


 Dept - (B/CS) Computer Information Systems


**For 2017-18 Submitted by::** Mary Pape

**APRU Complete for:** 2017-18

**Program Mission Statement:** De Anza's Computer Information Systems department has been a leading educational institution in Silicon Valley since the college was founded. Over the years it has developed a rich and diverse series of courses in many areas. Our courses meet the needs of both the transfer student and the industry professional.

**I.A.1 What is the Primary Focus of Your Program?:** Transfer

**I.A.2 Choose a Secondary Focus of Your Program?:** Career/Technical

**I.B.1 Number Certificates of Achievement Awarded:** 55

**I.B.2 Number Certif of Achievement-Advanced Awarded:** 2

**I.B.3 #ADTs (Associate Degrees for Transfer) Awarded:** 13

**I.B.4 # AA and/or AS Degrees Awarded:** 19

**I.C.1. CTE Programs: Impact of External Trends:** In state of California, the number of Database Administrators , Computer and Information Systems Managers, Network and Computer Systems Administrators, Information Security Analysts, and even the entry level Computer Network Support Specialists are expected to grow much faster than average growth rate for all occupations and for other states. The growth predictions and current median incomes for these careers in the state of California are:

-> Database Administrators and related fields projected growth rate of 24.0 percent, or 2,900 jobs between 2014 and 2024.

->Computer and Information Systems Managers projected growth rate of 30.3 percent, or 15,200 jobs between 2014 and 2024.

->Network and Computer Systems Administrators projected growth rate of 20.6 percent, or 8,900 jobs between 2014 and 2024.

->Information Security Analysts projected growth rate between 2014 - 2024 is +19.8% or 3900 jobs annually with a current median income of \$107,200

-> Computer Network Support Specialists projected growth rate between 2014 - 2024 is +20% or 20% jobs annually with a current median income of \$74,600

To meet these needs the following courses have been added (and applicable certificates/degrees updated) and two new AA degrees are being created:

Mobile development:

iOS Development course (CIS 55)

Java for Mobile Development (CIS 53)

Database:

Introduction to Large Scale Processing Systems (CIS 64E)

Introduction to Big Data and Analytics (CIS 64F)

Certificate of Advanced Achievement and an AA in Project Management

Security:

Enterprise Security Process Management (CIS 75D)  
 Enterprise Emergency Response Planning (CIS 75F)  
 Ethical Hacking (CIS 102)  
 Digital Forensics and Hacking Investigation (CIS 104)  
 (Spring 2017 as CIS 82Z Current Topics) Cloud Computing

Project Management:

Managing Cloud Projects (CIS 95F)  
 Agile Project Management - A Practicum (CIS 95G)  
 Certificate of Advanced Achievement and an AA in Project Management

Python Programming Language (CIS 40, CIS 41A, and CIS 41B) along with:

Programming in Python Certificate of Achievement

Machine Learning program built on Python and introducing data science preparation and R programming language

Challenge: Cutting edge technology classes tend to draw a small number of students at first. The proposed new funding scheme favors certificate/degree completion, but several certificates/degrees include one of these low enrollment courses.

Solution: A schedule be established to offer one of these possible low enrollment courses each quarter with the salary of the instructor supported by Strong Workforce monies. Where feasible the class will be online. These classes, required for students to complete degree/certificate, must be guaranteed not be canceled. As of now a list of such courses follows:

Network Programming Certificate of Achievement-Advanced A.A. Degree

CIS 75B Internet Programming with TCP/IP 4.5

Network Administration Certificate of Achievement-Advanced A.A. Degree

CIS 18B Advanced Unix/Linux (4.5)

Database Design for Developers (Oracle) Certificate of Achievement

CIS 64C Introduction to PL/SQL (4.5)

CIS 64D Database Tuning (3)

CIS 64E Introduction to Large Scale Processing Systems (4)

CIS 64F Introduction to Big Data and Analytics (4)

Challenge: Curriculum Committee timeline which does not allow for us to update curriculum to keep pace with the technological development.

