Basic Program Information

Department Name: Computer Science

Division Name: PSME

Program Mission(s):

AS in Computer Science: Prepare students for transfer to four year colleges, employment, professional enrichment, and promotions for entry, incumbent workers, and displaced workers.

AS in Enterprise Networking: To provide courses leading to employment, professional enrichment, and promotions for entry, incumbent workers, and displaced workers.

AS-T Degree in Computer Science: Provide students with the core CS courses required for students to receive guaranteed transfer to a CSU.

Please list all Program Review team members who participated in this Program Review:

Name	Department	Position
Elaine Haight	CS	Instructor (FT)
Biliana Kaneva (on Leave)	CS	Instructor (FT)
Michael Loceff	CS	Instructor (FT)
Mike Murphy	CS	Instructor (FT)

Please include the following information about your program:

Total number of Full Time Faculty:	4
Total number of Part Time Faculty:	15
Total number of Classified Professionals:	2

Please list all existing Classified positions:
Example: Administrative Assistant I
Mario Ramos, Computer Science Technician I?
Luis Barreto

List all Programs* covered by this review & check the appropriate column for program type:

Program Name	Certificate of Achievement Program	Associate Degree Program	Pathway Program
Computer Science AS		YES	

Enterprise Networking		YES	
Computer Science AS-T		YES	

*If you have a supporting program or pathway in your area for which you will be making resource requests, please analyze it within this program review (i.e. Integrated Reading and Writing, Math My Way, etc.) You will only need to address those data elements that apply.

Section 1: Data and Trend Analysis

Please complete the appropriate data elements.

A) Instructional Program Data:

Data will be posted on http://foothill.edu/staff/irs/programplans/programreviewdata.php
You must manually copy data in the boxes below for every degree or certificate of achievement covered by this program review.

Certificate and Degree Programs	2011-2012	2012-2013	2013-2014	% Change
Computer Science AS	6	6	**9**	**+50%**
Enterprise Networking AS	9	3	**0**	**N/A**

	2011-2012	2012-2013	2013-2014	% Change
Enrollment		2009	3851	91.7%
Productivity (College Goal 2014-15: 535)	818	682	656	-3.8%

B) Student Services Programs Data

Please enter the number of students served over the last 3 years.

	2011-2012	2012-2013	2013-2014	% Change
Students Served				

This data was obtained via the following sources (circle): CCC Apply, Ask Foothill, Credentials, SARS, Other (List)_____

C) Administrative Unit Data

Please enter the information below.

Dimension	2011-2012	2012-2013	2013-2014

Students Served (Unduplicated)			
Faculty Served			
Staff Served			
Full-time FTEF			
Part-time FTEF			
Full-time Staff			
Part-time Staff			

Using the data entered for your program above, briefly comment (1-3 paragraphs) on changes in students or staff served, enrollment and/or productivity for your program in the last year.

What changes have been made or are planned as a result of your analysis of the data? (for example, new curriculum, new pre-requisites, a focus on student retention, changes in teaching approaches informed by SLO Assessments, changes in when classes are scheduled, better use of technology, etc.)

Cutbacks and a switch from CIS to CS in 2011/12 resulted in an anticipated one-time enrollment decline in 2012/13. However, new courses in 2013/14 resulted in a 91.7% enrollment increase.

PSME vs. C S Unduplicated Headcount Comparison

An example of the success within CS can be seen in Unduplicated Head Count numbers:

Unduplicated Head Count

	2011/12	2012/13	2013/14	% Inc
PSME	9487	8630	9329	8.1%
CS		1325	2323	75.3%

Number of Sections Offered as Prospect of Future Growth

An indicator of the capacity for future growth is the increase in the number of sections offered year-over-year.

Sections Taught

	2012/13	2013/14	% Inc.
CS	59	120	103.4%

The fact that the student demand can absorb such a large increase in offerings indicates that CS has not yet approached its full capacity for serving the community.

Online vs. Face-to-Face Enrollment Comparison

CS can find a significant portion of future growth online courses. The following table reveals the % enrollment that comes from online instruction. As a baseline, we have compared this to the corresponding online percentages for the entire PSME division.

% Enrollment That Comes From Fully On-Line Instruction

	2011/12	2012/13	2013/14
PSME	21%	12%	13%
CS		53%	63%

(CS Unduplicated head count had a similar increase of online percentage from 63% to 71.5%).

Future Strategies

This is a clue to where we can best leverage our future enrollment figures: CS students are online, and that's where we should continue to grow our classes.

Section 2: Student Equity

The college is committed to student equity, defined by the Student Equity Workgroup as fostering similar outcomes for all students. One targeted area for improvement in this year's Student Equity plan is to increase the course completion rates for African American, Latino, and Pacific Islander students over the next three years by 3 percentage points.

Please describe how you see members of your program contributing to this goal.

Section 2-A. In 2013/2014, CS achieved a dramatic increase it is ability to serve the population (> 90% enrollment and > 100% sections offered) in all ethnic groups. The program was therefore challenged to grow *without impairing* the participation and success of targeted groups. The faculty members have been utilizing office hours, the PSME tutorial center, online forums, and email/private messaging to help overcome difficulties encountered by all students, including targeted ethnic groups.

The good news is that the growth spurt experienced by non-targeted groups was shared equally by targeted groups:

Success of Targeted vs. Non-Targeted Groups During the 90%+ Growth Year

	2012/13		2013/14		% Inc.
	Non-Targ	Targeted	Non-Targ.	Targeted	
Success	1137 (65%)	118 (44%)	2150 (66%)	259 (44%)	N.C.
Non-Success	243 (14%)	61 (23%)	413 (13%)	143 (24%)	+1%
Withdrew	357 (21%)	90 (33%)	681 (21%)	190 (32%)	-1%
Total	1737 (100%)	269 (100%)	3244 (100%)	592 (100%)	

The high growth took with it the same percentages of targeted groups. The challenge going forward is to begin to improve the discrepancy between the targeted and non-targeted participation and success.

Program members have begun a curriculum-wide strategy that has two components.

1. New Honors Sections of the entry-level courses CS 1A and CS 2A have been approved and are pending state approval. These will allow students who are accelerated to be moved into their own section, allowing the regular sections to address the needs those having a less complete background in the math and technology required for success. If targeted groups are over-represented in this latter sector, we would expect their success rate to improve.
2. An increase in full and part-time faculty as well as possible TA assistance to allow more personalized attention is being sought.
3. Coordination with the PSME (tutorial) center and a third-party online tutoring service "SmartThinking," is underway which will add attention to students who need it the most.

Please review the equity data available to you on the students served in your program and their outcomes by ethnicity (including, for instructional programs, course success rates by ethnicity). If differences exist, what efforts have members of your program undertaken or discussed to address them? If your program has undertaken any initiatives or interventions as a result of these efforts or discussions, please share what you have learned as a result of these initiatives.

Section 2-B. Computer science, and indeed PSME in general, draws a different demographic breakdown than the overall college demographics.

ASIAN: PSME draws a much higher percentage of Asian students (34%) than the College in general (15%). CS expands that difference even further: 41% vs. the college 15%. (See chart below).

AFRICAN AMERICAN: The percentages are in the 4-5% range for Foothill, PSME and CS, suggesting that the department is doing neither worse nor better than the college as a whole. (See chart below).

LATINO/A: While the division's percentage is somewhat lower that the college in this group (17% vs. 21%), the CS department seems to be attracting nearly the same as that of the college (at 20% vs. 21%). (See chart below).

CS vs. College Demographics

The table shows the full breakdown.

% Enrollment of Specific Targeted Student Populations

	CS	PSME	Foothill
African American	4%	4%	5%
Asian	41%	34%	15%
Decline to State	9%	8%	9%
Filipino	3%	4%	5%
Latino/a	20%	17%	21%
Native American	1%	1%	1%
Pacific Islander	1%	1%	1%
White	35%	28%	31%
Decline to State	8%	11%	10%

The data suggest that CS, as a department, is keeping pace with the college as a whole, while showing consistently higher representation in all targeted groups than the division. The one notable difference is the Asian population which is approaching three times the percentage in the department as is seen at the college level.

Future Strategies

The table suggests that CS is more successful than either PSME or Foothill at attracting Asian students, while seeing the same success as the college in other populations like African American or Latino/a. This gives us a direction in which we can go. There are two aspects:

1. Recruiting students
2. Retaining students

While recruiting students of varied ethnicities may present a difficult challenge, retaining students in targeted ethnic groups may be something we can address in a simpler manner. By hiring TAs and tutors who are themselves declared to be in the various targeted groups, we may be able to increase accessibility for them, and thus see an uptick in retention and success in the respective groups. Also see the strategies in the bullet above section and continuation 2-C.a).

Section 3: Outcomes Assessment Summary

A) Attach 2013-2014 Course-Level (for Instructional Programs Only) – Four Column Report for CL-SLO Assessment from TracDat, please contact the Office of Instruction to assist you with this step if needed.
See attached

B) Attach 2013-2014 Program Level – (for all programs) Four Column Report for PL-SLO Assessment from TracDat, please contact the Office of Instruction to assist you with this step if needed.

See attached

Section 4: Assessment and Reflection

Based on your assessment data and reflections, please respond to the following prompts.

A) For instructional programs only, what curricular, pedagogical or other changes have you made as a result of your course level student learning outcomes (CL-SLO) assessments?

As a result of our many course-level SLOs (attached), we adjusted a variety of activities in most courses of the programs.

In Fall 2013-14 we made significant changes to the CORs of several courses based on our reflections of the course---level SLOs (as well as other factors like transferability and advisory committee recommendations.)

