



ANNUAL PROGRAM REPORT

College	College of Science
Department	Computer Science
Program	M.S. Computer Networks
Reporting for Academic Year	2016-2017
Last 5-Year Review	2010-2011
Next 5-Year Review	2017-2018
Department Chair	Dr. Matt Johnson
Date Submitted	7/5/2017

I. SELF-STUDY

A. Five-Year Review Planning Goals

The goals from the last 5 year review of the M.S. degree in Computer Networking included the following:

1. Increase enrollment in the program
2. Replace retiring faculty
3. Implement an assessment plan
4. Acquisition of Resources – technical laboratories, IT support

B. Progress Toward Five-Year Review Planning Goals

Please note: it has now been six years since the Department’s last five year review (2010-2011). Due to semester conversion however, CAPR instituted a modified five year review plan, moving the next department review to 2017-2018.

Three major developments have occurred in the last two years which impacted several of the planning goals. They are the division of the Mathematics and Computer Science department into two separate departments, the move of the department office and faculty offices of the Department of Computer Science to the new Student and Faculty Support (SF) building, and the design, review, and approval of the new semester-based graduate and undergraduate programs as part of campus semester conversion.

Separation of department:

The faculty of the department of Mathematics and Computer Science had discussed the possibility of separation into two departments for many years. Combined departments were the result of Computer Science growing out of Mathematics departments, with some faculty teaching in both disciplines.

Computer Science has been a distinct field of endeavor for several decades now, and only 2-3 faculty members of the combined department taught in both areas, limiting the need to house the two programs in one department. The great size of the department (nearly 30 faculty), and the large differences in the programs made it difficult to manage, and difficult for standard departmental policies to be developed. As a result, a request was made to separate the programs into two departments. That request was approved in July, 2015.

Move to SF building:

With the completion of the new Student and Faculty Support building, the Department of Computer Science department office and most faculty offices were moved from offices spread over all four floors of both Science buildings to the fifth floor of the new building.

New semester-based programs:

As part of the campus-wide semester conversion, the Department of Computer Science developed a new Master's program addressing shortcomings of the current program as well as plans for assessment. This program was reviewed and approved by the college and university curriculum committees.

Now, the progress towards the goals identified in section A will be addressed.

- 1) The demand for the Computer Networks degree is primarily external and based on location and employment opportunities. Our Computer Networks program is a unique offering in the Bay Area. Students from India make up the majority of our student population. They come because the university is located near Fremont and Silicon Valley. We also attract some 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 20% increase in jobs over the next 6 years. Enrollment has stayed consistent over the last few years. We have increased GPA and GRE requirements. The program will become an option under the MS Computer Science program after semester conversion; therefore, we did not try to increase enrollment over the 2016-17 academic year.
- 2) Retiring faculty continues to be an issue. Drs. Reiter, Jurca and Simon completed their FERP this year. Dr Yu is in his third year of FERP. The department currently functions with nine tenure track faculty. The department's search for two new faculty members this year resulted in the hire of one professor, Dr. Xiajun Ruan. His expertise in Distributive Computing, Big Data and Computer Architecture will be an asset to the department. Potential candidates reported that they were deterred from accepting our position due to the cost of living in the Bay area and CSUEB's relatively low compensation. We will again search for two new faculty members next year as the department is understaffed, and relies on lecturers for many critical course.
- 3) At the time of our last five year review, we were beginning to identify program learning outcomes and student learning outcomes. We currently have these in place and conduct assessment via post-assessment examinations for required courses. The exams are deployed through Blackboard and automatically scored. We had some difficulty with these quizzes as some courses addressed multiple PLOs. With semester conversion, we have created new Program Learning Outcomes for all our degrees and will assess one PLO per course through Blackboard which will allow for easier evaluation of results.

- 4) The Computer Science program is in need of resources such as technical laboratories and office space. Moving to the SF building was a positive experience; however, there will not be enough room for our new hires. Through the generosity of the College of Science, the department was able to create an open Computer Science Lab for students in N Sci 337. This lab is staffed with student TAs. We have few classroom labs, however, which are needed for many of our courses. Currently our classroom labs are North Science 336, North Science 104 (shared with Statistics) and a small room VBT 218. We have added lab components to five of our courses for semesters and have been stating that this lab shortage will be a dire problem in the future. We were lucky enough to hire a new lab technician temporarily after Mr. Richard Euler retired. Unfortunately, due to a Human Resource issue, we were not able to hire the technician permanently. The department is currently searching for a replacement.

