

LEARNING SUPPORT CENTERS PROGRAM REVIEW: SPRING 2013 SUBMISSION CYCLE

Program Name: CIS
Center Contact: Melissa Green

Academic Year: 2011-2012
Program Review Submission Date: March 25, 2013

I. Description of Center

Provide a brief description of the program and how it supports the college's [College Mission and Diversity Statements](#), [Institutional Priorities, 2008-2013](#), [5 in 5 College Strategies, Spring 2011](#), and other [institutional planning documents](#) as appropriate.

The CIS Computer Center is located in building 19, rooms 124 and 126. Computer Center hours are

Monday - Thursday	8:30 am - 8 pm
Friday	8:30 am - 2 pm
Saturday/Sunday	Closed

The purpose of the CIS Computer Center is to help CSM students of all backgrounds succeed in their courses. The CIS lab hosts regularly-scheduled lab sessions for many CIS courses, and provides support to students enrolled in CIS, Architecture, Drafting, and Engineering courses. In addition, the lab is available so that students enrolled in these courses can complete their assignments and/or their required hour(s) by arrangement. CIS students can improve their programming and other skills during scheduled, instructor-led lab sessions. This helps to reinforce material introduced in lecture and allows the opportunity for instructors to ensure that students meet SLOs. CIS, Architecture, Drafting, and Engineering students use specialized software to complete their assignments and/or fulfill their hour by arrangement.

The CIS Computer Center is available to all CSM students, but priority is given to CIS, Architecture, Drafting, and Engineering students. Four CIS courses, some with multiple sections, have regularly-scheduled lab sessions in the CIS Computer Center, while an additional twenty-two CIS courses use the Computer Center. Two Architecture, four Drafting, and three Engineering courses use the Computer Center on an occasional or regular basis. All CSM students may use the CIS Computer Center, but only students with an account have printing privileges (with a limit of 10 pages). Accounts are created for CIS, Architecture, Drafting, and Engineering students.

By offering this resource and by measuring student learning outcomes, the CIS Computer Center of College of San Mateo serves to improve retention in CIS as well as other courses.

Unfortunately the CIS Computer Center's instructional aide left at the beginning of the year, having given notice a month in advance, and at present there is still no replacement for him. Data needed for this program review document is incomplete because there is no one to retrieve or generate the necessary information. The delay in hiring a replacement has created a hardship for the CIS department.

II. Summary of Student and Center Data

A. Student Learning Outcomes Assessment

Summarize recent SLO assessments, identify trends, and discuss areas in need of improvement.

CIS 110 SLOs
Fall 2012

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SLO 02: Differentiate between basic concepts of computer hardware and software. Students performed at an 82% level on this assignment. This includes 15% of students did not turn in the assignment.

SLO 07: Demonstrate ability to use and evaluate Internet tools for research. Students earned 96% on the final paper illustrating the Information Competency laid out in the preparatory assignments.

Spring 2013

SLO 03: Demonstrate use of the operating system to effectively organize and maintain computer files. Students performed at an 81% level on this assignment. This includes 20% of students did not turn in the assignment.

Evidence shows that those students who read the chapter and complete the labs are nearly 100% successful in accomplishing the student learning outcome(s). This suggests the instructional materials and teaching methodology are sound. What appears to be a problem is getting all students to engage in class assignments. These students eventually drop the class leading to low retention. One issue is getting students off to the right start in the distance mode. Optional orientation meetings are held, but it would be best augmented by an interactive orientation video. To this end the department requests *Camtasia* under the instructional materials. This video recording/editing software will provide an effective means to deliver course material in a more engaging way. Faculty of CIS 110 has already taken the mini-STOT training on this product and other faculty will also be able to be trained. A second issue may be that instructional materials are geared for the PC platform when an increasing number of students are using the Mac computer system. It would be helpful for instructors in this foundation class (and perhaps others) to have both a PC and Mac to develop appropriate instructions and materials for both. Thus under equipment requests is the acquisition of a Mac.

CIS 254 SLO Assessments

Fall 2012

All ten SLOs for CIS 254 were assessed, with successful outcomes ranging from 80-100% for individual SLOs. Absenteeism is the predominant factor leading to non-success in CIS 254. Students who regularly attend lecture and lab sessions generally succeed. The availability of CIS tutors in the Learning Center beginning fall 2012 has significantly aided retention and success. Several students who initially wanted to drop the class were persuaded to remain and credited their success with the tutoring they received from the Learning Center. Only 3 out of 26 students did not pass the class. 88.5% of retained students succeeded. This has led to record enrollment in CIS 255 for spring 2013, the second-semester programming course.