In some cases we noted that, despite meeting targets for successful students, there were a significant number of withdrawals. Example: "However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 31%." In these cases, we

1. successfully offered the course CS 49, a place for dropped or unsuccessful students to fall back to and get slower-paced instruction,
2. changed certain aspects from some COR (as evidenced by many of our COR changes in the last year),
3. coordinated with the PSME Center to offer more tutors and weekly review sessions for computer science students, and
4. added two new honors sections, CS 1AH and CS 2AH to help separate the underprepared population from the advanced entry-level students so we can offer more personalized instruction to each group. This will be put into operation in the 2015-16 academic year.

B) <u>For instructional programs only</u>, how has assessment of program-level student learning outcomes led to certificate/degree program improvements? Have you made any changes to your program based on the findings?

The findings at the program level paralleled those at the course level.

As with the course level reflection, targets were met, yet retention was less than stellar. Example: "The larger issue is retention: in CS many students do drop in the first three weeks, and we want to find ways to address this problem." The correction at the program level had to be integrated with that at the course level. See **Section 4-A**, above for the four concrete changes made that addressed the retention at the program level and course level, equally.

<u>For all programs: Instructional, Students Services, Administrative</u>

C) **How do the objectives and outcomes in your area relate to the program-level student learning outcomes and to the college mission?**

Mission Statement: Foothill College offers educational excellence to diverse students seeking transfer, career preparation and enhancement, and basic skills mastery. We are committed to innovation, ongoing improvement, accessibility and serving our community.

Each core CS course, and many of the optional support courses include verbiage that require English and Math practice.

CS Support for English

In all core CS course outlines of records and most support courses, under "Examples of Required Reading and Writing and Outside of Class Assignments", we give multiple examples of ways in which reading and writing should be incorporated into every aspect of the course. A few examples are "Reading the supplied handouts and modules averaging 10 pages per week" and "Writing technical prose documentation that supports and describes the programs".

CS Support for Math

In all core CS course outlines of records and most support courses, under "Course Objectives", we state the requirement that the student "solve problems that have origins in a variety of disciplines including math … " and under course content, we note that "Applications used throughout course in selected areas" of which the number one example is "Math".

D) What do members of your program do to ensure that meaningful dialogue takes place in both shaping and evaluating/assessing your program's student learning outcomes?

The CS department has regular meetings each academic quarter to discuss the progress made or difficulties encountered at the program level. Some of the efforts started in 2013-14 and continuing in Fall of 2014-15 include individual classroom strategies, coordination with the PSME center, online tutoring options, the development of new course options (honors vs. regular) at the entry-level, and increasing staff at the faculty and assistant level. These topics drive our ongoing departmental conversation.

Section 5: Program Goals

Please comment on progress you have made on program goals from prior program reviews. Check the appropriate status box & provide explanation in the comment box.

Goal/Outcome (This is NOT a resource request)	Related to prior resource request (Y/N)	Status: Completed, In progress or Revised	Comment on Status
1. Each student will be exposed to topics and courses which go beyond the minimum required for graduation in order to maximize their ability to succeed in the field of computer science.	Y	In progress	Within existing courses we continue to expose students to programs and projects, which have advanced content and provide added preparation for transfer and career placement. We also added new advanced support courses, new faculty and weekly PSME center sessions on advanced topics.
Improve retention.	Y	In progress	Our rapid (+90%) growth rate in enrollment without loss of success numbers confirms that we are able to scale our curriculum without negatively impacting outcomes. Next, we want to improve the success numbers even with the new larger enrollment.

Please list any new goals for your program you would like to undertake this year. The goals should be linked to the college mission and be driven by data (including student and program learning outcomes reflections).

Goal/Outcome (This is NOT a resource request)	How will this goal improve student success or respond to other key college initiatives?	How will progress toward this goal be measured?
1. Provide more customized and individualized support for the diverse first-year population.	It has been demonstrated that by making instruction more directly relevant to the individual needs of the learner, both basic skills and advanced mastery can be more easily attained.	Retention metrics already in place can be compared with prior years.
2. Improve success rates.	Fewer repeated classes due to	Success metrics already in place can be compared with prior years.

	withdrawal means a more efficient flow of learners through the sequences and consequently more students served using existing resources.	

Section 6: Program Resources and Support

To be completed only if making a new resource request.

Using the tables below, summarize your program's unfunded resource requests. Refer to the Operations Planning Committee website: http://foothill.edu/president/operations.php for current guiding principles, rubrics and resource allocation information.

Full Time Faculty and/or Staff Positions

Position	Related Goal from Table in section 5 and how this resource request supports this goal.	Was position previously approved in last 3 years? (y/n)
TWO (2) Full time CS faculty members	The current reliance on adjunct faculty to teach a huge majority of classes makes both goals in section 5 difficult to monitor and cultivate. Full-time faculty have a more complete view and participation in the programs as they relate to individual class instruction. In addition, a full-time faculty is currently on leave as of Jan. 2015, and whose continuance in the department is unknown.	Yes, and growth has accelerated. Even with an additional faculty member, we will continue to require many adjuncts to keep pace with student demand. (Note: With the uncertainty of the CS FT faculty member currently on leave, if she does not return, this would mean no expansion of the FT faculty has occurred while enrollment is up 90%.)

Unbudgeted Reassigned Time (calculate by % reassign time x salary/benefits of FT)
Indicate duties covered by requested reassign time:

Responsibility	Related Goal from Table in section 5 and how this resource request supports this goal.	% Time

One Time B Budget Augmentation

Description	$ Amount	Related Goal from Table in section 5 and how this resource request supports this goal.

Ongoing B Budget Augmentation

Description	$ Amount	Related Goal from Table in section 5 and how this resource request supports this goal.
Instructional Assistance for On-line and Hybrid courses (forums support, failure-intervention, and assignment screening).	**$3k/qtr x 3 assistants = $9k/qtr or $27k /yr.**	The class sizes in all CS offerings are larger than the rest of PSME, with many exceeding the maximum seat-count regularly in order to accommodate high demand. Assistance with activities (not related to grading) will help faculty meet both success and excellence goals of Section 5 more effectively.
Annual Software Licenses (Netlab, SolidWorks, Deep Freeze, VMWare, etc.)	**$25K**	The software required for both the core Computer Science and Enterprise Networking disciplines require licenses that are updated frequently, usually on an annual basis. With companies continually updating their software, the CS Department must stay current in order to train and educate students effectively to be successful both for transfer and the workforce. Delays in updating software can quickly make our curriculum obsolete due to the pace of innovation in Silicon Valley.
VMWare Virtual Machine Log Ins	$25K	The amount of simultaneous log-ins to access software is limited to the number of virtual machines permitted under the current agreement between VMWare and the District. If the District can renegotiate and increase the amount of permitted log ins, this will allow more students to access software regularly that is necessary for course success.

Facilities and Equipment

Facilities/Equipment Description	$ Amount	Related Goal from Table in section 5 and how this resource request supports this goal.
41 Dell All-in-One Desktop Computers	$70K	CS classes have a class size limit of 40; however, there does not exist in PSME a classroom that contains 40 computers. The CS department is growing rapidly and its success rates will constitute a large proportion of the PSME Division in the coming years. In order to meet Goals 1 & 2 of providing individualized support and increased success rates, students will need to be able to utilize a computer in the classroom while having access to an instructor that can help guide their development and learning. Additionally, class scheduling is limited due to the small number of computer labs which will hamper growth.

41 Dell All-in-One Thin Clients for Virtualization	$30K	Thin clients are a cheaper alternative to achieving a 40-computer classroom for some courses. Again, having students practice coding or other skills in the presence of an instructor will provide individualized support and potentially increase success and retention rates.

Section 7: Program Review Summary

Address the concerns or recommendations that were made in prior program review cycles, including any feedback from Dean/VP, Program Review Committee, etc.

Recommendation	Comments
Hiring of a new FT CS Faculty member to replace one that resigned in 2013/14.	A new FT faculty member was hired; however, she is currently on leave making the net gain zero.
The need for computer classrooms to support additional class offerings. Additional need to create virtualization system.	The need is great for a larger classroom that can actually handle the 40-seat class limit. Without a classroom of this size, class offerings are limited due to scheduling issues and eager students are turned away. Virtualization is a cheaper alternative to desktops, but does not work in all CS courses (but most); however, it does work for a majority of scenarios and helps to support math, counseling, and transfer-to-work courses as well.
Network classes have a high failure and withdraw rate. These classes are also expensive to support.	The failure rate is higher for Enterprise Networking classes in comparison to core programming; however, a majority of students are interested in work force and skills training and less about the grade. Enterprise Networking is expensive but must be allocated ongoing funding in order for the courses to stay relevant to skills desired in Silicon Valley.
FT faculty do not have enough capacity to create new courses. Many of the new courses require skills found in industry (and not currently possessed by the FT faculty).	Specialized areas such as mobile computing, software quality assurance, etc. are only taught and mainly developed by adjuncts with industry experience. A new curriculum model must be created for CS that allows for industry collaboration with faculty. Funding may only be part of the answer, as FT faculty still need to be responsible for content.

a. After reviewing the data, what would you like to highlight about your program?

The CS department, its transfer program and the workforce population that is served by the many new courses have proven to be an unqualified success, despite the challenges of high growth. We are successfully growing the program and absorbing a seemingly boundless demand for our old and new courses without suffering success erosion. We have incorporated the AS-T degree seamlessly into our curriculum and are able to offer both core transfer courses and support topics courses that meet the dual goals of transfer and workforce in a single classroom. The student population consists of entering freshmen and degreed professionals alike. Finally, we are reaching out to geographically wider regions by the rapid growth of our online component.

