ANNUAL PROGRAM REPORT

College	CSCI
Department	Computer Science
Program	Undergraduate Computer Science
Reporting for Academic Year	2022-2023
Last 5-Year Review	2022-2023
Next 5-Year Review	2027-2028
Department Chair	Levent Ertaul
Author of Review	Fay Zhong
Date Submitted	10/01/2023

I. SELF-STUDY

A. Five-Year Review Planning Goals

The Bachelors Computer Science program goals from the last 5-year review include the following:

Curriculum:
1. Provide education on the most up to date and current technologies aligned with the department mission and priorities.
2. Improve/update existing labs and try to set up new labs, and continue to make changes to curriculum in order to adapt to new realities.
3. Continue to serve as academy centers and improve collaboration with these centers to use their provided resources for courses.
4. Include lab components for CS 301, CS 311, CS 401, and CS 441 classes without increasing the Computer Science Major Requirements.
5. Assess PLOs in required courses and analyze results to continually improve courses.
6. Regularly evaluate the possibility of accreditation from the Accreditation Board for Engineering and Technology (ABET), which provides accreditation for Computer Science programs.
7. Regularly re-evaluate the introductory programming sequence, develop new courses, and increase the number of courses that are taught in online or hybrid modes.

Students:
1. Provide ongoing support for students who are continuing through the semester conversion.
2. Improve the student experience, increase retention and the graduation rate, and decrease the time to graduation.
3. Continue to provide formal advising by supporting an Undergraduate Coordinator for advising students in the bachelor's program.
4. Offer more courses in different modalities to serve students who need schedules that are more flexible.
5. Provide opportunities for students to form a community within the department.
6. Support the existing Computer Science clubs, and continue to conduct regular hackathons and industry visits to campus.

7. Work with AACE on internship and job recruiting on campus, and manage enrollment in the undergraduate programs.

Faculty:
1. Recruit new tenure-track faculty to provide opportunities to offer classes and research support in current Computer Science areas.
2. Create schedules that reduce the number of preparations for faculty and address the teaching load concerns.
3. Encourage professional development and address support for faculty supervision of student research.

Resources:
1. Address the need to co-locate faculty, lecturer, and teaching/research lab space to provide opportunities for faculty and students to work together more easily.
2. Address the need of a dedicated technician who will support teaching and research activities for Computer Science faculty and students.
3. Continue to work with ITS (Instructional Technology Services) to support teaching and research needs.
4. Upgrade labs and computing environments, address need for library support and continue to develop the Industry Advisory Board.
5. Address the need of funding for graders/TAs, professional development, and travel to academic conferences.

B.   Progress Toward Five-Year Review Planning Goals

The following are areas where significant progress was made:

Curriculum:
The Department has successfully implemented semester-based courses as defined by transformed syllabi. The undergraduate Computer Science committee continue to annually re-evaluate the choice of the language used in the introductory programming courses based on assessment data, pass rate, and other factors, to ensure that students are being provided the best learning experience possible. New topics courses in current areas have been offered at the undergraduate level, including Linux programming, Blockchain, Deep Learning, Quantum Computing and Interview skills. We also offer "CS170 - Cyber Security Awareness for Everybody: How to protect yourself in Cyber Space" as an Area E course. We are discussing the possibility of having at least one section of each course offered in an online format in the future.

Students:
Overall enrollment in the B.S. Computer Science program has increased from 741 in the Fall 2021 to 763 in Fall 2022. The Department and campus firmly believe that advising is a key component to undergraduate success. Freshman students all now have dedicated advisors during their first year and have their schedules determined based on their major. In the future, this could potentially be transformed into a cohort-based program and help to build community. The undergraduate committee will be looking at such a program in the future. The Department is currently pursuing grants to support such a program and to help build community within the computer science student body. Transfer students are offered multiple opportunities each semester to attend CS specific orientation given by the CS Undergraduate Coordinator and Janet Snyder. We have found funding for the undergraduate advising role through the Faculty Advising Fellow position, which offers a course release. As this campus role is highly relevant to the position, this has proven advantageous. As long as the Faculty Advising Fellow position continues to offer a course release, the undergraduate advisor position can continue to exist to support our students. While other mechanisms for advising may exist, the expertise of a tenure-track

faculty member is not easily replaced. The Department is continuing to hold regular undergraduate "Town Hall" meetings to get feedback from students and to increase the sense of community within the major.

