Fullerton College

Self-study for Computer Science Program
2025

Section 1: Introduction

1. Briefly describe your program, make sure to include how your program helps the College achieve its mission.

   The Computer Science department offers courses primarily for computer science majors, but also for students majoring in engineering and mathematics, who intend to transfer to a four-year or Master's/PhD program. Our students are persistent, intellectually curious, and not afraid to ask questions; as a department we work to meet their enthusiasm.

Section 2: Students

2.1 Student Demographics and Enrollment Trends

1. Using the data provided by the OIE, describe the student population your department serves. Which demographic groups have the most enrollments in your program? Which student groups

are underrepresented in your program? Has the demographic profile of your program changed over the last four years?

Our student demographic breakdown is as follows: gender, 75% male, 17% female, with these percentages remaining steady over the review period. Our largest ethnic demographic is Latina/o/x/e. We have seen a steady increase in headcount and enrollment over the last four years (45% in 24-25), while all other demographic trends remain steady.

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2. Briefly describe course-level enrollment trends in your program over the past five years. Have the enrollment trends in your program changed over the last five years? To what do you attribute any changes or lack of changes?

Enrollment has fluctuated over the last five years, from a high of 862 in 21-22 to a low of 735 in 24-25. The high peak was probably due to all our offering being online during the pandemic, allowing us to draw from a wider pool of students. The current dip is, we suspect from conversations with academic and industry peers, due to the preset downturn in technology hiring in the US, as well as the *perception* that AI is/will make computer science obsolete as a field.

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3. How do you monitor and modify course offerings, including time and modality, to ensure that students' needs are being met?

We track prior years' schedules and enrollments (both initial schedule and the final schedule/enrollment after census, as sections may have been canceled or added due to demand). While we've historically offered evening and Friday/Saturday classes, these have been less popular in recent years, frequently fail to run. We generally plan Fall-to-Fall and Spring-to-Spring, although we have added additional sections in a Spring semester if the preceding Fall seemed to warrant it.

2.2 Student Achievement

1. Using data provided by the OIE, describe overall student achievement counts, rates, and trends in your program over the past five years, these include: course success rates, degrees/certificates completion counts, transfer counts, licensing, job placement, wage improvements (not all of these measures apply to every program).

Our success rates have gradually increased over the review period, with an average success rate of 53%. On a course level, our 200-level courses have the highest success rates, at ~70%. While our introductory course has historically had the lowest success rates of all our courses, this was *not* true in 24-25, with CSci 123's success rate increasing

from a historical average of 45%, to 56%. We'll see if this increase persists.

Most students (~65%) in our program transfer, with the majority taking 3-5 years to do so. Degrees awarded tracks enrollment, following its peaks and troughs.

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2. Are there student groups whose success rates are below the institution-set standard or whose success rates are below other student groups? What factors can explain this?

As mentioned previously, our average success rate is 56% (for 24-25), which is itself below the ISS. Hence, almost all groups are below the ISS. Computer science as a field often has relatively low success rates, with a common explanation being student preparedness (high-school level computer science education is often minimal and/or largely unrelated to college-level computer science). (See our progress on our "pre-introductory" CSci 100 course, later, for our efforts to address this.)

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3. In terms of your degree and certificate completers, are there any groups who are underrepresented in your completion data compared to the overall enrollment in your program?

Interestingly, there are not! Degree completion, disaggregated by ethnicity/gender, strongly tracks headcount/enrollment percentages.

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4. Are your students completing your degree and certificate program requirements in the expected time frame? Are there certain groups whose rates are below other student groups? Discuss any efforts to improve time to completion.

The average time-to-completion is 4.5 years; the average is slightly higher for Latina/o/x/e students, slightly lower for Asian students. Female students complete our program significantly faster: 3.7 years on average, vs. 4.75 years for male students.

We offer both Summer and Winter intercession courses, and are considering offering late-start courses as well, but our time-to-completion reflects our lower success rates; we expect that efforts to improve student success will be reflected in improved time-to-completion as well.

