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Page 1: Full-Time Faculty Position Form

Q1

Please enter the following:

Department   **Computer Science**

Position Title   **Computer Science/Computer Engineering Faculty**

Q2

If this position has already been funded, do your want to continue with the current request?

No, the position has not yet been funded

Page 2

Q3

1. Describe why this position is essential to your program and/or service area. How has the lack of this position impacted your program and/or service area? What will be the impact to the program and/or service area if this position is not filled? (Rubric Criterion 1, 3)(300 words or less)

Computer Science/Engineering (CS/CE) and Computer Information Systems (CIS) are VERY distinct fields within the realm of computing, each with its own focus and career paths. CS/CE is an academic pathway requiring transfer to get to jobs like software engineering, while CIS is more of a career/certificate program designed to get students directly into the workforce.

Computer Science's Potential as a Social Mobility Engine
Computer Science (CS) has emerged as a powerful engine for social mobility, offering individuals from diverse backgrounds the opportunity to access high-paying and in-demand careers. Studies have shown that CS education can significantly increase earning potential and job stability. According to a report by Code.org, computing jobs are among the highest paying for new graduates, and the field of computer science is growing at twice the national average rate.* Furthermore, a study by the Pew Research Center highlighted that jobs in computer and information technology are less susceptible to automation, providing long-term career security.** Additionally, CS skills are highly transferable across various industries, enhancing employability and career flexibility. By breaking down barriers to entry and offering accessible pathways through initiatives like online courses and coding bootcamps, CS education is playing a crucial role in empowering individuals to improve their socioeconomic status and build fulfilling careers.

Employment Growth
Employment of computer and information research scientists is projected to grow 23 percent from 2022 to 2032, much faster than the average for all occupations. About 3,400 openings for computer and information research scientists are projected each year, on average, over the decade.***

Interest Growth Paired with Enrollment Loss
San Diego County colleges showed growth in degrees awarded for Computer Science every year in the last decade.**** Yet, Cuyamaca has seen a 40% decline in enrollment over the last 5 years. Meanwhile, our application data and surveys among engineering students in physics courses have shown that self-proclaimed computer science and computer engineering students have increased from 15-50% of the enrollment in those courses over the same period. The vast majority of these students also purport to be taking the bulk of their CS-specific courses at other colleges citing our lack of current/relevant offerings.

IMPACT ON OTHER PROGRAMS
Engineering, Math, Physics, Biology, Chemistry, GIS, Art, Graphic Design, and many others. Most specifically we are currently not supporting the growing number of computer and electrical engineering majors that need our courses to transfer, but also we could do much to support a vast array of other majors needing some programming basics as well as workers coming back for certificates to update their skills.

Limitations for Students Pursuing STEM Careers: For students at Cuyamaca interested in STEM fields, the lack of a CS department could limit their ability to acquire essential skills in programming, data analysis, and other tech-related areas, which are increasingly important in STEM careers.

Reduced Collaborative Opportunities with Local Tech Companies: A functional CS department can foster partnerships with local tech businesses for internships, job placements, and collaborative projects. Its absence could mean fewer such opportunities for students and other departments.

Challenges in Attracting Tech-Interested Students:
Prospective students interested in tech might opt for other community colleges or institutions that offer more comprehensive tech education, potentially decreasing enrollment in related programs at Cuyamaca.

Hiring Issues

Recruiting and retaining full-time computer science faculty is challenging for educational institutions due to the significant salary gap in the tech industry. In the industry, computer science professionals often earn considerably higher salaries. For example, the average salary for software engineers and data scientists can exceed $100,000 annually, with experienced professionals earning even more. In contrast, salaries for computer science faculty in academia are typically lower, often aligning with general academic pay scales which can be significantly less than industry standards. This disparity, coupled with the industry's additional benefits like stock options and bonuses, makes it harder for educational institutions to attract and keep qualified computer science professionals, impacting the quality and breadth of their computer science programs.

* Code.org, CSTA, & ECEP Alliance (2022). 2022 State of Computer Science Education: Understanding Our National Imperative. https://advocacy.code.org/stateofcs
** Pew Research Center, August 2014, "AI, Robotics, and the Future of Jobs" http://www.pewinternet.org/2014/08/06/future-of-jobs/
***Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Computer and Information Research Scientists,
at https://www.bls.gov/ooh/computer-and-information-technology/computer-and-information-research-scientists.htm (visited December 04, 2023).
**** https://datausa.io/profile/cip/computer-science-110701#counties_most_degrees

Q4

2. What are the racial and gender demographics of the faculty within your program? What steps will your program take to ensure this position will promote faculty diversity to reflect the students the college serves, for example: (Rubric Criterion 1)- Participating in professional development related to equity and diversity in hiring- Participating in professional development related to equal employment opportunity (EEO)- Completing EEO Representative Training- Employing strategies to recruit diverse applicants(300 words or less)

To address the issue of faculty diversity, particularly given that the current faculty demographics are predominantly white and male (hey! It matches the equity gaps!), the program can implement a strategic hiring plan for both full-time (FT) and part-time (PT) positions.