The next phase has to be the improvement of success along with more growth to accommodate the demand to serve our population.

Finally, full-time faculty hiring has reached a critical point as we were barely able to staff our existing courses with four full-time and 15 adjunct instructors. With the unexpected leave of a non-tenured full-time instructor, we are left with a double deficit. That, combined with the likely retirement of two full-time senior members in the next 2-5 years, means staffing and training two new full-timers is prudent and probably crucial.

Section 8: Deans Feedback and Follow Up

This section is for the Dean to provide feedback.

A) Strengths and successes of the program as evidenced by the data and analysis:

The strength of the CS Department lies in the small number of FT faculty members willing to revamp and create new courses to meet student and workforce demands, all while maintaining a high success rate and exemplary academic standards.

1. Two new honors courses were created (CS 1AH & CS 2AH) to address the wide disparity of students prepared to tackle programming.
2. A new CS 3A/B/C series was created to address the growing interest of Python as a programming language.
3. New cybersecurity courses were created to meet anticipated demand in Silicon Valley.
4. FT faculty readily provide new adjunct faculty with materials, best practices on Etudes, teaching tips for both online and face-to-face classes, and general support.
5. As mentioned, enrollment growth of 90% with high productivity (656).
6. Participation in local advisory boards, professional conferences, and Silicon Valley Code Camp.

B) Areas of concern, if any:

With the rapid growth of the CS department, the following areas are of great concern:

1. Insufficient number of FT faculty members and the high probability of retirement of those faculty members.
2. Insufficient number and size of computer labs to support growth and demand.
3. Creating new curriculum based on recent innovations in Silicon Valley to meet employer and student demand. Having adjunct faculty create content (due to their expertise) causes a lack of ownership if that PT faculty member leaves.
4. Lower success rates of targeted groups compared to non-targeted groups.
5. Only one FT faculty member (and no adjuncts) is able to teach Enterprise Networking courses.

C) Recommendations for improvement:

To remedy the areas identified above:

1. Hiring **multiple** new FT faculty members with both classroom and industry experience to help with Program expansion as well as stabilize the Department in case of faculty retirement or departure.
2. Increase B-Budget allocation or large allocation of Measure C funds to build a new computer classroom with minimally 40 updated computers; as well as additional computers to increase the size of current computer classrooms.
3. Form an academia-industry partnership with a variety of local companies and pair industry experts with FT and PT faculty to create new courses. New curriculum and courses should only be developed if multiple faculty are identified as being able to teach it effectively, with industry being a potential source.
4. Increase the number of resources available to struggling students, such as tutoring at night, online and at convenient times for employed students. Expansion of the PSME Center and their efforts with SMARTthinking are a step in the right direction. If successful, additional funding should be provided. An effort has also begun to direct unprepared students in CS 1A/2A to CS 49 instead in order to build a better programming foundation, which will hopefully lead to higher success rates. Expansion of CS 49 courses may prove to be beneficial.
5. Identify and hire additional adjunct faculty members to support Enterprise Networking course sequences and become accustomed to the current server configurations in lab.

D) Recommended next steps:

__X_ Proceed as planned on program review schedule
___ Comprehensive Program Review (Out of cycle) Recommended
___ Remediation Plan Recommended

Upon completion of section 8, the Program Review should be returned to department faculty and staff for review, and then submitted to the Office of Instruction and Institutional Research for public posting. See timeline on Program Review Cover Sheet.

Unit Course Assessment Report - Four Column

Foothill College

Department - Computer Science (C S)

Mission Statement: To provide an educational pathway to careers in computer science technology and research. To make computer technology accessible to students from all backgrounds. To provide a conduit between our students and both universities and companies, so that the training and learning that they acquire at Foothill can be leveraged to pursue professional and/or advanced research positions.