CIS 255 SLO Assessments

Spring 2012

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All eight SLOs for CIS 255 were assessed, with successful outcomes ranging from 75-100% for individual SLOs. Absenteeism is the predominant factor leading to non-success in CIS 255. Because the class is a hybrid class that meets for three hours of lecture once a week, missing even a single class results in missing an entire week's lecture. It can be difficult for students to make up missing material. The lab portion is completed online, although many students complete assignments in the Computer Center. Students who regularly attend lecture generally succeed, meeting all SLOs. The retention rate was 62.5%, with only one of the retained students not succeeding. PRIE data show a retention rate of 74.6% and a success rate of 64.4% for 2009-2011.

CIS 278 SLOs

Fall 2012

SLO 01: Demonstrate knowledge and understanding of the principal object-oriented programming concepts. Students performed at an 84% level on this exam question. Traditional students met the SLO 100%

SLO 02: Employ Unified Modeling Language (UML) notation to model the object oriented design of a non-trivial computer program. Students performed at a 94% level on this programming project. This is an improvement over the last assessment of this SLO. Traditional students met the SLO 100%.

SLO 03: Implement a medium-size computer program that is stylistically and functionally correct, based on an object-oriented design model. Students performed at a 86% level on this programming project. This is an improvement over the last assessment of this SLO.

SLO 07: Create dynamically allocated variables. Students performed at a 81% level on this programming project. This is an improvement over the last assessment of this SLO.

Percentage comparisons between traditional and online students tend to vary. Last year Camtasia code demonstrations were added to areas covered for SLO3 and SLO7, which may account for the improvement in these areas. Videos will be added to over the other SLO areas to support the online audience.

CIS 256/279 SLOs

SLO's for this course are measured as one, as these cross-listed courses are essentially the same. The two courses cover the same theory, the only difference being that students code their projects in different languages (using texts that are identical except for implementation language).

Fall 2012

SLO 01: Implement a classic data structure as an Abstract Data Type class. Students performed at a 100% level on this programming project.

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SLO 02: Characterize an algorithm using Big O notation. Students performed at a 93% level on this exam question..

SLO 02 is a fundamental outcome for this course. Although the measured performance is always high, it should be 100% for students who complete this course. The tools which have been used to measure this SLO occur early in the course, when the Big O concepts are first presented. This may not be entirely accurate for students who complete the course, and for the next assessment cycle a final exam question will be used to track this SLO.

SLO 03: Select an appropriate data sort, based on characteristics of data to be sorted together with frequency of sort; Students performed at a 94% level on this exam question.

SLO 04: Employ algorithmic patterns to array, linked and recursive structures . Students performed at a 94% level on this exam question.

While these concepts are practiced in homework and given adequate text coverage, online students do not score as high in SLO measurements. Camtasia code demonstration videos will be developed to present these basic sorts and traversal patterns.

The courses that have traditional as well as online sections, such as CIS 110, CIS 256, CIS 278, and CIS 279, generally have higher rates of completion and success in the traditional sections. Although CIS 110 does not have a regular lab scheduled in the CIS Computer Center, many of those students (traditional and online) complete their assignments in the Computer Center. The traditional sections of CIS 110 have at least one scheduled session in the Computer Center each semester. The success rate of traditional vs. online sections of CIS 110 over 2009-2011 is 60.1% (traditional) compared to 51.9% (online), while the retention rates of 82.2% (traditional) and 82.7% (online) are nearly identical.

CIS 256 is taught once a year in lecture mode, and twice a year online. The success rate of traditional vs. online sections of CIS 256 over 2009-2011 is 100% (traditional) compared to 51.5% (online), while the retention rates of 100% (traditional) and 72.7% (online) demonstrates complete success for traditional students. A part of that success should be credited to regularly scheduled labs in the CIS Computer Center, as students spend an equal amount of class time in lecture and in the Computer Center.

CIS 278 is taught once or twice a year in lecture mode, and twice a year online (not including summer session). The success rate of traditional vs. online sections of CIS 278 from 2009-2011 is 70.4% (traditional) compared to 25.9% (online), while the retention rates of 77.8% (traditional) and 55.6% (online) demonstrates higher success for traditional students. A part of that success should be credited to regularly scheduled labs in the CIS Computer Center.

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CIS 279 is taught once a year in lecture mode, and twice a year online. The success rate of traditional vs. online sections of CIS 279 from 2009-2011 is 87.3.4% (traditional) compared to 53.8% (online), while the retention rates of 89.6% (traditional) and 69.5% (online) demonstrates higher success for traditional students. A part of that success should be credited to regularly scheduled labs in the CIS Computer Center.

Although other departments do not have regularly-scheduled labs, students in Architecture, Drafting, Engineering classes use the lab to complete assignments and/or the hour(s) by arrangement requirement. Those departments will occasionally reserve the Computer Center for special sessions. BUSW students also use the Computer Center at times when they are unable to use the Business Computer Center.

CIS courses (some with multiple sections) holding regularly-scheduled lab sessions in the CIS Computer Center are CIS 254, 256, 278, and 279.

