CALIFORNIA STATE UNIVERSITY EAST BAY

COMMITTEE ON ACADEMIC PLANNING AND REVIEW
ANNUAL PROGRAM REPORT

College	CoS
Department	Math and Computer Science
Program Unit	Computer Networks
Reporting for Academic Year	2014-2015
Department Chair	Matt Johnson (Reported by Leann Christianson)
Date Submitted	6/23/2015

1. SELF-STUDY (about 1 page)

A. Five-year Review Planning Goals

The Computer Networks Master's degree program is housed in the Department of Math and Computer Science. It is unique in the Bay area as none of the other local universities offers a degree with this emphasis. One of the program's challenges is that faculty members supporting the Networks program also support the Computer Science program. Additionally, all courses (except for CS 6899 Capstone Project) can be potentially dual-enrolled with M.S. Computer Networks and M.S. Computer Science students, thus hindering accurate assessment of the two individual programs.

Students participating in the Computer Networks program are very successful in finding employment at local companies such as Symantec, Qualcomm, NetXperts, NetApp, Brocade, etc. We lose one to two students a year through attrition.

Our goals from the last 5 year review were to increase enrollment in the program, replace retiring faculty, and to implement an assessment plan. Enrollment increased dramatically last year. This year we are still seeing many applicants but are admitting fewer students, as the applicants we are seeing do not have adequate prerequisites and GRE scores.

Our search for a new faculty member with expertise in a general computer science area was unsuccessful this year. We will continue that search next year, and have been granted a second position as the department has four faculty in their last years of the FERP program. Once again we are not specifying a particular research focus.

In addition, the Math and Computer Science Department will be splitting into two departments in Fall 2015. This brings the Computer Science faculty (who support the Computer Networks program as well) down to nine tenure-track professors.

Our assessment process is moving forward. We successfully administered post-assessment examinations for seven courses this year. We are compiling results and modifying our process as needed. Primarily we have tuned the assessment for the Capstone project. A rubric was created for evaluating student projects, and was used for the first time during winter quarter 2015.

Our main goal for the 2015-16 academic year is semester conversion. We are evaluating the possibility of making Computer Networks an option under the M.S. Computer Science program once we move to semesters.

B. Five-year Review Planning Goals Progress

In our five year review we mentioned the need to increase enrollment, replace faculty that were FERPing or retiring, and institute an assessment plan.

The demand for the Computer Networks degree is primarily external and based on location and employment opportunities. Students from other countries make up the majority of our population. They come because the university is located near Fremont and Silicon Valley. We also attract currently employed networking professionals who wish to increase their knowledge and promotion opportunities. The economic upturn and the need for networking professionals have increased job opportunities. Consequently, students are finding internships and getting

hired quickly. The Bureau of Labor statistics projects a 15% increase in jobs over the next 6 years.

Four faculty members in the Computer Network program are FERPing. It is essential to replenish faculty to both cover existing requirements and find faculty with more direct experience with newer technology. We have had difficulties hiring faculty and lecturers due to salary constraints.

At the time of our last five year review, we were just starting to identify program learning outcomes and student learning outcomes. In the past three years we have finalized program learning outcomes, aligned those to our courses, and have begun implementing post-assessment examinations for each course. The exams are deployed through Blackboard. Primarily we have tuned the assessment for the Capstone Project. Evaluating and compiling the statistics generated from Blackboard has been difficult; therefore, we are evaluating alternatives for gathering data. Most likely we will be creating student portfolios. This is a method recommended by accreditation boards such as ABET.

C. Program Changes and Needs

Since our last five year review, three new hybrid courses have been added to the curriculum: Security in Mobile, Wireless, Grid and Pervasive Computing (CS 6526), Security Management (CS 6527) and Cloud Computing (CS 6593). Additionally, the new course Statistical Learning and Data Analysis (CS 6831) was added to the Computer Science curriculum. These are courses that provide students the opportunity to learn about more current technologies.

