PROGRAM REVIEW UPDATE 2016-2017

Program: Computer Studies (CIS/CNT/CS)

Division: CATSS

Date: 10/5/16

Writer(s): LaVaughn Hart, Bill Komanetsky, Moh Daoud, Debbie Fields, Colin Schatz

SLO/SAO Point-Person: LaVaughn Hart

Audience: Deans, Vice Presidents of Student Services and Academic Services, All Planning and Allocation Committees. This document will be available to the public.

Purpose: To document significant program accomplishments, plans and needs between Triennial Program Reviews. This update should provide a snapshot of your program.

Uses: This update will be used to inform the campus and community about your program. It will also be used in the processes of creating Dean's Summaries, determining College Planning Priorities and allocating resources.

Time Frame: This update should reflect on program status during the 2015-16 academic year. It should describe plans starting now and continuing through 2017-18.

Topics: The first section of this Program Review Update focuses on general program reflection and planning. The second, third and fourth sections focus on reflection and planning regarding Student Learning Outcomes. Only instructional programs need to complete Sections 2, 3, and 4.

Scope: While this Program Review Update does ask for some analysis of data, detailed data reports in the form of appendices should be reserved for the Triennial Program Review.

Instructions:

1) *Please fill in the following information as completely as possible.*

2) *If the requested information does not apply to your program, please write "Not Applicable."*

3) *Optional: Meet with your dean to review this document before October 10, 2016.*

4) *Send an electronic copy of this form to the Program Review Committee Chair and your Dean by October 10, 2016.*

Part One: Program Snapshot

A. Have there been any significant changes to your program, your program's data or your program's needs since the previous Program Planning Update?

   If there are any changes, describe the relevant information and its significance in the space below.

These changes might have originated from within the program or because of an external source (the institution or the state, for example). Possible sources of relevant information might include, but are not limited to, the following:

- Data generated by your program
- Data from the Office of Institutional Research (http://goo.gl/Ssfik2)
- CEMC Data
- Retirements
- State Mandates
- Labor Market Data
- SLO/SAO Data (http://goo.gl/jU2ylZ)

> ✓ We have hired a full time Computer Networking instructor to replace one that retired in at the end of the 2014/15 academic year (as of August 2016).

- ✓ We began a review of our Computer Networking program and identified a number of courses to be revised to more closely align with model curriculum and industry standards. A number of courses have been submitted to the curriculum approval process and the goal is to begin offering the revised courses in Spring 2018.
- ✓ We have continued to add FTEF to enable us to offer more CS classes as enrollments in that program are growing at this time.
- ✓ Last year, we researched, attended training, began conversations with local high schools to offer the CyberPatriots program for local high schools. The first CyberCamp for highs schools was offered in August 2016.
- ✓ Worked with Sandia labs on their Cyber Technology Academy.

B. What objectives, initiatives, or plans from the 2015 Program Review Update have been achieved and how? PRUs from 2015 are available here: http://goo.gl/9iF3m9

- ✓ While the work is not completed, one of our plans from the 2015 Program Review Update was to update curriculum to conform with model curriculum. Several revised courses are now in the process of being approved. This effort provides students with needed work skills that align with industry standards and aligns our program with other programs in the region and the state.
- ✓ We collaborated with Sandia lab to offer their Cyber Technology Academy at LPC in Summer 16. We are hopeful this collaboration will continue this year and perhaps expand.
- ✓ We have become actively involved in the CyberPatriots program on a regional level involving our feeder high schools and ROPs. Our efforts in this area are being used as a model for other campuses in the Bay Area. The CyberPatriots program brings high school students to our campus and introduces them to our Computer Networking program, our instructors, and the opportunities available at LPC to obtain the skills needed in the networking field (as well as other Computer Studies programs).
- ✓ We replaced our CNT Instructor (as of August 2016)
- ✓ Brochures were developed on our new Computer Information Technologist degree. The program is being discussed with students and a number of students have expressed interest in the degree and possible internship opportunities.
- ✓ As part of our collaborations with the regional Mobile Computing consortium, a new Android Applications class has been developed and is currently in the curriculum approval process and we hope to be able to begin offering this class in Fall 17. Currently, we offer an Apple OS Mobile Applications class; by adding the Android platform, students will have expanded opportunities to gain skills in the fast growing mobile application development industry.