Faculty:

This past year, the Department attempted to hire two full time tenure-track faculty members. Tiantian Chen was hired as a new tenure-track faculty member. Her expertise in machine learning, social networks, and algorithms will be very beneficial to students and the Department. David Yang has retired. Several faculty members have taken on a significant number of student research and capstone projects. Based on the policy set by the college of science, and conversations with the College of Science Dean and Assistant Dean, these faculty members will be able to receive a course release to support this work.

Resources:

The Computer Science program needs resources such as teaching/research laboratories and office space. Moving to the SF building was a positive experience, however, we worry that there will not be enough room for our new hires. In addition, we received A2E2 funding to purchase new equipment and continue to build our labs. We have more than 50 types of lab equipment including routers, sensors, GPU servers, XR headsets, drones, 3D printers, robotic arm, etc. We need physical lab space to store the equipment and to allow faculty and students to work on their research projects. We also need a dedicated laboratory technician to manage the hardware and update the software in the teaching/research labs for Computer Science faculty and students.

C. Program Changes and Needs

Overview:

The Department of Computer Science has a proven track record of success. Our graduated students are quite successful in Silicon Valley and in the national and international IT sector. In November 2014, The Washington Post reported that CSUEB Computer Science graduates were ranked #9 nationally in terms of career earnings, and ranked #7 nationally for the best rate of return for both in-state and out-of-state tuition. According to exit surveys done by AACE, Computer Science majors are the most successful of CSUEB graduates at finding degree-related employment within one year of graduation.

Undergraduate computer science student enrollment has increased by 28% from 596 in the Fall 2018 to 763 in the Fall 2022. While the Department did increase the number of full-time tenure-track faculty during this time from eleven to thirteen, the growth of students has required the Department to be dependent on lecturers. We are also facing space issues with regards to computer labs, teaching labs, and office space. In addition, we currently have no dedicated technician for the computer science department. We would like to eventually have this position to support the computer science department full time.

Covid-19 is the most notable event that continues to affect the department. This has caused significant strain on underrepresented groups. As many students have families and work part-time in order to pursue their education, this has greatly affected our student body. Any budget cuts to the Department funding would affect the ability of faculty members from completing research projects as this may affect the ability to have readers or TA's. Despite this world-changing event, enrollment has remained very strong. Faculty in the Department were able to transition well to the new online format given the circumstances.

Curriculum:

The department is currently investigating retention of online teaching as part of the program in the long term. If our department decides to proceed, several courses will likely add Hybrid as an instructional mode.

Students:

A significant number of students have been found to take courses without the required prerequisites. Given the linear nature of the material in Computer Science, this has led to students receiving DFW grades, as they do not possess the required skills to complete upper division work. Currently, it is left to instructors to enforce perquisite courses. One notable prerequisite that needs to be enforced is CS301 Data Structures and Algorithms. This upper division course is foundational for many courses and cannot be fulfilled at a community college. Starting Fall 2021, the CS301 prerequisite is automatically enforced for most upper division courses. We will be interested in seeing the effect on the DFW rates in the future semesters.

Academic dishonesty continues to be an issue. The current departmental policy states that students with an academic dishonesty report may not be graders and cannot take the Coop course. The undergraduate and graduate advisors as well as with the Department Chair meet with all students cited for academic dishonesty. With regards to internships, we have started tracking students who take internships for credit.

Faculty:

Hiring continues to be challenging for the Department. The Department has been able to expand the pool of applicants by emailing professors at other institutions directly rather than rely solely on traditional job postings. While this strategy greatly increased the number of applicants, this also required a great deal of time for our administrative staff. This past year, the Department attempted to hire two full time faculty members early in the hiring cycle to maximize our chances of a successful search. The Department extended one offer in 2022, which has been accepted. Potential candidates consistently report that they were deterred from accepting our position due to the cost of living in the Bay area and CSUEB's compensation. We currently have 51% of our undergraduate sections taught by full-time tenure track faculty. The following are our current faculty members:

Name	Time Base
Brown, Kevin	1.0
Chen, Tiantian	1.0
Christianson, Leann	1.0
Derakhshandeh, Zahra	1.0
Daneshyari, Moayed	1.0
Erickson, Varick	1.0
Ertaul, Levent	1.0
Grewe, Lynne	1.0
Johnson, Matt	1.0
Li, Hongmin	1.0
Roohparvar, Farzan	1.0
Ruan, Xiojun	1.0
Zhong, Fay	1.0
TOTAL FTEF	**13.0**

Given the rapid growth of our program, it will be critical to hire more tenure-track faculty.