In our previous reports, we mentioned our problem with oversubscribed courses. Students with early registration appointment times would sign up for the maximum allowed by the system (4 enrollments and 4 waiting lists). They would then drop the courses they did not want on the last day of the Add/Drop period. This meant that students with later registration appointments, including all incoming students, would have to get on waiting lists. The incoming students would be unable to register for courses that we had told them they were required to take, and for visa reasons had to sign up for courses for which they were unprepared. It also meant that sometimes extra sections created to meet supposed demand would turn out to be unnecessary after all the drops. Early attempts to mitigate the problem by appealing to students to stop enrolling in extra

courses had no impact on the problem.

The department addressed this by limiting early registration for courses starting in the fall quarter of 2014. After three quarters, we have to say this has been the most beneficial change to the program since at least the start of the assessment process. New students have been able to enroll in appropriate courses, existing students have been able to find courses to satisfy requirements, and enrollment has reflected actual demand.

Another issue with broad impact has been academic dishonesty. The department chair receives copies of all academic dishonesty reports, and had to process a large stack of reports each quarter. In meetings with the students involved, he also found that students were dismissive of the measures taken at the university level. Anecdotally, some faculty observed repeated incidents with the same students despite previous reports on their file. Inevitably, some faculty had ceased to use the academic dishonesty process since they felt that the reports had no impact and were thus a waste of time. Students not involved in academic dishonesty were frustrated as well, feeling that they had to compete with students with an unfair advantage. Some did come forward to mention their frustrations and request the department to do something, though as might be expected, they did so anonymously. In a rather dramatic incident, a research group from another university investigating the online solicitation of illicit aid for coursework provided an instructor with proof that a student in that instructor's course had offered to pay for someone to do their assignments. It turned out that work was shared with the rest of the class.

To handle this issue, the Chair proposed, and the Department accepted, levying department-level sanctions to a sufficient level to at least diminish the frequency. The first incident of reported academic dishonesty deprives the student of any opportunity or benefit requiring a department signature, whether a grader or TA position, a scholarship, or the opportunity to do an internship through the university's curricular practical training program. The second incident of reported academic dishonesty, even in the same academic term, results in declassification of the student. The effect of this is to remove them from the program. As with the early registration limits, this policy was started in the fall quarter of 2014. While the punishments may seem harsh, in just the three quarters of enforcement, the number of academic dishonesty reports has plummeted. During that period, the teaching faculty has been essentially the same, as have the courses offered.

Faculty:

Name	Time Base
Brown, Kevin	1.0
Christianson, Leann	1.0
Ertaul, Levent	1.0
Grewe, Lynne	1.0
Johnson, Matt	1.0
Jurca, Dan	0.44 (FERP)
Reiter, Eddie	0.5 (FERP)
Roohparvar, Farzan	1.0
Simon, Steve	0.44 (FERP)
Yang, David	1.0
Yu, Ytha	0.44 (FERP)
Zhong, Fay	1.0
TOTAL FTEF	**9.82**

Resources and Needs:

The Computer Science Department was dramatically impacted by IT Centralization several years back. Up until last year, we had only one small computing lab with less than a dozen machines -- despite the number of students in the majors – and only one computer classroom. Last year we were finally able to obtain at least primary usage to a second newly renovated computer classroom, and access to a second small computer lab in VBT. CS and Networks are still SEVERELY underequipped. Students often try to make do with their own laptops and general purpose space (like the Cave of the Science building), but this often leads to difficulties from incompatibilities among their laptops. Many courses in the curriculum require dedicated servers that are isolated from the campus networks, as students write programs to interact or query these servers. Getting these configurations set up is difficult when IT centrally manages all systems on campus. Classroom space, retiring faculty, equipment and software shortages, and lack of dedicated IT support are all issues that SEVERELY impact the program and its future growth.

