INSTRUCTIONAL COMPREHENSIVE PROGRAM PLANNING AND REVIEW (CPPR) FOR 2019

Only to be completed by those programs scheduled for the year according to the institutional comprehensive planning cycle for instructional programs (i.e., every four years for CTE programs and five years for all other instructional programs), which is produced by the Office of Academic Affairs. Faculty should meet with their dean prior to beginning this process. Training is available to support faculty completing this work.

Cluster: Workforce & Economic Development
Program: CIS - Computer Information Systems   **Current Academic Year:** 2018-2019

Last Academic Year CPPR Completed: 2014-2015   **Current Date:** March 2019

NARRATIVE: INSTRUCTIONAL CPPR

Please use the following narrative outline:

I.   **GENERAL PROGRAM INFORMATION**

A. Program mission (optional)

The Cuesta College Computer Information Systems (CIS) promotes both the career and technical education (CTE) and transfer education missions of the College. The CIS program prepares students for transfer to four-year schools. The courses and degrees serve students intending to major in Computer Science, Computer Engineering, Software Engineering, Information Systems, and similar degrees. The CIS program certificates prepare vocational students to enter the workforce upon course work completion. CIS courses also provide support courses to students in a variety of disciplines including but not limited to Engineering, Mathematics, Chemistry, Physics, Business, Library and Graphic Communication.

B. Brief history of the program

The CIS program began in the Business Education Division in the early 1990s. In 2001- 2002 the curriculum was significantly revamped. The revisions at that time included the creation of two new transfer degrees (A.S. Computer Science, A.S. Management Information Systems) and the realignment of the entire transfer curriculum to match requirements at targeted four-year schools.

A divisional review of the curriculum in the 2006-07 academic year found that the 2001- 2002 changes to still be valid and no changes were necessary. A new course for non- majors (CIS 1, now CIS 201) was introduced at that time. The curriculum was expanded between 2007 and the last CPPR in 2010 to include a pair of internet-oriented courses, app programming courses, and an upgrade of the Linux course to transferrable status.

The program began teaching Mobile Application Development in January 2010, becoming one of the first community colleges to do so. The first course was taught in iOS, with and Android course the following year. Eventually a second course was added for each platform as well as a matching certificate. Cuesta is one of the few community colleges that offers two courses in iOS or Android, much less both.

With the College's discontinuation of the Computer Application/Office Administration (CAOA) program in the 2012-2013 academic year all curriculum within the CAOA program was evaluated and reframed during the 2013-2014 academic year. It was determined that courses previously listed as CAOA courses would be realigned with either Business (BUS) or CIS prefixes. Many CAOA courses were deactivated while 3 courses aligned with the BUS programs and 3 aligned with the CIS programs. In addition two CIS courses: Introduction to Computer Applications (CIS 210) and newly created Advanced Business Applications, (CIS 215) now replace 4 CAOA courses and eliminate content overlap.

The program is currently working to enhance its existing offers with a re-emphasis on Mobile Application Development courses as well as a new serious of courses in Cloud Computing. This program, which is currently under development, will incorporate multiple new or revised courses as well as a new certificate. This program will also leverage mobile courses to create additional pathways for students.

C. Include significant changes/improvements since the last Program Review

The CIS curriculum continues to be dynamic. Since 2010 the following curriculum changes have taken place:

- The addition of certificates in iOS Development and Android Development, as well as a reactivation and revision of the Internet Applications Developer Certificate
- Conversion of the special topics course in Mobile Device Development (CIS 193G) into permanent courses in iOS Development (CIS 203 and 204) and Android Development (CIS 207 and 208). The iOS Development II course (CIS 204) was the first course of this type to be offered in California and is believed to be one of the first ten in the nation.
- A special topics course in Computer Game Design (CIS 193H) that has subsequently become a permanent course (CIS 271).
- A special topics course (CIS 193I) in Tech Entrepreneurship done in conjunction with a state entrepreneurism grant.
- A new course Advanced Business Applications (CIS 215) was created to eliminate course overlap of four CAOA courses.
- 3 courses with CAOA prefixes were converted to CIS courses: Outlook (CIS 154), MOUS Test Prep (CIS 156) and Adobe Acrobat (CIS 173)
- Distance Education approval for CIS 215 (effective Fall 2014) and CIS 203, 204, 207 and 208 (effective Fall 2015.)
- A new course, CIS 101 (Survey of Web Design), was created in conjunction with the Grizzly Academy
- A new course, CIS 216 (Electronic Spreadsheet Applications), was added for Fall 2017 to address needs for Business Information Workers as well as other majors.
- The program is currently developing a new series of courses and a certificate in Cloud Computing that will be taught beginning the 2019-2020 school year.