C. Discuss at least one example of how students have been impacted by the work of your program since the last program review update (if you did not already answer this in Question B).

See above

D. What obstacles has your program faced in achieving objectives, initiatives, or plans?

- ✓ It is difficult to find part-time faculty to teach during the day when we have the greatest need for classes, particularly in the Computer Science area. With the high employment rate and high salaries that are currently available for people with the skills/qualifications needed to teach Computer Studies classes the pool of qualified part-time faculty is extremely limited.
- ✓ As the requirements for faculty to do more with SLO/PLO, yearly program reviews, curriculum development, etc. have continued to increase over the last several years, it is becoming

increasingly difficult to find time to get everything done and actually do the important work that faculty were hired to do---Teach.
- ✓ In the Computer Studies fields, the need for constant upgrading for skills and retraining adds to the time commitment needed to be effective in our jobs. This requires significant additional time commitments by faculty. Some CNT classes require faculty to have specific industry certifications, which require time and funding—both of which in short supply.
- ✓ Limited computer lab space is also creating issues for our programs. We currently have no rooms available to enable scheduling additional evening classes. Even with a significant number of our CIS and CNT classes offered in a hybrid format, there is currently no space available to offer additional sections. Relatedly, we are experiencing increased scheduling conflicts with other programs wanting to use labs for non-computer classes. We also need lab space where computers can be assembled and disassembled for students in the several Computer Networking classes. Additional computer lab space and a space for working on computers are desperately needed.

E. What are your most important plans (either new or continuing) for next year?

- ✓ Continue to outreach to the local business community, particularly Sandia and LLNL, in the area of cybersecurity. Work with the WBL Specialists to increase internship opportunities for students and to promote our programs to local businesses.
- ✓ Increase the use of robotic technologies to enhance the learning environment in CS courses based on responses and SLO outcomes from the 2015/2016 academic year
- ✓ Increase the use of portable storage to enhance students' education in multiple operating systems in both the CS and CNT disciplines.
- ✓ Complete the updating for CNT curriculum particularly in the area of cybersecurity. Address the needs of the CNT program for updated equipment (particular Cisco equipment).
- ✓ Develop the CyberPatriots program and explore similar programs for students over 18. Develop curriculum that supports these programs. Develop CyberPatriots brochure and outreach materials.
- ✓ Revised CIS degrees and certificates. Review CIS curriculum and update as needed.
- ✓ Begin transitioning courses from Blackboard to Canvas with the goal of having all courses in Canvas by the end of Spring 2018.
- ✓ Revise SLO/PLOs to conform to latest definitions from the SLO Committee
- ✓ Actively engage in campus/district discussions and planning on the Strong Workforce Development initiative.
- ✓ Research possible opportunities for non-credit/dual enrollment/adult ed in the CIS and CNT areas.

F. Instructional Programs: Detail your department's plans, if any, for adding DE courses, degrees, and/or certificates. For new DE degrees and/or certificates (those offered completely online), please include a brief rationale as to why the degree/certificate will be offered online.

- ✓ Currently, there are no fully online Computer Science courses and only a few that are approved to be offered in hybrid modality. The possibility of development online/hybrid versions of Computer Science courses is being explored. This would allow additional flexibility in scheduling (to address lab space issues) as well as provide more flexibility for students particularly students working full-time and students managing substantial family or parenting obligations.
- ✓ CIS will be revising degrees and certificates next year. A large number of CIS courses are currently offered in online and/or hybrid modes. As degrees/certificates and courses are reviewed, there may be additional courses proposed for online/hybrid delivery to address student need for flexible schedules.