To do so, the Department may have to offer salaries that are more competitive. For the 2024-2025 academic year, we may have up to four faculty members on leave. One great concern is that the university only offered the department a single hire for the 2024-2025 school year. However, last year we were not able to fill two tenure track positions, and this year one of our tenured faculty just retired, another tenured faculty will retire soon by the end of the academic year. In the next 5 to 8 years, as more senior faculty FERP or retire, we need to make sure our department has enough mid-career faculty to ensure continuity. If we do not address this issue now, it will only become increasingly challenging to resolve and may force our department to become impacted. For the department to continue being successful, the department needs to consistently hire and retain tenure-track faculty each year.

Since we are short staffed with regards to full-time tenure-track faculty, we rely heavily on adjunct instructors. Also of note, it is difficult to retain quality adjunct instructors. Last year we lost several adjunct instructors because our compensation was not as competitive as the compensation offered by Community Colleges. For example, one adjunct instructor was offered a full-time tenure-track position at a community college for a salary of approximately $90,000/year. In comparison, our department was only offering $60,000/year compensation for the same course load. The same instructor indicated they would have preferred to stay at CSUEB had the compensation been more competitive. Another adjunct instructor indicated they would consider leaving their tenure-track position at the community college if a similar position were offered at CSUEB with similar salary. If we could advocate the hiring of permanent teaching professors/lecturers with salaries at matching community colleges, this would greatly improve our ability to attract and retain instructors.

Staff:

Administrative help is required by the Department. In the past, we have had funding to support student workers with various tasks. However, due to reduced funding we are unable to hire students for this purpose. Coordination has been done at the college level to help support our office by adjusting roles and responsibilities within other offices on campus. This year the college of science has reorganized our administrative staff from a department-based model to a new system called Administrative Hubs, where Stephanie Wiley and Stacy Sahagan will join the CS/ENG hub with Karina Mendez Martinez to support both Computer Science and Engineering departments. Our staff members are as follows:

Name	Time Base	Shared With
Mendez Martinez, Karina	0.5/0.5	Engineering
Synder, Janet	0.5/0.5	Mathematics
Sahagun, Stacy	0.5/0.5	Engineering
Wiley, Stephanie	0.5/0.5	Engineering

With regards to technical support, Brian Campbell functions as our technician who currently splits his time between the College of Science and IT. However, Brian is leaving this year. Moving forward, we would like to have a dedicated technician to support the computer science department full time, who will manage more than 50 types of lab equipment and install/update software on those lab equipment for computer science faculty and students.

To reiterate, we need additional staff to serve the approximately 1,000 students in our department.

Resources:

Currently our classroom labs are SC N336, AE 0393 and a small room SC N104 which are all shared. They are just CS teaching Labs. With the growth of the Department that is 28% in last five year, the needs for adequate classrooms have been increasing. Specifically, classes with lab components have also increased the demand for classrooms with computer labs. Since we do not have adequate lab spaces, we are having difficulty with offering new courses such as XR, Deep Learning, and Introduction to Drones. Therefore, we need more instructional labs to offer those classes.

The department also needs more physical lab space for research. Currently, we have seven labs including the computer networks and network security lab (CNNS), XR lab, AI and deep learning lab, parallel computing lab, drone lab, IoT lab, and iLAB. We have more than 50 types of lab equipment including routers, sensors, GPU servers, XR headsets, drones, 3D printers, robotic arm, etc. However, we do not have any dedicated rooms for each lab, but only a small room in VBT 218 for the computer networks and network security lab, which is an instructional lab for teaching CS 441. We temporarily share space with other departments in SCS 125 to store our lab equipment for the other six labs. However, this lab will be converted to a classroom for another department to use starting next year. Therefore, we desperately need more lab space to store the equipment and to allow computer science faculty and more than 1,000 computer science students to work on their research projects.

The need for additional resources to fund graders, Teaching Assistants, and travel to academic conferences continues to be critical for the Department. The lack of funding is especially an important factor as we attempt to hire new faculty who are especially in need of grading support and are expected to publish and present at conferences. This greatly affects the ability of new tenure-track faculty to pursue research.