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Computer Science (C S) - C S 10 - COMPUTER ARCHITECTURE & ORGANIZATION - Compilation of C++ or Java to assembly language - The student will demonstrate the ability to analyze the assembly language instructions generated by a C, C++ or Java program. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignment the examines and analyzes the code generated by a C, C++ or Java program. **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/18/2014 - Of those who finished the course, 50% had 7/10 understanding or better. Retention of enrollment was best in Fall and worst in Spring. < 50% retention in Spring, > 50% in Fall. seemed to know why they were there. **Result:** Target Not Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** TA or instructional assistant will likely provide needed support to shore up key concepts toward the end of the course. **Resource Request:** TA or instructional assistant will likely provide needed support to shore up key concepts toward the end of the course. **Resource Request:** TA or instructional assistant will likely provide needed support to shore up key concepts toward the end of the course.	
		06/30/2013 - This SLO was measured by lab assignment 3 of the computer labs. The average scores was 85%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Computer Science (C S) - C S 10 - COMPUTER ARCHITECTURE & ORGANIZATION - Microprocessor Architecture - The student will demonstrate knowledge of the architecture of a microprocessor including the use of registers, the program counter, and the arithmetic logic unit. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Test that includes questions about microcomputer architecture components. **Assessment Method Type:** Pre/Post Test **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/18/2014 - Of those who finished the course, 50% had 7/10 understanding or better. Retention of enrollment was best in Fall and worst in Spring. < 50% retention in Spring, > 50% in Fall. seemed to know why they were there. **Result:** Target Not Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** TA or instructional assistant will likely provide needed support to shore up key concepts toward the end of the course. 06/30/2013 - This SLO was measured by questions on the midterm and final exams. The average score was 72%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 18 - DISCRETE MATHEMATICS - Relations - Properly identify properties in a relation (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/30/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Computer Science (C S) - C S 18 - DISCRETE MATHEMATICS - Logic and Proofs - Use formal logic and various methods of arguments to formally write proofs involving number theory, set theory, combinatorics, and discrete probability. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/30/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** A formal proof written in mathematical English **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.		
Department - Computer Science (C S) - C S 18 - DISCRETE MATHEMATICS - Number theory and applications - Apply number theory, combinatorics, discrete probability, graph theory, and recursion to solve various application problems. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/30/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 1A - OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN JAVA - Java Control Structures and Methods - A successful student will be able to write and debug Java programs which make use of the fundamental control structures and method-building techniques common to all programming languages. Specifically, the student will use data types, input, output,	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program run, testing the control structures and methods in the program. **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will get a score of 7 or	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 80, 80, 86, 81, respectively. However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 56%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:**	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
iterative, conditional, and functional components of the language in his or her programs. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	better on a 10 point rubric.	Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week. 03/31/2013 - This SLO was measured by lab assignments 2,3, 4 and 5 of the computer labs. The average scores were between 93%, 90%, 88% and 83%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013 **GE/IL-SLO Reflection:** We will continue to use this SLO	
Department - Computer Science (C S) - C S 1A - OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN JAVA - Java OOP Design - A successful student will be able to use object-oriented programming techniques to design and implement a clear, well-structured Java program. Specifically, the student will use and design classes and objects in his or her programs. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program run, testing the classes and objects in the program **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 80, 80, 86, 81, respectively. Perusal showed that we met 7/10 goal on > 80% of students. However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 56%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		03/31/2013 - This SLO was measured by lab assignments 6, 7, 8 and 9 of the computer labs. The average scores were between 80%, 83%, 78% and 72%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013 **GE/IL-SLO Reflection:** SLO was not quite as successful as the other SLO, but was still very good - we met our goal. No change recommended for the coming year.	
Department - Computer Science (C S) - C S 1B - INTERMEDIATE SOFTWARE DESIGN IN JAVA - Java Inheritance - A successful student will be able to write and debug Java programs which make use of inheritance, i.e., the "is a" relationship, common to all OOP languages. Specifically, the student will define base and derived classes and use common techniques such as method chaining in his or her programs. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program run, testing inheritance in the program. **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 93, 90, 82, 88, respectively. However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 31%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
		03/31/2013 - This SLO was measured by lab assignments 6, 7 and 8 of the computer labs. The average scores were 84%, 80% and 97%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		results don't reflect an attrition of about 20% of the students (drop-outs) by the fourth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013 **Resource Request:** T/A for the course would be very useful if future budgets allow it.	
Department - Computer Science (C S) - C S 1B - INTERMEDIATE SOFTWARE DESIGN IN JAVA - Basic Java Abstract Data Types - A successful student will be able to use the Java environment to define the basic abstract data types (stacks, queues, lists) and iterators of those types to effectively manipulate the data in his or her program. (Created By Department - Computer Science (C S)) **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program run, testing a variety of abstract data types in the program. **Assessment Method Type:** Observation/Critique	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 93, 90, 82, 88, respectively. However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 31%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20% **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
		06/18/2013 - Abstract Data Types were tested from week 8 onward, and students received the equivalent of an 7 or better at the rate of about 90% of enrolled members. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
		03/31/2013 - This SLO was measured by lab assignments 8 and 9 of the computer labs. The	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		average scores were 97% and 91%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 20% of the students (drop-outs) by the fourth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013 **Resource Request:** T/A for the course would be very useful if future budgets allow it.	
Department - Computer Science (C S) - C S 1B - INTERMEDIATE SOFTWARE DESIGN IN JAVA - Java Generics - A successful student will be able to define and use Java generics to make their data and algorithms work with a variety of data types. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program run, testing a variety of Java generics in the program. **Assessment Method Type:** Observation/Critique	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 93, 90, 82, 88, respectively. However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only XX%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
		06/18/2013 - Generics were tested from week 8 onward, and students received the equivalent of an 7/10 or better at the rate of about 80% of enrolled members. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		03/31/2013 - This SLO was measured by lab assignments 6. The average scores was 84%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013 **GE/IL-SLO Reflection:** This SLO seems well met and no action needed for the coming year.	
Department - Computer Science (C S) - C S 1C - ADVANCED DATA STRUCTURES & ALGORITHMS IN JAVA - Time Complexity in Java - The successful student will be able to analyze the time complexity of a variety of algorithms and data structure access techniques and choose the best algorithm and/or data structure for the project at hand. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program run, measuring the time complexity of various sort, search or merge algorithms in a program. **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 78, 89, 90, 86, respectively. However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 47%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
		03/31/2013 - This SLO was measured by lab assignments 3, 5, 7 and 8 of the computer labs. The average scores were between 98%, 75%, 92% and 97%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 30% of the students (drop-outs) by the sixth week of the quarter.	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		Result: Target Met **Year This Assessment Occurred:** 2012-2013 **GE/IL-SLO Reflection:** The SLO was successful as far as the students who stayed in the course. We will continue to keep the SLO in-tact, but we should attempt to have more support for the students than can be provided by the instructor, alone. Tutors or class TAs would help. **Resource Request:** T/A for the course would be very useful if future budgets allow it.	
Department - Computer Science (C S) - C S 1C - ADVANCED DATA STRUCTURES & ALGORITHMS IN JAVA - Advanced Data Structures - The successful student will be able to write and incorporate balanced trees, hash tables, directed graphs and priority queues in his or her software. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignments that includ debugged source code and some evidence of successful program runs, demonstrating the use of each advanced data structure covered in the course. **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 78, 89, 90, 86, respectively. However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 47%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
		03/31/2013 - This SLO was measured by lab assignments 1, 2, and 9 of the computer labs. The average scores were between 94%, 79%, and 85%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students.	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		However, these results don't reflect an attrition of about 30% of the students (drop-outs) by the sixth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013 **GE/IL-SLO Reflection:** The SLO was successful as far as the students who stayed in the course. We will continue to keep the SLO in-tact, but we should attempt to have more support for the students than can be provided by the instructor, alone. Tutors or class TAs would help. **Resource Request:** T/A for the course would be very useful if future budgets allow it.	
Department - Computer Science (C S) - C S 20A - PROGRAMMING IN C# - C# Control Structures and Methods - A successful student will be able to write and debug C# programs which make use of the fundamental control structures and method-building techniques common to all programming languages. Specifically, the student will use data types, input, output, iterative, conditional, and functional components of the language in his or her programs. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:**	**Assessment Method:** C# programming assignment that includes source code built from various control structures, input/output and data types common to C#.		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Active Department - Computer Science (C S) - C S 20A - PROGRAMMING IN C# - C# OOP Design - A successful student will be able to use object-oriented programming techniques to design and implement a clear, well-structured Java program. Specifically, the student will use and design classes and objects in his or her programs. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** C# programming assignment that includes classes and objects in an efficient manner. **Assessment Method Type:** Observation/Critique		
Department - Computer Science (C S) - C S 21A - PROGRAMMING IN PYTHON - Python Control Structures and Methods - A successful student will be able to write and debug Python programs which make use of the fundamental control structures and method-building techniques common to all programming languages. Specifically, the student will use data types, input, output, iterative, conditional, and functional components of the language in his or her programs. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Python programming assignment that includes debugged source code and some evidence of a successful use of control structures, methods, input and output as well as a smooth program run. **Assessment Method Type:** Observation/Critique	08/15/2014 - Of the students who finished the course, 88% had a 7/10 understanding of this SLO. This class had a good retention rate of 64%. It seemed that many of the students had taken some sort of programming course prior to this one and that helped their ability to master the concepts quickly. Of course, brand new college students who had not had any programming experience were still successful but the rigor of the course gave them a much greater challenge that they had to overcome. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** None.	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Computer Science (C S) - C S 21A - PROGRAMMING IN PYTHON - Python OOP Design - A successful student will be able to use object-oriented programming techniques to design and implement a clear, well-structured Python program. Specifically, the student will use and design classes and objects in his or her programs. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Python programming assignment that includes classes and objects in an efficient manner. **Assessment Method Type:** Observation/Critique	08/15/2014 - Of the students who finished the course, 88% had a 7/10 understanding of this SLO. This class had a good retention rate of 64%. It seemed that many of the students had taken some sort of programming course prior to this one and that helped their ability to master the concepts quickly. Of course, brand new college students who had not had any programming experience were still successful but the rigor of the course gave them a much greater challenge that they had to overcome. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** None.	
Department - Computer Science (C S) - C S 22A - JAVSCRIPT FOR PROGRAMMERS - Development Environment - Use a web application development environment that includes a browser, editor, debugger and code libraries. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/30/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program run, testing the control structures in the program. **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/16/2014 - For this rubric, 83% of the students were able to show 7/10 master or better. Retention was 61%, which is high for CS courses, so this was a good sign.Many students with a background in graphic design but no programming experience sign up for the course. The course is aimed at programmers so these students end up dropping the course or struggling in it. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** None. **Resource Request:** None.	
Department - Computer Science (C S) - C S 22A - JAVSCRIPT FOR PROGRAMMERS - Quality JavaScript Programs - Write modifiable JavaScript programs that modify	**Assessment Method:** Javascript program that is hosted on a web server. Instructor can interact with the program to gain access to data, and		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
the DOM, respond to user events and make requests to the server. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/30/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	examine the source code to see that the programming style is acceptable. **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.		
	Assessment Method: Programming assignment that includes debugged source code, documentation and some evidence of a successful program run, testing the control structures and methods in the program. **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/16/2014 - For this rubric, 83% of the students were able to show 7/10 master or better. Retention was 61%, which is high for CS courses, so this was a good sign.Many students with a background in graphic design but no programming experience sign up for the course. The course is aimed at programmers so these students end up dropping the course or struggling in it. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** None.	
Department - Computer Science (C S) - C S 2A - OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN C++ - C++ Control Structures and Methods - A successful student will be able to write and debug C++ programs which make use of the fundamental control structures and method-building techniques common to all programming languages. Specifically, the student will use data types, input, output, iterative, conditional, and functional components of the language in his or her programs. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program run, testing the control structures and methods in the program. **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 81, 79, 86, 83, respectively. However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 38%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Not Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
		03/31/2013 - This SLO was measured by lab	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Course-Level SLO Status: Active		assignments 2, 3, 4 and 5 of the computer labs. The average scores were between 97%, 95%, 91% and 98%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013 **GE/IL-SLO Reflection:** Extremely positive results for this SLO. Will keep in place for coming year.	
Department - Computer Science (C S) - C S 2A - OBJECT-ORIENTED PROGRAMMING METHODOLOGIES IN C++ - C++ OOP Design - A successful student will be able to use object-oriented programming techniques to design and implement a clear, well-structured C++ program. Specifically, the student will use and design classes and objects in his or her programs. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program run, testing the classes and objects in the program. **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 81, 79, 86, 83, respectively. However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 38%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
		03/31/2013 - This SLO was measured by lab assignments 6, 7, 8 and 9 of the computer labs. The average scores were between 85%, 93%, 87% and 80%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. **Result:** Target Met **Year This Assessment Occurred:**	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		2012-2013 **GE/IL-SLO Reflection:** Strong results indicating a continued use of this SLO for the coming year.	