Full-Time (FT) Hiring Plan
1. Job Advertisement Posting Strategy:
Post job ads on platforms that cater to a diverse audience, including websites and forums that focus on underrepresented groups in academia and tech, such as Women Who Code, National Society of Black Engineers, Society of Hispanic Professional Engineers, and similar organizations.
Utilize social media channels and networks that reach diverse demographics.
Engage with minority-focused academic institutions and organizations for job posting and networking.
2. Interview Process:
Develop interview questions that assess candidates' commitment to diversity and inclusion, such as their experience working in diverse environments and their approach to inclusive teaching.
Include questions that allow candidates to demonstrate cultural competency and understanding of issues affecting underrepresented students.
Ensure the interview panel itself is diverse, representing different backgrounds and perspectives.
3. Transparent and Inclusive Hiring Practices:
Implement a transparent hiring process that clearly communicates the program's commitment to diversity.
Make sure faculty are trained in EEO practices and have a clear understanding of implicit bias.

Part-Time (PT) Hiring Plan
As this is a lot of work, its implementation would heavily depend on having a full-time faculty member to do the work.
1. Targeted Recruitment Efforts: We plan to reach out to the organizations listed in the full-time approach, but also work with SDCCA and community organizations as well as our student alumni network.
2. Equity-Minded Interview Process: Recognizing the importance of an inclusive hiring approach, we have meticulously revised our interview questions. This revision adheres to equity-minded guidelines, ensuring that our interview process not only evaluates the candidates' professional qualifications but also their commitment to and understanding of diversity, equity, and inclusion in an academic setting.

Q5

3. How will this position improve student learning and achievement, and close equity gaps in access and outcomes in your program?   What steps are you taking to close equity gaps in access and outcome, for example: (Rubric Criterion 2)- modify curriculum to reflect the college's diverse student population- close equity gaps- ensuring equitable access to courses that have pre-requisites- removing barriers for students, especially those from historically marginalized groups- adopt/create no cost/low cost textbooks and course materials(300 words or less)

This position plays a crucial role in enhancing student learning and achievement and closing equity gaps at Cuyamaca College. Recognizing the potential of our program as a potential route to secure, living wage jobs, we are committed to providing accessible educational pathways, particularly to students from historically marginalized groups. Our approach includes:

Closing Equity Gaps: As this department has some of the most egregious representation and success-based equity gaps on campus, a new hire would need to actively modify curriculum and teaching practices to better reflect and resonate with our diverse student population. This involves integrating diverse perspectives, and creating more student-centered assignments such as student-led projects.

Removing Barriers: Our commitment includes removing financial and academic barriers. We have adopted and are creating no-cost or low-cost textbooks and course materials, greatly reducing the financial burden on students. This initiative is supported by the ZTC (Zero Textbook Cost) grant, specifically aimed at making education more affordable.

High-Quality Online Courses: As a subject that lends well to distance education many of our classes have been online since long before 2020. In collaboration with the Engineering and Physics departments, a new faculty member could create high-quality online courses that humanize subjects, making them more accessible and engaging. This approach not only caters to diverse learning styles but also supports students who may have commitments outside of school.

Collaborative Growth with Grossmont: Our commitment extends to working in collaboration with Grossmont, ensuring our program growth is aligned and mutually beneficial. This collaboration is focused on broadening access and enhancing the quality of education provided.

We understand that not providing these pathways exacerbates wealth inequality and stands against our ethical commitment to education. Through these steps, we are dedicated to not just educating but empowering our students, paving the way for their success and, in turn, contributing positively to social mobility.

Q6

4. Has there been or is there evidence to demonstrate that there will be an increase in student demand for your programs and/or services? How are students being adversely impacted without this position? Please discuss supporting data from recent semesters. For example, enrollment trends, waitlist pressures, or wait time for appointments and support services, students served, etc. as they apply to this position. (Rubric Criterion 2)(300 words or less)

At Cuyamaca College, the demand for programs in Computer Science is growing, reflecting broader trends in San Diego County's booming tech industry. This position is crucial in addressing this demand and the related challenges.

Evidence of Growing Demand at Cuyamaca College: We've observed a significant increase in students majoring in Computer Science, paralleled in our Physics and Engineering departments. This growth is indicative of a broader regional trend. However, the absence of this position has pushed students to other colleges where the curriculum is more current.

Regional Trends in San Diego County: San Diego County's tech sector is still expanding, creating a high demand for skilled professionals. This has led to a surge in enrollment in computer science programs across local institutions, including San Diego State University and UC San Diego. The curriculum in these programs is increasingly tailored to meet the specific needs of the local tech industry, highlighting a strong alignment between education and industry requirements.

Impact on Student Opportunities: The growth of the tech job market in San Diego County, as reported by economic development councils and tech industry groups, directly impacts the demand for computer science education. Without this position, Cuyamaca College risks falling behind in adequately preparing students for these lucrative career opportunities.

Closing the Gap: By filling this position, Cuyamaca College can better align its curriculum with industry needs, provide timely support and guidance to students, and keep the students already at our college as well as attract more students from the region.

