Skyline College
Computer Science
Program Review
Executive Summary

Short Summary of Findings

Computer Science has been quite honestly a program in search of an audience. Being in the midst of the most technically savvy area of the world our students have expectations that they would have access to coursework that gives them an understanding of this technology. In the early part of 2000-01 Skyline created a much more robust CS program and brought in a significant number of programming classes. After the technology bust, enrollment in a number of courses has never gone up. Working with the other two colleges in the District has allowed students access to a number of technology related courses without duplicating under enrolled courses. Skyline has concentrated on networking, Linux and a beginning programming class. It also had the Oracle Academy, but that has since been put on hold due to enrollment problems. Please note this program review was submitted by Norm Del Prado who is responsible for only one area of CS. Much of the historical content is from Mike Williamson.

Three Strengths of the Program

- Very robust course work in networking and UNIX/Linux
- Very strong lab work in networking and UNIX/Linux
- Responsive to enrollment issues from a District perspective

Three Suggestions for Improvement

- Need to find a mechanism to stay abreast of new technology and industry needs
- Find a mechanism to increase LOAD with the constraints of classes that are 20-25 students
- Create a vibrant web presence for marketing

Full-Time Faculty Signatures

_____   _____   _____
Norm Del Prado   *Highlight this text & type in name*   *Highlight this text & type in name*

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Submitted on: April 1, 2009

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SKYLINE COLLEGE
PROGRAM REVIEW SELF STUDY

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PART A: Mission Effectiveness

Overview

1. *State the goals/ focus of this program and how the program contributes to the mission and priorities of the College and District.*

   The primary goals of Computer Science courses and the program are to:
   - Provide courses to meet Area 4 group b, Communication and Analytical Thinking, of the Skyline College general education requirements.
   - Provide workforce development and continuing education in the areas of computer networking and UNIX operating systems.
   - Provide an entry level course for students to explore the science of computer programming using Microsoft Visual Basic.
   - Provide the transfer requirements in computer programming for engineering computer science students – see Part B – question 1

   The above goals and focus are consistent with those of the college and hence support the institution.

2. *Discuss how this program coordinates, impacts, and/or interacts with other programs in the College.*

   Many of the courses in computer science are cross listed with either CAOT and or Telecommunications. This has allowed students that take networking classes or some CAOT classes to have reflected on their transcript the courses as computer science.

3. *Explain how this program meets the needs of our diverse community.*

   COMP 412 and 413 are offered in an on-line format for distance learners. The networking classes are directed at those students with learning styles that flourish with hands-on activities, since they are very activity related. Most faculty have websites that allow and encourage students to access information on-line. Most are now utilizing Webaccess.

4. *If the program has completed a previous self-study, evaluate the progress made toward previous goals.*
   N/A

PART B: Student Learning Programs and Services

Overview

1. *If the program utilizes advisory boards and/or professional organizations, describe their roles.*

   The networking degree/courses and the PC configuration course are also part of Telecommunications and utilize an industry advisory committee to inform the program of current practices and industry need. The network curriculum is also heavily defined by Cisco Systems. The Skyline networking program prepares students for the Cisco Certified Network Administrator examination and hence much of the curriculum is informed by Cisco. When the SQL database class was offered we were also using the Oracle Certified Associate course material.

Curriculum

1. *Describe how the courses offered in the program meet the needs of the discipline(s) and the students. (This may be answered through descriptive narrative evaluation or quantitative research).*

   Course offering in Computer Science have had difficulty in finding a significant student audience. Enrollment began to shrink in programming classes after the IT decline in 2000-01. With many programming jobs being out sourced overseas the number of students in programming has continued to decline. With this continue decline not only at Skyline, but across the District, discussion took place at the three Colleges science divisions as to how best to offer a robust program to students and improve efficiency. It was decided at that time that Skyline would support and improve the following offerings:
   * Networking
   * PC Repair
   * UNIX-Linux course offerings
   * SQL database courses.

