Comprehensive Program Review Report

Program Review - Computer Science

Program Summary

2020-2021

Prepared by: John Redden

What are the strengths of your area?: This program now has an AS-T and department status: https://catalog.cos.edu/areas-study/computer-science/

In addition, the computer science department enjoys an excellent reputation and coordinates closely with Math and Engineering.

Program Growth:
Fall 2019 Declared Majors - 35
Spring 2020 Declared Majors - 63

FTES Growth:
CSCI 2018-19 18.10 FTES
CSCI 2019-20 22.63 FTES

Overall Program Success Rate:
2018-19 Success 81.5%
2019-20 Success 76.1%

An elective was added - CSCI 120 - which is cross listed with the engineering program and another elective "Python Programming" is in development. The department recently lost one full-time faculty due to retirement, but added two excellent part time instructors. In addition, two core courses were added CSCI 005 and CSCI 006. These courses are also enjoying enrollment growth where we are waiting on baseline data.

Success Rates:
CSCI 001 (Multi-Year) 69.2%
CSCI 002 (Multi-Year) 86.3%
CSCI 005 (Multi-Year) 82.1%
CSCI 006 (Multi-Year) 90.0%

This popular program is enjoying good success and growth. The addition of the AWS virtual machines has been very important for this program. In particular, the Visual Studio IDE was added so students can access the "Lab" software from home.

What improvements are needed?: We continue to see increased CSCI course enrollments. A second section of CSCI 001 has been added to the Spring schedule and is well enrolled. CSCI 001 and CSCI 002 courses are foundational for this program. At least one section should be offered each semester.

1. Now we are finding that these students are requesting a CSCI 002 section to be offered in the Fall.
2. New unique lab assignments are needed to mitigate copying from web searches.
3. Continue outreach, awareness and recruitment process for the program.

4. Department coordination with adjuncts needs to be improved.

Describe any external opportunities or challenges.: The future prospects of CSCI at COS continues to look promising. However, some of our external activities have been reduced by the Covid-19 response. External opportunities:

1. We continue to offer a local chapter of the Google Developer Group (GDG) which meets once a month and offers industry standard learning opportunities as a means to bring real-world computer science experience to the central valley. This activity, in partnership with Google, has been folded into our "Friday Night Lab" (FNL) program. At least one conference per year is provided in the Fresno area at the Bitwise Stadium.

2. SURGE funding has ended. However, Dr. Owens, Mr. Redden, and Mr. Baig have agreed to continue the program in an ad hoc manner. Despite this, the yearly STEMposium has continued to be a success. Some funding has been secured from the COS foundation. The most recent event was cancelled due to Covid-19 response.

3. We have had contact with outside industries and plan to follow up and expand this list. These partnerships have led to activities such as NASA and TCOE projects.

With the new transferable CSCI degree option, we expect to see further opportunities that come with an expanded student base. The ongoing challenge is to recruit interested faculty members to share the workload that comes with these endeavors.

Overall SLO Achievement: SLO baselines for the core courses, CSCI 001 and CSCI 002, have been established. Ongoing SLO achievement has been inline with expectations with growth being considered. In particular, we have implemented a strategy to improve the topic of "classes" by covering more math/geometric exercises. This effort has improved this topic substantially from 52% to 74% in our latest SLO assessment.

We are currently establishing baseline SLO data for CSCI 005 and CSCI 006. Closer coordination with the adjunct faculty teaching these courses is required.

Changes Based on SLO Achievement: Based on our discussions, we have identified the need to show students how to implement the iterative design process form start to finish. Often student see our pre-made examples and think the process is easy and streamlined. We plan on implementing more "live coding" sessions during class time. We hope this will show the process in a more real-world light where the errors and issues arise as a problem is coded. Also, we feel we should continue to stress an early functions approach to the two courses CSCI 001 and 002. Other changes include:

1. More hands-on and diverse labs (math, engineering AND business examples) for all course offerings.
2. Modify programming lab assignments to combat the "copy-and-paste" problem.
3. Facilitate collaboration to create associated programming labs. (Meet more often!)
4. Cross-course strategy to introduce recursion early and work this topic into the overall program slowly and early.

Overall PLO Achievement: Our PLO's have been identified. Students will:

1. Demonstrate the skills to plan, create, test, and debug computer programs using procedural programming or Object-Oriented Programming techniques.
2. Demonstrate the ability to identify and understand the basic terminology used in Computer Science and how computer hardware and software work together to produce desired results.
3. Demonstrate the skills and training for employment and/or transfer to a four-year college or university.

To establish baseline data for these assessments we will track the following:

2019-20 degrees conferred: 0
2019-20 CSCI student transfers: ??
2019-20 declared majors: Fall 35 Spring 63

FTES Growth:
2018-19 CSCI 18.10 FTES
2019-20 CSCI 22.63 FTES

Changes Based on PLO Achievement: We plan to offer more real-world and hands-on instruction in all courses. This includes

demonstrating collaborative problem solving techniques in the classroom setting. Also, we plan on being more involved and proactive in promoting transfer by identifying a list of recommended universities.

Furthermore, we plan on coordinating all offerings with MESA, SETA, and FNL. CSCI students should be more involved with the STEM extra curricular offering here at COS.

Outcome cycle evaluation: The CSCI program is doing well to establish baselines for all assessed outcomes. Growth is present and the prospect for future growth is expected. In addition, new "elective" courses are being considered. This new program is evolving nicely and with broad support from the STEM community here at COS.

