College of San Mateo

ANNUAL UPDATE PROGRAM REVIEW & PLANNING

Form Approved 9/2/2008: Governing Council
Revised: 2/21/2010

The Program Review process should serve as a mechanism for the assessment of performance that recognizes and acknowledges good performance and academic excellence, improves the quality of instruction and services, updates programs and services, and fosters self-renewal and self-study. Further, it should provide for the identification of weak performance and assist programs in achieving needed improvement. Finally, program review should be seen as a component of campus planning that will not only lead to better utilization of existing resources, but also lead to increased quality of instruction and service. A major function of program review should be to monitor and pursue the congruence between the goals and priorities of the college and the actual practices in the program or service.

~Academic Senate for California Community Colleges

INSTRUCTIONS

This *Annual Update for Program Review and Planning* is due each year that your *Comprehensive Program Review and Planning* report is not due.

(For information about program review cycles, see Instructional and Student Services program review rotation schedules posted online in their respective sections of the program review webpage: http://collegeofsanmateo.edu/prie/program_review/program_review.php)

Resources for Supporting Documentation:
A listing of resources and documents which provide data or information for each section is included at the end of this document, after the final signature page. These resources are posted online and their URLs are listed at the end of this document.

(You may delete this section, when you submit your final program review.)

Next Steps:
All *Annual* and *Comprehensive Program Review and Planning* reports are due March 25, 2010. This date is aligned with CSM's *Integrated Planning Calendar.*
(See: http://collegeofsanmateo.edu/prie/institutional_documents.php.)

Upon its completion, please email this *Program Review and Planning* report to the Vice President of Instruction, the Vice President of Student Services, the appropriate division dean, the CSM Academic Senate President, and the Dean of Planning, Research, and Institutional Effectiveness (PRIE).

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Susan Estes, Vice President of Instruction, estes@smccd.edu
Jennifer Hughes, Vice President of Student Services, hughesj@smccd.edu
John Sewart, Dean (PRIE), sewart@smccd.edu

DEPARTMENT OR PROGRAM: CIS

DIVISION: Business/Technology

1. **BRIEF DESCRIPTION OF PROGRAM:**

The Computer Information Science Department offers courses in computer fundamentals, computer programming (beginning through advanced), internet programming and networking/computer forensics. Twenty-two of the 25 CIS classes in the catalog are taught regularly. The three Enterprise courses not taught routinely are still relevant and are not candidates for banking. Of the 25 classes, all are AS/AA degree applicable, 24 transfer to CSU, and 7 to University of California. This makes CIS 96% "Transferable" and 100% "Degree Applicable." (See NOTE)

NOTE: PRIE data is incorrect on this point. It shows CIS as 100% "Vocational," which is incorrect.

2. Based on the elements in your *Core Program and Student Success Indicators* (provided by PRIE for each program) and the goals stated in your most recent Program Review, please identify any key successes and challenges.

Enrollments and load have increased each of the past two years.

	2007-08	2008-09	**2009-10**
Enrollments	842	872	**960**
LOAD	438	486	**522**

These successful enrollment numbers are partially attributed to the addition of more online courses. Even with retention concerns, online brings in more students than those classes that require an on-campus presence. The department will continue to convert face-to-face courses to online as appropriate.

Full time Equivalent Faculty (FTEF) numbers remained consistent. Last year's program review expressed concern in this area because of a returning full-time faculty, but this was mitigated by the unexpected retirement of a different faculty member.

Overall retention has increased, although not significantly, and still remains a challenge. CSM's Computer Science online retention falls below traditional class retention, as is the case nationwide. Student success (59%) still remains lower than the college average (70%). This is partially due to students arriving ill-prepared and under-estimating the demands of the course. The department thinks these issues can be addressed with **tutoring services**.

3. Are you on track for meeting the goals/targets that your program identified in its most recent Program Review? If not, please explain possible reasons why. If needed, update your goal/targets based on these reasons.

Last year's curricular goals from the Program Review are on target; however funds for **tutoring services**, requested in our last three program reviews, have not yet been realized.

The department has long felt that the absence of tutoring for CIS students contribute to students' high attrition and low success.