Department - Computer Science (C S) - C S 2B - INTERMEDIATE SOFTWARE DESIGN IN C++ - C++ Inheritance - A successful student will be able to write and debug C++ programs which make use of inheritance, i.e., the "is a" relationship, common to all OOP languages. Specifically, the student will define base and derived classes and use common techniques such as method chaining in his or her programs. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program run, testing inheritance in the program. **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 92, 75, 86, 93, respectively. However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 32%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
		03/31/2013 - This SLO was measured by lab assignments 6, 7 and 8 of the computer labs. The average scores were 84%, 80% and 97%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 20% of the students (drop-outs) by the fourth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013 **Resource Request:** T/A for the course would be very useful if future budgets allow it.	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Computer Science (C S) - C S 2B - INTERMEDIATE SOFTWARE DESIGN IN C++ - Basic C++ Abstract Data Types - A successful student will be able to use the C++ environment to define the basic abstract data types (stacks, queues, lists) and iterators of those types to effectively manipulate the data in his or her program. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program run, testing a variety of abstract data types in the program. **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 92, 75, 86, 93, respectively. However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 32%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Not Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week. 03/31/2013 - This SLO was measured by lab assignments 8 and 9 of the computer labs. The average scores were 97% and 91%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 20% of the students (drop-outs) by the fourth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013 **Resource Request:** T/A for the course would be very useful if future budgets allow it.	
Department - Computer Science (C S) - C S 2B - INTERMEDIATE SOFTWARE DESIGN IN C++ - C++ Templates - A successful	**Assessment Method:** Programming assignment that includes debugged source code and some evidence	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 92, 75, 86, 93, respectively. However, these	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
student will be able to define and use C++ templates to make their data and algorithms work with a variety of data types. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/23/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	of a successful program run, testing a variety of C++ templates in the program. **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 32%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
		03/31/2013 - This SLO was measured by lab assignments 6. The average scores was 84%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 2C - ADVANCED DATA STRUCTURES & ALGORITHMS IN C++ - Time Complexity in C++ - The successful student will be able to analyze the time complexity of a variety of algorithms and data structure access techniques and choose the best algorithm and/or data structure for the project at hand. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:**	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program run, measuring the time complexity of various sort, search or merge algorithms in a program. **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 82, 91, 91, 97, respectively. However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 50%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
06/30/2017 **Course-Level SLO Status:** Active		assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
		06/18/2013 - This was measured in week 4 (lab #3) and selected labs thereafter. Students consistently computed accurate time complexity and compared their predictions with lab results. More than 80% of the students - approximately 90% - demonstrated understanding of this concept and its use in evaluating algorithms. The only area of improvement was in overall retention. The course is difficult and had a large drop-out rate, not due to this rubric, specifically. We continue to work on that aspect. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 2C - ADVANCED DATA STRUCTURES & ALGORITHMS IN C++ - Advanced Data Structures - The successful student will be able to write and incorporate balanced trees, hash tables, directed graphs and priority queues in his or her software. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignments that includ debugged source code and some evidence of successful program runs, demonstrating the use of each advanced data structure covered in the course. **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/14/2014 - Average scores on assignments #5, 6, 7 and 8 (which included skill on this rubric) were 82, 91, 91, 97, respectively. However, these statistics don't include the drops, which occurred before assignment #5. Overall course retention was only 50%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
		06/18/2013 - Lab assignments #4, #5, #6 and #9 measure this rubric. Of those students who were	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		in the course during each of those weeks (there was attrition due to overall difficulty with the course, not this rubric specifically) 80% or more of the students did demonstrate a very high degree of competence in these data structures. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 30A - INTRODUCTION TO LINUX & UNIX - Unix/Linux Operating System Components - A successful student will be able to describe the various aspects of the Unix operating system from a user and administrator perspective. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Written tests which measure the student's knowledge of specific attributes of different Unix flavors. **Assessment Method Type:** Pre/Post Test	08/16/2014 - The rubric that cover this SLO showed the following percentage of students were successful in this area: Total: 75%. This SLO is based on material taught early in the course and generally students turned in more work near the beginning of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** None.	
Department - Computer Science (C S) - C S 30A - INTRODUCTION TO LINUX & UNIX - Unix/Linux Operating System Configuration and Control - A successful student will be able to perform basic sysadmin tasks, write simple shell scripts, make changes to the OS file system and use regular expressions for searching the file system. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013	**Assessment Method:** Assignments which require the student to perform basic Unix tasks like writing shell scripts and making changes to the OS file systems. **Assessment Method Type:** Observation/Critique	08/16/2014 - The rubric that cover this SLO showed the following percentage of students were successful in this area: Total: 69%. This percentage is based on students who stayed in the course (did not drop), but did not necessarily complete all of the work in the class and generally students turned in more work near the beginning of the quarter than the end of the quarter. The percentages are a lot higher if we take out students who did not complete the rubric work.	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
End Date: 06/30/2017 **Course-Level SLO Status:** Active		**Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** None.	
Department - Computer Science (C S) - C S 30B - LINUX & UNIX SHELL PROGRAMMING - BASH Fundamentals - A successful student will be able to code basic commands in the BASH programming environment using a structured approach that shows mastery of the write/test/debug cycle. In particular, the student will be able to use arrays, iterative and conditional structures, sorts, regular expressions and nesting in shell scripts. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Assignments which require the student to write scrips in the OS shell, BASH, that exercise the various control structures. **Assessment Method Type:** Observation/Critique		
Department - Computer Science (C S) - C S 30B - LINUX & UNIX SHELL PROGRAMMING - Scripting Techniques - A successful student will be able to make us of redirection, pipes, advanced regular expressions, awk, jobs, signals and other advanced scripting techniques. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:**	**Assessment Method:** Assignments that require the use of advanced scripting techniques like pipes, awk and regular expressions. **Assessment Method Type:** Observation/Critique		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
06/30/2017 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 30C - LINUX & UNIX SYSTEM ADMINISTRATION - Unix/Linux System Set-up and Responsibilities - A successful student will be able to configure an OS and be capable of planning for the routine maintenance of the system's many components. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Assignments that require the student to configure a Unix/Linux OS. **Assessment Method Type:** Observation/Critique		
Department - Computer Science (C S) - C S 30C - LINUX & UNIX SYSTEM ADMINISTRATION - Advanced System Management - A successful student will be able to manage and repair the many aspects of the operating system including networking, file sharing, accounting, logging, printing and disk file system. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Assignments that challenge the student to manage and repair aspects or the operating system. **Assessment Method Type:** Interviews/Focus Groups		
Department - Computer Science (C S) - C S 31A - INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS - Database	**Assessment Method:** Design a database with at least 10 fields in each record.	08/15/2014 - Based on those assignments that addressed this SLO about 87% (13 out of 15	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Design - Create a conceptual database design (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/30/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method Type:** Observation/Critique **Target for Success:** Processes used in industry are employed to design a database that can be used efficiently.	students) had an understanding that was 7/10 or better. However, these statistics don't include the drops, which occurred before week five. Overall course retention was only 43%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. A significant percentage of students seemed to have had initial misconceptions about the formalisms required to develop and understand the concepts of Database Systems (Relational Algebra, Normal Forms). **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Online course assistant would certainly improve retentiion	
Department - Computer Science (C S) - C S 31A - INTRODUCTION TO DATABASE MANAGEMENT SYSTEMS - Querying a Database - Use Structured Query Language to perform queries on a database (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/30/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Perform queries to generate a report on a database using SQL **Assessment Method Type:** Observation/Critique **Target for Success:** Queries are expressed efficiently in SQL and the resulting reports are easy for humans to read.	08/15/2014 - Based on those assignments that addressed this SLO about 87% (13 out of 15 students) had an understanding that was 7/10 or better. However, these statistics don't include the drops, which occurred before week five. Overall course retention was only 43%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. A significant percentage of students seemed to have had initial misconceptions about the formalisms required to develop and understand the concepts of Database Systems (Relational Algebra, Normal Forms). **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:**	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		Online course assistant would certainly improve retentiion	
Department - Computer Science (C S) - C S 40A - SOFTWARE ENGINEERING METHODOLOGIES - MVC - Design a computer program that employs the Model/View/Controller pattern (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/30/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignments which require the student to implement the model/view/controller pattern. **Assessment Method Type:** Observation/Critique	08/15/2014 - Based on those assignments that addressed this SLO about 100% (15 out of 15 students) had an understanding that was 7/10 or better. However, these statistics don't include the drops, which occurred before week five. Overall course retention was only 58%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Online course assistant would certainly improve retentiion	
Department - Computer Science (C S) - C S 40A - SOFTWARE ENGINEERING METHODOLOGIES - Iterative Development - Use an iterative, agile process to develop a quality software product (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/30/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Assign group projects that employ the agile process and demonstrate iterative approach to designing a software product. **Assessment Method Type:** Observation/Critique	08/15/2014 - Based on those assignments that addressed this SLO about 100% (15 out of 15 students) had an understanding that was 7/10 or better. However, these statistics don't include the drops, which occurred before week five. Overall course retention was only 58%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Online course assistant would certainly improve retentiion	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Computer Science (C S) - C S 49 - FOUNDATIONS OF COMPUTER PROGRAMMING - Control Structures and Methods - A successful student will be able to write and debug computer programs which make use of the fundamental control structures and method-building techniques common to all programming languages. Specifically, the student will use data types, input, output, iterative, conditional, and functional components of the language in his or her programs. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program run, testing the control structures and methods in the program. **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will get a score of 7 or better on a 10 point rubric.	08/15/2014 - Based on those assignments that addressed this SLO about 80% had an understanding that was 7/10 or better. However, these statistics don't include the drops, which occurred before week five. Overall course retention was only 55%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. A handful of students did very well so it is encouraging. The students are young and old and from all backgrounds. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Online course assistant would certainly improve retentiion	
Department - Computer Science (C S) - C S 49 - FOUNDATIONS OF COMPUTER PROGRAMMING - Object Oriented Design - A successful student will be able to use object-oriented programming techniques to design and implement a clear, well-structured computer program. Specifically, the student will use and design classes and objects in his or her programs. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** A successful student will be able to describe the algorithms used in programs by clear documentation. **Target for Success:** Evaluation of programs in which students achieve a score of 7 on a scale of 10. 80% of students should meet this.	08/15/2014 - Based on those assignments that addressed this SLO about 80% had an understanding that was 7/10 or better. However, these statistics don't include the drops, which occurred before week five. Overall course retention was only 55%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. A handful of students did very well so it is encouraging. The students are young and old and from all backgrounds. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Online course assistant would certainly improve retentiion	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Computer Science (C S) - C S 50A - NETWORK FUNDAMENTALS (CCNA) - Network Communications - The student will demonstrate an understanding of communications between two hosts on an IP network connected by an arbitrary collection of routers and switches. The student will perform a lab experiment requiring them to analyze the flow of data between two host using Wireshark or Packet Tracer. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Course-Level SLO Status:** Active	**Assessment Method:** The student will successfully design and configure a network **Assessment Method Type:** Observation/Critique **Target for Success:** 80% of the students will successfully complete the lab exercise	06/30/2013 - This SLO was measured by lab assignments 6 of the computer labs. The average scores were between 90%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 40% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 50A - NETWORK FUNDAMENTALS (CCNA) - OSI Model - The student demonstrate understanding of the role of IP addressing in the TCP/IP Network Reference Model in Networking. (Created By Department - Computer Science (C S)) **Course-Level SLO Status:** Active	**Assessment Method:** The student will be tested in chapter 6 exam on their understanding of IP address and subnet masks through the use of a multiple choice test. **Assessment Method Type:** Pre/Post Test **Target for Success:** Target for Success: 80% of the students will get a score of 70 or better on a 100 point rubric.	11/10/2013 - This SLO was measured by questions on the chapter 6 exam. The average score was 85%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 50B - IP ROUTING PROTOCOL FUNDAMENTALS (CCNA) - Routing Protocols - The student will demonstrate the ability to configure the interior gateway routing protocols RIP, RIPv2, OSPF, and EIGRP. (Created By Department - Computer Science (C S)) **Start Date:** 09/24/2012	**Assessment Method:** The students will complete laboratory experiments design to demonstrate their understanding and ability to configure and debug network configurations employing RIP, RIPv2, OSPF, and EIGRP. **Assessment Method Type:** Observation/Critique **Target for Success:** Target for Success: 80% of the students will	06/30/2012 - This SLO was measured by lab assignments 3, 4, 7, and 11 of the computer labs. The average scores were between 80%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 25% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:**	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Course-Level SLO Status: Active	get a score of 7 or better on a 10 point rubric in the Lb experiments.	Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 50B - IP ROUTING PROTOCOL FUNDAMENTALS (CCNA) - Selection of Interior Gateway Routing Protocols - The student will demonstrate the process of selecting the appropriate routing protocol for specific network requirements. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/30/2012 **Course-Level SLO Status:** Active	**Assessment Method:** The student will perform a laboratory experiment requiring them to design a layer 3 network to satisfy specific size and performance requirements. **Assessment Method Type:** Observation/Critique **Target for Success:** Target for Success: 80% of the students will get a score of 7 or better on a 10 point rubric.	06/30/2013 - This SLO was measured by lab assignments 11 of the computer labs. The average scores were between 90%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 25% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 50C - THE LOCAL AREA NETWORK: ETHERNET & WIRELESS NETWORKS - LAN Design - The student will demonstrate knowledge of the Composite LAN Design Model. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **Course-Level SLO Status:** Active	**Assessment Method:** The students will be tested in a multiple choice exam which requires them to demonstrate knowledge of the Composite LAN Design Model. They will be asked to demonstrate knowledge of the purpose and use of each layer and of the tools and designed techniques to ensure reliability, availability, and security in the network, **Assessment Method Type:** Pre/Post Test **Target for Success:** Target for Success: 80% of the students will get a score of 70 or better on a 100 point rubric.	06/30/2013 - This SLO was measured by questions on the chapter 1 exam. The average score was 83%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013 06/30/2013 - This SLO was measured by questions on the chapter 5 exam. The average score was 78%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
