

Search Standards By User

Source: IPR

Cycle: Instructional Program Review 2016-17

User Name: Lead Faculty, Engineering and CS

Response Types: All Responses Types

1	Executive Summary
0	Executive Summary

Summarize your program's strengths, opportunities, challenges, and action plans. This information will be presented to the Board of Trustees. [1000 word limit]

Response Detail

No Response Information to Display

Narrative

The Computer Science (CS) Program at Cañada College was developed in line with the ACM course requirements for a two year program of study leading to an Associates of Science AS/T in CS. Instruction focuses on preparing students for transfer to a four year institution where they can complete a CS BS degree.

The programs offers quality theoretical knowledge and its applications in Computer Architecture, Operating Systems, the Procedural and Object oriented Programming paradigms, Discrete Structures, and Data Structures. There are three language tracks that student can choose from, depending on their interest. The program offers personal growth in Logical thinking which can transfer easily to other courses a student takes. There is a supportive staff of full time and Adjunct faculty, which offer a highly encouraging environment.

Program Strengths:

- We continue to experience a strong growth in enrollment each semester
- We are offer Three Certificates for CS: Java, Swift and C++
- There numerous resources available that increase student Success
- There is now one full time faculty and three Adjunct Faculty that teach in the Program

Program Challenges and Proposed actions:

- To further increase the enrollment of underrepresented students.
 - o To participate more in the outreach program for High School
 - o Create flyers and Brochures that are written with that goal
- The amount dedicated class rooms
 - o The new Building 23 will have two class rooms for the use of the CS Program. It will be a modern smart classroom.
- Make and keep Articulation agreements with the area High Schools are in progress so students will be encouraged to attend Cañada Colleges' CS program
- Increase the consistency of using the same course for each class.

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

2	Program Context
1	Mission

Identify how your program aligns with the college's mission by stating which categories of courses you offer: Career Technical, Basic Skills, Transfer, and/or Lifelong Learning. If your program has a mission statement, you may include it here.

Search Standards By User

Source: IPR

Cycle: Instructional Program Review 2016-17

User Name: Lead Faculty, Engineering and CS

Response Types: All Responses Types

Response Detail

No Response Information to Display

Narrative

Cañada College's Engineering and CIS programs are transfer programs that offer the lower-division courses needed by students to transfer to four-year computer science programs or engineering programs in any field of engineering. The mission of the two programs is to educate students from a diverse population to become productive members of the engineering/computer science professions and society at large. Each department combines excellence in teaching theoretical principles and concepts with practical hands-on experience and the development of technical proficiency and communications skills. The departments work closely with the College's Mathematics, Physics, and Chemistry departments, as well as the College's Student Services Division and four-year engineering and computer science programs to maximize students' opportunity for timely completion of courses and successful transfer. Although primarily transfer programs, courses are also available for students who are seeking to update job skills related to engineering and computer science. Engineering and computer science students receive academic support services and professional development opportunities from the College's STEM Center (including the Mathematics, Engineering, and Science Achievement (MESA) Program).

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

2 Articulation

Are there changes in curriculum or degree requirements at high schools or 4-year institutions that may impact your program? If so, describe the changes and your efforts to accommodate them. If no changes have occurred, please write "no known changes".

Response Detail

No Response Information to Display

Narrative

Changes in high school curriculum have minimal effect on our curriculum. Changes in the curriculum at four-year institutions are reflected in our curriculum. We are in on-going conversations with university faculty in computer science and engineering regarding the lower-division curriculum and requirements for transfer.

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

3 Community and Labor Needs

Are there changes in community needs, employment needs, technology, licensing, or accreditation that may affect your program?. If so, describe these changes and your efforts to accommodate them. If no changes have occurred, please write "no known changes". CTE programs: identify the dates of your most recent advisory group meeting and describe your advisory group's recommendations for your program.

Search Standards By User

Source: IPR

Cycle: Instructional Program Review 2016-17

User Name: Lead Faculty, Engineering and CS

Response Types: All Responses Types

Response Detail

No Response Information to Display

Narrative

We are addressing community needs by offering day courses for full-time students and evening courses for working students. We do not have an advisory board. The Demand for high quality Computer Science (CS) graduates continues to grow. Most career opportunities require a four year CS degree. The department is developing pathways to bring the local high school students to Canada College for an affordable avenue to study CS, so students can be successful and transfer to a four instruction so they can have a career in computer science.

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

3	Looking Back
---	--------------

4	Curricular Changes
---	--------------------

List any significant changes that have occurred over the prior two years in your program's curricular offerings, scheduling, or mode of delivery. Explain the rationale for these changes.