4. Have you identified any new goals or projects for the program to focus on during this next year? Please explain (grants, stipends, initiatives, etc.).

   a. During the 2010-2011 year, the CIS department explored how best to serve transfer and non-transfer students in the area of game programming. In spring 2011, a gaming-focused section of our introductory programming class, CIS 254 Intro to Object Oriented Programming, was offered, the intent being to determine student interest and abilities for a newly designed gaming course, CIS 680 Computer Gaming: OpenGL. CIS 680, to be first offered in fall 2011 is a pilot offering of a permanent course which we hope to articulate with ICS 61 Game Systems and Design at UC Irvine. The CIS 680 course was developed using Professional Development funds during the fall of 2010.

   b. In response to both student requests and industry popularity, Visual Basic was unbanked and brought back into the 2010 – 2011 class schedule. The department will explore the possible need to un-bank and/or develop other VB classes.

   c. Two new internet programming courses will be offered this year: CIS 680 Python (summer 2011) and CIS 680 HTML5 and CSS (fall 2011). We will explore offering an online degree/certificate in internet programming. The current certificate of specialization is only 15-16 units but, because of the expansion of the internet programming curriculum and the availability of online required and elective courses, it seems feasible to offer an online A.S. degree and certificate of achievement.

   d. Cloud computing will be unofficially integrated into the 2011 – 2012 curriculum. Appropriate COI paperwork will be submitted so this enhancement is reflected in the 2012-2013 catalogs and can be officially integrated into the class. This update to *CIS 110 Introduction to Computer Science* was supported by professional development.

   e. "Information Literacy" SLOs are being integrated into *CIS 110 Introduction to Computer Science*. This will be piloted in fall 2011 and submitted to COI for inclusion in the 2012-2012 catalog. This update was supported by professional development.

5. Are there any critical issues you expect to face in the coming year? How will you address those challenges?

   a. STUDENT RETENTION-SUCCESS

      According to the PRIE data, CIS "Retention" is low, but there has been *some* improvement since last year. This is welcomed news and it is a trend the department hopes to continue. Unfortunately, "Success" decreased. This may be related to the increase in the department's online courses and the lack of **tutoring services**.

	2007-08	2008-09	**2009-10**
Retention	75%	74%	**77%**
Success	63%	62%	**59%**

Both retention and success could improve by offering computer **tutoring services** to CIS students. Generous resources are available for tutoring in many areas including English, math, and the hard sciences. Yet, CIS has not been funded at the lowest level to assist students with what many think are some of their most difficult courses.

b. COMPUTER PRE-REQ CHECKING

Starting in fall 2011, computerized prerequisite checking will be in effect when students register for CIS courses at CSM. While this will take the burden of identifying unprepared students off of the classroom instructor, it may present a hurdle for many of our students, particularly those online. The CIS department is concerned that this will affect enrollment, and the ability to offer courses required by our program.

Many CIS students did not begin their education at CSM, attended other schools for their introductory learning in CIS, and lack the specific CSM prerequisite course. Additionally, some of our students have been working in the computer field for many years, have equivalent skills but have no formalized education record. While it is intended that there be a seamless process for students to provide documentation of equivalent courses, or petition for equivalency based on skill level, this may prove to be a problem for some students. Course documentation is not always readily available, and skill level is difficult to determine by a process administered by staff that are not familiar with the subject area. It is quite possible that students who are actually prepared for a course may not be able to register for the course, and will go to another campus.

Over half of CIS students are enrolled in online classes. Although an on-campus facility will be prepared to assist students who do not have the CSM prerequisite, this is not an option for many of our online students who do not live in the area. There are many online programs that do not have prerequisite blocking. It is quite possible that many online students will opt to enroll elsewhere rather than face a myriad of process steps and that our enrollments will suffer as a result.

The internet programming curriculum will be most severely affected by automatic prerequisite checking, as this program is completely online. Few students enrolled actually took a prerequisite class in our district. If enrollment is affected it could result in cancellation of classes required for the certificate of specialization. As many of these classes are offered only once a year, this would prevent students from completing the program in a timely manner. Currently prerequisite checking is done by the instructor and very few students enroll without adequate preparation (rarely more than one or two). These students are quickly identified and referred to the appropriate prerequisite class. Prerequisite checking for internet programming classes might have the unintended consequence of discontinuation of the entire program.

c. NEED FOR ONLINE EVALUTAION TOOL

With more courses going online, the department is concerned about the lack of an evaluation tool to assess the work of adjuncts.

d. BASING DECISIONS ON INACCURATE DATA

The CIS department seriously questions the accuracy of the PRIE data. As noted above, the department is inaccurately listed as 100% "Vocational" when a closer look shows 96% "Transferable" and 100% "Degree Applicable." A more serious error was found in the class-by-class listing of statistics for fall 2007, 2008, and 2009. A core course, CIS 254, was not included on this list yet two-three sections are consistently offered each semester. This leads faculty to question the accuracy of the *aggregate* data on which college and department decisions are based.