   Both CSM and Canada have engineering programs. These students are among the last that need transfer level programming classes. Both colleges offer advanced level programming classes in C#, C++ and Java. Skyline offers an introductory course in basic programming that allows our students to develop a "flavor" for programming, and also meet prerequisites for advanced level classes should they wish to continue those classes at CSM or Canada. Skyline has chosen to keep the advanced level programming classes in the catalog, should a cohort of students need the college to offer a section of the class.

   Enrollment declined to unacceptable levels in the SQL database classes in the 2007-08 academic year and at this time those classes are not being offered.

2. *State how the program has remained current in the discipline(s).*

   Faculty have attended a significant number of professional development activities, particularly in networking. All faculty outside of networking are adjunct that work in the industry doe their "day jobs". This allows faculty to bring a wealth of information from industry into the classroom.

3. *If the student population has changed, state how the program is addressing these changes.*

Programming is dependent on a strong understanding of math and analytical thinking skills. Success in programming classes struggled as many of our students were not prepared. It became apparent that all students needed to go through a basic programming course to pick up those skills.

4. *All courses in this program should be reviewed for currency and modified every six years. If this has not occurred, please list the courses and explain.*

   COMP 156 and 190 will be asked to be inactivated
   COMP 356 and 357 will not be updated – we do not have a discipline faculty member for SQL
   programming at this time.

5. *If external accreditation or certification is required, please state the certifying agency and status of the program.*
   N/A

Student Learning Outcomes & Assessment

1. *Where on the continuum do you believe your department is on the SLOAC Initiative?*

Emergents	Novices	Practitioners	Mentors
• Learning and discovering • Gathering information • Attending workshops	• Beginning a dialogue • Drafting SLOs • Drafting assessment plans • Taking inventory of assessments • Creating instruments for assessment	• Engaging in widespread dialogue • Implementing assessment plans • Refining SLOs • Reviewing outcome data and discussing implications	• Facilitating discussions and generating new dialogue • Conducting workshops • Lending assistance

Mark an X on the continuum and briefly comment.

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 _____|_____X_____|_____|_____

      Emergents            Novices            Practitioners          Mentors
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All computer science courses except those discussed in question 4 have SLOs. Course assessments are under development in the networking classes. Assessment will be challenging in those classes only taught by adjunct.

2. *Highlight any major findings and resulting course or program modifications.*

The biggest issue in program modifications has been the low enrollment resulting in course cancellations or decisions not to offer. The greatest modification has been what courses to offer as was discussed under curriculum.

3. *What additional resources are needed to implement the plan?*

If the plan this question is referring to are the major highlights from program assessment – computer science is not that far along with assessment.

PART C: Resources

Faculty and Staff

1. *List major development activities completed by faculty and staff in this program in the last six years and state what development is needed or proposed by faculty in this program.*

The following has taken place over the last 6 years:
*   Programming classes in SQL were developed as was the Oracle Academy
*   The networking classes that resided in TCOM were also cross-listed as computer science
*   Programming in PERL and Flash that reside in CAOT were cross-listed in COMP
*   UNIX-Linux classes were developed as was a career certificate

The following lends itself to future development, but not at this time proposed:
*   Increased development of network security classes
*   Desk top sharing software

2. *Describe the orientation process for new faculty and staff (include student workers such as tutors and aides).*

Orientation is typically done through the Division Office. Faculty assist with course specific information.

3. *If recruitment of new and/or diverse faculty is needed, suggest recruitment techniques.*

N/A

Facilities, Equipment, Materials and Maintenance

1. *Discuss the effectiveness of the facilities, equipment, equipment maintenance, and materials for the program to meet its goals and focus. Include if they impact success and if they are accessible to all students.*

Computer programming and repair classes are offered in the CALT. This has been ideal for these classes. Networking classes have been offered in a non-ADA accessible room that prior held costumes for the theater. It is totally not appropriate for a networking lab. There has been a suggestion to move the networking to the CALT and the College should find the resources to make that happen.
Computer Science is also held "hostage" to technology. The most important equipment needs at the present are the upgrades to software. We have lost some prior licenses and not able to offer students these experiences due to lack of instructional equipment budget in the 2008-09 year.