50C - THE LOCAL AREA NETWORK: ETHERNET & WIRELESS NETWORKS - Spanning Tree Protocol - The student will demonstrate knowledge of the Spanning Tree and Rapid Spanning Tree protocols. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **Course-Level SLO Status:** Active	**Assessment Method:** The student will be given a set of criteria for the design of a network using Spanning Tree and ask to select the appropriate protocol, design the topology, and test and analyze the results. **Assessment Method Type:** Observation/Critique **Target for Success:** Target for Success: 80% of the students will get a score of 7 or better on a 10 point rubric.		
Department - Computer Science (C S) - C S 50D - INTRODUCTION TO WIDE AREA NETWORKS, NETWORK SECURITY & IP ADDRESSING SERVICES - WAN Design - The student will demonstrate knowledge of the design and configuration of Wide Area Networks utilizing point-to-point (PPP) and point-to-multipoint (Frame Relay) topologies. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **Course-Level SLO Status:** Active	**Assessment Method:** The student will be given a specific communications requirement and asked to determine the appropriate protocol to deploy and then to design, deploy, and verify the configuration of the network. **Assessment Method Type:** Observation/Critique **Target for Success:** Target for Success: 80% of the students will get a score of 7 or better on a 10 point rubric.	06/30/2013 - This SLO was measured by lab assignments 2 & 3 of the computer labs. The average scores were between 90%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 40% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 50D - INTRODUCTION TO WIDE AREA NETWORKS, NETWORK SECURITY & IP ADDRESSING SERVICES - Network Security - The student will demonstrate the ability to secure a local area and wide area network. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:**	**Assessment Method:** The students will be tested using a multiple choice exam designed to determine their knowledge of current security requirements and the deployment of secure LANs and WANs. **Assessment Method Type:** Pre/Post Test **Target for Success:** Target for Success: 80% of the students will get a score of 70 or better on a 100 point	06/30/2013 - This SLO was measured by questions on the chapter 4 exam. The average score was 86%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
09/24/2012 **Course-Level SLO Status:** Active	rubric.		
Department - Computer Science (C S) - C S 50E - INTRODUCTION TO IP NETWORK SECURITY - Firewalls - The student will demonstrate the ability to configure and use firewalls to provide security for a campus network. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 50E - INTRODUCTION TO IP NETWORK SECURITY - Intrusion Prevention - The student will demonstrate the configuration use of Intrusion Prevention Systems to increase the security of a campus network (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **Course-Level SLO Status:** Inactive			
Department - Computer Science (C S) - C S 52A - ADVANCED IP ROUTING PROTOCOLS & SERVICES (CCNP) - Route Maps - The student will demonstrate the use of route maps. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:**	**Assessment Method:** The student will perform a laboratory experiment involving route filtering for redistribution where there will use a route map to select the routes. **Assessment Method Type:** Observation/Critique **Target for Success:** Target for Success: 80% of the students will	09/30/2012 - This SLO was measured by lab assignments 5 of the computer labs. The average scores was 90%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 20% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:**	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
09/24/2012 **Course-Level SLO Status:** Active	get a score of 7 or better on a 10 point rubric.	Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 52A - ADVANCED IP ROUTING PROTOCOLS & SERVICES (CCNP) - Border Gateway Protocol (BGP) - The student will demonstrate knowledge of the Border Gateway Protocol (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **Course-Level SLO Status:** Active	**Assessment Method:** The students will be tested using a multiple choice assessment which is designed to determine their knowledge of both eBGP and iBGP. The assessment will cover when to use BGP, the differences between eBGP and iBGP, and other details of the protocol. **Assessment Method Type:** Pre/Post Test **Target for Success:** Target for Success: 80% of the students will get a score of 70 or better on a 100 point rubric.	11/10/2013 - This SLO was measured by lab assignment 6 of the computer labs. The average scores were between 100%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 20% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 52B - ADVANCED SWITCHING & CAMPUS LAN DESIGN (CCNP) - Private VLANs - The student will demonstrate the application and configuration of private VLANs. (Created By Department - Computer Science (C S)) **Start Date:** 06/30/2013 **Course-Level SLO Status:** Active	**Assessment Method:** The student will perform a laboratory experiment requiring the use of private VLANs for traffic separation. **Target for Success:** Target for Success: 80% of the students will get a score of 7 or better on a 10 point rubric.	09/30/2013 - This SLO was measured by lab assignment 6 of the computer labs. The average scores were between 90%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 20% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 52B - ADVANCED SWITCHING & CAMPUS LAN DESIGN (CCNP) - First Hop Redundancy Protocols - The student will demonstrate the knowledge of three first-hop	**Assessment Method:** The student will perform laboratory experiments and will be ask to choose the most appropriate protocol for the problem presented.	11/10/2013 - This SLO was measured by lab assignment 5 of the computer labs. The average scores was 80%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
redundancy protocols, HSRP, GLBP, and VRRP, (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Course-Level SLO Status:** Active	**Assessment Method Type:** Observation/Critique **Target for Success:** Target for Success: 80% of the students will get a score of 7 or better on a 10 point rubric.	results don't reflect an attrition of about 20% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 52C - ADVANCED NETWORK TROUBLESHOOTING (CCNP) - Troubleshooting connectivity problems in a campus LAN - The student will demonstrate the ability to describe the methodology of troubleshooting and correcting connectivity problems in a campus LAN. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **Course-Level SLO Status:** Active	**Assessment Method:** The student will be given a configured campus LAN topology and told to test connectivity among all of the LANs and make the necessary changes to the topology to ensure connectivity. The student will also be told to force a specific switch to be the STP root switch. **Assessment Method Type:** Observation/Critique **Target for Success:** Target for Success: 80% of the students will get a score of 7 or better on a 10 point rubric.	11/10/2013 - This SLO was measured by lab assignment 4 of the computer labs. The average scores was 90%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 15% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 52C - ADVANCED NETWORK TROUBLESHOOTING (CCNP) - BGP Attributes - The student will demonstrate the use of BGP attributes to influence the BGP route selection decision. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **Course-Level SLO Status:** Active	**Assessment Method:** The student will be given a configured topology which is not choosing the correct routes for packet forwarding. The student will be required to troubleshoot the problem. The solution to the problem will require the student to modify the BGP attributes of the route. **Assessment Method Type:** Observation/Critique **Target for Success:** Target for Success: 80% of the students will get a score of 7 or better on a 10 point rubric.	06/30/2013 - This SLO was measured by lab assignment 5 of the computer labs. The average scores was 80%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 15% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Computer Science (C S) - C S 54A - STORAGE AREA NETWORKS - Network Attached Storage - The student will demonstrate the use of Network Attached Storage in a data center environment (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 09/24/2012 **Course-Level SLO Status:** Active	**Assessment Method:** The student will perform a laboratory experiment requiring the configuring of a Network Attached Server (NAS) and connecting to it and sharing files from both Windows and Linux servers. **Assessment Method Type:** Observation/Critique **Target for Success:** Target for Success: 80% of the students will get a score of 7 or better on a 10 point rubric.	11/10/2013 - This SLO was measured by lab assignment 4 of the computer labs. The average scores was 80%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 100% of the students. However, these results don't reflect an attrition of about 15% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 54A - STORAGE AREA NETWORKS - Data Backup and Recovery - The student will demonstrate the knowledge of recovery time option (RTO) and recovery point option (RPO) in backup and recovery. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Course-Level SLO Status:** Active	**Assessment Method:** The students will take a multiple choice assessment requiring them to demonstrate their knowledge of recovery time option (RTO) and recovery point option (RPO) and to use the appropriate backup and recovery technologies to meet the objectives. **Assessment Method Type:** Pre/Post Test **Target for Success:** Target for Success: 80% of the students will get a score of 70 or better on a 100 point rubric.	11/10/2013 - This SLO was measured by questions on the midterm and final exams. The average score was 82%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 15% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 54B - VMWARE VSPHERE INSTALL, CONFIGURE, MANAGE - vMotion - The student will demonstrate the use of vMotion in a virtual infrastructure environment. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:**	**Assessment Method:** The student will configure to two ESXi hosts using Virtual Center to use vMotion to move a running virtual machine from one host to the other automatically. **Assessment Method Type:** Observation/Critique **Target for Success:** Target for Success: 80% of the students will get a score of 7 or better on a 10 point	11/10/2013 - This SLO was measured by lab assignment 6 of the computer labs. The average scores was between 90%. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 20% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:** Target Met	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
01/07/2013 **End Date:** 09/27/2013 **Course-Level SLO Status:** Active	rubric.	**Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 54B - VMWARE VSPHERE INSTALL, CONFIGURE, MANAGE - Distributed Virtual Switches - The student will demonstrate knowledge of the configuration and use of Virtual Distributed switches in a virtual infrastructure. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 09/27/2013 **Course-Level SLO Status:** Active	**Assessment Method:** The student will take a multiple choice assessment which will determine the student's knowledge of VIrtual Distributed Switches, when to deploy them, how to configure them and and to verify their functionality. **Assessment Method Type:** Pre/Post Test **Target for Success:** Target for Success: 80% of the students will get a score of 70 or better on a 100 point rubric.	11/10/2013 - This SLO was measured by a question on the Final Exam. The average Average scores was 92, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
		11/10/2013 - This SLO was measured by lab assignment 5 of the computer labs. The average scores were between 90%, respectively. Careful analysis of the individual assignments revealed, we met the 7/10 goal on more than 80% of the students. However, these results don't reflect an attrition of about 20% of the students (drops/withdrawals) by the sixth week of the quarter. **Result:** Target Met **Year This Assessment Occurred:** 2012-2013	
Department - Computer Science (C S) - C S 54C - VMWARE VIEW INSTALLATION, CONFIGURATION & MANAGEMENT - Install and configure View components - The studnet will be able to install and configure the View Connection Server, Virtual desktops, Client systems, the View Composer. (Created By Department - Computer Science (C S)) **Start Date:** 12/17/2012			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Course-Level SLO Status: Active			
Department - Computer Science (C S) - C S 54C - VMWARE VIEW INSTALLATION, CONFIGURATION & MANAGEMENT - Analyzing design choices in a VMware View deployment - The student will be able to analyze design choices in the following areas: View Manager infrastructure, View desktop options, vSphere infrastructure, network infrastructure, client access devices, end-user management,and construct a comprehensive View solution. (Created By Department - Computer Science (C S)) **Start Date:** 12/17/2012 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 54D - CLOUD COMPUTING - Virtual Data Centers - The student will demonstrate knowledge of the architecture of a virtual data center. (Created By Department - Computer Science (C S)) **Start Date:** 06/02/2014 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 54D - CLOUD COMPUTING - Self-Service Deployment - The student will be able to demonstrate knowledge of the requirement for self-service deployment model in a public cloud. (Created By Department - Computer Science (C S)) **Start Date:** 07/01/2014			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Course-Level SLO Status: Active			
Department - Computer Science (C S) - C S 56A - ENTERPRISE WIRELESS LOCAL AREA NETWORKS - Autonomous Access Points and Wireless Lan Controllers - The student will demonstrate knowledge of the application and use of autonomous access points and thin access points in a wireless LAN controller environment. (Created By Department - Computer Science (C S))			
Department - Computer Science (C S) - C S 60A - INSTALLING & CONFIGURING WINDOWS SERVER 2012 - Active Directory Installation - The student will be able to install Active Directory Domain Services (AD DS) on a Server Core installation (Created By Department - Computer Science (C S)) **Start Date:** 12/17/2012 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 60A - INSTALLING & CONFIGURING WINDOWS SERVER 2012 - DHCP Deployment and Comfiguration - The student will be able to deploy and configure the Dynamic Host Configuration Protocol (DHCP) service (Created By Department - Computer Science (C S)) **Start Date:** 12/17/2012 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 60B - ADMINISTERING WINDOWS SERVER 2012 - Configure File and Print Services - The student will be able to			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
configure file and print services on a Windows 2012 Server. This includes configuring Distributed File System (DFS) and file and disk encryption. (Created By Department - Computer Science (C S)) **Start Date:** 12/17/2012			
Department - Computer Science (C S) - C S 60B - ADMINISTERING WINDOWS SERVER 2012 - Configure Network Services and Access - The student will be able to configure DNS zones, configure DNS zones, configure VPN and routing, and configure DirectAccess. (Created By Department - Computer Science (C S)) **Start Date:** 12/17/2012 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 60C - CONFIGURING ADVANCED WINDOWS SERVER 2012 SERVICES - Configure and Manage High Availability - THe student will be able to configure Network Load Balancing (NLB) and failover clustering (Created By Department - Computer Science (C S)) **Start Date:** 12/17/2012 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 60C - CONFIGURING ADVANCED WINDOWS SERVER 2012 SERVICES - Implement Business Continuity and Disaster Recovery - The student will be able to configure and manage backups, recover servers, and configure site-level fault tolerance (Created By Department - Computer Science (C S))			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Department - Computer Science (C S) - C S 61A - CONFIGURING WINDOWS 8 - Install and Upgrade to Windows 8 - The stident will be able to evaluate hardware readiness and compatibility, install Windows 8, and migrate and configure user data on the new system. (Created By Department - Computer Science (C S)) **Start Date:** 12/17/2012 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 61A - CONFIGURING WINDOWS 8 - Configure Hardware and Applications - The student will be able to configure hardware and applications, install and configure desktop applications, install and configure Windows Store applications, and control access to local hardware and applications (Created By Department - Computer Science (C S))			
Department - Computer Science (C S) - C S 63A - DEVELOPING APPLICATIONS FOR IOS - Objective-C - Produce clearly written Objective-C code that solves a given problem. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/30/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful Objective C program run. **Assessment Method Type:** Observation/Critique	08/20/2014 - Based on assignment scores that included skills on this rubric, 100% who completed the course had a 7/10 understanding or better. However, these statistics don't include the drops. Overall course retention was only 50%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. Also, lack of adequate preparation/background is a major problem. We are considering revising the course or breaking it into two easier sections. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:**	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
		TA or instructional assistant will likely provide needed support to shore up key concepts toward the end of the course.	
Department - Computer Science (C S) - C S 63A - DEVELOPING APPLICATIONS FOR IOS - Persist data - Write a program that stores user data in between sessions. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/30/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Assignments that require the student to develop apps that store data between sessions.	08/20/2014 - Based on assignment scores that included skills on this rubric, 100% who completed the course had a 7/10 understanding or better. However, these statistics don't include the drops. Overall course retention was only 50%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. Also, lack of adequate preparation/background is a major problem. We are considering revising the course or breaking it into two easier sections. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
Department - Computer Science (C S) - C S 64A - WRITING APPS FOR THE ANDROID IN JAVA - Basic Activity Lifecycle - A successful student will be able to configure an Android SDK emulator and use it to write and debug basic apps that can be uploaded and tested on an actual Android device. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:**	**Assessment Method:** Programming assignment that includes use of Android SDK emulator to write and debugged source code and some evidence of a successful app. **Assessment Method Type:** Observation/Critique	08/20/2014 - Based on assignment scores that included skills on this rubric, 100% who completed the course had a 7/10 understanding or better. However, these statistics don't include the drops. Overall course retention was only 50%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. Also, lack of adequate preparation/background is a major problem. We are considering revising the course or breaking it into two easier sections. **Result:** Target Met **Year This Assessment Occurred:**	