**I.C.2 CTE Programs: Advisory Board Input:** Input from our Advisory Board:

- Our Advisory Board feedback indicated that the skill of programming in Python is as much in demand as other areas such as programming in Java and web development. Python is mostly replacing the need for Perl. For 2016-17 we introduced CIS 40 for the student with no programming experience, CIS 41A and CIS 41B for the intermediate level programmer who wishes to develop Python programming skills for the workplace. The advisory board has suggested adding a sequel course with an emphasis on data analysis. We will use this suggestion to add a machine learning course in the future.
- On the advice of our Advisory Board we have revamped and renamed the quality assurance course: Software Quality Assurance. This course will be part of Web Test Engineering COA. The Advisory Board feels the certificate of achievement prepares the student well in the three main skill areas: ability to understand or learn quickly whatever language(s) the engineering team is currently using, ability to assess and debug client side browser issues, and QA best practices and methods.

- In the area of database skills our teaching of SQL is precisely what is needed as indicated by the Board. With the introduction in 2015 of CIS 64F Introduction to Big Data and Analytics, we are teaching one of the second most desired database skills, Hadoop. R Programming course and a course dedicated to analytics are suggested additions.
- Web Development certificate was considered one of the most beneficial for those without a Bachelor's degree. In the area of Web development, new course Representational Style Transfer (REST) paired with JSON protocol is the suggested direction for updating and enhancing the present Web development course offerings. Ruby on Rails was suggested. More emphasis on PHP would also benefit students.
- When asked "what courses could De Anza College offer to help your company or organization address needs related to computers or information technologies", the advisory group replied with Cloud Computing, Android Development, Requirement of Analysis and Design, Data Warehousing, iPhone Development, Team Based Software Development
- Begin a program in Functional Programming including robotics.
- It should be noted that of the courses listed we teach Cloud Computing (CIS 95F), Android Development (CIS 53), Analysis and Design (CIS 28), Data Warehousing (CIS 64F), and iPhone Development (CIS 55). It should also be noted that a team project is part of the CIS 22C curriculum.
- Only a third of respondents were willing to hire an applicant without any work experience. An internship would suffice was a comment by some. Thus, we are endeavoring to find ways to establish connection with industry to provide students possibilities for internships, paid and unpaid. These opportunities are published on the CIS Department's website: <http://deanza.edu/cis/internships.html> . In addition, through Strong Workforce monies a mentor has been hired to work with local companies such as Google and Facebook to build an alliance where our students are benefiting from speakers, mentors, site visits, and internships.

#### **I.D.1 Academic Services & Learning Resources: #Faculty served:**

#### **I.D.2 Academic Services & Learning Resources: #Students served:**

#### **I.D.3 Academic Services & Learning Resources: #Staff Served:**

#### **I.E.1 Full time faculty (FTEF): 25.5**

#### **I.E.2 #Student Employees:**

**I.E.3 % Full-time :** FT + overload has declined by .2% between 2015-16 and 2016-17 and is at 43.5%

#### **I.E.4 #Staff Employees:**

**I.E.5 Changes in Employees/Resources:** While two additional full-time instructors have been added to the department since 2012-13, the number of students has grown so dramatically that our ratio of full-time employees to part-time employees has actually decreased by 17% even with overload included.

Availability of rooms equipped with computers for each student to use is often the deciding factor not only for when to offer a class but if another section should be opened. While statistics for core courses suggest the majority of students prefer day classes, in recognition for the need of equity, we must still make these available in the evening. Other courses, both CTE and those that draw students primarily from those working a full-time daytime job, must also be offered in the evening. Thus, there is no room to grow our program in the 6:00 - 7:50 pm time-frame.

One way to alleviate the room issue is through offering more sections online where appropriate. However, this has brought about a significant issue in the proctoring of exams. Once again, too few rooms equipped with computers for proctoring of finals.

**II.A Enrollment Trends:** Enrollment 2012 - 2013: 4663

Enrollment 2013 - 2014: 5677

Enrollment 2014 - 2015: 7443

Enrollment 2015 - 2016: 8349

Enrollment 2016 - 2017: 8625

Not only are our core courses overcrowded, but many of the courses needed to achieve certificates and degrees are overcrowded (CIS 28, CIS 29, CIS 26B, CIS 89A, CIS 66). Ratio of students to instructor is, perhaps, the most crucial issue in increasing success.