2. SUMMARY OF ASSESSMENT (about 1 page)

A. Program Student Learning Outcomes

Students graduating with an M.S. in Computer Networks from CSU East Bay will be able to:

1. Exhibit mastery of advanced computer science theory as applied to the field of computer networks
2. Employ current techniques, skills, tools, and coding practices necessary for application and system development
3. Apply critical thinking and problem solving skills by analyzing problems, designing solutions, and evaluating results
4. Demonstrate communication skills in both written and oral form, and work in a team environment
5. Independently acquire new computer related skills through analysis of current computer science literature and industrial practices

B. Program Student Learning Outcome(s) Assessed

As according to our assessment plan, we are closing the loop on PLO #2 this year. The department does collect assessment data for all targeted courses each year, however, so as to track trajectories for scores on all PLOs.

Post-assessment quizzes were administered for five courses:

CS 6560 Mastering PLO1, Practicing PLO3, PLO4	
CS 6526 Practicing PLO 1, PLO 4, and PLO 5	
CS 6591 Practicing PLO1 and PLO2, Mastering PLO 4	
CS 6715 Mastering PLO 1, Practicing PLO 3 and PLO 4	(Breadth requirement)
CS 6899 (Capstone Project), Mastering PLO 3, PLO 4, PLO 5	(Capstone requirement)

C. Summary of Assessment Process

We created PLOs and SLOs for the Master in Computer Networks in the academic year 2012-

2013. The Math and Computer Science Department in which this degree is housed made the decision to use Blackboard as a means to provide students with an assessment exam that addresses the SLOs of each course (which are mapped to PLOs for each program and the ILOs of the university). We have these in place for seven courses in the M.S. Computer Networks program at this time (an increase of four from last year). The results of these exams are being stored in a separate Blackboard shell repository for the Department. Evaluating the results of these exams is challenging, as each assessment contains questions for multiple PLOs. We are currently looking at averages over the entire exam, which is suboptimal. To evaluate by PLO, hand calculations are needed. For the Capstone project, we went to a rubric for evaluating written projects. We are planning an alternative means for evaluation when we move to semesters.

We are considering other options such as creating individual assessments for each PLO, thus allowing automatic calculation through Blackboard. Another challenge is addressing PLOs for both the Computer Science Master degree and the Computer Network Master degree in courses that serve both programs. We are evaluating merging the two separate programs into one degree with two options for semester conversion. In addition, we are looking at alternative ways to assess PLOs that do not depend solely on Blackboard. We will be looking at methods suggested by ABET, as we may be looking for ABET accreditation of our undergraduate Computer Science program.

In evaluating our PLOs and SLOs and their correspondence to the ILOs, we note that diversity, social responsibility, and sustainability are not adequately addressed in our curriculum. We will be sure to include these areas in our new classes that are tailored towards the semester calendar – specifically in the required courses CS 6591 Network Design and CS 6899 Capstone.

For PLO #2 this year, the assessment score for CS 6591 was well beyond the acceptable score of 70%, indicating that at this juncture we are adequately addressing this outcome in our curriculum.

D. Summary of Assessment Results

CS 6525	average 78%
CS 6526	average 80%
CS 6560	average 69%
CS 6591	average 82%
CS 6596	average 77%
CS 6715	average 80%
CS 6899	average 82%

Two student projects from CS 6899 were chosen to be published in the Proceedings of the 2015 International Conference on Security & Management SAM'15.

3. STATISTICAL DATA (about 1 page)

Student Demographics: Updated demographic data for 2014-15 was not available.