II.   SUMMARY OF ASSESSMENT

A.   Program Learning Outcomes (PLO)

BS Computer Science Program Learning Outcomes (PLOs)

Students graduating with a B.S. in Computer Science will be able to:

1. Apply knowledge of mathematics and computational theory to analyze problems in computer science, and identify and define the resources and requirements needed for their solution.
2. Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
3. Recognize and distinguish the mechanisms, components and architecture of computing systems.
4. Employ current techniques, skills, and tools necessary for computing practice, and recognize the need for continuing professional development.
5. Identify professional, ethical, legal, and security issues and responsibilities and the impact of computing on individuals, organizations and society.
6. Perform successfully on teams to accomplish a common goal, and communicate computer science concepts effectively in written and oral form.

Program Student Learning Outcome(s) Assessed

Last year we evaluated PLO 5 in CS 471. This year we will evaluate PLO 1 and PLO 6 in

CS 401 and CS 411.

B.   **Summary of Assessment Process**

Instrument(s):
We assess each PLO using a standardized multiple-choice test that is created for each course. Each test has 10 questions and the tests are administered by the instructor at the end of the semester.

Sampling Procedure:
Assessment quiz was given to students in one section of CS471 offered last year. Average score of the assessment quiz is used to analyze the results.

Sample Characteristics:
All students taking CS 471 are required to complete the assessment test. All scores are collected.

Data Collection:
Instructor gathers results and sends them to the undergraduate assessment coordinator.

Data Analysis:
Assessment coordinator compiles the results in tabular form. This data is shared with the undergraduate committee for curricular changes, areas of concern, and general comment.

C.   **Summary of Assessment Results**

Main Findings:
Last year we assessed PLO 5, which was assessed in one section of CS 471 Security and Information Assurance offered in Spring 2023 (1 section, 27 students).

	Total Samples	Average
Spring 23, Section 1	27	73.7%

Recommendations for Program Improvement:
Students did well in the Spring 2023 semester with an average score of 73.7%. This score is likely affected by the mode of instruction. The Spring sections were taught hybrid or online synchronous.

Next Step(s) for Closing the Loop:
For changes made to close the loop, new PLO's have been created for semester conversion. We have created standardized assessment quizzes for all required courses. Each quiz addresses a single PLO. With the assessments established, we plan to start looking for trends as data is collected and develop actionable strategies to address issues we find.

One area we are interested in examining is the effectiveness of the various modes of online instruction. Online instruction offers the benefit of reduced commute time and the ability of students to balance work with school. However, initial data suggests that the method of online instruction can greatly affect the learning effectiveness.

Other Reflections:

Based on anecdotal information, many students seem to greatly prefer online instruction. It allows for greater flexibility and gives them more time to spend on study since the commute time is reduced. It also allows for potentially reduced cost as students can live in lower cost areas. This could potentially benefit URM's as most CSUEB students commute. However, there is still uncertainty regarding the effectiveness of online instruction. Over the next few years, a balance between online and on-ground instruction will need to be reached. We need to determine what best supports our students.

D. Assessment Plans for Next Year

Next year we will be assessing PLO 2 in CS 413. We will continue to examine and revise curriculum and assessments based on the data gathered.

III. DISCUSSION OF PROGRAM DATA & RESOURCE REQUESTS

A. Discussion of Trends & Reflections Notable Trends;

Over the past few years, based on the University Dashboard data as shown in the Appendix, the undergraduate computer science student enrollment has increased by 167 (28%) from 596 in the Fall 2018 to 763 in the Fall 2022.

Freshman Enrollment in the CS undergraduate program has increased by roughly 50% this year, and many CS courses have large waitlists. In the Fall 2022, the computer science department served a total of 1,011 undergraduate and graduate students.

When it comes to race and ethnicity of the undergraduate computer science students, we noticed a steady increase in the percentage of Latinx students from 116 (19%) in the Fall 2018 to 186 (24%) in the Fall 2022. Also from the Fall 2018 to the Fall 2022, Asian students increased from 215 to 302, Black students increased from 31 to 40.

If we consider the percentage of female students, it steadily increased from 17% (103) to 19% (146) from the Fall 2018 to the Fall 2022. On the other hand, the total number of male students also increased from 493 to 616 from the Fall 2018 to the Fall 2022.

It is notable that the first generation undergraduate computer science students increased from 286 (48%) in the Fall 2018 to 420 (55%) in the Fall 2022. In addition, first-time freshmen increased from 286 to 330, and transfer students increased from 310 to 433 from the Fall 2018 to the Fall 2022.

The graduation data shows that 138 transfer students in undergraduate computer science program graduated in 2.2 years, and 40 first-time freshmen students graduated in 4.7 years on average.