Other CIS courses with students using the CIS Computer Center are CIS 110, 111, 113, 114, 117, 121, 125, 127, 132, 151, 255, 363, 364, 379, 380, 420, 479, 489, 490, and 491. In addition, students in the online sections of CIS 254, 256, 278, and 279 will also use the Computer Center.

Beginning fall 2013 there will be two additional CIS courses: CIS 128 and 200.

In 2014 there will be three new CIS courses: Computer Architecture, Android, and a MOOC course.

Architecture courses using the Computer Center are ARCH 120 and 140.

Drafting courses using the Computer Center are DRAF 110, 111, 121, and 122 (fall 2013).

Engineering courses using the Computer Center are

- ENGR 100 - for roughly half the term in summer and fall (Excel, general internet access, Arduino, MATLAB)
- ENGR 210 - full semester in spring (Solidworks for full term, AutoCAD for a few weeks)
- ENGR 215 - full semester in fall (MATLAB)

In addition, the Engineering club has used the lab for club projects (Arduino, Solidworks) and both Architecture and Engineering students use the lab for individual work on assignments for other classes (e.g. writing up lab reports).

B. Center Usage Indicators

1. Review center usage and discuss any differences across demographic variables. Refer to [Planning, Research and Institutional Effectiveness \(PRIE\) reports](#), SARS records, and other data sources as appropriate.

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The spring 2012 survey of 440 Computer Center users show nearly 80% of respondents enrolled in day courses. 85.5% of respondents are enrolled in 0.5-12.0 units, with only 14.5% enrolled in more than 12 units. The respondents are ethnically diverse (with the exception of no Native American respondents). African American and Unrecorded students have the highest rates of success (80% and 81%). Hispanic students have the lowest success rate at 72.2%. Overall, the average success rate of 76.2% is well above the college-wide average of 70.9%. The overall non-success rate of 23.8% is significantly lower than the college-wide non-success rate of 29.1%. And the retention rate of 85.5% is slightly higher than the college-wide retention rate of 84.7%.

In terms of gender, female students have a success rate of 79.6%, compared to male students with a success rate of 73%. Both success rates are substantially higher than the college-wide rates of 72.3% (female) and 69% (male).

The CIS Computer Center unduplicated student count in fall 2012 was 1,154.

2. Discuss any differences in student usage of center across modes of delivery. If applicable, refer to [Delivery Mode Course Comparison](#).

CIS courses taught in the distance mode have a retention rate of 58.9% compared to an 80.46% rate for traditional classes. This compares with the college's overall rates of 79% for the distance mode and 81% for traditional mode. The 2011 success rate for CIS online courses is 49% compared to a 70% success rate for traditional courses. The college's overall success rate for both online and traditional courses is 62%. Thus compared to the college, CIS online classes are 13% less successful, and CIS traditional classes are 8% better than the overall college's success rate. The regularly-scheduled lab sessions that are part of traditional CIS programming classes should be credited, as least in part, for the significant success rate of these students.

C. *Center Efficiency. Is the center efficient in meeting student needs?*

Discuss center efficiency, including staffing, hours of operation, tutorial and other services, space utilization, equipment, or technology as appropriate.

Currently the Computer Center is run by four lab aides, as there is still no replacement for the former Instructional Aide who managed the Computer Center. The Compute Center is open Monday-Thursday 8:30 am – 8:00 PM and Friday 8:30 am – 2:00 PM. The Computer Center is closed on weekends.

Tutoring is available in the Learning Center. CIS Computer Center lab aides do not provide tutorial services. During formal lab sessions led by instructors there is usually room in the overflow lab in 19-126 for students who are not enrolled in that class. However, the introductory CIS 254 classes are large and need both labs to accommodate all students. That means that other students cannot use the Computer Center during those scheduled lab periods. Some CIS software is installed on several Learning Center computers so CIS students would have an alternative. However, Architecture, Drafting and Engineering (as well as other) students would have to wait until the scheduled lab session is over to access the software that they need.

Currently the computers are satisfactory and two printers accommodate all students. However, if there would be a switch to Pinnacle printing service this could affect lab classes that require printouts of lab assignments. Any technical problem with the printing system (as so frequently happens with campus Xerox machines) would negatively impact students. At present, if one of the

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two printers does not work students still have a way to print. If there was a single printer and it became unavailable this would be extremely problematic, especially for evening classes, as students would be unable to print and submit their lab work.

D. Course Outline Updates (if applicable)

Review the [course outline update record](#). List the courses that will be updated in the next academic year. For each course that will be updated, provide a faculty contact and the planned submission month. See the [Committee on Instruction website](#) for [course submission instructions](#). Contact your division's [COI representatives](#) if you have questions about submission deadlines. Career and Technical Education courses must be updated every two years.