2.3 Student Learning Outcomes

1. Describe your program's processes and practices for defining, assessing, and analyzing

student learning outcomes at the course (CSLO) and program (PSLO) level. Include a discussion of how your program uses the results of CSLO/PSLO data to inform course and program improvement efforts.

Course SLOs are assessed according to the standard CSLO schedule; their assessment is generally incorporated into the final exams of the courses to be assessed. The results are then reviewed during a later department meeting, and compared with success rates for the course in question. If there are significant differences between the two, we would investigate further and either suggest changes to the course pedagogy, or perhaps revise the CSLO, but this has not occurred in the review period.

PSLOs are still assessed by being mapped from CSLOs. We are working toward a separate, independent assessment for our PSLOs, but this is made difficult by the fact that there is not a single "exit course" for our program: depending on the transfer destination, students may end their time with us in any one of CSci 223, 241, or even 133.

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2. (OPTIONAL/NOT REQUIRED) Using the data provided by OIE, describe the most salient results of CSLO or PSLO mastery rates. Did you find significant differences by race, ethnicity, gender, and other categories?

NOTE: SLO data was not provided by OIE in time for this review; instead, we generated reports from eLumen on P/CSLO performance for review.

CSLO performance largely tracks the same trends mentioned previously with respect to student success. CSLO performance is higher, percentage-wise, than student success, since CSLOs are assessed as part of final exams and thus do not include students who have withdrawn prior to that point.

As mentioned in the previous question, PSLO are currently derived directly from CSLOs, and thus do not represent a separate data point for us. Again, we are working to separately assess PSLOs.

Section 3: Other Areas of Program Effectiveness

1. Document any substantial changes to your program curriculum since the last review and discuss what prompted these changes. Looking forward, what changes to the curriculum do you plan based on the emerging needs of your discipline, industry, student population, etc.

We have added three new courses, due to start in Fall 2026: CSci 100, a "pre-introductory" course for students with no/little prior programming experience, CSci 298, a seminar course, and CSci 299, an independent-study course.

We also have an introduction to data science course in the pipeline, CSci 190, which if all goes well will launch in Fall 2027.

The largest change affecting our field is of course the advent of generative AI in the form of large language models. While there is some popular perception that "AI can do all the coding" and "computer science is dead", our conversations with peers in industry suggest that AI is actually creating a *greater* demand for skilled software engineers, but at the same time reducing the demand for junior, less skilled engineers. The contradiction is apparent: how do you get skilled senior engineers if you have no juniors? We and other computer science programs are still trying to determine how we fit into this new setting.

(In the event that AI really *does* advance to the point where it can do all the coding, this author's backup plan is to open a hamburger restaurant.)

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2. Please briefly describe opportunities your students have to apply and deepen knowledge and skills through projects, apprenticeship, internships, co-ops, clinical placements, group projects outside of class, service learning, study abroad, and other experiential learning activities that you intentionally embed in coursework or elsewhere in your program.

While individual instructors incorporate group projects into their course designs, we do not currently have a department-wide effort to build out this aspect of our program. We do maintain a list of local employers who have previously recruited students for internships, as a resource for students.

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3. Describe any laws, regulations, trends, policies, procedures, or other influences that have an impact on your program. These can include things like Vision 2030, CALGETC, Common Course Numbering, etc.

Aside from changes to course numbering affecting our prerequisites, there are no laws/regulations affecting our program.

Section 4: Faculty and Staff

4.1 Population and Demographics

1. Using the data provided by OIE, describe your program's staff (full-time/part-time faculty, nonfaculty, classified). How reflective of your program's student population is your staff?

Our department consists (as of Fall 2025) two full-time faculty members and five adjunct faculty members. While our faculty demographics are not as diverse as our student population, we are not uniform, either, with our faculty

being approximately one-third Asian, one-third Latina/o/x/e, and one-third White.

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2. Describe your program's staffing changes since fall 2021. How have these changes impacted your program's ability to achieve its strategic action plans?

One full-time faculty member retired at the end of Spring 2024, while two new adjuncts were hired in Summer of 2025. These additional adjuncts will be helpful as we add new course offerings to our schedule, starting Fall 2026.