The APR coursework data shows that our FTES increased from 361.5 to 536.3, and FTEF increased from 13.6 to 18.1, SFR increased from 26.6 to 29.6 over the past few years from the Fall 2018 to the Fall 2022.

Reflections on Trends and Program Statistics:

We will continue to have problems in the future to find lecturers and/or tenure-track faculty with PhDs and teaching experience if we are not able to offer suitable compensation to match market demand for computer science and the high cost of living in the bay area.

We run one of the largest programs in the college of science, which brings approximately 10 million dollars to the university annually. For ABET and for our department, the majority of undergraduate CS courses should be taught by regular faculty with PhD degrees. To sustain this standard, we need to hire more faculty. Otherwise, our department will soon reach our resource limits to support additional students.

B. Request for Resources

1. Request for Tenure-Track Hires: provide evidence from trends provided

The Department request three tenure-track hires at the rank of assistant professor for the following reasons:

- Freshman Enrollment in the CS undergraduate program has increased by roughly 50% this academic year, and many required CS courses have large waitlists.

- The National Academy of Science, the Bureau of Labor Statistics, ABET and other data sources all predict a 30% upswing in CS enrollment trends annually during the next five years.

- The Department of Computer Science was not able to fill two tenure track positions last year.

- One tenured faculty retired last year. Another tenured faculty will retire this year. A third tenured faculty will start FERP next year.

- We request offer increase of at least 20% for TT faculty candidates comparing to last year accepted offer. In last five years we were never able to hire any TT candidate who were in top 2-3 list.

New hires are therefore necessary to accommodate current and future student demand for the major. This would positively affect the graduation rates of our majors, as students would be able to enroll in the courses they need to graduate on time. It would also enable the department to offer better advising to all majors, thereby improving achievement gaps.

Due to the plethora of technology jobs in nearby Silicon Valley, it is extremely difficult – and often impossible – to find qualified temporary faculty to teach upper division or graduate courses in the discipline. It is therefore essential that we bring new tenure-track faculty members onboard.

In order to meet ABET accreditation standards, at least 50% of CS courses must be taught by tenure track faculty. This semester (Fall 2023), 51% of courses with the CS-prefix were taught by tenure-track faculty in our department. However, given our enrollment growth, we will need additional tenure track faculty if we are to pursue ABET accreditation. To our knowledge, we are the only remaining program in Computer Science within the CSU that is not already accredited.

Faculty attrition has diminished our coverage of key areas in the discipline, and we have sharply curtailed many elective offerings in the major as a result. A new hire would allow us to align the department's curriculum and research efforts with emerging technologies. As a rapidly changing applied discipline, Computer Science must continually evolve in order to provide our graduates with key knowledge and skills demanded by industry.

2. Request for Other Resources

The Department of Computer Science faces a critical shortage of computer labs for teaching and research. Computer Science is a laboratory discipline. Most of our major courses need to have computers available in the classroom. Without the needed instructional labs, we are unable to deliver our curriculum. The department currently has more than 1,000 undergraduate and graduate majors, and enrollment is predicted to increase sharply for the next five years.