C. Program Changes and Needs

Overview:

The Computer Networks Master's degree program is housed in the Department of Computer Science. 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, Google, NetXperts, NetApp, Brocade, Shutterfly, vCidr, CommTouch, TechSoup, Cloud Computing, LookingPoint, etc.

Students have the opportunity to write papers in the CS 6899 Capstone course. This year 5 student papers were chosen for publication. Authors and titles are listed below:

International Conference on Wireless Networking 2016 (ICWN16)

- Levent Ertaul, Nikhitha Vadla Konda, Dharani G Ramasamy, "Implementation of EAX Mode of Operation within a Real-Time Android Chatting Application"
- Levent Ertaul, Sravya K L, Nagaraju Sanka, "Implementation of Authenticated Encryption Algorithm Offset Code Book (OCB)"
- Levent Ertaul Manpreet Kaur, Venkata Arun Kumar R Gudise, "Implementation and Performance Analysis of PBKDF2, Bcrypt, Scrypt Algorithms"

International Conference on Security and Management 2016 (SAM16)

- Performance Comparison of AES-CCM and AES-GCM Authenticated Encryption Modes, Levent Ertaul, Anup Mudan, Nausheen Sarfaraz
- EasyAuth – Implementation of a Multi-Factor Authentication Scheme based on Sound, Fingerprint and One Time Passwords (OTP), Levent Ertaul, Ishita Thanki

Curriculum:

Since our last five year review, three new hybrid courses have been added to the curriculum for the quarter system: Security in Mobile, Wireless, Grid and Pervasive Computing (CS 4526), Security Management (CS 4527) and Cloud Computing (CS 4593). These courses are currently tiered with undergraduate sections.

Students:

In previous reports, we mentioned a 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 be 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. Students are limited to enrolling in two CS prefix courses prior to the start of the quarter. Any students who enroll in more than two CS courses prior to the start of the quarter are dropped from all courses. We have used this process for two years now and it has been effective. New students are able to enroll in appropriate courses, existing students have been able to find courses to satisfy requirements, and enrollment has reflected actual demand.

Academic dishonest continues to be an issue. The current departmental policy states that students with academic dishonesty report may not be graders and cannot take the CS3898 Coop course. Under semesters, graduate students with three academic dishonesty reports will be dismissed from the program.

A final issue is students leaving their prerequisites and completion of the Writing Skills Test to their final quarter. Students are not allowed to enroll in the Capstone course unless they have finished prerequisites and the WST. The practice of waiting until the final quarter is becoming less common, however, we are unable to deter it completely despite orientations, advising, and notifications.

Faculty:

Retiring faculty continues to be an issue. Drs. Reiter, Simon and Jurca completed their FERP this year. Dr Yu is in his last year of FERP. The department currently functions with nine tenure track faculty. The department's search for two new faculty members this year resulted in the hire of one professor, Dr. Xiajun Ruan. His expertise is in Distributive Computing, Big Data and Computer Architecture will be an asset to the department. Potential candidates reported that they were deterred from accepting our position due to the cost of living in the Bay area and CSUEB's compensation. We will again search for two new faculty members next year as the department is under staffed and relies on lecturers for many course sections.

Name	Time Base
Brown, Kevin	1.0
Christianson, Leann	1.0
Erickson, Varick	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	10.82

Staff:

The Department of Computer Science shares staff with the Department of Mathematics, and one staff member with the Department of Health Sciences. Our staff members consist of:

Name	Time Base	Shared With
Frazier, Sharonda	1.0	
Mendoza, Rosaura	0.4/0.4/0.2	Mathematics and Engineering
Snyder, Janet	0.5/0.5	Mathematics

Student workers also help to serve the roughly 1000 undergraduate and graduate computer science students and computer network students.

