COMMITTEE ON ACADEMIC PLANNING AND REVIEW
ANNUAL PROGRAM REPORT

College	CoS
Department	Math and Computer Science
Program Unit	Computer Science
Reporting for Academic Year	2013-2014
Department Chair	Matt Johnson Report by David Yang
Date Submitted	9/29/14

1. SELF-STUDY (about 1 page)

A. Five-year Review Planning Goals

> The Master degree program in Computer Science faces challenges common to subject areas with constant change. While there is a stable core of concepts, developments in equipment and in the uses of computers have created new areas of study as well as renewed ideas that were once thought impractical. The department does need to ensure students learn the core while adapting to stay relevant. That our students and those of the Computer Networks program often take courses together is another challenge to curriculum development and assessment.
>
> Students graduating with the M.S. in Computer Science almost always seek employment after graduation, and the program has the highest rate of degree-related job placement at CSUEB. Attrition from the program predominantly comes from students being unable to satisfy the academic requirements of the program.

Our goals from the last five year review were to increase enrollment in the program, replace retiring faculty, and to implement an assessment plan. In regards to enrollment, we have seen a steep increase of applicants to the program. Computer Networks has reported a 100% increase in applicants. The CS M.S. program experienced a 250% increase. We have increased the threshold for acceptance, and are now requiring applicants to submit GRE scores to help us do this more accurately. Even so, we have been having trouble offering enough sections of our courses.   the last fi c-4(e)-.602 Tw[Tw43.2(

next 6 years.

Six faculty members in the Computer Science 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 difficulties hiring Computer Science lecturers due to salary constraints and opportunities in Silicon Valley. Luckily we were able to hire a new tenure track faculty member and anticipate hiring another tenure track faculty member this year.

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 two 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 and automatically scored. We are looking at ways to streamline this process.

C. Program Changes and Needs

Since our last five year review, two new hybrid courses have been added to the Computer Networks curriculum: Security in Mobile, Wireless, Grid and Pervasive Computing (CS 6526) and Security Management (CS 6527). These are courses that Computer Science students often take as well. Proposals have been submitted for graduate Computer Science courses in Statistical Machine Learning and in Software Testing.

Faculty Data:

Name	Base	
Billard, Ted	0.11	(FERP)
Brown, Kevin	1.0	
Christianson, Leann	1.0	
Daley, Jim	0.22	(FERP)
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)
Thibault, William	1.0	
Yang, David	1.0	
Yu, Ytha	0.5	(FERP)
Zhong, Fay	1.0	
Total:	**11.21**	

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. This 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 is 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 impact the program's future growth.

2. SUMMARY OF ASSESSMENT (about 1 page)

A. Program Student Learning Outcomes

> Students graduating with an M.S. in Computer Science from CSU, East Bay will be able to:
>
> 1. apply advanced computer science theory to computational problems
> 2. demonstrate advanced understanding of the mechanisms, components and architecture of current computing systems
> 3. apply emerging technologies and advanced algorithmic design
> 4. critique, plan and produce complex software applications
> 5. research and analyze current computer science literature

B. Program Student Learning Outcome(s) Assessed

> All learning outcomes were assessed in the following:
>
> CS 6320 (Software Engineering and Web-Based Systems), Developing PLO 2 and PLO 4
> CS 6560 (Operating Systems Design – Core requirement) Developing PLO2 and PLO 3
> CS 6870 (Computer Simulation) Developing PLO 2, Mastering PLO 4
> CS 6901 (Graduate Capstone) Mastering PLO 1, PLO 2, and PLO 3

C. Summary of Assessment Process

> We created SLOs and PLOs for the Master in Computer Science program 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 aligned to the PLOs for each program and the ILOs of the university. We have these in place for four courses in the MS Computer Science program at this time. 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.

Due to this, we are considering other options such as creating individual assessments for each PLO. The existing version of Blackboard unfortunately does not support aggregation and comparison of assessments across multiple courses. 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 also will work on collecting assessments data for more courses. We have a total of 34 courses that we may offer at present, not counting the two aforementioned proposals.

We have also had a problem of oversubscribed courses. The university has limits on class sizes while students register for classes during specific scheduled time slots. Students have regularly signed up for many more courses than they intend to take, and drop courses at a later time. While this may seem like purely an administrative inconvenience, it does create concrete pedagogical problems. Because students join the programs with varying backgrounds, incoming students in some sense compete with existing students for many of the same classes. Since incoming students register after existing students, they are the ones who are often shut out of the classes they should be taking. This increases the chances they end up trying to learn material that is beyond them. To handle this problem, the department has started to limit early registration for courses. Early indications are positive. New students have been able to sign up for courses with very few complaints.