NOTE: The new CTE-course requirement dictates that outlines must be updated every two years. That leaves thirteen classes to update with many taught by adjuncts. Currently, there is no plan for how to address the issue of redoing course outlines in areas where full-time faculty do not have an expertise.			
Courses to be updated	Faculty contact	Submission month	Last Update
CIS 111 Intro to Internet Programming	Green	4/2013	2006
CIS 151 Networks and Digital Communication	?	?	2006
CIS 254 Intro to Object Oriented Program Design	Grasso / Green	12/2013	2007
CIS 255 (CS1) Programming Methods: Java	Green	4/2013	2009
CIS 256 (CS2) Data Structures: Java	Grasso	12/2013	2005
CIS 278 (CS1) Programming Methods: C++	Grasso	12/2013	2010
CIS 279 (CS2) Data Structures: C++	Grasso	12/2013	2005
CIS 364 Enterprise Data Warehousing	Green	4/2013	2008
CIS 479 Networking Security Fundamentals	?	?	2006
CIS 489 Computer Forensics	?	?	2006
CIS 490 Computer Forensics: Network Analysis and Defense	?	?	2006
CIS 491 Computer Forensics: Search and Seizure	?	?	2007
CIS 492 Computer Forensics: White Collar Crime	?	?	2006

E. Website Review

Review the center's website(s) annually and update as needed.

Contact(s)	Date of next review/update
No current CIS Computer Center Instructional Aide II/CIS	Spring 2013

III. Student Learning Outcomes Scheduling and Alignment

A. Course SLO Assessment (if applicable)

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Explain any recent or projected modifications to the Course SLO assessment process or schedule.

Scheduled lab sessions for CIS courses allow useful feedback to instructors to monitor student performance. Instructors can tailor lab assignments to reinforce concepts learned in lecture. In addition, instructors can tell when students need extra support. This allows instructors to assess SLOs on the fly and could lead to more class time covering a subject that students are struggling with, or additional lab assignments for more difficult subjects. Not all classes are the same, and some groups of students are stronger than others. One semester's students might need a lot of remedial help, while the following semester that class could be very strong with students mastering topics quickly. The immediate feedback acquired in the scheduled lab sessions allows adjustment of lecture and lab assignments as needed by a particular class, rather than adjusting SLOs for the following semester when those future students might have very different needs.

The hands-on environment with face-to-face instructor interaction contributes greatly to student success, particularly in the early programming courses. For example, students in CIS 254 who do not regularly attend scheduled lab sessions generally do not succeed in the class.

B. Center SLO Assessment

Explain any recent or projected modifications to the Center SLO assessment process or schedule.

CIS Computer Center SLOs are assessed through surveys administered to lab students.

The CIS Computer Center SLOs are

1. Students will have knowledge of the CIS Computer Center's resources and how to access them.
2. Students will be able to create, relocate, save, rename and backup files on local machine and via email and USB drive.
3. Students will be able to log into web based services such as WebAccess and web-based my.smccd.edu email.
4. Students will be able to apply technical knowledge of relevant computer applications used to solve real-world problems pertaining to their specific course work.
5. Students will be able to use 'help files' and online resources to answer questions about unfamiliar software.
6. Students will be able to navigate the internet and CSM website including WebSMART and WebAccess.
7. Students will learn that one of their best resources for completing an assignment will often come from working with other students in the same class.

CIS Computer Center survey results from 2012 show that the Computer Center has helped students improve in their coursework. Students surveyed were from various disciplines, not just CIS. 92.1% found the center's staff helpful. 100% of students surveyed said they found work done in the Computer Center was either very or moderately helpful in their academic success in course(s) linked to or supported by the Computer Center. Their experience in the Computer Center has also helped them to attain specific SLOs:

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11. Based on your overall experience in the Computer & Information Science Lab this semester, please indicate the extent to which you have made gains or progress in the following learning objectives identified below:

<i>I can...</i>	Major Progress	Moderate Progress	Minor Progress	No Progress	# of Students	Does not apply
a. Express ideas and provide supporting evidence effectively in writing	47.8% (11)	39.1% (9)	4.3% (1)	8.7% (2)	23	12
b. Express ideas and provide supporting evidence effectively orally	37.5% (9)	37.5% (9)	20.8% (5)	4.2% (1)	24	11
c. Comprehend, interpret, and analyze information I read	52.2% (12)	34.8% (8)	8.7% (2)	4.3% (1)	23	11
d. Comprehend, interpret, and analyze information I hear	50.0% (12)	37.5% (9)	4.2% (1)	8.3% (2)	24	11
e. Communicate effectively in a group or team situation	54.2% (13)	37.5% (9)	4.2% (1)	4.2% (1)	24	10
f. Comprehend, interpret, and analyze numerical and/or quantitative calculations	45.8% (11)	45.8% (11)	4.2% (1)	4.2% (1)	24	10
g. Interpret graphical representations of quantitative information (e.g. graphs, tables, or charts containing data)	44.0% (11)	40.0% (10)	12.0% (3)	4.0% (1)	25	10
h. Effectively identify, develop, and evaluate arguments	46.2% (12)	38.5% (10)	11.5% (3)	3.8% (1)	26	9