6. STUDENT LEARNING OUTCOMES (SLOs) AND ASSESSMENT FOCUS FOR THIS YEAR:

a. Academic areas: Identify at least one course SLO on which to focus. Describe the assessment strategies you will use and your method of reflection and documentation for this cycle.

<u>CIS 254 Introduction to Object-Oriented Program Design</u>

Students in both sections of CIS 254 were surveyed at the end of the fall 2009 semester regarding the course SLOs. After evaluating the survey responses we focused on one SLO with the lowest response rate:

SLO: Students can develop and use program testing data and techniques

23.3% of students responded that they did not feel confident developing test data and testing their programs. This was addressed in spring 2010 and fall 2010 with a lab assignment in which students developed test data and documented the results after testing their data. Students were also given a lab assignment with bugs and had to develop test data in order to help debug the code.

Although students are always expected to test and debug their programs, making them formally document test results was beneficial. All students successfully completed the lab assignments.

<u>CIS 278 Programming Methods: C++</u>

SLO: Reuse existing components through inheritance and polymorphism.

This SLO has been measured regularly since spring 2008 by way of a practical exam question where students must program an extension to an existing abstract class, and then code an application which exhibits the polymorphic behavior.

Spring 2008 results indicated a success rate of 75% for traditional students, 50% for online students with an overall level of success of 62%. The action taken at that time was to introduce inheritance material two weeks earlier in the course, allowing one additional programming project using this material.

Fall 2008 results were not that much different. Results indicated a success rate of 66% for traditional students, 40% for online students with an overall level of success of 59%. The

action taken was to spend less time on pre-object concepts, and expand the coverage of object oriented foundation prior to the introduction of inheritance.

Fall 2010 results were encouraging in the traditional classroom. Results indicated a success rate of 80% for traditional students, 50% for online students with an overall level of success of 65%. The intended action for the 2011-2012 academic year will be to provide a set of progressive labs to enable online students to practice programming with inheritance.

b. Student services areas:

The transfer program is in need of **tutoring services**, especially for students in the introductory programming class CIS 254. Students remark that when they struggle with Math or English assignments they can readily get help in Math or English labs, but CIS does not have drop-in tutoring services available in the computer lab. CIS faculty is confident that retention and success will improve if students can get timely help.

7. **SUMMARY OF RESOURCES NEEDED TO REACH PROGRAM ACTION STEPS**
(Data resources: Educational Master Plan, 2008, Institutional Priorities, 2008-2011, College Index, 2009-2011, GE-SLOs, SLOs; department records; Core Program and Student Success Indicators; previous Program Review and Planning reports)

a. In the matrices below, itemize the resources needed to reach program action steps and describe the expected outcomes for program improvement.* Specifically, describe the potential outcomes of receiving these resources and the programmatic impact if the requested resources cannot be granted.

**Note:* Whenever possible, requests should stem from assessment of SLOs and the resulting program changes or plans. Ideally, SLOs are assessed, the assessments lead to planning, and the resources requested link directly to those plans.

Full-Time Faculty Positions Requested	**Expected Outcomes if Granted and Expected Impact if Not Granted**	**If applicable, briefly indicate how the requested resources will link to achieving department action steps based on SLO assessment.**
None	Input text here.	Input text here.

Classified Positions Requested	**Expected Outcomes if Granted and Expected Impact if Not Granted**	**If applicable, briefly indicate how the requested resources will link to achieving department action steps based on SLO assessment.**
See Resources Requested	Input text here.	Input text here.

b. For instructional resources including equipment and materials, please list the exact items you want to acquire and the total costs, including tax, shipping, and handling. Include items used for instruction (such as computers, furniture for labs and centers) and all materials designed for use by students and instructors as a learning resource (such as lab equipment, books, CDs, technology-based materials, educational software, tests, non-printed materials). Add rows to the tables as necessary. If you have questions as to the specificity required, please consult with your division dean. Please list by priority.