Computer Network		Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013
Female	Black, non-Hispanic		1			
	Asian		3		1	
	White				1	
	Race/ethnicity unknown				1	3
	Nonresident aliens	6	10	15	14	16
Male	Black, non-Hispanic				1	1
	Asian				1	3
	White	2	1			2
	Race/ethnicity unknown		1			
	Nonresident aliens	15	19	10	7	28
Total	Black, non-Hispanic		1		1	1
	Asian		3		2	3
	White	2	1		1	2
	Race/ethnicity unknown		1		1	3
	Nonresident aliens	21	29	25	21	44

Annual Data:

A. Student Headcount:

Computer Network					
1. Undergraduate	0	0	0	0	0
2. Postbaccalaureate	0	0	0	0	0
3. Graduate	35	25	26	53	57
4. Total Number of Majors	35	25	26	53	57

B. Degrees Awarded:

Computer Network	**College Years**				
Degrees Awarded	**09-10**	**10-11**	**11-12**	**12-13**	**13-14**
1. Undergraduate	0	0	0	0	0
2. Graduate	5	12	16	12	18
3. Total Number of Majors	5	12	16	12	18

C. Faculty Information:

Please note that the university does not calculate separate data for the Math and Computer Science programs. Please see above (Program Needs) for information on Computer Science and Computer Network faculty.

	Fall Quarter				
	2010	**2011**	**2012**	**2013**	**2014**
C. Faculty					
Tenured/Track Headcount	Computer Science and Mathematics Combined				
1. Full-Time	25	25	23	21	22
2. Part-Time	4	2	1	1	2
3a. Total Tenure Track	29	27	24	22	24
3b. % Tenure Track	80.6%	62.8%	58.5%	52.4%	57.1%
Lecturer Headcount	Computer Science and Mathematics Combined				
4. Full-Time	1	1	1	2	2
5. Part-Time	6	15	16	18	16

6a. Total Non-Tenure Track	7	16	17	20	18
6b. % Non-Tenure Track	19.4%	37.2%	41.5%	47.6%	42.9%
7. Grand Total All Faculty	36	43	41	42	42
Instructional FTE Faculty (FTEF)	Computer Science and Mathematics Combined				
8. Tenured/Track FTEF	22.4	19.4	16.5	17.4	17.0
9. Lecturer FTEF	11.1	18.1	19.0	19.3	18.4
10. Total Instructional FTEF	33.5	37.4	35.4	36.7	35.4
Lecturer Teaching	Computer Science and Mathematics Combined				
11a. FTES Taught by Tenure/Track	439.1	307.1	288.1	314.9	356.4
11b. % of FTES Taught by Tenure/Track	58.7%	38.7%	36.0%	36.2%	39.4%
12a. FTES Taught by Lecturer	308.5	487.1	513.2	553.9	547.3
12b. % of FTES Taught by Lecturer	41.3%	61.3%	64.0%	63.8%	60.6%
13. Total FTES taught	747.7	794.2	801.3	868.7	903.7
14. Total SCU taught	11215.0	11913.0	12019.0	13031.0	13556.0

D. Student Faculty Ratios:

D. Student Faculty Ratios	Computer Science				
1. Tenured/Track	16.8	14.7	17.1	19.4	20.9
2. Lecturer	26.4	23.6	27.5	30.2	29.2
3. SFR By Level (All Faculty)	17.5	15.5	18.5	21.5	23.0
4. Lower Division	24.6	22.5	20.8	24.9	28.9
5. Upper Division	17.0	17.5	20.2	21.4	23.8
6. Graduate	15.9	10.1	14.5	19.8	19.9

E. Sections:

1. Number of Sections Offered	39.7	47.8	37.0	45.8	49.0
2. SCU taught	3016.0	2962.0	3054.0	3938.0	4556.0
3. Average Section Size	21.1	17.8	20.9	22.5	24.0
4. Average Section Size for LD	33.5	26.4	29.5	27.0	27.0
5. Average Section Size for UD	20.2	18.8	21.4	22.9	25.5

6. Average Section Size for GD	18.7	12.5	15.5	19.5	21.1
7. LD Section taught by Tenured/Track	4	5	5	5	2
8. UD Section taught by Tenured/Track	18	21	19	21	15
9. GD Section taught by Tenured/Track	16	18	10	12	16
10. LD Section taught by Lecturer	0	2	1	3	7
11. UD Section taught by Lecturer	1	0	3	5	5
12. GD Section taught by Lecturer	2	3	3	3	4