2. *List projected needs.*

- Networking facility change
- Network observer software
- PC repair software and instruction materials

3. *Describe the use of technology in the program and discuss if technology is current and comparable to other college and business or industry.*

The program is technology and without it the program would be ineffective. The needs have been identified in #2 above.

4. *If appropriate, describe the support the program receives from industry. If the support is not adequate, what is necessary to improve that support?*

Unfortunately, when industry does have some equipment to offer it is usually outdated and in need of repair. This has not been an effective mechanism to acquire equipment and supplies. Industry certainly helps inform curriculum and creates peer certification.

Budget Request

1. *What resources (staff, facilities, equipment and/or supplies) will be needed in the next six years?*

- Relocate the networking lab – consider the CALT as an ideal location
- CS will usually need on average $10,000/year for equipment or software upgrades. At some time in the life cycle of hardware they will also need replacing. The life cycle of most computers is the 5-6 years.

2. *If appropriate, discuss methods the program could share resources with other programs in the College and District.*

Presently doing that with TCOM and CAOT

PART D: Leadership and Governance

1. *What leadership roles do the faculty and staff of your program hold in the college?*

All faculty teaching CS classes are adjunct with the exception of Norm Del Prado, who is a member of the TCOM faculty and teaches the cross-listed faculty

2. *How do the faculty and staff in your program participate in the governance processes of the college/district?*

Norm Del Prado is on the TAC Committee and now that he is tenured will also participate in Division evaluation committees as well as represent the Division on shared governance committees.

3. *How do the faculty and staff in your program exercise initiative/leadership in improving practices and services related to the program?*

New initiatives are usually undertaken through discussion with other faculty and the Division Dean. Options are evaluated and a cost/benefit analysis is performed. Most curriculum is brought through experimentally with the oversight of industry.

PART E: Action Plan

1. *Describe the program's plan for addressing areas of improvement.*

   The priority issue for Computer Science is enrollment. The program is now only offering the courses that Skyline has been able to "specialize" in and an introductory programming class. This seems to be the formula that the department will need to stay with, since those classes have had decent enrollment – that is classes with 20 students or above. This number of students does not give the program a high LOAD, since there are no 35-40 enrollment classes to offset these, but with the majority of classes taught by adjunct, they are still cost effective.

Skyline College Program Review
Worksheet for Enrollment, Performance and WSCH/FTE

Weekly Student Contact Hours – WSCH

Report the 3 previous **Fall** semesters with the most recent on the right.

Year	2005	2006	2007
WSCH	279	208	357

Please comment on program enrollment and expected trends.

WSCH in 2003 was 830 and has declined since that time. It has now stabilized in the mid 300 range and anticipate there will not be changes

FTE and WSCH/FTE (LOAD)

Report the previous 3 **Fall** semesters with the most recent on the right

Year	2005	2006	2007
FTE	1.18	1.22	0.93
WSCH/FTE	237	170	383

Please comment on the comparison of this program to College trends.

The LOAD of computer science is below that of the college. It has improved and continues to improve. Limitations for increasing the LOAD are that most classrooms with CS classes are limited to 25 students with the networking classes limited to 20 students. This is a lab size issue, although student interest also would not fill larger rooms or labs.

Retention and Success

Report data on program retention and success rate with the most recent on the right.

Year	2005	2006	2007
Retention	84%	79%	86%
Success	71%	69%	71%

Please comment on the programs success and retention rate. Include factors that affect the rates and how college services are used to provide multiple avenues for student success.

The retention and success rate from 2003 was 59% and 48% respectively. There has been significant improvement from early years of CS offerings and they are now consistent with the College wide average.

Retention and success by ethncity is difficult to gauge. The number of students in CS classes per year is about 150 and the small number of students make it difficult to state. As an exmaple in 2006 - African American students had a 100% pass rate and whites 55%, but the following year African American students had a 33% pass rate and whites a 78%. This was based on 3 and 33 students respectively. Looking over data over the last 5 years, since all ethnicities have such swings, I feel that no one group has significantly less retention and success.