<i>I can...</i>	Major Progress	Moderate Progress	Minor Progress	No Progress	# of Students	Does not apply
i. Effectively assess the legitimacy or adequacy of different types of information	42.3% (11)	46.2% (12)	7.7% (2)	3.8% (1)	26	9
j. Work effectively with others of diverse backgrounds	53.8% (14)	26.9% (7)	15.4 (4)	3.8% (1)	26	9
k. Identify ethical issues and evaluate their consequences	45.8% (11)	41.7% (10)	8.3% (2)	4.2% (1)	24	11
l. Acknowledge the value of diverse opinions and perspectives	60.0% (15)	36.0% (9)	0.0% (0)	4.0% (1)	25	9

Note: Counts are listed in (parentheses).

C. SLO Alignment (as applicable)

Discuss how Center SLOs support Program SLOs. Discuss how Course and/or Center SLOs support Institutional/GE SLOs. Refer to [TracDat](#) related program and institutional SLOs reports.

The department has completed Objectives and SLOs for its A.S. degrees as shown below and they are appropriately published on the college SLO website. Below are listed the CIS A.S. degree program Objectives followed by the SLO. Assessment is ongoing although not formalized.

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Technical Competency

1. Apply computer science concepts to design and implement software solutions to problems;
SLO: Students will demonstrate the ability to use computer science concepts and program matching skills to design and implement software solutions to problems.
2. Use a variety of software tools, operating systems and/or computer languages;
SLO: Students will have the ability to use a variety of software tools, operating systems, and/or computer languages.
3. Acquire new technological skills by building upon discipline fundamentals;
SLO: Students will have an understanding of how to obtain information on computer concepts and discipline details. This understanding will provide them with the foundation necessary to pursue further learning.

Interpersonal Skills

4. Verbally communicate ideas and concepts clearly in an organized manner;
SLO: Students will demonstrate the ability to verbally communicate ideas and concepts clearly and in an organized manner.
5. Write clear system documentation, user documentation and research papers and/or posters;
SLO: Students will demonstrate the ability to write clear system documentation, user documentation, and research papers and/or posters.
6. Work as a team member in a problem solving situation;
SLO: Students will demonstrate the ability to work as a team member in a problem-solving situation.

Professional Awareness

7. Be aware of their professional responsibilities regarding key ethical issues affecting computer science.
SLO: Students will be aware of key ethical issues affecting computer science and their responsibilities as computer science professionals.

All seven degree-level SLOs are directly supported by the CIS Computer Center SLOs.

GE-SLOs Program Courses	Effective Communication	Quantitative Skills	Critical Thinking	Social Awareness and Diversity	Ethical Responsibility
CIS 110	X	X	X	X	X
CIS 111	X	X	X		
CIS 113	X	X	X		
CIS 114	X	X	X		
CIS 117	X	X	X		
CIS 121	X	X	X		
CIS 125	X	X	X		
CIS 127	X	X	X		

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CIS 132	X	X	X	X	X
CIS 151	X	X	X		
CIS 254	X	X	X	X	X
CIS 255	X	X	X	X	X
CIS 256	X	X	X		
CIS 278	X	X	X		
CIS 279	X	X	X		
CIS 363	X	X	X	X	X
CIS 364	X	X	X	X	X
CIS 379	X	X	X		
CIS 380	X	X	X		
CIS 420	X	X	X		
CIS 479	X	X	X	X	
CIS 489	X	X	X	X	
CIS 490	X	X	X	X	X
CIS 491	X	X	X	X	X
CIS 492	X	X	X	X	X

IV. Additional Factors

Discuss additional factors as applicable that impact the center, including changes in student populations, state-wide initiatives, transfer requirements, advisory committee recommendations, legal mandates, workforce development and employment opportunities, community needs. See [Institutional Research](#) as needed.

The Web and Mobile Application Development AS degree and certificate will, pending state approval, increase enrollment, particularly in intro classes that are required by the more advanced classes. Although most of the curriculum will be offered online, CIS 254 (Intro to Object-Oriented Program Design) is taught in traditional mode. It is possible that we would need to add additional sections of CIS 254, resulting in increased usage of the Computer Center.

The CIS department plans to offer an AS-T degree in Computer Science beginning 2014-2015. This would very likely result in increased enrollment and might require more space and more computers in the CIS Computer Center. In addition, we will offer a revised computer architecture course in traditional format (lecture/lab) that would require use of the Computer Center for the scheduled lab sessions.