Q7

5. Which program review goal(s) is this request supporting? Please state how the position will help advance the specific goal(s). Please explain how this position would support historically marginalized groups. (Rubric Criterion 3)

Previous Goal 2:
Increase enrollment by developing a relationship with the Create partnerships with some of the local middle schools (Hillsdale and Emerald), and High schools (Steele Canyon, Monte Vista, Mt. Miguel, and Helix) Tech teachers and become active in supporting their programs.
It would be incredibly difficult to manage this with a part-time instructor as these are long-term relationships.

New Goal 1: Implement Humanizing Online Teaching Practices Focusing on instruction and how faculty interact with students is the most reliable way to close equity gaps.
This is crucial to changing the instructional approach, but needs a central leader and vision at a minimum.

New Goal 2: Create Modern Curriculum/Degrees/Certificates
This goal would add cyber security, cloud computing, and/or a more modern computer science curriculum that better aligns with the current industry to the catalog for these programs. This would give our students the job skills employers are looking for and give us a faculty member who could help us talk to district IT more effectively.
This is going to be very difficult to manage without a full time person invested in making change.

Q8

6. Is this a new position, replacement for a retirement/upcoming retirement or replacement for internal promotion (faculty to administrator), or replacement for other circumstances? Please explain. (Rubric Criterion 3)(100 words or less)

Two retirements in the last three years (Jodi Reed and Tim Phillips) and a resignation during the tenure process have left this department completely without full-time faculty.

Q9

7. Which strategic priority/priorities is this request supporting? Please state how the position will help advance the specific priority/priorities and the College's mission, vision and values. Note: the more goals addressed the stronger the request (Rubric Criterion 4) Increase equitable access (enrollment) Eliminate equity gaps in course success (passing grade in class) Increase persistence eliminate equity gaps (re-enrolling the subsequent semester or year) Increase completion and eliminate equity gaps (graduating with a degree/certificate, or transferring) Increase hiring and retention of diverse employees to reflect the students and communities we serve (300 words or less)

Universal access to high-quality CS education is necessary to close historical gaps in technology fields. Black, Latino, and Indigenous populations and women have long been underrepresented* in STEM occupations that heavily rely on CS and computing skills.* Given the higher wages and job prospects associated with these fields, this underrepresentation of diverse populations in STEM implicitly contributes to race- and gender-based gaps along economic lines. Developing technical skills provides a path to upward social mobility, as has been shown through the assimilation experience of some immigrant groups: Those with computing and other STEM skills reach earnings parity with native workers far faster than those without these skills.***

Increase Equitable Access (Enrollment): By providing a high-quality Computer Science (CS) education, this position directly contributes to increasing equitable access to in-demand technical fields. It addresses the historical underrepresentation of Black, Latino, and Indigenous populations, and women in STEM, offering more students the opportunity to engage in these high-value educational paths.

Eliminate Equity Gaps in Course Success: The role will focus on tailored teaching methodologies and support systems that cater to the diverse learning needs of all students, aiming to eliminate equity gaps in course success. This includes implementing inclusive pedagogical practices that resonate with underrepresented students, helping them achieve passing grades and excel in their classes.

Increase Persistence and Eliminate Equity Gaps: Through consistent support and mentorship, this position will encourage students, particularly those from underrepresented groups, to re-enroll in subsequent semesters. By creating a welcoming and supportive learning environment, it will enhance student engagement and persistence.

Increase Completion and Eliminate Equity Gaps: By providing comprehensive and relevant CS education, this position will aid students in graduating with degrees or certificates or successfully transferring. The focus on CS skills relevant to current industry demands ensures students are well-prepared for the workforce or further studies.

Increase Hiring and Retention of Diverse Employees: We hope to do this either directly by hiring a FT diverse faculty member or by utilizing their position to diversify our part-time faculty.

In essence, this position is pivotal in closing race- and gender-based economic gaps by providing equitable access to high-quality CS education. It will play a crucial role in ensuring that all students, regardless of background, have the opportunity to develop skills that lead to high-wage, high-demand careers, thereby advancing the College's mission of fostering social mobility and equity.

*Effective Strategies to Increase Diversity in STEM Fields: A Review of the Research Literature. The Journal of Negro Education Vol. 76, No. 4 (Fall, 2007), pp. 555-58.https://www.jstor.org/stable/40037228
**A comprehensive effort to expand access and diversity in computer science, ACM InroadsVolume 6, Issue 3 pp 67–72. https://doi.org/10.1145/2807704
*** High-Skilled Immigration and the Rise of STEM Occupations in U.S. Employment Gordon H. Hanson and Matthew J. Slaughter N.BER Working Paper No. 22623 September 2016, Revised October 2016

Q10

8. Please confirm that you have discussed this faculty position request with the Division Dean and that you understand that Division Deans will be providing feedback to help inform the prioritization process.Note: The Division Dean will be providing feedback to help inform the prioritization process

Yes, I have discussed this position request with the Chair of the Department

Q11

If you would like to attach data to support your request in light of the rubric criteria, please upload a PDF, Word, or image file using the button below.

CS%20Majors.pdf (76.7KB)