Response Detail

No Response Information to Display

Narrative

Changes in the engineering curriculum are in direct response to the recently approved statewide C-IDs. These changes are: increase in the number of units for Engr 270 from 3 to 4, adding Math 251 as a prerequisite for Engr 215, and adding Engr 230 as a prerequisite for Engr 240. Additionally, distance education delivery for the following lab courses have been added: Engr 100, Engr 210, Engr 261, and Engr 270. The Engineering Department recently received a three-year grant for over \$700,000 from the National Science Foundation to develop online labs for these courses. There have been no changes in the CIS curriculum this academic year, due to the fact that the CIS curriculum is part of the new Computer Science Degree and it is up to date.

The Computer Science (CS) program:

The first two years of the program from 2014 to 2015, we offered mainly day classes on campus.

Today in 2016 and 2017, we have expanded to include more online classes and evening classes. This has increased our enrollment.

F2013 to F2015: 73 to 182 students (249% increase)

S2013 to S2016: 67 to 154 students (229% increase)

We have now a consistent Summer Session program where we offer online and on-campus course.

The fill rates of all the summer classes in 2016 have been over 100%. In general, due the increase in enrolments each year, we are now employing one full time faculty and three adjunct faculty.

There has been a need to add at least one new class, covering the concepts of DataBase Storage to round out the CS program.

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

Search Standards By User

Source: IPR

Cycle: Instructional Program Review 2016-17

User Name: Lead Faculty, Engineering and CS

Response Types: All Responses Types

5.A. Progress Report - IPC Feedback

Provide your responses to all recommendations received in your last program review cycle.

Response Detail

No Response Information to Display

Narrative

There are no recommendation for the ENG dept.
For the Computer Science Department:

1. **Program Context – Community and labor needs:** The demand for high quality Computer Science (CS) graduates continues to grow. This year the department has done some research and found that there is a need for an added a class: Introduction to Databases: SQL. With the fast paced increase of indefinite retention of data accumulate by Government and private industry. This course will be added as an experimental class in the Fall 2017 semester.
2. **Looking back – Curricular changes.** There have not been any courses cancelled from the initial courses added to the CS Degree and Certificate programs when they started in 2014. All the courses in our department are required courses, there no optional courses.
3. **Looking back – Progress report -** The department notes the increase in enrollment and is fortunate to have hired three talented and experience adjunct faculty to fill the demand for each of our offered class as our enrollment grows.
4. **Current State of Program – Progress and completion.** There has been good success increasing the enrollments There are more Asian and Hispanic enrolled in the program. There needs to be additional attention to
5. **SLO Assessment:** All courses are up to date with the required SLO Assessments.
6. **PLO Assessment:** There currently no PLO assessments done. There will be an effort to do so in the 2017 year.

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

5.B. Progress Report - Prior Action Plans

Provide a summary of the progress you have made on the strategic action plans identified in your last program review.

Response Detail

No Response Information to Display

Narrative

There were no recommendations from the the reviewers of the last program review for Engineering.
For the Computer Science Department

- 1) **Meet with Canada College Academic counselor** to explain the Computer Science (CS) degree and three CS Certificates. This has lead counselors informing MORE of their student clients that the CS program exists. I believe this has contributed to the steady enrollment increases.
- 2) **Increasing the course options:** An increase in Online and Evening section offerings has been accomplished. This has allowed different demographics to take class, where otherwise they would be working or occupied during the day. I believe this has contributed to the steady enrollment increases.
- 3) **Increase Enrichment activities** by way of a Computer Science club. This has been accomplished. Events planned and completed each semester are: Computer Science Museum Visits, Game Tournaments, CS club sponsored speakers, Company Tours, Hackathons, and more.

Search Standards By User

Source: IPR

Cycle: Instructional Program Review 2016-17

User Name: Lead Faculty, Engineering and CS

Response Types: All Responses Types

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

6.A. Impact of Resource Allocations

Describe the impact to-date that new resources (equipment, facilities, research) requested in prior years' program reviews have had on your program. If measurable impacts on student success have been observed, be sure to describe these and include any documentation/evidence. If no resources have been recently requested, please write ?not applicable?.

Response Detail

No Response Information to Display

Narrative

Programs developed through grant-funded programs including Math Jam, Physics Jam, tutoring, and Supplemental Instruction have significantly increased enrollment not only in engineering and CIS but in other STEM areas as well. These programs have also led to improved student performance and increased student engagement in academic and professional development activities such as internships, workshops, seminars, conferences, and student clubs.

In fall 2014, grant funding for four new programs has been successfully secured: \$607,678 from the National Science Foundation S-STEM Program to award as scholarships for STEM students; \$710,877 from the NSF IUSE Program to develop online labs for lower-division engineering courses; \$63,929 from the NSF REE Program for a research project on the impact of prior engineering-related employment on nontraditional students; and \$49,999 from NSF to organize a state-wide engineering articulation workshop.