Program Review
Course Outline & Prerequisite Checklist

Discipline: COMPUTER SCIENCE   Semester: SPRING 2009

> **ALL COURSE OUTLINES MUST BE REVIEWED AND UPDATED DURING PROGRAM REVIEW!**

If there are no changes made to the course outline, use the Program Review date to update the course outline. ***Please note that all course outlines must now include the title of a representational text with its publication or revision date** and **follow the current Title V format***. Refer to *Guidelines for Preparing a Course Outlines* for further assistance.

If it is determined that a course outline needs **substantial modification**, you must complete and submit **Form D – Course Modification** to the Curriculum Committee for approval well **in advance** of your Program Review due date. Please check with your Curriculum Committee representative or go to the Curriculum Committee web site for a list of meeting dates, submission deadlines, instructions and curriculum forms to update (or modify) a course outline. (http://www.smccd.net/accounts/skycurr/).

List all the courses in your **discipline** on the attached form. Complete the columns on the form for each course in your discipline using the instructions below:

Column 1:   What is the course prefix and number?
Column 2:   What is the course title?
Column 3:   What date was the course outline last reviewed or updated?
Column 4:   If this course transfers to either CSU **or** CSU *and* UC, place a check mark in the appropriate column.
Column 5:   If this course satisfies a GE (General Education) requirement, place a check mark in the column.
Column 6:   Please list all course prerequisites, corequisites, and/or recommendations.
Column 7:   Please indicate that the course prerequisites, corequisites, and/or recommendations have been reviewed and validated by faculty by placing a check mark in the column.
Column 8:   Does the course have SLOs on the official course outline of record?
Column 9:   Does the course have assessment plans?
Column 10:   Has the course implemented their assessment plans?
Column 11:   When did the department review results from implementation of the assessment plan?

   Upon submission of your Program Review materials, all course outlines should have the current date in the upper right corner. Please submit a hard copy of **each** outline from your **discipline** listed on the form with your *Program Review* materials. Additionally, all course outline *files* should be e-mailed to the Instruction Office in care of Maria Norris (norris@smccd.net).

Please have the faculty and division dean sign and date the certification on the last page.

		COURSE OUTLINE, PREREQUISITE, & STUDENT LEARNING OUTCOMES CHECKLIST								
1	**2**	**3**	**4**		**5**	**6**	**7**	**8**	**9**	**10**	**11**
			Transfer				**Validated**				
Prefix & Number	**Title**	**Review Date**	**CSU**	**UC & CSU**	**G.E.**	**Prerequisites, Corequisites, Recommendations**		**SLOs**	**Assessment Plans**	**Implemen-tation**	**Reviewed**
COMP 118	INTRODUCTION TO OBJECT-ORIENTED PROGRAM DESIGN	3/2009		X		MATH 110, ENGL 836		Yes			
COMP 155	COMPUTER PROGRAMMING VISUAL BASIC	"		X		MATH 110, ENGL 836		Yes			
COMP 156	INTERMEDIATE PROGRAMMING IN VISUAL BASIC	"		X		COMP 155	**COURSE TO BE INACTIVATED**				
COMP 190	INTRODUCTION TO C PROGRAMMING	"		X		MATH 110, MATH 120, ENGL 836	**COURSE TO BE INACTIVATED**				
COMP 250	PROGRAMMING METHODS I: C++	"		X		COMP 118, MATH 120, ENGL 836		Yes			
COMP 252	PROGRAMMING METHODS II: C++	"		X		COMP 250		Yes			
COMP 284	PROGRAMMING METHODS I: JAVA	"		X		COMP 118, MATH 120, ENGL 836		Yes			
COMP 286	PROGRAMMING METHODS II: JAVA	"		X		COMP 284		Yes			
COMP 312	INSTALLING/USING LINUX AS YOUR PC OS	"	X					Yes			
COMP 313	WORKING IN A LINUX SHELL ENVIRONMENT	"	X			COMP/TCOM 312		Yes			
COMP 314	MANAGING A LINUX SYSTEM	"	X			COMP/TCOM 312		Yes			
COMP 316	MANAGING LINUX-BASED INTRA-NET (ENTERPRISE) SERVICES	"	X			COMP/TCOM 314, TCOM 480, COMP/TCOM 313		Yes			
COMP 315	MANAGING LINUX-BASED INTERNET SERVICES	"	X			COMP/TCOM 314, TCOM 480, COMP/TCOM 313		Yes			
COMP 355	INTRODUCTION TO ORACLE- SQL		X			MATH 110, ENGL 836, READ 836, ENGL 846		No			
COMP 356	FUNDAMENTALS OF DATABASE ADMINISTRATION I		X			COMP 355		No			
COMP 357	FUNDAMENTALS OF DATABASE		X			COMP 356		No			