**II.B.1 Overall Success Rate:** Success rate 2012-13: 70%

Success rate 2013-14: 70%

Success rate 2014-15: 71%

Success rate 2015-16: 72%

Success rate 2016-17: 74%

**II.B.2 Plan if Success Rate of Program is Below 60%:** N/A

**II.C Changes Imposed by Internal/External Regulations:** The Computer Science AS Transfer Degree is now a reality and is available to students beginning Fall, 2015. In an effort to fill the needs of our students, parallel tracks for curriculum in both C++ and Java have been expanded and are continuing to be expanded. Curriculum for CIS 36A Introduction to Java and CIS 36B Intermediate programming in Java are being updated to gain C-ID approval in order to offer another pathway for students to achieve the A-D-T Computer Science degree.

Also in connection with assisting students to complete their transfer courses including those that are part of the Computer Science A-D-T degree, CIS 22C Data Abstraction and Structures is being offered using three different approaches: exclusively with C++ code usage, exclusively with Java code usage, and language independent.

Our core C++ core courses were collaboratively developed and we will continue our collaborative effort to improve them. Students benefit from us teaching using the same materials in the same ways at the same time. Students are able to collaborate across classes and our teaching assistants and tutors are more productive and helpful when working with students from different course sections.

With the advent of no cost and low cost student resources needed designations, CIS faculty is finding and implementing no cost resources where available and working with publishers to offer low cost eText solutions otherwise. The C++ sequence of CIS 22ABC currently offers a low-cost e-text to students. Mark Sherby and Ron Kleinman have developed no cost materials of their own for CIS 56 and CIS 28, respectively. More instructors are currently developing such options.

With a class in Flash offered for the first time in 2016-17, we are now offering the necessary skills that the non-computer science student needs in this age of technology: word processor, spreadsheets, presentation software, Photoshop, Flash, data base thus meeting the void created when CAOS department was phased out.

**III.A Growth and Decline of Targeted Student Populations:** From 2012-13 to 2016-17, the targeted group population grew by 132%; The non-targeted group grew at the slower rate of 68%

**III.B Closing the Student Equity Gap:** The gap between targeted group and non-targeted group in relation to success rates is fairly flat:

2012-13 => 15%  
2013-14 => 14%  
2014-15 => 14%  
2015-16 => 15%  
2016-17 => 11%



In summary the number of target has grown and the gap has narrowed. Subjectively considering these statistics one might surmise that sense of community plays an important role. Of course, building a sense of community should begin in the classroom, but we perceive that the teaching assistant programs and the three CIS clubs each with a different intended outcome play an important role in community building. These clubs and programs lead students to say to themselves "if you can, then so can I". As part of post Winter 2016 quarter student survey (212 respondents), approximately 50% of the students have sought TA assistance and, of these, 90% were satisfied or very satisfied with the help they received.

The rationale for improving success rate continues to be to provide multiple methods for delivery of learning materials and to provide each student with one-on-one assistance in several ways: tutoring by our volunteer teaching assistants, peer-to-peer assistance through forums and chat groups, online instructor hours, and in-class teaching assistants. Beginning Fall of 2016, peer tutoring by paid tutors has been available. This person does not help with homework but takes time to explain the underlying concept. It should be noted that a close in the equity gap has occurred since paid tutoring was begun.

With the introduction of LanSchool software installed on all CIS classroom computers, student attention during class has grown.

Continuance of offering CodeLab to all programming students is considered important to decrease the gap.

**III.C Plan if Success Rate of Targeted Group(s) is Below 60%:** Teaching Assistants in the lab. These are students fresh out of our first two core courses that hopefully instill the notion in a struggling student "if he/she can so can I". Teaching assistants volunteer their time for a parking permit and something for their resume. Teaching assistants are just supposed to help the student over his/her present bug.

Teaching assistant in the classroom. Again, this is a volunteer position and it is often a previous student of the instructor.

Some students require the support of one-on-one tutoring sessions. Since Fall of 2016 we have been able to hire peer tutors.

Faculty are providing more back-up assistance to students in being available more online, setting up chat sessions, rewarding students for posting to forums, available face-to-face in the lab as well as online during online times and utilizing online tutorials. Teaching Assistants have also been added into Canvas to assist in the answering of doubts and questions online.

