Ohlone College
Program Review Report

- **Program Description and Scope:**
  - *Program Review Title:* Computer Science
  - *Academic year:* 2015/2016
  - *Review Type:* Instructional Disciplines
  - *Program/Departments:* Computer Science (07000)
  - *Authority Code:* 53-Dean, Business, Technology, and Learning Resources
  - *External Regulations:* Yes_ No X
  - *Provide a brief narrative that describes the instructional program/discipline:*

    The Computer Science (CS) program prepares students for employment in careers in Information Technology such as computer programming and for transfer to 4-year schools in order to pursue an advanced degree. The CS Faculty recognizes that Ohlone serves two types of students: those who intend on getting an advanced degree (i.e. transfer) and those who are interested in enhancing employment skills, whether unemployed or on the job already. Fortunately there is no conflict in these two areas since the techniques needed are similar. The main difference is that transfer students need to focus on theory and foundation and the skills students need to concentrate on current tools and technologies. Our teaching method(s) is/are to not only use theory as a foundation(s) but also to utilize the latest technologies/tools to reinforce the fundamentals of Computer Science.

- **College Mission:**
  - *Mission Statement:*
    Ohlone College responds to the educational needs of our diverse community and economy by offering high quality instruction supporting basic skills, career development, university transfer, and personal enrichment and by awarding associate degrees and certificates to eligible students in an innovative, multicultural environment where successful learning and achievement are highly valued, supported, and continually assessed.
  - *Program Relation to College Mission:*
    - Basic Skill
    - Careeer Entry (CTE)
    - University Transfer
    - Economic Development
    - Personal Enrichment
    - Support Services
  - *State Your Program Mission/Purpose:*

    Ensure that the program uses current technology and computer science theory

needed for this programs' PSLO's to be achieved.

- *Briefly Describe Program Accomplishments:*

  During the last 3 years the Computer Science program faculty have;

  a) Secure additional funding for embedded tutoring services (STEM programs).

  b)Hired several new part time faculty from industry with expertise in areas for the latest programming needs. e.g CS-124 and CS-116.

  c) Worked with the Ohlone College Multimedia department re: Programming web based tools and designing courses such as the new CS-174 Mobile applications.

  d) Sponsored several STEM “College for a day" sessions for Middle School to High School Seniors using funds from Larry Weiner Endowment.

  e) Implemented an ADT degree which required restructuring of all CS trasnfer courses.

  f) Published a Microdocumentary video that explains the purpose and vision of the CS program.
  https://www.youtube.com/watch?v=ZYEP5nT9qFc

  This video is being used to promote the program to underserved populations, e.g. minorites and young women.

- **Achievement and Resource Data Analysis:**
  1. *Research Questions:*

- **Resource Assessment Summary:**

    1. *Academic Year:* 2015-16
    2. *Activity Center Fund 10 Budget Allocation:* $492567.00
    3. *FTES:* Fall: 83 Spring: 106 Summer: 0
    4. *WSCH/FTEF:* Fall: 561 Spring: 565 Summer: 0
    5. *Course Sections Offered:* Fall: 23 Spring: 27 Summer: 0
    6. *Sections Taught FT Faculty:* Fall: 4 Spring: 4 Summer: 0
    7. *Sections Taught PT Faculty:* Fall: 11 Spring: 12 Summer: 0
- **Human Resources:**

    1. *# of FT Faculty:* 3
    2. *# of PT Faculty:* 8
    3. *# of Classified Staff:* 0
    4. *# of Administrators:* 0
    5. *% Faculty release/reassigned time:* 0%
    6. *Technology:*
        - Specialized Software
        - Simulation
        - Technology Enhanced Instructional Equipment
        - Laptops
        - Tablet
        - Desktops
    7. *Physical Resources:*
        - General Classrooms
        - Specialized Labs
        - Tutoring/Learning Center
- **Program Analysis PSLOs - Student Learning:**
  (Key: I-Introduced, P-Practiced with Feedback, M-Demonstrated at the Mastery Level)

    1. *PSLO Matrix:*

Course	PSLO-1	PSLO-2	PSLO-3
CS 101	I	I	
CS 102	P	I	I
CS 104A	I	I	I
CS 104B	P	P	P
CS 113	I	M	
CS 116	M	M	P
CS 118	M	I	P
CS 124	M	M	M
CS 125	P	I	I

CS 131	I	I	I
CS 145	P	I	I
CS 149	P	I	I
CS 152	I	P	
CS 157	I	P	
CS 162	I	P	
CS 170	P	P	P
CS 172	M	P	I
CS 173	M	P	I
CS 175	P	P	P
CS 178	P	P	P

2. *Please Indicate the PSLO(s) which you are reporting on:*
    - Design an algorithm using psuedocode, and implement a computer program to solve the problem. Demonstrate debugging techniques to find and resolve logic errors discovered during testing.
    - Demonstrate knowledge of fundamental computer science concepts such as software and hardware architecture, logic, and discrete structures.
    - Demonstrate knowledge of the basic data structures: stacks, lists, trees, graphs, queues, and sets. Analyze which of several methods involving data structures is most appropriate for solving a particular problem, then implement them in appropriate applications, such as sorting and searching.