For changes made to close the loop for specific PLOs, adjustments are currently made in an ad hoc manner. For example, for PLO #3, CS 6560 did show a relatively low score of 5.8 in 2013. The instructor made the modification of changing some of the technical papers he assigned to students to cover. We did find that students in the Graduate Capstone (CS 6901) ultimately do seem to understand the material well, scoring an excellent 9.0 on PLO #3. Over the next year, we intend to collect information on how instructors have made adjustments based on assessment results and the impact of those adjustments.

D. Summary of Assessment Results

2013 2014 Assessment Exam results	1	2	3	4	5
CS 6320 Software Engineering and Web Based Systems		8.0		8.5	
CS 6560 Operating Systems Design		7.9	5.8		
CS 6870 Computer Simulation		5.6		8.3	
CS 6901 Graduate Capstone	7.4	7.7	9.0		

	American Indian or Alaska Native					
	Asian	6	9	11	5	4
	Pacific Islander					
	Hispanic		2	1	1	1
	White	7	12	10	10	3
	Multiple ethnicity					1
	Race/ethnicity unknown	10	5	4	3	5
	Nonresident aliens	71	59	46	30	66
Total	**Black, non-Hispanic**	3	2	1	2	3
	American Indian or Alaska Native		1			
	Asian	30	23	18	10	11
	Pacific Islander					
	Hispanic	1	3	2	2	1
	White	9	18	15	12	5
	Multiple ethnicity		2			1
	Race/ethnicity unknown	18	17	10	6	6
	Nonresident aliens	122	118	102	73	125

Annual Data:

A. Student Headcount:

Computer Science B.S. and M.S.	Fall Quarter				
Headcount Enrollment	**2009**	**2010**	**2011**	**2012**	**2013**
1. Undergraduate	281	260	290	315	326

Computer Science B.S. and M.S.	College Years				
Degrees Awarded	**08-09**	**09-10**	**10-11**	**11-12**	**12-13**
1. Undergraduate	42	41	54	51	63
2. Graduate	38	62	102	89	57
3. Total Number of Majors	80	103	156	140	120

Accepted Applications for MS Computer Science (from Graduate Coordinator records):
For the Winter 2014 quarter, there were 356 applicants, of whom 2 were accepted into the 4th-year Bridge program, 218 were accepted into the CS MS program, and 136 were rejected.
For the Spring 2014 quarter, there were 250 applicants, of whom 1 was accepted into the 4th-year Bridge program, 115 were accepted into the CS MS program, and 134 were rejected.
For the Fall 2014 quarter, there were 1150 applicants, of whom 3 were accepted into the 4th-year Bridge program, 142 were accepted into the CS MS program, and 1005 were rejected.

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.

Computer Science, Computer Network, and Mathematics	Fall Quarter				
Faculty	**2009**	**2010**	**2011**	**2012**	**2013**
Tenured/Track Headcount	Computer Science, Computer Network, and Mathematics				
1. Full-Time	28	25	25	23	21
2. Part-Time	3	4	2	1	1
3a. Total Tenure Track	31	29	27	24	22
3b. % Tenure Track	57.4%	80.6%	62.8%	58.5%	52.4%
Lecturer Headcount	Computer Science, Computer Network, and Mathematics				

7. Grand Total All Faculty	54	36	43	41	42
Instructional FTE Faculty (FTEF)	Computer Science, Computer Network, and Mathematics				
8. Tenured/Track FTEF	19.5	22.4	19.4	16.5	17.4
9. Lecturer FTEF	21.5	11.1	18.1	19.0	19.3
10. Total Instructional FTEF	41.0	33.5	37.4	35.4	36.7
Lecturer Teaching	Computer Science, Computer Network, and Mathematics				
11a. FTES Taught by Tenure/Track	372.5	439.1	307.1	288.1	314.9
11b. % of FTES Taught by Tenure/Track	37.8%	58.7%	38.7%	36.0%	36.2%
12a. FTES Taught by Lecturer	612.5	308.5	487.1	513.2	553.9

4. Average Section Size for LD	31.0	33.5	26.4	29.5	27.0
5. Average Section Size for UD	19.2	20.2	18.8	21.4	22.9
6. Average Section Size for GD	18.3	18.7	12.5	15.5	19.5
7. LD Section taught by Tenured/Track	4	4	5	5	5