The computer science department has long functioned with a dedicated lab technician to support out class room labs and faculty software needs. Our technician issues student accounts, manages dedicated servers that support web, security, and database courses, and manages virtual operating system environments. Our lab technician, Richard Euler retired in Fall 2016 after many years of service. We were able to hire a new lab technician temporarily; however, CSUEB's Human Resource's would not allow us to hire the technician permanently due to visa issues. The department is currently searching for a replacement.

Resources:

The Department was pleased that space was made available in the new Student and Faculty Support (SF) building for the department office and faculty offices. Faculty had been spread over all four floors of both Science buildings previously. Proximity to colleagues and the department office has already led to increased communication between department faculty, more frequent department committee meetings, and increased productivity. Unfortunately, space was not made available for all department

faculty. In particular, faculty participating in the FERP program and all lecturers are still housed in the Science buildings. In addition, there is not enough space in the new building to house the faculty that would result from successful searches that have been approved for next year. Ideally, it would be beneficial to house the entire department in one place with enough room made available for desired growth.

The College of Science has provided some limited additional teaching lab space, but this is still a significant concern as current space is insufficient to meet department needs. As our outside reviewer mentioned, if we choose to seek accreditation our relative lack of teaching and experimental lab space would be a major concern to the accrediting board. The Department is in discussions with the Dean of the College of Science to address these issues.

The centralization of Information Technology Services (ITS) on campus left the Department of Computer Science with no dedicated support for its teaching and research support needs. The centralized model is unwieldy, slow, and has not served the Department well. It has impacted the students as software and hardware testbeds and learning environments have become outdated or unusable. We have been more dependent on the virtual environment of BayCloud; however, BayCloud has not proven to be consistently stable. The Department is in discussions with the College of Science to increase dedicated lab course support as is the norm for other lab-based disciplines; however, we find our department classroom teaching labs being reduced rather than increased.

The need for additional resources to fund readers, teaching assistants, and travel to academic conferences is little changed. Our outside reviewer specified lack of funding for continuing development and other department needs was a significant issue. The lack of funding is especially a factor as we attempt to hire new faculty who are particularly in need of grading support and are expected to publish and present at conferences.

Library offerings have been uneven, with important database subscriptions cancelled and re-established. Access to a wide range of journals and conference proceedings is especially important as we plan to increase the rigor of our graduate courses under the semester system.

Assessment:

We created SLOs and PLOs for the Computer Network program in the academic year 2012-2013. The decision was made 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 approximately eight courses in the Computer Networks 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. Additionally, each instructor creates the assessments in different ways – some combining PLOs in one question and some keeping them separate. We are currently looking at averages over the entire exam. As we move to semesters, our graduate committee will create assessments which address only one PLO for each class, thus simplifying the evaluation of data. Currently another challenge is addressing PLOs for courses that serve both the graduate and undergraduate degree programs. Under semesters this will not be an issue as graduate students will not be able to take undergraduate courses.

For changes made to close the loop for PLOs, adjustments are in an ad hoc manner. Instructors rotate for each class and may not be aware of the previous instructor's assessment results. We have evaluated PLO's 1,2, and 3. This year we evaluated PLO 4.

Other:

The MS Computer Networks program was discontinued for Fall 2018. The program will become a Computer Networks option under the MS Computer Science program.

Program Learning Outcomes (PLO's) were modified and new curriculum maps and assessment plans were completed for the new M.S. Computer Science degree program. Please see the annual report for M.S. Computer Science for details.

II. SUMMARY OF ASSESSMENT

A. Program Learning Outcomes (PLO)

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 (ILO 2 & 6)
2. Employ current techniques, skills, tools, and coding practices necessary for application and system development (ILO 1 & 6)
3. Apply critical thinking and problem solving skills by analyzing problems, designing solutions, and evaluating results (ILO 1)
4. Demonstrate communication skills in both written and oral form, and work in a team environment (ILO 4)
5. Independently acquire new computer related skills through analysis of current computer science literature and industrial practices (ILO 6)

B. Program Learning Outcome(s) Assessed

Following our assessment plan, the Department is assessing one PLO per year. This is the fourth year that assessment has been done and so we are assessing PLO #4 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 and allow for "closing the loop."