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
06/30/2017 **Course-Level SLO Status:** Active		2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
Department - Computer Science (C S) - C S 64A - WRITING APPS FOR THE ANDROID IN JAVA - Apps Programming Specifics - A successful student will be able to write many different types of Android apps, making use of diverse aspects such as user interface layout, XML, the Android support library, location-awareness, 2-D and 3-D graphics, and app signing and publishing. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Several Android app assignments which cover a variety of application areas. **Assessment Method Type:** Observation/Critique	08/20/2014 - Based on assignment scores that included skills on this rubric, 100% who completed the course had a 7/10 understanding or better. However, these statistics don't include the drops. Overall course retention was only 50%. Instructor was fully engaged in helping students, and past experiments with an online instructional assistant, showed that this could improve retention by 20%. Also, lack of adequate preparation/background is a major problem. We are considering revising the course or breaking it into two easier sections. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Suggest funds be allocated for teaching assistant to help answer questions/discuss problems beyond what the instructor can do in 40 hours/week.	
Department - Computer Science (C S) - C S 80A - OPEN SOURCE CONTRIBUTION - Tool-Based Topics - A successful student will be able to install a Git repository and issue the various commands for checking-in, checking-out, and forking a project's source code. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:**	**Assessment Method:** Assignment that includes creation of a repository and some evidence of a successful checking-in and -out of an evolving project. **Assessment Method Type:** Observation/Critique		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 80A - OPEN SOURCE CONTRIBUTION - Concept-Based Topics - A successful student will be able to join a team that handles the workflow of a specific open-source project and become a productive contributor to such a team. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Student demonstration of membership in a public repository and productive interaction with others in the team. **Assessment Method Type:** Observation/Critique		
Department - Computer Science (C S) - C S 81A - 3-D GRAPHICS PROGRAMMING - 3D API Mastery - A successful student will be able to write code using a specific 3D API such as OpenGL that generates 3-D images and motion. Aspects of the API that will be mastered include setting up the configuration space, specifying the projection, camera positions and lighting parameters, and attaching material properties to the scene members. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:**	**Assessment Method:** Programming assignment that includes debugged source code and some evidence of a successful program that produces dynamically animated 3-D scenes through use of the OpenGL library. **Assessment Method Type:** Observation/Critique		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Active Department - Computer Science (C S) - C S 81A - 3-D GRAPHICS PROGRAMMING - Dynamics of 3D Scenes and Motion - A successful student will apply the mathematical tools of matrices, normal vectors and linear transformations to the design of graphics programs. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Tests that reveal student knowledge of mathematical tools needed to write 3-D animated programs. **Assessment Method Type:** Observation/Critique		
Department - Computer Science (C S) - C S 82A - INTRODUCTION TO SOFTWARE QUALITY ASSURANCE - Writing a Test Plan - Write a QA test plan that reveals defects in source code (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/30/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Assignment that includes writing a QA plan for specific project specification. **Assessment Method Type:** Observation/Critique		
Department - Computer Science (C S) - C S 82A - INTRODUCTION TO SOFTWARE QUALITY ASSURANCE - Testing Tools - Use test automation software (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:**	**Assessment Method:** Assignment that includes using test automation tools for specific project specification and testing the project using those tools for success and failure.		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
06/30/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 83A - INTRODUCTION TO QUANTUM COMPUTING - Quantum Computing Fundamentals - A successful student will be able to apply basic mathematical tools of quantum mechanics to describe the fundamental component of a quantum computer: the qubit. In addition, the student will be capable of describing and analyzing simple quantum circuits, and explain how they work differently from their classical binary counterparts. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Evaluation of student performance on homework and tests that require computational proficiency in quantum mechanics and its application to quantum-bit (qubit) logic gates. **Assessment Method Type:** Pre/Post Test		
Department - Computer Science (C S) - C S 83A - INTRODUCTION TO QUANTUM COMPUTING - Applications of Quantum Logic - A successful student will be able to describe and derive the fundamental algorithms of quantum computing in the areas of teleportation, superdense coding and the quantum Fourier transform. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 01/07/2013	**Assessment Method:** Assignments which test the student's ability to describe and utilize quantum mechanical algorithms for computing. **Assessment Method Type:** Observation/Critique		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
End Date: 06/30/2017 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 83B - QUANTUM COMPUTING II: FORMALISM & THEORY - Density Operator Formulation of Quantum Mechanics - A successful student will be able to use the density formulation of quantum mechanics to model non-orthogonal measurement and environmental noise in quantum computers. (Created By Department - Computer Science (C S)) **Start Date:** 11/01/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Evaluation of student performance on homework and tests that require computational proficiency in density matrices and their application to noisy quantum systems. **Assessment Method Type:** Pre/Post Test **Target for Success:** Scores of 70% or better.		
Department - Computer Science (C S) - C S 83B - QUANTUM COMPUTING II: FORMALISM & THEORY - Application to Quantum Search and Noise Reduction - The successful student will be able to write pseudocode and quantum circuits for algorithms that implement quantum search and environmental noise reduction in the quantum channels. (Created By Department - Computer Science (C S)) **Start Date:** 11/01/2013 **End Date:** 06/30/2016	**Assessment Method:** Assignments that test the student's ability to describe and utilize density matrices and tensor purifications in the modeling of search and noise reduction algorithms. **Assessment Method Type:** Observation/Critique **Target for Success:** 70% score on assignments.		
Department - Computer Science (C S) - C S 83C - QUANTUM COMPUTING III: ADVANCED LOGIC & ALGORITHM DESIGN - Algorithm Complexity - A successful student will be able define the problem classes P and NP, and compare	**Assessment Method:** Assignments which test the student's ability to categorize algorithms as being P vs. NP, and define NP-Completness. **Assessment Method Type:** Observation/Critique		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
classical vs. quantum mechanical algorithms in this context. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 11/01/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Target for Success:** 70% or better on assignments.		
Department - Computer Science (C S) - C S 83C - QUANTUM COMPUTING III: ADVANCED LOGIC & ALGORITHM DESIGN - Error Correction Codes - A successful student will be able define the stabilizer code, and test whether given error correction codes satisfy certain analytically-defined bounds. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Quarter **Start Date:** 11/01/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Evaluation of student performance on homework and tests that require computational proficiency in error correction codes. **Assessment Method Type:** Pre/Post Test **Target for Success:** 70% or better on tests or assignments		
Department - Computer Science (C S) - C S 84A - DATABASE-DRIVEN WEB APPLICATION DEVELOPMENT - Installation/Configuration - The student will be able to download, install, configure and test the MySQL system on a local operating system. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/01/2013 **End Date:**	**Assessment Method:** Assignments which require the student to download, install, and test MySQL. **Assessment Method Type:** Observation/Critique		