The lab accommodates students' needs for access to computers and the Internet. The lab is designed to promote peer-to-peer support.

To close this gap further, class size in the core class needs to be kept closer to the maximum of 40.

There has been a definite shift in the development of course materials from teacher by teacher to departmental groups. This was evidenced in the Catalyst Master Shells created for our new core courses of CIS 22A Beginning Programming Methodologies in C++ and CIS 22B Intermediate Programming methodologies in C++. CIS faculty, both full-time and adjunct, met and contributed materials to develop the shell. This will lead to more uniform skills learned by students by the end of these courses.

Continuance of the program offering CodeLab to programming students at no charge is important.

**III.D Departmental Equity Planning and Progress:** The CIS Department is offering a Lecture series each quarter.

We are contributors to the STEM initiative.

We have CIS clubs with CIS faculty as advisers. Assessments of SLOs (e.g. SLOAC for CIS21JB\_SLO\_1) "From this experience, it was observed that if students were actively learning and felt a common bond with each other. . . , they tend to encourage each other and be more likely to succeed. "

Fall 2016 was the first offering of CIS 40 Introduction to Programming in Python. This class is aimed at the non-computer science major. It serves as an excellent starting point for targeted groups and all who are less comfortable around computers and with applying problem solving skills. This course serves to prepare students to be successful in the computer transfer path where CIS 22A or CIS 36A are required.

We intend to make use of the low-cost feature and our new agreement with Pearson. We have been promised an offer for our students that will guarantee an E-text and other online resources for students for approximately \$40 for 12 months. We will begin with this in CIS 22A, 22B, 22C courses.

Beginning Spring 2017 we have been able to hire a mentor with Strong Workforce monies. This has led to developing relationships with big-name Tech companies such as Google. Google chose Google employees for panel discussions at the College's STEM events based on their diversity . This hopefully builds on the "if he/she can, then so can I" concept. Google employees have given special lectures to the CIS students. Google has also graciously made tours of Google Mountain View available. Thus far, we have had two tours of 20 students each. The students involved in the lectures and/or tours learn how cool it is to be a Google employee. They also get insights about the interview process realizing they will need to know coding and design topics they are learning in class to successfully garner the job of their choice; just having a degree is not enough. Several Google employees shared that they were not hired on their first try. So perseverance is a must. We hope to have some similar events involving Facebook in the near future.

We became part of a LinC program but unfortunately the match-up of English and Beginning Programming methodologies in C++ did not draw students.

Summer 2018 we are supporting a Cyber Security Camp for high school students. In addition, CIS



faculty are joining visits to high schools with outreach to promote the CIS offerings. So far we have visited Fremont High, Pioneer High and Gunderson High.

**IV.A Cycle 2 PLOAC Summary (since June 30, 2014):** Seven of 12 Program Level Outcome statements has been assessed since June 30, 2014 = 58%

**IV.B Cycle 2 SLOAC Summary (since June 30, 2014):** 59 of the 119 SLO statements have been assessed since June 30, 2014 = 50%

**V.A Budget Trends:** CIS gets the FTEF that we can schedule classes for. Since the Business/CS/AppliedTech Division enjoys an increasing enrollment, budget has not been the deciding issue. For us in CIS, the deciding issues are good instructors, adequate support for our students, and availability of classrooms with computers for each student.

However, we have trouble with first offerings of cutting edge courses since these often fail to meet the minimum of 20 at first. Then the certificate is not attainable for the student since the class has been canceled. In addition, the lead time for new curriculum prohibits us from being "cutting edge". We found a solution for Spring 2017 by combining funds received from Strong Workforce along with re-purposing CIS 82Z Current Topics class as Cloud Security. Unfortunately with the focus on productivity we will no longer be able to hold low enrollment classes even with the support of Strong Workforce monies. For Spring 2018 the online course Introduction to Big Data and Analytics will have sufficient number of students but Managing Cloud Projects will likely be cut for low enrollment.

**V.B Funding Impact on Enrollment Trends:** 1) For our transfer students, our core classes are over-crowded and students must often wait between taking sequential courses.

2) We are restricted in the number of cutting edge courses we can offer for those wishing to improve the technical skills in their quest for employment or expanding their career options.