C. Summary of Assessment Process

Instrument(s) and Sampling Procedure:

The Department created SLOs and PLOs for the Master in Computer Science program in the academic year 2012-2013. The Department made the decision to use Blackboard as a means to provide students with an assessment exam that addresses the SLOs of each course. The SLOs for each course have been mapped to the program PLOs and the ILOs of the university. The assessment exams were developed for the required courses in the program, as well as a representative set of elective courses. The assessment instruments were then made available to the department faculty via a BlackBoard repository. Instructors teaching courses which were to be assessed in a given year deployed the tests and reported

the results back to the Graduate Coordinator.

Sample Characteristics:

The Department has been using this assessment mechanism for three years now and can evaluate its advantages and disadvantages. Unfortunately, evaluating the results of the assessment exams as they stand is challenging, as each assessment contains questions addressing multiple PLOs. Due to a BlackBoard limitation, the results for individual PLOs cannot be automatically aggregated and compared across multiple courses, and instead must be tabulated by hand. To solve this problem, for the semester-based program, the Department agreed to develop assessment instruments that address only one PLO at a time. This will allow assessment to be automated, providing the opportunity to assess more courses, and assess those courses more frequently. The Department has developed most of the new assessment instruments for the semester-based program and will complete the remaining ones in early 2017-2018.

An additional challenge in the current system is assessing PLOs for both the Master's in Computer Science program and the Master's in Computer Network program. Since the programs share the great majority of the courses, but have different PLOs, it has been necessary to provide separate mappings of course SLOs to the PLOs of the two different programs, or to include additional questions on the assessment instruments to address the different PLOs. Fortunately, this difficulty will be eliminated under the semester-based program as the Master's in Computer Science and the Master's in Computer Networks have been combined into a single program with common PLOs. In addition, the PLOs for the Bachelor's and Master's programs have been coordinated so that matching PLOs for the undergraduate and graduate programs will be evaluated on the same timetable.

Data Collection:

Assessment data for PLO 4 was collected in three courses. The data were collected by the instructors of the classes from the BlackBoard tests that they had deployed.

The courses were:

CS 6525 Network Security

CS 6596 Wireless and Mobile Networks

CS 6899 Capstone Project

Data Analysis:

Assessment coordinator compiles the results in tabular form.

D. Summary of Assessment Results

Main Findings:

- **CS 6525 - Network Security**
78%
- **CS 6596 Wireless and Mobile Network Architecture**
81%
- **CS 6899 Capstone project**
87%

Recommendations for Program Improvement:

In general, we are happy with the results, but realize there is a need for more courses to be assessed.

Next Step(s) for Closing the Loop:

For changes made to close the loop, new PLO's and a completely new program (MS CS with Network options) were created for semester conversion. At this time we are creating standardized assessment quizzes for all required courses in the new M.S. Computer Science Master's degree. Each quiz will address a single PLO.

Other Reflections:

Currently, we do not have standardized assessments so consistency and validation is an issue. In addition, lecturers are not always aware of the assessments and do not give them. We have created a standard repository for the assessment quizzes for easier deployment in the future.

E. Assessment Plans for Next Year

Next year we will assess PLO 5. No changes will be made as the entire process is being revamped for Fall 2018-19.

III. DISCUSSION OF PROGRAM DATA & RESOURCE REQUESTS

A. Discussion of Trends & Reflections

Notable Trends:

The program data we were given through Academic Affairs still contains wildly inaccurate data for Computer Science:

1. It incorrectly combines data for the Department of Computer Science and the Department of Mathematics in certain tables, and provides separate but wholly incorrect information in others.
2. The data seems to only reflect majors and student headcounts for Mathematics.
3. It contains errors with regard to FERPer and lecturer counts. As a result, it does not convey meaningful information on FTEF and SFR.

The department currently has almost roughly 750 undergraduate majors and 200 graduate students. Enrollment for CS has increased by 30-35% this year, and over 50% in the last five years. The National Academy of Science, the Bureau of Labor Statistics, ABET and other data sources all predict a continuing 30% upswing in CS enrollment trends during each of the next five years.