D. List current faculty, including part-time faculty

Full Time CIS Faculty

Scovil, Randy:
Educational Background: B.A., San Diego State University, San Diego, California; M.S., California Polytechnic State University, San Luis Obispo, California
Courses Taught: Introduction to Computer Science, IOS Development 1, IOS Development II, Android Development I, , Android Development II, "C" Programming Language, Fundamentals of Computer Science I, Fundamentals of Computer Science II, and Fundamentals of Computer Science III.

Full-time faculty in other divisions who teach CIS courses

Akelian, Chris (Engineering/Technology)
Educational Background: B.S., California Polytechnic State University, San Luis Obispo, San Luis Obispo, California; M.S., San Diego State University, San Diego, California.
Courses Taught: "C" Programming Language, Microcomputer Architecture and Programming

Part Time Faculty

Cleeves, Marilyne; B.S., Capella University, Minneapolis, Minnesota

Hope, Robert. B.S, Western Governers' University, Salt Lake City, Utah

Hubbard, Jennifer; Business Education Credential, California Lutheran University, Thousand Oaks, CA, B.A., Purdue University, West Lafayette, Indiana, M.A., Gonzaga University, Spokane, Washington

Perry, Amity; B.A., California State Polytechnic, Pomona, California, M.B.A. California State University Dominguez Hills, Carson CA

Salas, Cintia Vanessa: B.S, San Diego State University, San Diego, California

Scholl, Susan; B.S, University of Wisconsin, Menomonie, Wisconsin, M.S, Capella University, Minneapolis, Minnesota

Sfarzo, Robert; B.S., Bridgewater State University, BridegeWater, Massachusetts; M.S., University of Minnesota, Minneapolis, Minnesota

Vakalis, Ignatios; B.S. University of Patras, Patras, Greece; M.S., Ph.D., Western Michigan University, Kalamazoo, MI

E. Describe how the Program Review was conducted and who was involved

The CPPR was prepared primarily by the lone full time CIS faculty member, Randy Scovil with significant assistance from part time CIS instructor Robert Sfarzo and Division Char/Econonimcs Instructor Susan Kline.. Part time faculty participated in the completion of individual course CPAS documentation and provided input in their respective areas with regards to Program Development/Forecasting

II. PROGRAM SUPPORT OF DISTRICT'S MISSION STATEMENT, INSTITUTIONAL GOALS, INSTITUTIONAL OBJECTIVES, AND/OR INSTITUTIONAL LEARNING OUTCOMES

A. Identify how your program addresses or helps to achieve the District's Mission Statement.

The Computer Information Systems program is at its core about achieving and building Technical and Informational Fluency to its highest levels. Students in the program not only use a variety of hardware and software on a daily basis but they are also using some of the most sophisticated software on campus as part of their coursework. Furthermore, students are being empowered in CIS courses to not only use these tools at a high level but to create and construct successful software solutions.

The Program is available to all students in many modalities, and it offers courses and certificates that range from CSU four-year transferable coursework to vocational technical skills. Our curriculum is strong in foundational material, and robustly adaptive to changing technologies. We teach students to use computing technology in a way that is safe and beneficial to society

The Cuesta College Computer Information Systems (CIS) program consists of the following degrees and certificates: Computer Science Degree; Android Developer Certificate; Internet Applications Developer Certificate and IOS Developer Certificate and support courses for computer applications reflects and promotes both the vocational education and transfer education missions of the College. The Android Developer Certificate; Internet Applications Developer Certificate and IOS Developer Certificate are designed as vocational certificates.

B. Identify how your program addresses or helps to achieve the District's Institutional Goals and Objectives, and/or operational planning initiatives.

Institutional Goals 2017-2020
1. San Luis Obispo County Community College District will increase the rates of completion for degrees, certificates, and transfer-readiness overall for all students.

Institutional Objective 1.1: Increase the percentage of transfer-directed students who are transfer prepared by 2% annually.