Many students enrolled in online classes use the CIS Computer Center. With two new AS degrees offered in the near future, it is entirely probable that enrollment will soar and we would need additional space and computers in the Computer Center. It might be possible to use the old Networking and Computer Forensics lab that is no longer actively used, as that curriculum has moved entirely online.

V. Institutional Planning

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[*Note:* For centers that serve a single department, a portion of the information included in a departmental program review may be referred to or inserted here.]

A. *Results of Plans and Actions*

Describe results, including measurable outcomes, from plans and actions in recent program reviews.

The 2009 Computer Center Program Review had 5 action steps:

1. *Provide tutorial services to CIS students.*
This was achieved beginning fall 2012, with two CIS tutors hired to work in the Learning Center. Enrollment is up significantly in intermediate programming courses in spring 2013. Students in the intro classes are succeeding in greater numbers.
2. *Assigned lab hours for faculty.*
Although several instructors meet with students in the Computer Center outside of scheduled lab sessions, there are still no formal faculty hours as in other campus centers.
3. *Replacing the obsolete lab computers is a priority (in 2009).*
This was done in 2009 and 2011.
4. *Expansion of the Internet Programming curriculum into an associate's degree would be contingent on ITS support of the csmcis2 web server.*
ITS discontinued the csmcis2 server in spring 2013 and has forced instructors to use an off-site web server. The new Web and Mobile Application Development A.S. degree and Certificate of Achievement will most likely require an on-site web server to support the numerous courses. With the hiring of a new ITS director, it is hoped that ITS would once again provide support to our program and web server. The previous ITS director was opposed to maintaining the web server and was primarily responsible for the discontinuation of the csmcis2 web server. Other community colleges maintain web servers to support courses, and we feel that it is an important adjunct to our academic program, particularly if we will offer a (primarily) online degree.
5. *SARS has been introduced in the CIS and the Computer Forensics/Networking labs so that student lab usage can be tracked, resulting in more reliable data.*
SARS reports have turned out to be difficult to generate. Getting even attendance data has proved time-consuming. Also, SARS tracks lab usage but there is an increasing number of online classes so the majority of CIS students are not tracked by SARS. The new Computer Center manager to be hired this spring should receive adequate training in the use of SARS. More sophisticated reports would be helpful to programs using the Computer Center.

CIS Computer Center faculty and staff welcome the opportunity to participate in the Academic Senate Reading Apprenticeship initiative and other academic or support services activities, such as those associated with CSM Cares, the college's mental health grant.

B. *Center Vision*

The LSC Committee coordinates hours of operation, computer and technology resources, staffing, and scheduling of services to create comprehensive learning support network for all students. Centers will continue to strategically align services as a standing committee of the Academic Senate.

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What is the program's vision for sustaining and improving student learning and success during the *next six years*? Make connections to the [College Mission and Diversity Statements](#), [Institutional Priorities, 2008-2013](#), and other [institutional planning documents](#) as appropriate. Address trends in the SLO assessment results and student usage and data noted in Section II. Summary of Student and Program Data.

[*Note*: Specific plans to be implemented in the *next year* should be entered in Section V.C.]

1. To guide future faculty and staff development initiatives, describe the professional enrichment activities that would be most effective in carrying out the program's vision to improve student learning and success.

The Computer and Information Science department will continue to build on its strengths as shown in section IV above to provide an educational experience that is appropriate to the needs of the community and the computer industry by:

- Continuing its commitment to robust programs in transfer, occupational education, and lifelong learning.
 - Supporting and retaining the best faculty and staff.
 - Strengthening partnerships with businesses and industry through the Advisory Board.
 - Providing a welcoming and intellectually stimulating environment to both the online and campus students.
 - Endorsing, supporting and actively pursuing a policy of inclusiveness of all ethnic groups and other diversities.
 - Supporting institutional needs identified through program review for updating facilities and equipment to enhance learning environments.
2. To guide future faculty and staff development initiatives, describe the professional enrichment activities that would be most effective in carrying out the program's vision to improve student learning and success.

The ever-changing nature of CIS requires constant retraining and rethinking of curricula. The college does not provide adequate or timely professional development for retraining in such a dynamic discipline. CIS faculty typically spends summers, spring and/or winter breaks learning new technologies or updating skills. Most of the CIS courses are additionally taught in the distance mode which adds the need for training in the teaching methodologies and technologies supporting online instruction.

It would be beneficial if applications for professional development in cutting-edge technologies were evaluated in light of the fact that it might be unknown exactly how faculty would learn the technology at the time of application. Also, faculty in this area needs adequate release time to learn these technologies and develop new courses. There are no "plug-in" educational solutions for new technologies as are available in more established fields.

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Without this support CIS faculty often lag a full year or more behind industry standards. Another solution would be to allow more release time funded from outside the Professional Development fund. For computer science faculty to stay fully-informed on the discipline's changes that directly affect the students, the load should be reduce to 12-units at least one semester each year. This could also facilitate the management of SLOs and assessment for the specialized technologies that adjuncts teach.