Reflections on Trends and Program Statistics:

The program data we were given through Academic Affairs still contains wildly inaccurate data for Computer Science:

1. It incorrectly combines data for the Department of Computer Science and the Department of Mathematics in certain tables, and provides separate but wholly incorrect information in others.
2. The data seems to only reflect majors and student headcounts for Mathematics.
3. It contains errors with regard to FERPer and lecturer counts. As a result, it does not convey meaningful information on FTEF and SFR.

The graduate programs in Computer Science and Computer Networks receive between 1500-2000 applications each year. On average, we accept roughly 10% of applicants.

Although we are making a new hire in 2017-2018 (Dr. Xiaojun Ruan), three faculty members are ended their FERP agreements this year (Drs. Reiter, Jurca and Simon). This means our FTEF continues to drop even as we make new hires. Meanwhile, our enrollment in the major is increasing rapidly.

B. Request for Resources

1. Request for Tenure-Track Hires

The Department of Computer Science will be asking once again for a new tenure-track hire line in 2018-2019 for the following reasons:

1. Enrollment in the CS undergraduate program has increased by roughly 35% this academic year, and many required CS courses have large waitlists. The National Academy of Science, the Bureau of Labor Statistics, ABET and other data sources all predict a 30% upswing in CS enrollment trends annually during the next five years. A new hire is therefore necessary to accommodate current and future student demand for the major. This would positively affect the graduation rates of our majors, as students would be able to enroll in the courses they need to graduate on time. It would also enable the department to offer better advising to all majors, thereby improving achievement gaps.
2. Seven faculty members in Computer Science have retired since 2012! The department needs to “plug the holes” in curriculum coverage caused by the recent loss of so many senior faculty members. Due to the plethora of technology jobs in nearby Silicon Valley, it is extremely difficult – and often impossible – to find qualified temporary faculty to teach upper division or graduate courses in the discipline. It is therefore essential that we bring new tenure-track faculty members onboard.
3. In order to meet ABET accreditation standards, at least 50% of CS courses must be taught by tenure track faculty. This quarter (winter 2016), only 28.9% of courses with the CS-prefix were taught by tenure-track faculty in our department. To my knowledge, we are the only remaining program in Computer Science within the CSU that is not already accredited.
4. Faculty attrition has diminished our coverage of key areas in the discipline, and we have sharply curtailed many elective offerings in the major as a result. A new hire would allow us to align the department’s curriculum and research efforts with emerging technologies. As a rapidly changing applied discipline, Computer Science must continually evolve in order to provide our graduates with key knowledge and skills demanded by industry.
5. The Department of Computer Science has four faculty members currently in the FERP program. Three of these four (Drs. Jurca, Reiter and Simon) will be ending FERP agreements at the end of this academic year. All three teach in the area of computational theory, one of the three core areas in our discipline. Their impending departure means not only that FTEF will drop by 1.44

next year, but also that there will be a gap in curricular coverage within the major.

2. Request for Other Resources

The Department of Computer Science faces a critical shortage of instructional computer labs.

Computer Science is a laboratory discipline. The vast majority of our major courses need to have computers available in the classroom. Without the needed instructional labs we are unable to deliver our curriculum. The department currently has almost 1000 undergraduate and graduate majors, and enrollment is predicted to increase sharply for the next five years. We currently have only three computer classrooms available to support our program: NSCI 336, NSCI 104 (shared with Statistics), and a small lab (25 seats) in VBT 218. Through the generosity of the College of Science, the department was able to create an open Computer Science Lab for students to use outside of the classroom in NSCI 337.

As our outside reviewer mentioned, when we seek accreditation our relative lack of teaching and experimental lab space would be a major concern to the accrediting board.