- We need to continue offering more of the new courses and additional sections for the new Computer Science curriculum to meet the increase in demand.
- Participate in all campus events, like Career Days and Major days and High School feeder events that inform potential students about the new CS degree and certificates
- Promote the Computer Science Club and its associated company tours, speakers, game days and code competitions and create a long term network for CS majors.
- Further and promote an integrated curriculum and set of lectures for all the CS courses
- Hire additional CS professor for the growing program
- Continue working with the Articulation officer to keep articulation agreements current
- Insure the availability of CS tutors to increase student success

For the Computer Science Department:

Today , the hardware and software resources are sufficient. The resources needed are computer Hardware and software.

There currently 23 Window PC in Room 22-118. The software installed for student use on the PC's is: Visual Studios, Code Blocks (Free) and Blue Jay (JAVA).

There are currently 20 Mac Laptop available in Room 22-118 which have xCode for the IOS Swift language programming courses.

When building 23 is constructed with the two rooms dedicated for CS classes, there will be a need to purchase new PC's for each room and IDE software.

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

Search Standards By User

Source: IPR

Cycle: Instructional Program Review 2016-17

User Name: Lead Faculty, Engineering and CS

Response Types: All Responses Types

6.B. Impact of Staffing Changes

Describe the impact on your program of any changes in staffing levels (for example, the addition, loss or reassignment of faculty/staff). If no changes have occurred, please write "not applicable".

Response Detail

No Response Information to Display

Narrative

Programs developed through grant-funded programs including Math Jam, Physics Jam, tutoring, and Supplemental Instruction have significantly increased enrollment not only in engineering and CIS but in other STEM areas as well. These programs have also led to improved student performance and increased student engagement in academic and professional development activities such as internships, workshops, seminars, conferences, and student clubs.

In fall 2014, grant funding for four new programs has been successfully secured: \$607,678 from the National Science Foundation S-STEM Program to award as scholarships for STEM students; \$710,877 from the NSF IUSE Program to develop online labs for lower-division engineering courses; \$63,929 from the NSF REE Program for a research project on the impact of prior engineering-related employment on nontraditional students; and \$49,999 from NSF to organize a state-wide engineering articulation workshop.

- We need to continue offering more of the new courses and additional sections for the new Computer Science curriculum to meet the increase in demand.
- Participate in all campus events, like Career Days and Major days and High School feeder events that inform potential students about the new CS degree and certificates
- Promote the Computer Science Club and its associated company tours, speakers, game days and code competitions and create a long term network for CS majors.
- Further and promote an integrated curriculum and set of lectures for all the CS courses
- Hire additional CS professor for the growing program
- Continue working with the Articulation officer to keep articulation agreements current
- Insure the availability of CS tutors to increase student success

For the Computer Science Program

With the addition of three Adjunct Faculty for the Computer Science (CS) Program, the number of courses and section has grown. Staffing increases have enabled the CS to offer more evening, Day and online classes.

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

4	Current State of the Program
---	------------------------------

7	Enrollment Trends
---	-------------------

Use the Productivity data packet to examine your enrollments (headcount, FTES, Load) and pattern of course offerings (Productivity by Courses by Semester). How have your enrollments changed? What changes could be implemented, including changes to course scheduling (times/days/duration/delivery mode/number of sections), marketing, and articulation of pathways that might improve these trends? NOTE: If other sources of data are used, please upload these documents or provide URLs.

Search Standards By User

Source: IPR

Cycle: Instructional Program Review 2016-17

User Name: Lead Faculty, Engineering and CS

Response Types: All Responses Types

Response Detail

No Response Information to Display

Narrative

For the Computer Science Program
Total numbers for the program

The Fall semesters have seen a steady increase in enrollment

FA13 - 130
FA14 - 165
FA15 - 181

The Spring semesters have seen a steady increase in enrollment

SP14 - 146
SP15 - 154
SP16 - 169

The Summer semester have seen a steady demand

SU14 - 152
SU15 - 148

There can be an increase in the offering of courses such as CIS 252 for the summer. New courses offered for the Summer would see an increase in enrollment for the Summer term.

Gender Enrollment

	Female	Male
2013/2014	75	206
2014/2015	108	279
2015/2016	125	284

?There has been an increase in the enrollment of both genders.

The efforts to attract Females to the Computer Science (CS) program has seen a faster increase in Females, then males, which is good.

Over all there has been an increase in the enrollment of Students based on their ethnicity. The one decline has a 15% decrease in male Hispanics.

Student Age

?There is a wide spread for the ages of students in the CS program. There is a steady increase in the number of High School students enrolled. The age ranges from 18-28 have shown a great increase in enrollment.

Under 18

2013/2014	34
2014/2015	45
2015/2016	54

This can be attributed to the increase awareness by The High School student word of mouth to other students letting them know that Canada College has a great and very accessible program for them.