We currently have only three, shared, computer classrooms available to support our program: SCN 336, SCN 104 and a classroom in AE 0393. Through the generosity of the College of Science, the department was able to create an open Computer Science Lab for students to use outside of the classroom in SC N337. As our external reviewer mentioned, when we seek accreditation our relative lack of teaching and experimental lab space would be a major concern to the accrediting board.
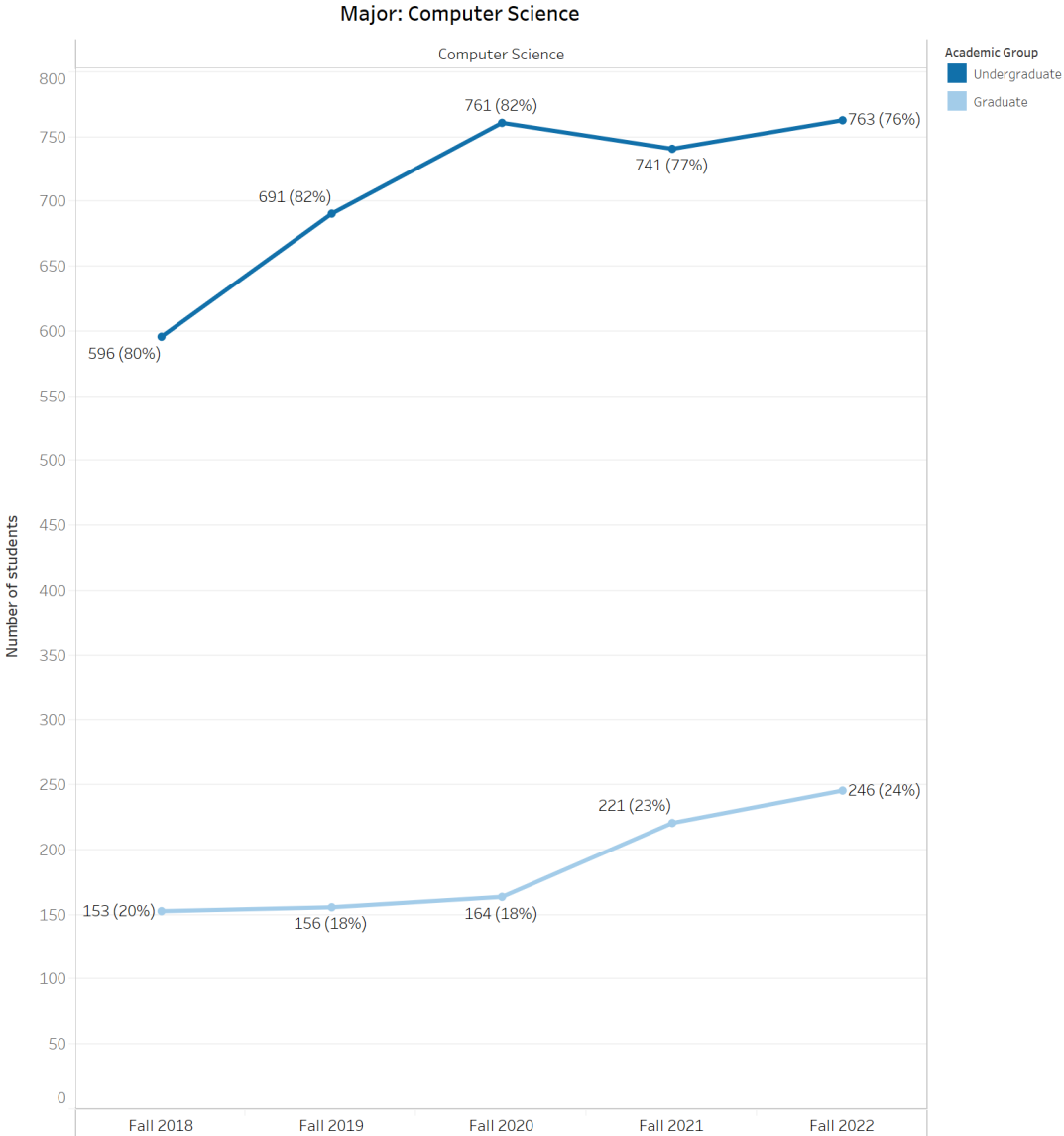
The department is currently involved in discussions with the Dean of the College of Science in order to address the lack of teaching lab space. It seems that CS will have yet another shared lab space in this new science building. This could be enough for some research activities but it is not definitely enough to teach XR and Drone classes for example. We need a permanent, CS only, teaching labs.

When it comes to research labs, the department needs more physical lab space, since we don't have any dedicated rooms but only shared space with other departments. Currently we have seven labs, include the Computer Networks and Network security lab (CNNS), XR lab, AI and Deep learning lab, Parallel Computing lab, Drone lab, IoT lab and iLAB. We have more than 50 types of lab equipment including routers, sensors, GPU servers, XR headsets, drones, 3D printers, robotic arm, etc. We need more lab space to setup the equipment and to allow faculty and students to work on their research projects.

With regards to technical support, Brian Campbell functions as our technician who currently splits his time between the College of Science and IT. However, Brian is leaving this year. Moving forward, we would like to have a dedicated technician to support the computer science department full time, who will manage the lab equipment and install/update software on the equipment for computer science faculty and students. We have to point out that CSUEB CS department is the only CS department in CSU an UC systems who has not have its own technician

We also need additional staff to serve the approximately 1,000 students in our department. In the past, we had three staff members to serve our department. This year, after the new administrative hub was created, we have to share all three staff members with another department. Considering the notable trends of enrollment increase in our department, we need approximately 2 more staff members to join the CS/ENG hub next year.