3. To guide future collaboration across student services, learning support centers, and instructional programs, describe the interactions that would help the program to improve student success.

The current CIS tutoring service offered in the Learning Center has been of enormous benefit to CIS (and other) students, and to the department itself. We had requested funds for CIS tutors for the last four years, but our requests were denied until fall 2012. Students are now persevering in their coursework and are experiencing better outcomes in terms of both retention and success. This strengthens our program and the CIS department is grateful to the Learning Center.

4. To guide the [Institutional Planning Committee](#) (IPC) in long-range planning, discuss any major changes in resource needs anticipated in the *next six years*. Examples: faculty retirements, equipment obsolescence, space allocation. Leave sections blank if no major changes are anticipated. Specific resource requests for the next academic year should be itemized in Section VI.A below.

Increased hiring in technology sectors has led to higher enrollment in CTE courses. There are currently many entry-level employment opportunities for students with two-year degrees and certificates.

The Web and Mobile Application Development degree and certificate will, pending state approval, increase enrollment in 2013-2014, particularly in intro classes that are required by more advanced classes. Although most of the curriculum will be offered online, CIS 254 (Intro to Object-Oriented Program Design) is taught in traditional mode. It is possible that we would need to add additional sections of CIS 254, meaning increased usage of the CIS Computer Center.

The CIS department plans to offer an AS-T degree in Computer Science beginning 2014-2015. This would very likely result in increased enrollment and might require additional space and computers in the CIS Computer Center. In addition, we will offer a revised computer architecture course in traditional format (lecture/lab) that would require use of the Computer Center.

Equipment and Technology: Computer Center computers will need replacement within the next six years. ITS recommends replacement hardware. There are 45 desktop computers and 2 printers that will need to be replaced within the six year cycle. The internet programming courses now use an off-site web server as a replacement for the csmcis2 server. If that web server proves to be inadequate (very likely) for the needs of the new Web and Mobile Application Development curriculum, the department will need to purchase a new web server and maintain it on-campus, as was previously done.

Instructional Materials: MS Office is covered by CSM's site license and will be upgraded within the next six years. The majority of software used by CIS in the Computer Center is open-source, so most upgrades will be at no cost. Upgrades to software used by departments other than CIS would be purchased by those departments. Four Lego Mindstorms robots used by CIS 254 have failed

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and need replacement. All robots are out of warranty and most are 5 years old.

Web server software will also need upgrades, but all software is currently open-source and free.

Faculty: There is likely to be a full time faculty retirement within the next six years.

Classified Staff: There is currently no coordinator for the CIS Computer Center (Instructional Aide II/CIS) managing the Computer Center since the departure of the previous coordinator in early January 2013. The college is in the process of hiring a replacement. There was a significant delay before the position was allowed to be posted internally by HR, and unfortunately there were no suitable candidates within the District. There was yet another delay before the position was opened to external candidates. This has been difficult for the CIS department, as the coordinator effectively runs all aspects of the Computer Center. The coordinator normally creates and administers Linux accounts for all CIS students enrolled in online internet programming classes. This service was not provided in spring 2013, creating difficulties for instructors. In addition, the coordinator manages all aspects of the yearly advisory committee meeting. Finally, the coordinator would provide necessary information for the CIS Computer Center Program Review.

Duties of the Instructional Aide II (CIS) include the following:

1. provides a wide variety of services for students and staff in the CIS laboratory;
2. recruits, screens and hires students as lab assistants, including Work Study students;
3. trains and directs the work of student lab assistants;
4. schedules lab assistant hours;
5. covers empty lab assistant time slots as needed;
6. reviews, corrects and approves student lab assistant timesheets;
7. distributes and receives computer lab equipment, books, documentation and other materials as requested;
8. provides information and assistance as technical expert to students, faculty and to College staff regarding lab procedures;
9. provides general information regarding the CIS program to prospective students
10. enters, modifies and retrieves online data; compiles statistical and other data for a variety of reports as assigned;
11. composes correspondence, reports, memoranda and other written materials as requested by the dean or other staff;
12. inventories, monitors and purchases laboratory supplies, making budget transfers as needed; and
13. performs a variety of other related duties as assigned.

Student Assistant: There are currently four part-time assistants who staff the Computer Center during its open hours.

Facilities: There are currently no plans to move or renovate the Computer Center. There could be need for expansion in the next few years, depending on state approval of additional degrees and increased enrollments.

C. Plans and Actions to Improve Student Success

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Prioritize the plans to be carried out next year to sustain and improve student success. Briefly describe each plan and how it supports the [Institutional Priorities, 2008-2013](#). For each plan, list actions and measurable outcomes.

