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
Date Submitted	6/22/2015

1. SELF-STUDY (about 1 page)

A. Five-year Review Planning Goals

The Department of Computer Science has a proven track record of success. Our graduated students are quite successful in Silicon Valley and in the national and international IT sector. In November 2014, *The Washington Post reported that CSUEB Computer Science graduates were ranked #9 nationally in terms of career earnings,* and ranked #7 nationally for the best rate of return for both in-state and out-of-state tuition. According to exit surveys done by AACE, *Computer Science majors are the most successful of CSUEB graduates* at finding degree-related employment within one year of graduation.

The local technology industry recovered relatively quickly from the recent economic downturn, and IT jobs in the Bay Area are abundant. Overall enrollment in our B.S. Computer Science program has increased roughly 40% since the date of our last 5-year review, with the majority of that increase occurring in lower division courses.

Computer Science does continue to face the challenges of managing an appropriate curriculum that adapts to our dynamically evolving discipline, while at the same time maintaining a solid core of fundamentals. As CSUEB plans to convert to semesters starting in fall 2018, we are additionally tasked with the major responsibility – and opportunity -- of transforming our curriculum in its entirety so as to align with ABET accreditation criteria.

There continues to be a looming issue with retiring faculty, as there are currently four faculty members in the FERP program. 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. Although we are active in the recruitment of temporary faculty, the department finds it extremely difficult – or impossible – to find qualified instructors to teach upper division and graduate level courses.

Our assessment process is moving forward. We successfully administered post-assessment examinations for four courses this year. We are compiling results and modifying our process as needed. The priority and distinction report was [surprisingly] useful as a self-study, and we have pinpointed several areas for improvement in our assessment plan as a result.

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.

Our programs possess the highest rate of degree-related job placement at CSUEB (from AACE data). The Bureau of Labor Statistics forecasts: "Employment of software developers is projected to grow 30 percent from 2010 to 2020, much faster than the average for all occupations. The main reason for the rapid growth is a large increase in the demand for computer software." This is certainly evidenced by the upswing in enrollment in all undergraduate courses. Local job recruiters now contact our department on a weekly basis.

Four 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

The Math and Computer Science Department will be splitting into two departments in Fall 2015. This brings the number of department faculty down to eight tenure-track professors.

Computer Science, like every other program on campus, is redeveloping its curriculum for semester conversion. As we do this, we will also be transforming our program so as to better align with the guidelines from ABET, our discipline's accrediting body.

Our department has been plagued with a high rate of academic dishonesty for some time. In meetings with the students involved, the Chair often 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 now 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. 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 a Bachelor of Science in Computer Science will be able to:

1. apply knowledge of mathematics and computational theory to appropriate problems in computer science
2. analyze a problem, and identify and define the resources and requirements needed for its solution
3. design and implement a program to meet stated needs
4. develop and maintain computer-based systems, processes, and platforms
5. recognize and distinguish the mechanisms, components and architecture of computing systems
6. employ current techniques, skills, and tools necessary for computing practice
7. identify professional, ethical, legal, and security issues and responsibilities and the impact of computing on individuals, organizations, and society
8. perform successfully on teams to accomplish a common goal, and communicate effectively in written and oral form

B. Program Student Learning Outcome(s) Assessed

As according to our assessment plan, we are closing the loop on PLO #2 this year.

Post-assessment quizzes were administered for four courses (addressing PLO #2):
CS 3340 developing PLOs #2, #3, and #6
CS 4245 mastering PLOs #1, #2, and #6
CS 4320 developing PLO #7, mastering PLO #6
CS 4660 mastering PLOs #4 and #6

C. Summary of Assessment Process

We created SLOs and PLOs for the 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 B.S. 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 courses that serve both the graduate and undergraduate degree programs.

For changes made to close the loop for PLOs, adjustments are still made in an ad hoc manner. For PLO #2 this year, assessment scores were slightly above the acceptable score of 70%, indicating that at this juncture we are adequately addressing this outcome in our curriculum.

For CS 3340, the instructor did note in our assessment documents that the course could not be roomed in a computer classroom (a common issue), which greatly impaired instruction and in-class exercises. We would expect the scores would be higher if the classroom had proper instructional support (see above in Program Needs).

For 4245, the instructor noted that mathematical preparedness for the course seems wanting. This is an issue we will be addressing with the Department of Mathematics (soon to be a separate academic unit) once we begin semester conversion.

D. Summary of Assessment Results

2014-15 Assessment Results	1	2	3	4	5	6	7	8
CS 3340 Introduction to OOP and Design		**7.3**	**4.4**	**3.3**				
CS 4245 Analysis of Algorithms	**6.8**	**7.2**			**6.2**			
CS 4320 Testing and Quality Assurance						**6.4**	**4.4**	

	CS 4660 Database Architecture				**5.0**		**8.0**			

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

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 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