3) Too few classrooms equipped with computer for each student.

**V.C.1 Faculty Position(s) Needed:** Growth

**V.C.2 Justification for Faculty Position(s):** CIS Department wishes to grow its core transfer program while simultaneously adding courses focused on cutting-edge topics. Two new faculty positions are needed. Ideally, each full-time member needs to be capable of teaching our core transfer courses while bringing to the "table" the ability to teach courses in one of our higher academic and/or career enhancement areas.

Since 2012-13 and our department enrollment has grown by 3962 students or 99 sections of 40 students each. The number of full-time faculty during this same period has grown by 2.1 which equates to approximately 19 sections!

In addition we have created new certificate and new area: security. Furthermore, we would like to add ITIS CSU Transfer degree.

The area most pressing is Security program which was begun in 2014-15. There is a great need for this expertise, but a full-time instructor poised to push for a solid security program is needed.

**V.D.1 Staff Position(s) Needed:** Replace vacancy

**V.D.2 Justification for Staff Position(s):** Instructional Associate is needed to replace a vacancy due to a retirement in December, 2013. The person needs to be well-versed in writing C++, Java, and python code in order to assist our students in the lab.

Survey indicates that students wish for more support.

**V.E.1 Equipment Requests:** Over \$1,000

**V.E.2 Equipment Title, Description, and Quantity:** 1) Camtasia & Snagit by TechSmith on each computer in AT 203B and in 5 classrooms (AT 203, 204, 205, 311, and 312). Pending assessing the results of using this software and waiting for Tech Committee to possibly endorse this or comparable software, eventually provide a license for each full-time and part-time faculty member.

2) Budget for departmental accounts such as SurveyMonkey and chegg

3) Computer in AT 203F cloned as computers in lab

4) PolyCom phone to allow dial-in access to the meetings in AT 203F.

5) Each CIS Faculty member's office desktop computer needs parallel software to software on computers in AT 203 and in the classrooms. Office computers need direct access to AT 203 server.

6) Each CIS Faculty member needs a laptop in addition to a desktop. The laptop needs software in parallel to software used by students in lab and classrooms

7) Smart boards for the classrooms

8) A second overhead projector in AT 204, AT 205, AT 311, and AT312

9) Faster login, desktop initialization and opening of apps on lab computers.

10) Solution to support students enrolled in cutting edge courses such as iOS Development and Cloud Security. Possible solution for iOS course is Mac in Cloud priced at about \$60 per student; Amazon Web Services for cloud security is paid for an "on demand" basis.

11) Wireless adapters to project student work to the overhead and instructor's screen in the classroom.

12) Privacy shields for student desks in classroom

**V.E.3 Equipment Justification:** 1) Allows capture and immediate editing of lecture with code development for later viewing by students. Several enhancements list such issues as "flipping" the classroom more and the fact that students need to work on lab assignments during class face-to-face time. Having videos there for students to review would speed up lecture time and allow for more one-on-one time during class.

2) SurveyMonkey subscription provides for longer surveys to numbers needed. When we realize that our students are subscribing to tutoring sites we need a departmental suscription in order to "see" what are students are seeing.

3) Computer in AT 203F cloned as computers in lab. With the growth in the number of students our lab is often noisy and crowded. instructors were assisting students in AT 203B but this needs to be reserved as a preparation area for adjunct faculty. The solution is using CIS 203F for instructors to hold sessions with individual or small groups of students. This necessitates the need for computer in there. This speaks to equity as well since it is the at-risk students who are the least likely to have their own laptop to use during conference with instructor.

4) PolyCom phone to allow dial-in access to the meetings in AT 203F. There is only a 30 minute period during the day when no faculty areteaching. Due to the three CIS clubs with meetings on Fridays, faculty are busy attending these meeting as advisers. PolyCom Phone would facilitate some faculty being able to join meeting from off campus allowing more creative scheduling of department meetings times.



5) There is little time before or after the class to prepare for the lecture or to post code created live during the class.

6) Instructors need to assist students in the lab, in AT 203F, and, in addition, with all assignments being submitted online (rather than students printing and submitting hard-copy) the time it takes to correct programming labs has more than doubled. This means correcting anywhere and everywhere one has the opportunity. On the other hand choosing a laptop over a desktop is not ergonomically a good idea since faculty are spending more time than ever in front of computers correcting work.