According to the minutes from the *IPC Initiatives Developed at Fall, 2012 Planning Session*, IPC recognizes the need for “Rapid curriculum responses for “hotbed issues.” An initiative is “already underway” and will include the development of a process to accelerate a rapid response, which may include “Stipends/release time for faculty.” The CIS department strongly urges COI, the Professional Development Committee, and the VPI office to include CIS course development in the “hotbed” category and allow it quick and sufficient release time to keep the curriculum current with industry standards.

Plan 1

Title:

Relearn and Re-implement the Banked Computer Architecture Course

Description

Description
CSM’s CIS banked the Computer Architecture class when it was removed from the State’s recommended first two-years of Computer Science curriculum. Recent discussions from CSU and UC, however, have determined that Computer Architecture should, again, be taught as part of the core in a student’s first two years. This course would be required for the AS-T degree that would become effective 2014-2015. To accommodate this trend, CIS would like to un-bank Computer Architecture and begin teaching it in fall 2014.

Action(s)	Completion Date	Measurable Outcome(s)
Re-Learn Computer Architecture	Fall 2013	- Faculty shows signs of being prepared. -Paperwork is approved by COI.
Submit COI paperwork for new course		
Design and implement a CIS course offering in Computer Architecture to be offered in both online and traditional modes.	Spring 2014	Course is prepared and uploaded to WebAccess (4-units release time)
Offer the new Computer Architecture course.	Fall 2014	Course offered fall 2014

Plan 2

Title:

Learn Android and develop a new online Android course

Description

Android is a Linux-based operating system designed primarily for touchscreen mobile devices such as smartphones and tablet computers. A course in this technology will greatly

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enhance the *Web and Mobile Application Development AS* and certificate offerings in the CIS curriculum. It is the course most requested by web programming and Java students. Application for professional development to learn Android and develop a new course was approved in spring 2013.

Action(s)	Completion Date	Measurable Outcome(s)
Submit COI paperwork for new course	Spring 2013	Paperwork approved by COI.
-Learn the Android OS. -Design and implement an online Android course.	Fall 2013	-Faculty enrolls in and completes an Android class. -Faculty concurrently develops materials for a new course. (5-units release time)
Offer the new Android online course.	Spring 2014	Experimental course offered spring 2014, to become a permanent course in 2014-2015

Plan 3

Title:

Create a CIS Course on an "Open Enrollment" Platform

Description

The SMCCD is exploring the offering of courses on MOOCs and other open-enrollment courses. The CIS Advisory Committee also recommended the department look at Udacity. There is a need for a department member to become familiar with this new direction, research available CIS courses, and determine if any are appropriate for our curriculum. If there is, then develop an open-enrollment course for fall 2014. At this time, the CIS foundation course, CIS 110, is the most likely candidate.

Action(s)	Completion Date	Measurable Outcome(s)
Learn the District's parameters and guidelines for using open-enrollments courses. Explore the range of CIS courses offered through Udacity (and/or MOOCs). Report and discuss with department.	Fall 2013	Hold a department meeting where all findings are reported. Assess faculty members' interest in proceeding in this direction. (1-unit of release time)
Develop MOOCs course for the department, most likely CIS 110.	Spring 2014	A fully formed open-enrollment course completed in spring 2014. (6-units of release time)

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Offer the new open-enrollment course.	Fall 2014	Course offered fall 2014
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[Note: Itemize in Section VI.A. Any additional resources required to implement plans.]

VI. Resource Requests

A. Itemized Resource Requests

List the resources needed for ongoing program operation and to implement the plans listed above.

Equipment and Technology

Description (for ongoing program operation)	Cost
Web server to support new Web and Mobile Application Development degree and internet programming curriculum	\$2,000.00

Instructional Materials

Description (for ongoing program operation)	Cost
4 replacement Lego Mindstorms robots	\$1,159.95

Classified Staff

Description (for ongoing program operation)	Cost
Instructional Aide II/CIS	\$45,732.00 - \$55,872.00/yr

Student Assistant

Description (for ongoing program operation)	Cost
4 part-time lab aides	930 hours per semester of paid time (Level C – Step 2 @ \$13/hr) \$12,090.00

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Facilities

For immediate or routine facilities requests, submit a [CSM Facility Project Request Form](#).

Description (for prioritized plans)	Plan #(s)	Cost
None at present, but increased future enrollment in CIS would require expansion of Computer Center facilities.		?

B. Cost for Prioritized Plans

Use the resources costs from Section VI.A. above to provide the total cost for each plan.

Plan #	Plan Title	Total Cost
1	Relearn and Re-implement the Banked Computer Architecture Course	4-units (S14) release time
2	Learn Android and develop a new online Android course	5-units (F13) release time *
3	Create a CIS Course on an "Open Enrollment" Platform	1-unit (F13) release time 6-units (S14) release time

*Already approved and funded for fall 2013