COURSE OUTLINE, PREREQUISITE, & STUDENT LEARNING OUTCOMES CHECKLIST

1	2	3	4		5	6	7	8	9	10	11
			Transfer				Validated				
Prefix & Number	Title	Review Date	CSU	UC & CSU	G.E.	Prerequisites, Corequisites, Recommendations		SLOs	Assessment Plans	Implemen-tation	Reviewed
	ADMINISTRATION II										
COMP 378	PROGRAMMING IN PERL	3/2009	X			COMP 118, COMP 250, COMP 284		Yes			

COURSE OUTLINE, PREREQUISITE, & STUDENT LEARNING OUTCOMES CHECKLIST

1	2	3	4		5	6	7	8	9	10	11
			Transfer				Validated				
Prefix & Number	Title	Review Date	CSU	UC & CSU	G.E.	Prerequisites, Corequisites, Recommendations		SLOs	Assessment Plans	Implemen-tation	Reviewed
COMP 412	FLASH I	3/2009	X			CAOT 403		Yes			
COMP 413	FLASH II	"	X			CAOT/COMP 412		Yes			
COMP 423	JAVASCRIPT	"	X			CAOT 404		Yes			
COMP 451	PC CONFIGURATION AND REPAIR	"	X			CAOT 105, ELEC 110, TCOM 405		Yes			
COMP 481	NETWORK SYSTEMS ADMINISTRATION	"	X			TCOM 480		Yes			
COMP 482	INTRODUCTION TO ROUTERS	"	X			CAOT/TCOM 480		Yes			
COMP 483	NETWORK SWITCHES	"	X			COMP/TCOM 482		Yes			
COMP 484	ADVANCED ROUTING CONCEPTS AND APPLICATIONS	"	X			COMP/TCOM 482, COMP/ TCOM 483		Yes			
COMP 486	NETWORK SECURITY	"	X			COMP/TCOM 482		Yes			
COMP 487	ADVANCED NETWORK SECURITY	"	X			COMP/TCOM 486		Yes			

			Transfer				Validated				
1	**2**	**3**	**4**		**5**	**6**	**7**	**8**	**9**	**10**	**11**
Prefix & Number	**Title**	**Review Date**	**CSU**	**UC & CSU**	**G.E.**	**Prerequisites, Corequisites, Recommendations**		**SLOs**	**Assessment Plans**	**Implemen-tation**	**Reviewed**
COMP 665	SELECTED TOPICS IN COMPUTER SCIENCE			X		MATH 120, ENGL 836					

COURSE OUTLINE, PREREQUISITE, & STUDENT LEARNING OUTCOMES CHECKLIST

Skyline College Program Review
Certification of Course Outline & Prerequisite Review

Faculty Signatures

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Norm Del Prado

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Date Submitted: *April 1, 2009*   ***Division Dean:*** _____

(Additional faculty signature lines may be added to this form as needed.)

Program Review - Resource Needs Summary Table

Program ___Computer Science_____

	Needs	Notes
Personnel	1. 2. 3. 4.	
Equipment	1. Updated Software – particularly for networking 2. In 3-5 years will need to update computers 3. 4.	
Facilities	1. The networking lab must be re-located. The CALT would be the most logical choice. Some expense would be involved in setting up routers and switches in a new location. 2. 3. 4.	

Program Review - Resource Needs Summary Table

Program ___Computer Science_____

	Needs	Notes