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G. Do plans listed under Question E or Question F connect to this year's planning priorities (listed below)? If so, explain how they connect.

> *Planning Priorities for 2016-17*
> - *Establish regular and ongoing processes to implement best practices to meet ACCJC standards*
> - *Provide necessary institutional support for curriculum development and maintenance*
> - *Develop processes to facilitate ongoing meaningful assessment of SLOs and integrate assessment of SLOs into college processes*
> - *Expand tutoring services to meet demand and support student success in Basic Skills, CTE and Transfer courses.*

✓ We will be making use of any and all institutional support for curriculum development and maintenance as we work through updating degrees, certificates, and courses.

H. Instructional programs: Did your program meet its program-set standard for successful course completion? _X_yes _____no

(This data can be found here: http://goo.gl/Ssfik2**)**

If your program did not meet your program-set standard, discuss possible reasons and how this may affect program planning or resource requests.

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I. Units with SAOs: Using SAO data from last year, describe the impacts of SAO practices on student learning, achievement, or institutional effectiveness. Describe the practices which led to the success. (Copy the box below if you would like to discuss multiple examples). SAO data can be found here: http://goo.gl/jU2ylZ

SAO:
Describe the quantitative or qualitative results:
Discuss any actions taken so far (and results, if known):
Discuss your action plan for the future:

Part Two: Course-Level SLO Assessment Schedule

THIS SECTION HAS BEEN REMOVED. PLEASE SKIP TO PART THREE.

Part Three: Assessment Results
(Instructional Programs Only)

1. Describe an example of how your program used **course SLO data (SLOs)** from last year (2015-16) to impact student learning or achievement. (Copy the box below if you would like to discuss multiple examples).

Course: CNT 51
Course SLO: Assembling, configuring a functional computer.
Describe the quantitative or qualitative results: The students are able to build and configure the lab computers in the new small room on desks that double as workbenches. Enrollment has gone from 6 students to 20 students.
Discuss any actions taken so far (and results, if known): A set of 15 computers were purchased to be used for students to assemble and disassemble. The computers all have the same components instead of using random, used computers that have been scavenged from around the campus. Have a standardized set of computers that students can use when learning how to assemble/disassemble the computers will hopefully provide for more consistent outcomes for the students.
Discuss your action plan for the future: A larger lab room is needed to accommodate 30-35 students

2. Degree/Certificate granting programs only: Describe an example of how your program used **program-level SLO data (PSLOs)** from last year (2015-16) to impact student learning or achievement. (Copy the box below if you would like to discuss multiple examples).

Degree/Certificate: AS Computer Programming
Program SLO: Students will be able to direct computer operations by writing detailed instructions using computer programming languages.
Describe the quantitative or qualitative results: Observed increased student interest and engagement when robotic technologies were introduced into Computer Science courses.
Discuss any actions taken so far (and results, if known): Robotic technologies have been used in several CS classes. Students write programs to control movement of robotic devices.
Discuss your action plan for the future: Plan to increase use of robotic technologies to enhance the learning environment in CS courses based on responses and SLO outcomes from the 2015/2016 academic year

Degree/Certificate: AS - Computer Science
Program SLO: Students will be able to direct computer operations by writing detailed instructions using computer programming languages.
Describe the quantitative or qualitative results: The addition of a second full-time instructor beginning in the 2015-16 academic year has given this program the opportunity for sustained

dialogue around patterns in student experiences and outcomes, as well as additional and more pro-active engagement with part-time instructors to meet their own learning needs as teachers.

During 2015-2016, certain patterns of questions/feedback from students suggested areas within students' Computer Science experience at LPC as a whole that could benefit from collaborative faculty work to make course material and assignments as clear as possible and with comparable difficulty/accessibility across every offering of a given course.

Discuss any actions taken so far (and results, if known): In addition to the two full-time Computer Science faculty actively discussing and sharing ideas about their courses, these instructors also explicitly engaged individual part-time instructors to offer feedback, observations, advice and suggested changes to course materials, in a process distinct from any contractually-obligated evaluation activities.