C. Appendix

APR Faculty & Courses (Fall Terms)					
College of Letters, Arts and Social Science					
Department	Math and Computer Science combined				
DeptID	12350 - Math and Computer Science, 12351 - Math, 12352 - Computer Science				
Subjects	CS, MACS, MATH				
Faculty Data					
	HEADCOUNT				
Instructor Type	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Professor	15	14	16	14	13
Associate Professor	6	6	6	6	6
Assistant Professor	3	2	2	2	4
Lecturer: Full-time	1	2	2	4	3
Lecturer: Part-time	16	18	18	21	27

Teaching Associate	27	18	24	24	18
Total	68	60	68	71	71
	FTEF				
Instructor Type	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Professor	15.0	14.0	15.7	13.3	12.0
Associate Professor	5.7	5.7	5.7	5.7	5.7
Assistant Professor	3.0	2.0	2.0	2.0	4.0
Lecturer: Full-time	1.0	2.0	2.0	4.0	3.0
Lecturer: Part-time	7.8	9.2	9.6	10.1	12.4
Teaching Associate	10.1	8.4	8.7	9.1	7.4
Total	42.6	41.2	43.6	44.2	44.4
% Breakdown by Type					
	HEADCOUNT				
Instructor Type	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Lecturer	25.0%	33.3%	29.4%	35.2%	42.3%
Tenure Track	35.3%	36.7%	35.3%	31.0%	32.4%
Teaching Associate	39.7%	30.0%	35.3%	33.8%	25.4%
	FTEF				
Instructor Type	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Lecturer	20.7%	27.1%	26.6%	32.0%	34.7%
Tenure Track	55.6%	52.6%	53.5%	47.5%	48.8%
Teaching Associate	23.8%	20.4%	20.0%	20.5%	16.6%
Full-time Equivalent Students (FTES)					

	FTES				
Instructor Type	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Lecturer	259.2	343.0	340.6	423.6	468.3
Teaching Associate	258.4	218.4	215.4	244.8	193.6
Tenure Track	309.4	341.8	401.4	284.9	389.3
Total	827.0	903.2	957.4	953.3	1057.5
Additional Categories					
	FTES				
	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Major FTES	52	49	54	43	51
GE FTES	192	189	191	201	209
Waitlist FTES	2	4	5	6	3
Student-Faculty Ratios (SFR)					
Overall SFR (All FTES / All appointed FTEF)					
Instructor Type	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Lecturer	29.5	30.8	29.4	30.0	30.4
Teaching Associate	25.5	26.0	24.7	27.0	26.3
Tenure Track	13.1	15.8	17.2	13.6	18.0
Total	19.4	21.9	21.9	21.6	23.8
Instructional SFR (All FTES / Course assignment FTEF for given subjects)					
Instructor Type	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Lecturer	29.4	31.5	30.0	30.0	30.4

Teaching Associate	25.5	26.0	30.7	27.1	26.8
Tenure Track	18.8	19.7	23.6	22.9	20.7
Total	23.3	24.6	27.1	26.8	25.4
Total Instructional SFR by Course Level					
	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Pre-College	--	--	30.1	27.9	27.6
Lower Division	25.7	27.2	27.6	29.2	29.3
Upper Division	21.6	18.6	21.9	20.3	15.8
Graduate Division	14.1	9.1	16.0	12.6	12.5
Average Instructional SFR by Course Type					
	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Activity	--	--	--	--	--
Lab	--	--	--	--	--
Lecture	25.2	26.0	27.8	27.4	26.5
Seminar	14.1	6.6	14.7	13.9	19.2
Supervision	--	5.6	--	2.8	3.8
<u>Course Information</u>					
Sections					
	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Total	90	89	90	95	96
Average Enrollment					

Class Type	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Activity	0.0	0.0	0.0	0.0	0.0
Lab	0.0	0.0	0.0	0.0	0.0
Lecture	25.7	26.6	26.0	27.4	27.7
Seminar	13.7	9.7	8.8	8.5	10.7
Supervision	0.0	1.0	0.0	1.0	1.5
Total	25.3	25.7	25.2	26.4	26.1
Majors					
	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Enrollment Count	182	174	194	153	184
% of Enrollment	8.0%	7.6%	8.6%	6.1%	7.4%
General Education					
	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Enrollment Count	719	704	716	753	778
% of Enrollment	31.6%	30.8%	31.6%	30.1%	31.1%
Repeat Enrollments					
	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Repeats	281	328	336	338	313
% of Enrollment	12.3%	14.3%	14.8%	13.5%	12.5%
Waitlist (unduplicated by course)					
	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016
Waitlist	9	13	18	24	10

% of Enrollment	0.4%	0.6%	0.8%	1.0%	0.4%
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