Completion of transferable courses rose considerably since the last CCPR. Below are statistics for our core transferable courses CIS201, CIS231, CIS232,

Computer Information Systems Success Rate Table

	Academic Year 2013 - 2014	Academic Year 2014 - 2015	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018
Department Success..	54.24%	65.26%	60.87%	63.13%	69.60%
Total Enrollments	271	380	414	480	569

CIS233.

Institutional Objective 1.2: Increase the percentage of degree-or-certificate-directed students who complete degrees or certificates by 2% annually.

The Program steadily maintains the new average of 9 completions annually that was established in 2013/4.

Program Awards Table

Award T..	Award	2013-2014	2014-2015	2015-2016	2016 - 2017	2017 - 2018
Associate in Science	Computer Science (AS)	9	8	9	10	8
	Total	9	8	9	10	8
Certificate 6-18 Cre..	Android Developer (CS)			2		
	Total			2		
Grand Total		9	8	11	10	8

Institutional Objective 1.3: Increase successful completions in distance education courses by 2% annually.

Distance education completions are not consistent over time, but since the last CPPR, the Program is averaging around 67% overall, slightly below the College average of 70%. Disaggregating CIS201 reveals that its data has a large impact on the Program's overall success.

SLOCCCD Program Review Data: Successful Course Completion

Select Department:
Computer Information Systems

Course:
Multiple values

Legend:
- 🟩 Face to Face Modality
- 🟥 Online Modality

Successful Course Competion by Modality -Computer Information Systems

Successful Course Competion by Modality Table - Computer Information Systems

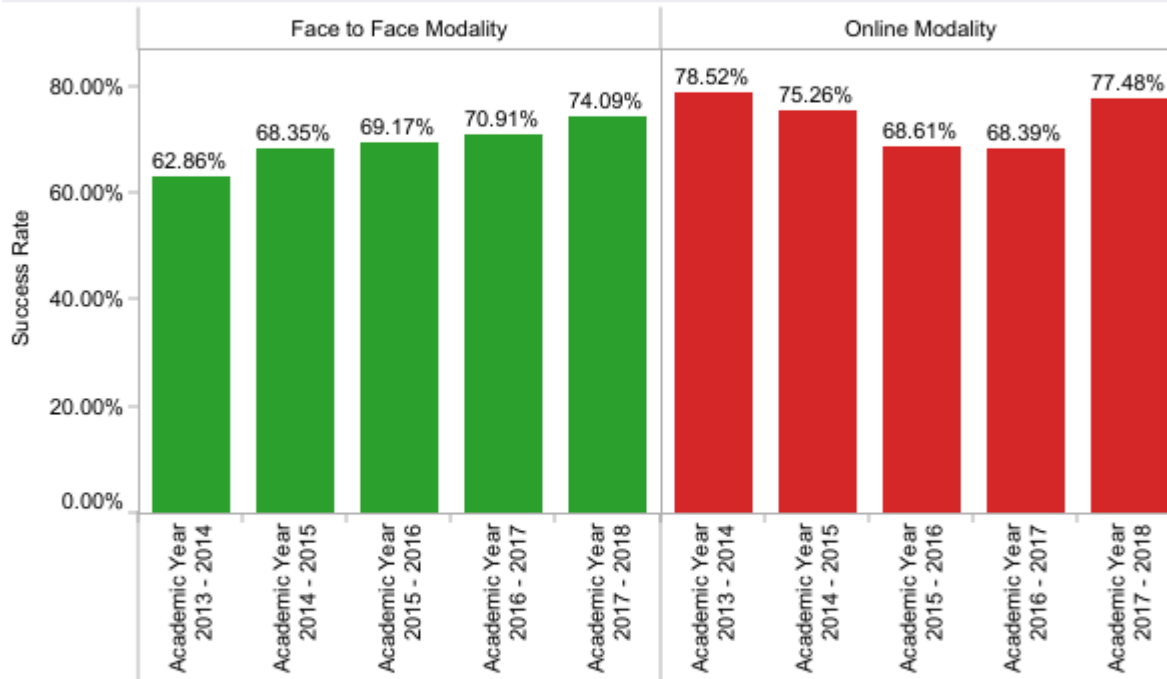|		Academic Year 2013 - 2014	Academic Year 2014 - 2015	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018
Face to Face Modality	Department Success Rate	63.22%	69.50%	66.95%	69.92%	75.78%
	Total Department Enrollments	609.0	682.0	717.0	665.0	739.0
Online Modality	Department Success Rate	78.52%	75.70%	65.89%	57.19%	66.57%
	Total Department Enrollments	135.0	214.0	302.0	278.0	359.0