7) Many of our students experienced smart boards in their high schools but not here at De Anza even in the Advanced Technology Building.

8) The issue of trying to simultaneously show code along with slides or other means to explain the rudimentary background information still exists. Ideally this is accomplished with two projectors in each classroom.

9) Login time, desktop initialization, and opening Visual Studio take an unacceptable long amount of time. It makes faculty and students alike use their own laptops in preference to lab computers. This would not be a problem except that the larger screen is much better for collaboration. If speeding up login is not possible then means to use monitors with laptops easily needs to be provided for.

10) Courses such as iOS development and Cloud Security require students to have specific hardware and/or software to be able to continue their work on a 24/7 basis. For iOS it is necessary for students to have access to Mac computer with xCode. Since many have Mac laptops the issue is to provide the same experience to those who do not own their own Mac. This is very much an equity issue. Purchasing and maintaining Macs to loan to students is one possibility but a simpler solution would be Mac in Cloud (<http://www.macincloud.com/>). For Cloud Security, Amazon Web Services will be needed.

11) With more and more students choosing to use their own laptops rather than the computers in the classroom it is necessary to find a way for the student to share his work with peers and instructor.

12) Students can easily read the monitors of adjacent peers when taking tests in AT 204, 205, 311, and 312 due to the locked position of the monitors. Privacy shields would prevent this.

**V.F.1 Facility Request:** 1) Two more smart classrooms between the hours of 6:00 - 8:00 pm; one more classroom during the daytime (9:30 - 5:20 pm).

2) More electrical outlets are needed in the lab and classrooms (AT 204, 205, 311, 312)

3) A Mac classroom equipped with a Mac computer for each student to use

4) Re-design for AT 205

5) More areas with computers for students in online classes to take midterms and finals

**V.F.2 Facility Justification:** 1) Currently we are using the area at the back of the Lab (AT 203) to hold classes. This and all other options are exhausted during several times of the day especially between 6:00 pm to 7:50 pm.

CIS program is growing each year. This growth can only be sustained if we can offer more classes

from 6:00 pm to 7:50 pm. A focus group assessment with students conducted Winter 20115 revealed that the later time frame, 8:00 - 9:50 pm is extremely difficult for our students who depend on public transportation.

The availability of a classroom often is the deciding factor of whether or not another class section can be added to handle the over-flowing wait-lists.

2) A survey of all current CIS students was conducted at the end of Winter quarter 2016. 47.4% of the 212 respondents listed too few electrical outlets in the lab as an issue. There needs to be an electrical outlet at each station dedicated to allow student to plug in their laptop. 61.5% of the 212 respondents to survey indicated they use their own laptop in the lab. Currently there is a problem when some students unplug the lab computer so they can plug-in their computer and then they fail to plug the lab computer back in upon leaving.

3) CIS 55 iOS Development is a popular class but they have no classroom equipped with Mac computers. The lecture is held in a small classroom without computers and then students must switch to AT 203 for working with Macs in there. This is not conducive to keeping students engaged nor to making them feel a part of a small community that is learning very sought after skills.

4) AT 205 needs redesign of student desks. We wish our students to work in groups. We wish in-class tutors and instructors to be able to go to the students and assist, one-to-one on the computer. This is greatly hampered in AT 205 by cramming too many desks too close together. Assessments of SLOs (e.g. SLOAC for CIS22A\_SLO\_2) Students need more in class time to complete assignments. That is, there needs to be more "flipping" of the classroom to accommodate the many issues that students are striving against: other difficult classes, work, poor study habits, lower than anticipated problem solving skills. This will make the class more equitable for all. (12/17/2014)

5) The best time for students to take exams is in the evening. Presently all classrooms including the back of the Lab are filled with classes and, thus, the lab itself is divided up to accommodate proctored tests. However, we still run out of suitable areas with computers for each student.

**V.G Equity Planning and Support:** Offer a linked course between mathematics and a beginning programming course. Assistance is needed in setting up such a program starting from the point of what discipline would be willing to work with us and how do we ascertain what pairing up of courses would result in the best outcome for students.