Action: 2020-2021 Increase Student Access to this Degree Program

Add a CSCI 002 course section to the Fall schedule.

Leave Blank:
Implementation Timeline: 2020 - 2021
Leave Blank:
Leave Blank:
Identify related course/program outcomes:
Person(s) Responsible (Name and Position): John Redden
Rationale (With supporting data): With the addition of CSCI in the Spring, it has come to our attention that these students want to complete the sequence as soon as possible. That means adding a section in the Fall schedule.
Priority: High
Safety Issue: No
External Mandate: No
Safety/Mandate Explanation:

Action: 2020-2021 Increase Success through Collaboration

Schedule the "first" department meeting with faculty to discuss program cohesion.

Leave Blank:
Implementation Timeline: 2020 - 2021
Leave Blank:
Leave Blank:
Identify related course/program outcomes:
Person(s) Responsible (Name and Position): John Redden
Rationale (With supporting data): All faculty should be working together to make this program as cohesive as possible. In addition, faculty might share course and program resources.
Priority: Medium
Safety Issue: No
External Mandate: No
Safety/Mandate Explanation:

Action: 2020-2021 Increase student retention with relevant coursework.

Create an "elective" course in python programming.

Leave Blank:
Implementation Timeline: 2020 - 2021
Leave Blank:
Leave Blank:
Identify related course/program outcomes:
Person(s) Responsible (Name and Position): John Redden
Rationale (With supporting data): Python is a growing language used in Machine Learning and Artificial Intelligence applications. In addition, it is a tool used by some of our local engineering firms.
Priority: Low
Safety Issue: No
External Mandate: No

Program Review - Computer Science

Safety/Mandate Explanation:

Action: 2020-2021 Increase student retention through events

Encourage CSCI students to addend and volunteer at campus functions such as STEMposium, EYH and MAPS. Conscript CSCI student volunteers to run a demonstration booth.

Leave Blank:
Implementation Timeline: 2020 - 2021
Leave Blank:
Leave Blank:
Identify related course/program outcomes:
Person(s) Responsible (Name and Position): John Redden
Rationale (With supporting data): Earning a CSCI degree should require more than just class work.
Priority: Medium
Safety Issue: No
External Mandate: No
Safety/Mandate Explanation:

Action: 2019-2020 Facilitate CSCI Faculty Collaboration

Schedule regular meeting between all faculty involved in this new program/department.

Leave Blank:
Implementation Timeline: 2019 - 2020
Leave Blank:
Leave Blank:
Identify related course/program outcomes: District Objectives: 2018-2021
District Objective 2.1 - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over three years
District Objective 2.2 - Increase the number of students who transfer to a four-year institution by 10 percent over three years
District Objective 4.2 - Improve organizational effectiveness by strengthening operations of and communication between District departments, divisions, and constituents
Person(s) Responsible (Name and Position): John Redden
Rationale (With supporting data): Open a collaborative dialogue to meet program level outcomes.
Priority: High
Safety Issue: No
External Mandate: No
Safety/Mandate Explanation: None

Update on Action

Updates

Update Year: 2020 - 2021   09/29/2020
Status: Action Completed
Collaboration and resource sharing has been good. However, with a retiring faculty member and two new adjuncts, this action will be rolled over to the next cycle.
Impact on District Objectives/Unit Outcomes (Not Required): Continued course improvement.

Action: 2019-2020 Program Awareness and Outreach

Attend campus functions such as STEMposium, EYH and MAPS. Conscript CSCI student volunteers to run a demonstration booth.

Leave Blank:
Implementation Timeline: 2019 - 2020
Leave Blank:
Leave Blank:

Program Review - Computer Science

Identify related course/program outcomes:
Person(s) Responsible (Name and Position): John Redden
Rationale (With supporting data): District Objectives: 2018-2021

District Objective 1.1 - The District will increase FTES by 1.75% over the three years

District Objective 2.1 - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over three years

District Objective 2.2 - Increase the number of students who transfer to a four-year institution by 10 percent over three years
Priority: Medium
Safety Issue: No
External Mandate: No
Safety/Mandate Explanation: None

Update on Action

Updates

Update Year: 2020 - 2021   09/29/2020
Status: Action Completed
CSCI students have been actively participating in all of the above events. Their booths have been very popular.

Impact on District Objectives/Unit Outcomes (Not Required): Program growth through outreach.

Action: 2019-2020 Discuss Possibility of Offering CSCI 002 in the Fall

Discuss with area Division Chair and Dean about the viability of offering CSCI 002 in the Fall Semester.

Leave Blank:
Implementation Timeline: 2019 - 2020
Leave Blank:
Leave Blank:
Identify related course/program outcomes: District Objective 1.1 - The District will increase FTES by 1.75% over the three years

District Objective 2.1 - Increase the percentage of students who earn an associate degree or certificate (CTE and Non-CTE) by 5 percentage points over three years

District Objective 2.2 - Increase the number of students who transfer to a four-year institution by 10 percent over three years
Person(s) Responsible (Name and Position): Matt Bourez
Rationale (With supporting data): Just opening dialog on the possibility and/or student need.
Priority: Low
Safety Issue: No
External Mandate: No
Safety/Mandate Explanation: None

Update on Action

Updates

Update Year: 2020 - 2021   09/29/2020
Status: Action Completed
This action has been initiated.

Impact on District Objectives/Unit Outcomes (Not Required): We are just discussing the possibilities.