IV.   <u>**APPENDIX**</u>

Major: Computer Science

Computer Science

Number of students

	Fall 2018	Fall 2019	Fall 2020	Fall 2021	Fall 2022

Undergraduate: 596 (80%), 691 (82%), 761 (82%), 741 (77%), 763 (76%)

Graduate: 153 (20%), 156 (18%), 164 (18%), 221 (23%), 246 (24%)

Academic Group
- Undergraduate
- Graduate

Computer Science: Concentration

		Fall 2018		Fall 2019		Fall 2020		Fall 2021		Fall 2022	
		n	%	n	%	n	%	n	%	n	%
Undergraduate		561	94%	675	98%	755	99%	739	100%	763	100%
	Computer Engineering	7	1%	2	0%						
	Networking & Data Communic	4	1%	3	0%	2	0%				
	Software Engineering	24	4%	11	2%	4	1%	2	0%		
	Total	596	100%	691	100%	761	100%	741	100%	763	100%
Graduate		117	76%	73	47%	41	25%	33	15%	1	0%
	Computer Networks	4	3%	3	2%	1	1%	2	1%	1	0%
	Computer Science	32	21%	80	51%	122	74%	186	84%	244	99%
	Total	153	100%	156	100%	164	100%	221	100%	246	100%
Postbaccalaureate										2	100%
	Total									2	100%
Grand Total		749	100%	847	100%	925	100%	962	100%	1,011	100%

Computer Science: Race/Etnicity

		Fall 2018		Fall 2019		Fall 2020		Fall 2021		Fall 2022	
		n	%	n	%	n	%	n	%	n	%
Undergraduate	Asian	215	36%	264	38%	300	39%	309	42%	302	40%
	Black	31	5%	30	4%	46	6%	41	6%	40	5%
	International	84	14%	81	12%	83	11%	71	10%	67	9%
	Latinx	116	19%	143	21%	150	20%	160	22%	186	24%
	Multirace	23	4%	25	4%	26	3%	29	4%	33	4%
	Native American	1	0%	1	0%	1	0%				
	NHPI	8	1%	4	1%	7	1%	6	1%	9	1%
	Unknown	26	4%	32	5%	36	5%	30	4%	32	4%
	White	92	15%	111	16%	112	15%	95	13%	94	12%
	Total	596	100%	691	100%	761	100%	741	100%	763	100%
Graduate	Asian	17	11%	15	10%	22	13%	19	9%	9	4%
	International	127	83%	129	83%	131	80%	190	86%	229	93%
	Latinx	1	1%	1	1%	3	2%	3	1%	3	1%
	Multirace	1	1%	1	1%	1	1%				
	NHPI	1	1%	1	1%	1	1%	1	0%	1	0%
	Unknown	2	1%	1	1%			1	0%	1	0%
	White	4	3%	8	5%	6	4%	7	3%	3	1%
	Total	153	100%	156	100%	164	100%	221	100%	246	100%
Postbaccalaureate	Asian									1	50%
	Latinx									1	50%
	Total									2	100%
Grand Total		749	100%	847	100%	925	100%	962	100%	1,011	100%

Computer Science: Sex

		Fall 2018		Fall 2019		Fall 2020		Fall 2021		Fall 2022	
		n	%	n	%	n	%	n	%	n	%
Undergraduate	Female	103	17%	121	18%	140	18%	135	18%	146	19%
	Male	493	83%	570	82%	621	82%	606	82%	616	81%
	Nonbinary									1	0%
	Total	596	100%	691	100%	761	100%	741	100%	763	100%
Graduate	Female	74	48%	80	51%	100	61%	103	47%	98	40%
	Male	79	52%	76	49%	64	39%	118	53%	148	60%
	Total	153	100%	156	100%	164	100%	221	100%	246	100%
Postbaccalaureate	Female									2	100%
	Total									2	100%
Grand Total		749	100%	847	100%	925	100%	962	100%	1,011	100%

Computer Science: First Generation

		Fall 2018		Fall 2019		Fall 2020		Fall 2021		Fall 2022	
		n	%	n	%	n	%	n	%	n	%
Undergraduate	FG	286	48%	349	51%	388	51%	403	54%	420	55%
	Non-FG	310	52%	342	49%	373	49%	338	46%	343	45%
	Total	596	100%	691	100%	761	100%	741	100%	763	100%
Graduate	FG	55	36%	49	31%	39	24%	23	10%	12	5%
	Non-FG	98	64%	107	69%	125	76%	198	90%	234	95%
	Total	153	100%	156	100%	164	100%	221	100%	246	100%
Postbaccalaureate	FG									2	100%
	Total									2	100%
Grand Total		749	100%	847	100%	925	100%	962	100%	1,011	100%

