level of majors (e.g. Juniors, Seniors), faculty and academic allocation, and course data.

The following links might be helpful:

    a)   Student demographics of majors
            http://www.csueastbay.edu/ira/tables/AcademicProgramReview/apr.enrollment.PGM_MAJOR.Statistics.html

b)   Degrees Conferred by the program
http://www.csueastbay.edu/ira/tables/AcademicProgramReview/Degrees%20Awarded%202011-12.html
See "degrees awarded.xlsx" attachment.

c)   SFR's by discipline
See Statistics SFR.xlsx. Note that STAT had the highest graduate-level SFR in the University and fifth highest overall.

d)   Course History data
http://www.csueastbay.edu/ira//tables/AcademicProgramReview/crshis.STAT.html

http://www.csueastbay.edu/ira//tables/AcademicProgramReview/crshis.BSTA.html

Additional data can be obtained through this link:
http://www.csueastbay.edu/ira/factbook/Academic%20Program%20Review%20Summary%20Data.html/

The Annual Report may include one or two pages of supplemental information, as appendices, in the form of graphical presentation (e.g., line graphs), tables, and pertinent discussion which summarize the data of the last several (3-5) years to make changes and trends more apparent.