CALIFORNIA STATE UNIVERSITY EAST BAY

COMMITTEE ON ACADEMIC PLANNING AND REVIEW
ANNUAL PROGRAM REPORT

College	CoS
Department	Math Computer Science
Program Unit	Computer Science
Reporting for Academic Year	2014-2015
Department Chair	Matt Johnson (Reported by David Yang)
Date Submitted	6/22/2015

1. SELF-STUDY (about 1 page)

A. Five-year Review Planning Goals

The Master of Science program in Computer Science continues to face the challenges of managing an appropriate curriculum that adapts to an evolving subject area, while at the same time maintaining a solid core of fundamentals. The program must also administer to the needs of our own students, while simultaneously supporting students in the Computer Networks Master program who take our courses as well.

As CSUEB plans to convert to semesters starting in fall 2018, we are additionally planning for the major responsibility – and opportunity -- of transforming our curriculum in its entirety.

Students participating in the M.S. Computer Science program almost always seek employment after graduation, and do not experience any issues finding jobs. Attrition from the program predominantly comes from students being unable to satisfy its academic requirements.

Our goals from the last 5-year review were to increase enrollment in the program, replace retiring faculty, and to implement an assessment plan. In regards to enrollment, we noted in the previous year's report the significant upswing in the number of applicants. We reported a 250% increase, which was frankly not practical for the size of our program. By increasing the threshold for acceptance and requesting GRE scores, the numbers of applicants for the Spring 2015 quarter and the Fall 2015 quarter have dropped to a more manageable level. Enrollment however is still on the rise.

There continues to be a looming issue with retiring faculty, as there are five in the FERP program at this time. Dr. William Thibault also retired this summer. After a successful faculty search last year, the department was given permission to seek another hire this year, but was unfortunately not able to find an acceptable applicant. The department was given permission to continue this search next year as well as seek an additional hire. While we continue to seek applicants with interests in emerging fields of current interest, we must make sure we remain open to applicants who can cover the foundational core of our graduate program.

Our assessment process is moving forward. We successfully administered post-assessment examinations for four courses this year (most notably for the Capstone Experience). We are compiling results and modifying our process as needed.

The priority and distinction report was useful as a self-study, and we have pinpointed several areas for improvement in our assessment plan and in meeting institutional learning outcomes.

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 M.S. Computer Science degree is primarily external, and is based on location and employment opportunities. Students from other countries make up the majority of our student population. They come because the university is so near to Silicon Valley. Our programs already possess the highest rate of degree-related job placement at CSUEB (from AACE data). Even so, the economic upturn has increased job opportunities for our graduates

even more. The Bureau of Labor statistics projects another 22% increase in jobs over the next 6 years. Consequently, we are seeing a marked increase in the number of applications. Students are getting hired even more quickly and finding internships easily. Employers are contacting our department on a weekly basis.

Five faculty in the Computer Science program are FERPing. Dr. William Thibault also retired this summer. It is essential to replenish faculty to both cover existing requirements and to find faculty with more direct experience with newer technology. We have difficulties hiring Computer Science lecturers due to university salary constraints and the plethora of opportunities in nearby Silicon Valley. Luckily, we were able to hire a new tenure track faculty member (Jiaofei Zhong) during the previous academic year, and will be conducting two new faculty searches this fall.

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 our assessment process, and have conducted post-assessment examinations for targeted 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, 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 report, 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. The drop in reports may be partly due to a significant number of students leaving after the fall quarter of 2014, either after being academically disqualified or to transfer to other (often unaccredited) regional universities. Departing students were found to be only those whose grades were below the standard for acceptable academic standing. This policy serendipitously has also allowed us to address the 4th ILO of the university, specifically "understanding the implications of values and ethics for leadership, teamwork and collaboration".

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 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 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 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

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 four courses (addressing PLO #2):

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 6660 (Database Systems) Developing PLO2 and PLO 3
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 several 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. 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.

For changes made to close the loop for PLO's, adjustments are still made in an ad hoc manner. For PLO #2 this year, assessment scores were well beyond acceptable for three of the courses. For CS 6660, the course material has been completely revamped to cover more current topics. While the scores were not very good, one positive effect was that participation in the assessment quiz was quite high (85%). The instructor also noted that while the average score for both PLO's was the same, there was a much higher correlation between a student's total score for PLO #3 questions and the student's final grade in the course (.61) than between the total score for PLO #2 and the final grade (.25). The PLO #2 questions did require more understanding of the principles behind the technology. The PLO #3 questions mostly involved the more straightforward use of the technology.

D. Summary of Assessment Results

2014-2015 Assessment 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 6660 Database Systems		**5.6**	**5.6**		
CS 6901 Graduate Capstone	**6.5**	**7.8**	**6.8**		

3. STATISTICAL DATA (about 1 page)

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

M.S. Computer Science		Fall 2009	Fall 2010	Fall 2011	Fall 2012	Fall 2013
Female	**Black, non-Hispanic**					
	American Indian or Alaska Native		1			
	Asian	24	14	7	5	7
	Pacific Islander					
	Hispanic	1	1	1	1	
	White	2	6	5	2	2
	Multiple ethnicity		2			
	Race/ethnicity unknown	8	12	6	3	1
	Nonresident aliens	51	59	56	43	59
Male	**Black, non-Hispanic**	3	2	1	2	3
	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:

	Fall Quarter				
Headcount Enrollment	**2010**	**2011**	**2012**	**2013**	**2014**
Computer Science					
1. Undergraduate	260	290	315	326	355
2. Postbaccalaureate	8	4	0	1	1
3. Graduate	184	148	105	152	222
4. Total Number of Majors	452	442	420	479	578
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:

	College Years				
Degrees Awarded	**09-10**	**10-11**	**11-12**	**12-13**	**13-14**
Computer Science					
1. Undergraduate	41	54	51	63	74
2. Graduate	62	102	89	57	31
3. Total Number of Majors	103	156	140	120	105
Computer Network					
1. Undergraduate	0	0	0	0	0
2. Graduate	5	12	16	12	18
3. Total Number of Majors	5	12	16	12	18

Over the past three quarters, a total of 31 students received their MS degrees. This is a significant drop from the 57 degrees awarded last year and 89 the year before, but reflects the typical pace of our students. Most take 2 courses per quarter, and many are required to take prerequisite courses that do not count towards their degree. It is common for students to take 2 or more years to complete the degree requirements, so the dip in degrees awarded seems to match the low point of 103 students noted in fall 2012.

Accepted Applications for MS Computer Science (Data is from Graduate Coordinator records):

For the winter 2015 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 2015 quarter, there were 80 applicants, of whom 16 were accepted into the CS MS program, and 64 were rejected. Spring 2014 was still a quarter of relatively loose admissions standards and the acceptance rate was a high 46.4% for 250 applicants compared to the spring 2014 acceptance rate of 20%.
For the fall 2015 quarter so far (applications close on May 1, but transcripts can be submitted as late as July 15, so there are still many applications that may need to be processed), there have been 832 applicants, of whom 1 was accepted into the 4th-year Bridge program, 115 have been accepted into the CS MS program, and 717 have been rejected. This acceptance rate of 13.8% is roughly comparable to last fall's acceptance rate of 12.6%, but with fewer applicants so far.

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