Continue and expand one-on-one tutoring.

Continue offering CodeLab online tutorial free to all our students.

Continue to search for low or no-cost textbooks. Some examples presently in place:

->Ron Kleinman: The students get the course notes, which is what I exclusively teach from, and for the rest (Unified Modeling Language artifacts, OO terminology, Design Patterns) they type the terms into Google and follow up on the results. I occasionally supply specific URL's (ex: to the free PDF of the entire "Gang of 4" Design Patterns book).

->Clare Nguyen: For Python 40 students get the course notes, which is "what I exclusively teach

from" (and is available for anyone who wants to teach CIS 40). For students who like to have a book, we use a free textbook (Downey's Think Python, under the Creative Commons license) that is widely popular, such that there is a Codelab exercise version for this book, so that I can use Codelab for quizzes.

We have presently entered into an agreement with Pearson publishers. For the low cost of approximately \$44.00 students may opt in to purchase the e-text plus student resources. Access will be for 12 months. For Spring 2018 this choice has been included along with the usual hard-copy option.

**V.H.1 Other Needed Resources:** Stipend for the development of alternatives to textbook for core courses. This stipend should be equivalent to the average/median salary paid for one course taught by full-time faculty as overload. This stipend maybe shared if 2-3 faculty wish to collaborate.

**V.H.2 Other Needed Resources Justification:** The department conducted an informal survey among all students registered for CIS 22A Beginning Programming Methodologies during Fall 2015. Only a small percentage (<25%) actually purchased the text.

Enhancements of assessments (e.g. SLOAC for CIS 18C) suggest the weekly assignments and quizzes kept everyone on task and built students' knowledge consistently. However, students need to learn the skill of reading and assimilating technical material from a source such as a textbook.

**V.J. "B" Budget Augmentation:** Teaching Assisting program needs B-budget support. Our volunteer teaching assistants are performing a much needed service. Fortunately, we are able to provide the ones working multiple quarters with parking permits but we would appreciate being able to award them with perhaps more social get-togethers, best practices in tutoring computer science students presentations, etc.

Raising female retention in computer science program

There seems to be a growing number of females enrolling in CIS courses. To retain these special gatherings with speakers, food, etc.

Speaker seminars for particular areas of interest

Sukhjit Singh has been able to expand the Project Management program by offering evening and weekend symposiums with special presentations from industry and refreshments.

Printing

'B' budget needs to be expanded to cover the expenses for the following:

- Printing of tests including quizzes, midterms, and finals
- Ability to offer students "spur of the moment" handouts
- Students need to be able to print code for working in groups, desk checking, and in instructor discussions.

**V.K.1 Staff Development Needs:**

- Assistance with creating courses compliant with the OEI rubric
- Equity training that the department members could take together.
- Assistance in becoming part of LinC program

**V.K.2 Staff Development Needs Justification:** For the Online Educational Initiative pilot program high demand Associate Degree for Transfer (ADTs; AA-T/AS-T) courses were chosen based on their inclusion in ADTs, student demand data, and course fulfillment of transfer area

requirements. CIS Department has 5 C-ID courses with two more (CIS 36A & 36B) submitted for approval. No Computer Science courses were chosen for the OEI pilot program but we would like to be among the colleges offering these courses in the second round.

The department has embraced the use of Canvas as our course management system. Since few of us are experts at creating courses to be delivered online, we would progress with authoring OEI accepted courses if there was a consultant to help us with this.

Equity training based on our particular subject area is needed. Based on the program review data ([http://deanza.fhda.edu/ir/Program\\_Review\\_2016-17/CIS.pdf](http://deanza.fhda.edu/ir/Program_Review_2016-17/CIS.pdf)) we have made some progress in closing the target vs. non-targeted .

While our teaching assistants program and and three CIS clubs do build a sense of community for many of our students a Linc program would reach out more directly to our students from the targeted groups.

**V.L Closing the Loop:** In addition to meeting target on all course level and program level outcome assessments, three main methods for assessment:

- 1) Increase success rates
- 2) Increase number of certificates and degrees awarded
- 3) Closing the gap between targeted and non-targeted groups

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**#SLO STATEMENTS Archived from ECMS:** 21