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
06/30/2017 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 84A - DATABASE-DRIVEN WEB APPLICATION DEVELOPMENT - PHP Scripting - The student will be able to write web pages that have PHP scripts embedded for access to MySQL databases. (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 06/01/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active	**Assessment Method:** Assignments which require the student to write and deploy web pages that contain PHP code and successfully test the code in its ability to access MySQL databases. **Assessment Method Type:** Observation/Critique		
Department - Computer Science (C S) - C S 84B - DISTRIBUTED DATABASES - Design - Design a distributed database with implementation strategies to maintain transaction and concurrency control (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 11/01/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 84B - DISTRIBUTED DATABASES - Query Processing - Develop query processing and optimization strategies for an existing distributed database design (Created By Department - Computer Science (C S))			

Course-Level SLOs	Means of Assessment & Targets for Success / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Assessment Cycles: End of Academic Year **Start Date:** 11/01/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active			
Department - Computer Science (C S) - C S 84B - DISTRIBUTED DATABASES - Replication and Integration - Develop data replication and integration plans for an existing distributed database design (Created By Department - Computer Science (C S)) **Assessment Cycles:** End of Academic Year **Start Date:** 11/01/2013 **End Date:** 06/30/2017 **Course-Level SLO Status:** Active			

Unit Assessment Report - Four Column

Foothill College

Program (PSME-C S) - Computer Science AS

PL-SLOs	Means of Assessment & Target / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Program (PSME-C S) - Computer Science AS - Software Development Expertise - The successful student will be able to develop quality, maintainable software using current tools and object oriented design techniques. **Year PL-SLO implemented:** End of Academic Year **Start Date:** 09/19/2012 **End Date:** 06/30/2016 **SLO Status:** Active	**Assessment Method:** The development of a program that follows a given set of style guidelines and satisfies the given user requirements. The student must demonstrate that the program meets the requirements, and must be prepared to answer questions about why she solved the problem the way she did. **Assessment Method Type:** Class/Lab Project **Target:** 100% of students awarded this degree must pass the assessment.	10/10/2014 - Reviewing SLOs for multiple courses, with focus on core degree requirements, we see a trend. Students who do not drop the course by the third or fourth week, do meet at general target of 70%+ mastery of the topics by the end of the quarter. The larger issue is retention: in CS many students do drop in the first three weeks, and we want to find ways to address this problem. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Tutorial Center growth, Teaching assistants.	
Program (PSME-C S) - Computer Science AS - Ability to design data structures - The successful student will be able to design a complex program using different types of data structures and their corresponding algorithms. **Start Date:** 09/19/2012 **End Date:** 06/29/2016 **SLO Status:** Active	**Assessment Method:** The development, test and modification of a program that contains complex data structures. The student must be able to tell how her chosen data structure and algorithm works, and why she chose the design that she used in the project. **Assessment Method Type:** Class/Lab Project **Target:** 100% of the students earning this degree will pass this assessment.	10/10/2014 - Reviewing SLOs for multiple courses, with focus on ADVANCED degree requirements, we see a trend. Students who do not drop the course by the third or fourth week, do meet at general target of 80%+ mastery of the topics by the end of the quarter. The larger issue is retention, especially in these advanced courses: About 20% of the students drop in the first three weeks, and we want to find ways to address this problem. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Tutorial Center growth, Teaching assistants.	
Program (PSME-C S) - Computer Science AS - Pursuit of Excellence Toward Further			

PL-SLOs	Means of Assessment & Target / Tasks	Assessment Findings/Reflections	Action Plan & Follow-Up
Education and Vocation - Each student will be exposed to topics and courses which go beyond the minimum required for graduation in order to maximize their ability to succeed in the field of computer science. The student will work cooperatively with ohter students of all levels and backgrounds, lending support to, and getting support from, other members of the college's uniquely diverse and experienced student population. **Start Date:** 11/01/2013 **End Date:** 06/30/2017 **SLO Status:** Active	**Assessment Method:** Evaluation of the optional, application-specific, assignments, which can be selected by the students based on their individual interests and goals. Evaluation of group projects in courses admitting those. Evaluation of peer support and group forum contributions **Target:** At least 70% of the students should be showing active participation in either optional/advanced assignments or engaging in forums and group participation with some passing or excelling evaluation by the instructor.	10/10/2014 - Students who complete the advanced courses of the program sequence do show excellent results in these optional and supportive areas. This is probably due to the demands required to make it though the sequence, which self-selects motivated students. The main goal here would be trying to help those who do not make it to the end, and improve retention. **Result:** Target Met **Year This Assessment Occurred:** 2013-2014 **Resource Request:** Tutorial Center growth, Teaching assistants.	