The majority of the student increases are in the 18-28 year range.

Age 18 - 28

2013/2014	181
2014/2015	272
2015/2016	300

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

Search Standards By User

Source: IPR

Cycle: Instructional Program Review 2016-17

User Name: Lead Faculty, Engineering and CS

Response Types: All Responses Types

8-A. Access & Completion

One of the goals of the College's Student Equity plan is to close the performance gaps for disproportionately impacted students. The Equity Supplement data packet indicates which groups are experiencing disproportionate impact in your program. Which gaps are most important for improving outcomes in your program? How can the college help you address these gaps? What changes could be made?

Response Detail

No Response Information to Display

Narrative

Equity Gap.

The Group that is experiencing an equity gap in 2015-2016 is Hispanics

Female Hispanic Students have an access rate of 30% compared to an overall Canada College rate of 60%.

Male Hispanic Student have a access rate of 20% compare to an overall Canada College rate of 35%.

The equity gap for females is somewhat larger. There need to be an recruitment effort for both groups.

Course Success

Among Asians the course success rates for

Females 77% - This is 20% better than Instructional average

Males 62% - this is 7% better than the Instructional average

Among Hispanics, the course success rates for

Females 29% - This is 27% lower than the Instructional average

Males 42% - This is 13% lower than the Instructional average

There is a need to double the normal follow up with Hispanics and have them participate in supplemental assistance: such as the STEM Tutors for Computer Sciences.

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

Search Standards By User

Source: IPR

Cycle: Instructional Program Review 2016-17

User Name: Lead Faculty, Engineering and CS

Response Types: All Responses Types

8-B. Completion - Success Online

The college has a goal of improving success in online courses. Examine the "Course Success and Retention by DE vs Non DE" data table in the "Effectiveness: Success and Retention" data packet. What significant gaps do you see in success between online/hybrid and non-online courses? What changes could be made to reduce these gaps? If your program does not offer online/hybrid courses, please write "not applicable".

Response Detail

No Response Information to Display

Narrative

Our Online class grew fast. The success rate is about 9% lower the online classes.

	In Class	On-Line
2014/2015	52%	61%
2015/2016	51%	60%

The Rate has held steady for the last 4 semesters. One reason that rates are similar is the course content is identical for both classes. The main difference is that when a student takes a on-campus class, they receive in class coding practice and this would help account for the increased success

The success rate that we set as our goal is 70%. Having students not procrastinate, and seek additional help when they need it for the complex subjects discussed in Computer Science classes is essential to increase the rates to 70%+.

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

9.A. SLO Assessment - Compliance

Are all active courses being systematically assessed over a 3-year cycle? Describe the coordination of SLO assessment across sections and over time.

Response Detail

No Response Information to Display

Narrative

Course-level student learning outcomes and department-level learning outcomes for engineering courses have been assessed regularly. Most of the course-level SLO assessment results have been satisfactory. A total of 186 individual course SLO assessment results have been reported in Tracdat, and less than 5% of these results did not meet the criterion. Course level SLO assessments that have yielded unsatisfactory results have been used to make changes in specific courses (length, depth and order of coverage of topics; methods of delivering content and assessing student learning, etc.)

In 2017 Feb a comprehensive review of all courses was done.

Most courses have an update SLO assessment posted in TracDat, as required. It can be difficult with Adjunct Faculty to have them learn and post their course assessments in a timely fashion.

There must be a plan made an put in place to insure training of Adjuncts for posting timely assessments.

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

Search Standards By User

Source: IPR

Cycle: Instructional Program Review 2016-17

User Name: Lead Faculty, Engineering and CS

Response Types: All Responses Types

9.B. SLO Assessment - Impact

Summarize the dialogue that has resulted from these course SLO assessments. What specific strategies have you implemented, or plan to implement, based upon the results of your SLO assessment? Cite specific examples.

Response Detail

No Response Information to Display

Narrative

For engineering courses, results of SLO assessments in minor changes in the courses including changes in the order in which topics are covered, amount of time spent on specific topics, and additional formative assessments (e.g., quizzes) on topics that proved difficult for students.

For CIS, we have implemented additional modalities of delivering content (e.g., videos). The SLO currently in place reflect the key concepts for each of the computer science course descriptions. To truly measure the rate of a student's successfully learns the course material, the selection of the correct SLO's and corresponding assignments do a good job.

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display

10 PLO Assessment

Describe your program's Program Learning Outcomes assessment plan. Summarize the major findings of your PLO assessments. What are some improvements that have been, or can be, implemented as a result of PLO assessment?

Response Detail

No Response Information to Display

Narrative

We have not yet addressing PLO. There is not yet a plan. There will be one developed in 2017.

Suggested Follow Ups

Date	Suggested Follow Up
------	---------------------

No Suggested Follow Ups to Display