Computer Science: Admit Type

		Fall 2018		Fall 2019		Fall 2020		Fall 2021		Fall 2022	
		n	%	n	%	n	%	n	%	n	%
Undergraduate	First-time Fr..	286	48%	319	46%	315	41%	306	41%	330	43%
	Transfer	310	52%	372	54%	446	59%	435	59%	433	57%
	Total	596	100%	691	100%	761	100%	741	100%	763	100%
Graduate	First-time Gr..	152	99%	155	99%	163	99%	220	100%	246	100%
	Transfer	1	1%	1	1%	1	1%	1	0%		
	Total	153	100%	156	100%	164	100%	221	100%	246	100%
Grand Total		749	100%	847	100%	925	100%	962	100%	1,009	100%

Computer Science: Class Level

		Fall 2018		Fall 2019		Fall 2020		Fall 2021		Fall 2022	
		n	%	n	%	n	%	n	%	n	%
Undergraduate	Frosh	93	16%	139	20%	118	16%	117	16%	113	15%
	Sophomore	76	13%	56	8%	74	10%	72	10%	89	12%
	Junior	198	33%	180	26%	198	26%	188	25%	185	24%
	Senior	229	38%	316	46%	371	49%	364	49%	376	49%
	Total	596	100%	691	100%	761	100%	741	100%	763	100%
Graduate	Postbacc	153	100%	156	100%	164	100%	221	100%	246	100%
	Total	153	100%	156	100%	164	100%	221	100%	246	100%
Postbaccalaureate	Postbacc									2	100%
	Total									2	100%
Grand Total		749	100%	847	100%	925	100%	962	100%	1,011	100%

Computer Science Program Insights

763
Fall 2022

UG MAJORS
Enrollment has increased 28% in the last 5 years

DIVERSITY
Less than half (29.6%) are URM
(24.4% Latinx, 5.2% Black)

178
AY 21-22

GRADUATES
24% of undergraduates graduated in 2021-22
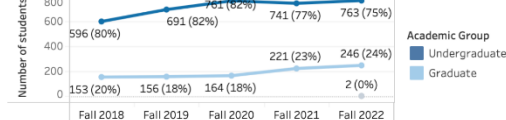
4.7
Years (F)
AY 21-22

2.2
Years (T)
AY 21-22

AVERAGE TIME TO DEGREE
URM Frosh (F): 5.6 Years
URM Transfer (T): 2.3 Years

Non-passing Rates in Highest Enrolled Courses AY 21-22

Grades: DFWU | A | B | C | CR

Course num	Description	n (AY)	Nonpass% (All)	Nonpass% diff (..	Inequity (URM)	Group_URM	n (URM)				
CS 201	Computer Science II	153	22%	12%	▲	URM	50	30% (15)	22% (11)	20% (10)	28% (14)
						Non-URM	103	18% (19)	16% (16)	24% (25)	42% (43)
CS 221	Computer Org & Assem. Lang.	167	20%	7%	▲	URM	31	26% (8)	6% (2)	23% (7)	45% (14)
						Non-URM	136	16% (19)	13% (15)	22% (26)	50% (59)
CS 301	Data Structures & Algorithms	309	18%	3%	▲	URM	73	21% (15)	19% (14)	27% (20)	33% (24)
						Non-URM	236	16% (33)	16% (33)	24% (49)	44% (92)

Computer Science Enrollment - Last 5 Years

Number of students (y-axis: 0, 200, 400, 600, 800)

Undergraduate: 596 (80%), 691 (82%), 761 (82%), 741 (77%), 763 (75%)
Graduate: 153 (20%), 156 (18%), 164 (18%), 221 (23%), 246 (24%), 2 (0%)

Academic Group:
- Undergraduate
- Graduate

(Fall 2018, Fall 2019, Fall 2020, Fall 2021, Fall 2022)

For more information, check out Pioneer Insights.
- Graduation rates are calculated on incoming Fall cohorts.*
- Program Enrollment
- Degree Data
- Course Outcomes (DFW Rates)
- Equity Course Outcomes

Pioneer Insights: data.csueastbay.edu

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Graduation/Degree Data

Time to Degree Years (and Headcount)

		Transfer	Masters & Ed.D	First-time Freshmen
Overall		2.2 (138)	2.2 (67)	4.7 (40)
CSCI	Computer Science	2.2 (138)	2.2 (67)	4.7 (40)