3. *Analyze and summarize your assessment findings â?? What in the data jumped out?*

    Assessing PLO #2 faculty, Dave Topham, reviewed SLO #2, from the CS-113, Discrete Mathmatics.

    SLO#2: Construct valid mathematical arguments using logical connectives & quantifiers & verify the correctness of a mathematical arguments using symbolic logic & truth tables.

    Accessing PLO #3, faculty, Dr. Fang, used SLO # 4 from CS-124, Data Structures.

    SLO# 4 Analyze & determine which methods data structures are most

appropriate for solving a particular problem.

Data shows:

CS-124 with the implementation of the new ADT degree, the Computer Science department needed to implement more rigorous lab assignments & embed tutors to assist the students.

(Embedded tutors have been added to these courses.)

CS-113: The Computer Science department needs to reintroduce additional exercises to the homework problems so students can practice more on distinguishing between the various proof rules needed to understand the type of problems in this course. Critical thinking problem sets need to be more stringent.

4. *Give examples of assessments used for your PSLO analysis:*

CS-113: The department used critical thinking questions to refcous the studnets on various proof rules.

CS-124: Quizzes for each topic throughout the semester, along with a dozen programming labs to strengthen the understanding of the topics, then a comprehensive midterm and final exam to allow the students to demonstrate their knowledge.

5. *Describe input from Program Advisory Committee (if applicable):*

   Even though educational regulations do not require that the Computer Science department hold an annual Advisory committee meeting, the department has scheduled one for January 2016. This is because there have been many recent changes in the software industry and such changes lend themselves to the Computer Science department staying up-to-date with what the future student/software/system professional needs to know.

6. *Comments:*

   Most of the courses in our department are designed to be non-sequential to allow flexibility to our students. Many do have pre-requisites of CS-102 or CS-125, but other than that, students are free to choose. This means there is no "capstone" course that represents the program as a whole and makes it more difficult to identify a cohort of students to assess for program SLO mastery. Even the goal of "mastery" is misleading because these skills require many years to master. Similar to mastering a musical instrument, you can't do it in a year! It takes a lifetime. But if we think of M as on the way to mastery, then it is appropriate to use this tool as one of the measurements.

- **Program Improvement Objectives**

1. *Based on the program data analysis and PSLO analysis, identify your Program Improvement Objective(s): What are you going to do? Why are you going to do it?*

   Improve enrollment of underserved students in CS degrees because computer science and computer engineering majors are underrepresented by underserved American students nationwide. Micro documentary was created in 2014 to promote Computer Science program to underserved populations.

   Notes (optional): Please include any notes related to your PIO. (2500 Character limit)

   Program PIO will address the following:

   - Course Retention
   - Course Completion
   - Success Rates
   - Increase Program Enrollments
   - Increase Degrees/Certifications

How will you assess the effectiveness of your PIO:

By reviewing research records collected after each semester.

PIO Action Plan:
How will you accomplish this?

Primary research: ASOC was approached in Fall 2014, and they responded by saying CS dept should wait until the Equity Plan was in place. (This just recently happened Summer 15). Secondary research: Follow up on equity plan this year.

What is your timeline?

Year 2015-16

Who is going to do this?

CS faculty

PIO Status:

- In-Progress

Closing the loop - Describe the results of your PIO implementation or completion:

Conclusion: Complete if PIO has been completed

Fiscal Resources Status:

- No fiscal resources requested. PIO could be part of the Equity Plan objective.

PIO Resources:

- Resource: People Time

2. *Based on the program data analysis and PSLO analysis, identify your Program Improvement Objective(s): What are you going to do? Why are you going to do it?*

   There is evidence that embedded tutors are needed in the Computer Science courses.

   Notes (optional): Please include any notes related to your PIO. (2500 Character limit)

   Program PIO will address the following:

   - Institutional Effectiveness
   - Student Learning & Achievement
   - Course Retention
   - Course Completion
   - Success Rates

   How will you assess the effectiveness of your PIO:

   By reviewing retention and success rates.

   PIO Action Plan:
   How will you accomplish this?

   By reviewing retention and success rates statistics found on Research and Planning page.

   What is your timeline?

   2015-16

   Who is going to do this?

   Faculty

   PIO Status:

   - In-Progress

Closing the loop - Describe the results of your PIO implementation or completion:

Conclusion: Complete if PIO has been completed

Fiscal Resources Status:

- There has been funding awarded to the Computer Science department though the CIO STEM scholarship fund. In 2015, this fund was converted to an endowment. While this helps, there needs to be an increase in the allocation for student tutors from the General Fund. Dean Buehler is working with the Foundation department to secure more funding from this new endowment. It should also be noted the Computer Science Larry Weiner endowment has also provided funding for tutoring support during years Spring 2014-Fall 2015.

PIO Resources:

- Resource: People Time
- Resource: Data from Research and Planning Office
- Resource: Other Budget Related Resources Needed
  Description: Tutoring costs
  Est. Cost: $10,000.00

Attached Files:

- 2015spring-sloa-cs113-5.docx
- 2015spring-sloa-cs124.doc
- Embedded Tutors 2014.xlsx
- CIOLBFOUNDATIONMASTER.pptx
- EmbedTutor_Sections_HoursSP151.xlsx
- 2015semester-sloa-cs102.doc