Resources Requested	**Expected Outcomes if Granted and Expected Impact if Not Granted**	**If applicable, briefly indicate how the requested resources will link to achieving department action steps based on SLO assessment.**
Funding for drop-in and scheduled tutoring services Student Assistant Salary Level D (Technical) Pay rate: 13.25 – 14.25/hr A minimum of 15 hours /week would be scheduled. The overflow area of the CIS Computer lab would be sufficient to accommodate tutoring, so no additional facility is requested.	Higher retention in transfer-track programming courses. If we cannot offer tutoring services then we will continue to experience current attrition and non-success rates.	We could increase the number of students successfully attaining all expected learning outcomes, especially in the introductory CIS 254 class. Even if students have poor math skills, a tutor could work with students in their problem areas. Tutoring has traditionally played a significant role in increasing student success.
New: MacBook Computer $949.00 (plus tax) 2.4GHz : 250GB 2.4GHz Intel Core 2 Duo 2GB DDR3 memory 250GB hard drive1 8x double-layer SuperDrive NVIDIA GeForce 320M graphics Built-in 10-hour battery2 Polycarbonate unibody enclosure This is the least expensive entry-level Mac laptop.	Many of the internet programming students have Macs and need support that is specific to a Mac. This is especially an issue in the CIS 114 JavaScript/Ajax course, as code does not always work as expected. Without a Mac the instructor can have difficulty debugging student programs and is sometimes unable to tell if a problem is due to a student coding error or behavior specific to the Mac. This is especially true in advanced DOM scripting. In addition, because most internet programming classes use the csmcis2 web server,	The CIS computer lab has only PCs. However, online students do not usually use the computer lab, but instead rely on their own computers. Online classes must serve students using all platforms, not just Windows. The number of students using a Mac has grown considerably over the past five years, and currently up to one-third of students enrolled in internet programming classes use a Mac. If an instructor cannot provide adequate help to all students this is counter-productive to the goal of learning.

	students often need help connecting to the server. Without a Mac, the instructor can only provide help to students using PCs. Mac students must help each other. Without a Mac for the instructor Mac students will continue to be underserved in online internet programming classes.	Allowing the instructor to help online students regardless of platform will positively affect all student learning outcomes.

*****Status = New, Upgrade, Replacement, Maintenance or Repair.*

8. PROGRAM REVIEW PARTICIPANTS AND SIGNATURES

Date of this *Annual Update for Program Review and Planning* evaluation: March 25, 2010

Please list the department's *Annual Update for Program Review and Planning* report team as appropriate:

Primary program contact person:
Phone and email address:
Full-time faculty: Stacey Grasso, Martha J. Tilmann, Melissa Green
Part-time faculty:
Administrators: Kathleen Ross
Classified staff:
Students:

Primary Program Contact Person's Signature	*Date*
Full-time Faculty's Signature	*Date*
Full-time Faculty's Signature **(as appropriate)**	*Date*
Administrator's Signature **(as appropriate)**	*Date*
Classified Staff Person's Signature **(as appropriate)**	*Date*
Student's Signature **(as appropriate)**	*Date*
Dean's Signature	*Date*

Annual Program Review
RESOURCES FOR SUPPORTING DOCUMENTATION

This section contains a listing of sources for data and key documents referred to in this *Annual Update* along with other resources. Contact information for relevant people is also included.

Academic Senate
http://www.collegeofsanmateo.edu/academicsenate/
Contact: csmacademicsenate@smccd.edu
Diana Bennett, President, bennettd@smccd.edu, (650) 358-6769

College Catalogs and College Class Schedules are archived online:
http://collegeofsanmateo.edu/schedule/archive.asp

Course Outlines are found at:
http://collegeofsanmateo.edu/articulation/outlines.asp

Committee on Instruction
http://www.smccd.net/accounts/csmcoi
Contact: Laura Demsetz, Chair, demsetz@smccd.edu, (650) 574-6617.

Program Review Resources (includes forms, data, and completed program reviews for both instructional and student services program review)
Core Program and Student Success Indicators (see links for "Quantitative Data for Instructional Programs")
Distance Education Program Review Data
Glossary of Terms for Program Review
Listing of Programs Receiving Program Review Data from PRIE
Rotation Schedule for Instructional Program Review, 2008-2014
http://collegeofsanmateo.edu/prie/program_review/program_review.php

Office of Planning, Research, and Institutional Effectiveness (PRIE)
http://collegeofsanmateo.edu/prie/
Contact: John Sewart, Dean, sewart@smccd.edu, (650) 574-6196
Contact: Milla McConnell-Tuite, Coordinator, mcconnell@smccd.edu, (650)574-6699

At PRIE Website:
College Index, 2009-2010, http://collegeofsanmateo.edu/prie/institutional_documents.php
Comprehensive Listing of Indicators and Measures, 2009-2010
http://collegeofsanmateo.edu/prie/institutional_documents.php
Division/Department Workplans, Spring 2009 (only)
http://collegeofsanmateo.edu/prie/institutional_documents.php
Educational Master Plan, 2008, http://collegeofsanmateo.edu/prie/emp.php
Institutional Priorities, 2008-2011
http://collegeofsanmateo.edu/prie/institutional_documents.php

Student Learning Outcomes (SLOs) website:
http://www.collegeofsanmateo.edu/sloac/
Contact: Frederick Gaines, Interim SLO Coordinator, gainesf@smccd.edu, (650)574-6183