Discuss your action plan for the future:
In Computer Science, the full-time instructors intend to work toward a more systematic (even if voluntary) set of procedures, documents and other mechanisms for "onboarding" new Computer Science instructors and giving ongoing support and guidance to those instructors.

Background: Program-level Student Learning Outcomes

Program-level Student Learning Outcomes (PSLOs) are defined as the knowledge, skills, abilities, or attitudes that students have at the completion of a degree or certificate. Faculty within a discipline should meet to discuss the expected learning outcomes for students who complete a particular series of courses, such as those required for a certificate or a degree. PSLOs should be the big things you want students to get out of a degree or certificate. PSLOs should be developed throughout the program and in multiple courses. Discussions might also involve colleagues in other programs regarding prerequisites and transfer courses or community stakeholders regarding job expectations.

It is recommended that each program have 3-6 PSLOs. Discipline faculty members might need to have a more comprehensive list based on the requirements of external stakeholders (employers, state requirements, etc.). For most programs, PSLOs are only assessed through linked course-level SLOs. You might assess PSLOs in a capstone project or capstone course that many students complete when earning a certificate or degree. Alternatively, you could assess development of a set of skills as students advance through different courses in your program (ENG 1A -> ENG 4 or 7).

Program-level outcomes should

1. **describe** what students are able to do after completing a degree or certificate;
2. be **limited** in number (3-6 outcomes);
3. be **clear** so that students and colleagues can understand them;
4. be **observable** skills (career-specific or transferable), knowledge, attitudes, and/or values;
5. be **relevant** to meet the needs of students, employers, and transfer institutions;
6. be **rigorous** yet realistic outcomes achievable by students

eLumen

Strategic Planning	SLOs & Assessments	Org Management	Reports
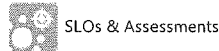
SLOs Listing Curriculum Map Outcomes Groups Assessments

Mapping source

CSLOs

Organization Computer Science ▾

Outcomes Groups - No Outcomes Group selected - ▾

Programs Computer Programming - AS ▾

	Students will be able to direct computer operations by writing detailed instructions to using computer programming languages.
Computer Programming - AS ▾ Courses ▾ Computer Programming - AS ▾ ☐ **Include inactive Courses**	
CIS60 - Systems Analysis and Design	
At the completion of this course, a student will be able to create survey questions to identify client requirements.	
CS1 - Computing Fundamentals I	
Demonstrate understanding of fundamental syntax and control structures - including variables, arithmetic statements, if statements and loops.	✔
Explain and implement programmer-defined functions in C++.	✔
CS2 - Computing Fundamentals II	
Create and use overloaded functions and operators in C++, including friend functions.	✔
Design and implement programmer-created C++ classes, using encapsulation and inheritance.	✔
CS20 - Adv Prog w/Data Structures/C++	
Demonstrate understanding of fundamental syntax and control structures - including variables, arithmetic statements, if statements and loops.	✔
Implement programs using linked lists, stacks, queues and binary trees, including implementations using the Standard Template Library.	✔

Interpret and implement code using typical forms of recursion.	✔
CS21 - Assembly Language Programming	
Implement the assembly equivalent of while loops, for loops and switch statements.	✔
Interpret and apply the machine representation of integers, characters, strings and floating point (e.g., IEEE format) numbers.	✔
CS31 - Java Programming	
Create and use programmer-defined functions in Java.	✔
CS43 - Professional Communications	
Analyze a business situation and select an appropriate approach to respond to it; use principles of routine and informative writing to	
Demonstrate clear, compelling, analytical, and concise writing	
CS47 - Capstone Project	
Develop detailed design specifications for a substantive application, including major subsystems and interfaces.	✔
ENG1A - Critical Reading and Comp	
Identify the main ideas and supporting arguments of a college-level text.	
Write an academic essay using textual evidence to support a thesis.	
Research a topic using credible sources and document sources in an academically responsible way.	
Use effective and correct sentence structures to convey ideas.	