4.2 Staff Support and Professional Development

1. Describe the regular discussions your program faculty are having about equitable grading, attendance, late work, extra credit policies, and other strategies to support equitable student success.

Pedagogy, grading, and equity issues are discussed formally at regular department meetings, as well as informally through discussion and collaboration. Our faculty have shared knowledge of new and more equitable grading systems, methods for assessing students in asynchronous courses while minimizing the impact of cheating, and new tools for communicating with students and encouraging student-to-student interaction.

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2. How have these conversations shaped practices or polices in your program? What action has arisen from these discussions? If no action has been taken, why not?

Most of our instructors use a common "FCCSCI server" environment for student work; this shared computing system leads to sharing of techniques. For example, one of the authors of this review (Andrew Clifton) installed a tool for use in his courses, but emailed the department to make everyone aware of its installation; this led to a few other instructors adopting the same tool in their course content. One of our adjuncts adopted Linda Nilson's "Specifications Grading" after a discussion with a full-time faculty member who enthusiastically recommended it.

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3. What additional areas of professional development could help your faculty and staff engage in this work?

We are interesting in attending conferences and looking at research specifically targeting computer science education.

Section 5: Program Planning

5.1 Progress on Previous Strategic Action Plans

1. Please discuss the goals (Strategic Action Plans, SAPs) from your last self-study. Assess and explain your progress on each of the SAP.

Our previous SAPs included 1) increasing retention and success rates, 2) offering preparatory “boot-camp” sessions 3) developing a “pre-introductory” CSci 0 (now officially numbered CSci 100) course, 4) exploring a data science course and 5) update classroom and lab technology.

Of these, we noted above that retention and success *have* increased since the previous review cycle. In addition, we will be offering CSci 100 in Fall of 2026, and hopefully CSci 190, Introduction to Data Science, in Fall of 2027. The only SAPs not achieved were (2), which did not come to fruition due to lack of available faculty, and (5) which was not funded.

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2. If additional funds were NOT allocated to you in the last review cycle, how did the LACK of funds have an impact on your program?

The only SAP for which we previously requested funding was (4), upgrading classroom/lab technology. While funding was not allocated for this SAP, some of the technology requested (projector upgrades) was obtained as part of ACTs normal upgrade processes, and thus did not impact our program.

SAPs

Increase retention and success rates

Short Description:
As mentioned, we have several new course offerings to be launched in 2026/27, at least one of which is specifically targeting underprepared students. We are also looking at attending computer science education conferences.

MeasurableOutcomes:
We expect our success and retention numbers to go up from their 2024/25 levels.

College Goals:
3.3 Reduce equity gaps in transfer attainment

SAP Phase:
In Progress

Offer intersession preparatory seminars to help incoming students become better oriented

Short Description:
Having a preparatory “boot camp” available before the semester begins can help students become acquainted with some of the complex tools and concepts that will be required of them in the forthcoming semester. This should have a positive impact in reducing achievement gaps, especially outreach is extended to students in disadvantaged or underrepresented groups.

Measurable Outcomes:
We hope that this wlll reduce achievement gaps, particularly for students in our introductory course (CSCI 123).

College Goals:
3.2 Reduce equity gaps in degree/certificate completion

SAP Phase:
In Progress

Continue development of CSci 190, Introduction to Data Science course

Short Description:
We are building out the curriculum and resources for an introduction to data science course, with the long-term goal of building a sequence of data science courses.

Measurable Outcomes:
Increased enrollments in this and other adjacent courses.

College Goals:
3.2 Reduce equity gaps in degree/certificate completion

SAP Phase:
New

Resource Requests

Replace CSCI instructor office chalkboard with whiteboard, 8'x4'

Enhancement:
Our shared CSCI instructor office currently only has an ancient chalkboard for us to use when meeting with students. Replacing this with a whiteboard would make discussions with students

during office hours smoother. https://everwhiteboards.com/product/1-inch-ghost-grid-whiteboard-magnetic/

Personnel-Related:
n/a

Resource Category:
Equipment

Quantity:
1

Unit Cost:
$650.00

TotalCost:
$650.00