Success of only CIS201:

SLOCCCD Program Review Data: Successful Course Completion

Select Department:
Computer Information Systems

Course:
CIS201

Legend:
🟩 Face to Face Modality
🟥 Online Modality

Successful Course Competion by Modality -Computer Information Systems

Successful Course Competion by Modality Table - Computer Information Systems

		Academic Year 2013 - 2014	Academic Year 2014 - 2015	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018
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2.	San Luis Obispo County Community College District will increase student access to higher education.

The CIS Program has increased access to distance education by achieving a 100% DE certified faculty, and 90% of the courses are DE approved . CIS Faculty use Open Educational Resources (OER), providing zero-cost and low-cost textbook solutions. CIS Faculty implement OEI solutions, providing zero-cost access to learning resources such as Google Cloud, Amazon Cloud, Practice Labs LTI.

3.	San Luis Obispo County Community College District will develop and sustain collaborative projects and partnerships with the community's educational institutions, civic organizations, businesses, and industries.

The Computer Information Systems program supports this institutional objective by participating in local high school outreach functions such as career day functions, Cuesta College Tech Fair, college nights, and Promise Day.

The CIS Program maintains a regular dialogue with the Cal Poly computer science department. Faculty participate in meetings with SLO County High School Dual Enrollment Instructors to share ideas for improving our instruction. This ongoing exchange of news and ideas allows the program to participate effectively among the flow of County students.

The Program is developing new relationships with industry in order to obtain apprenticeships.

The Program assists with Cuesta's Computer Networking (CNET) program in connecting its Cybersecurity curriculum with the South Central Coast Region's resources, and events at the California Cybersecurity Institute (CCI).

4.	San Luis Obispo County Community College District will integrate and improve facilities and technology to support student learning and the innovations needed to serve its diverse communities.

We maintain an excellent teaching facility upgrading hardware and software in our primary teaching room.

In order to increase access to educational resources, we have extensively researched several cloud-based provider solutions including Google Cloud, AWS Cloud, and others. We have also researched contemporary software solutions such as NodeJS and NoSQL technologies.

5.	San Luis Obispo County Community College District will build a sustainable and stable fiscal base.

The Program adapted to the raised 2017/8 FTE minimum course size recommendations. The District has not hired any new full-time instructors for this Program.

Institutional Objective 1.1: Increase student success in Basic Skills, English as a Second Language, Career Technical Education, degrees, and transfer programs.

Success steadily increases over time, especially in the Face-to-Face modality. Distance Education success has been uneven over time, but success has increased over the most recent three academic years. The largest factor is lower success is derived from CIS201 Distance Education results.

Institutional Objective 2.3 Expand financial support opportunities for students.

In 2016/8 the Program initiated a discussion with President Stork, that resulted in the re-establishment of Cuesta's textbook grant program for all students.

Institutional Objective 2.4 Increase career pathways for local high school students.

We participated in the South Central Coast Region's design of the State's first Cybersecurity learning pathway for grades 6-12.

Institutional Objective 3.1: Increase the number of partnerships with four-year institutions to strengthen and streamline students' transfer opportunities.

We actively collaborative, discuss our curriculum and goals with CalPoly, our largest transfer consumer.

Institutional Objective 3.2 Increase the number of partnerships with local businesses in order to expand student work-based and experiential-based learning opportunities.

We facilitated internship connections with Tapestry Solutions (Boeing) and Underwriter's Laboratories, that may also benefit Cuesta's CNET program.

Institutional Objectives 5.1 Build a sustainable base of enrollment by effectively responding to the needs of the District as identified in the Educational Master Plan.

Our enrollment numbers are phenomenal, and increase well above the College averages.

% Change - Overall College Enrollments

Academic Year	% Change
2013 - 2014	-0.559%
2014 - 2015	2.039%
2015 - 2016	1.829%
2016 - 2017	1.653%

% Change - Computer Information Systems

Academic Year	% Change
2013 - 2014	20.97%
2014 - 2015	13.11%
2015 - 2016	-7.27%
2016 - 2017	17.58%
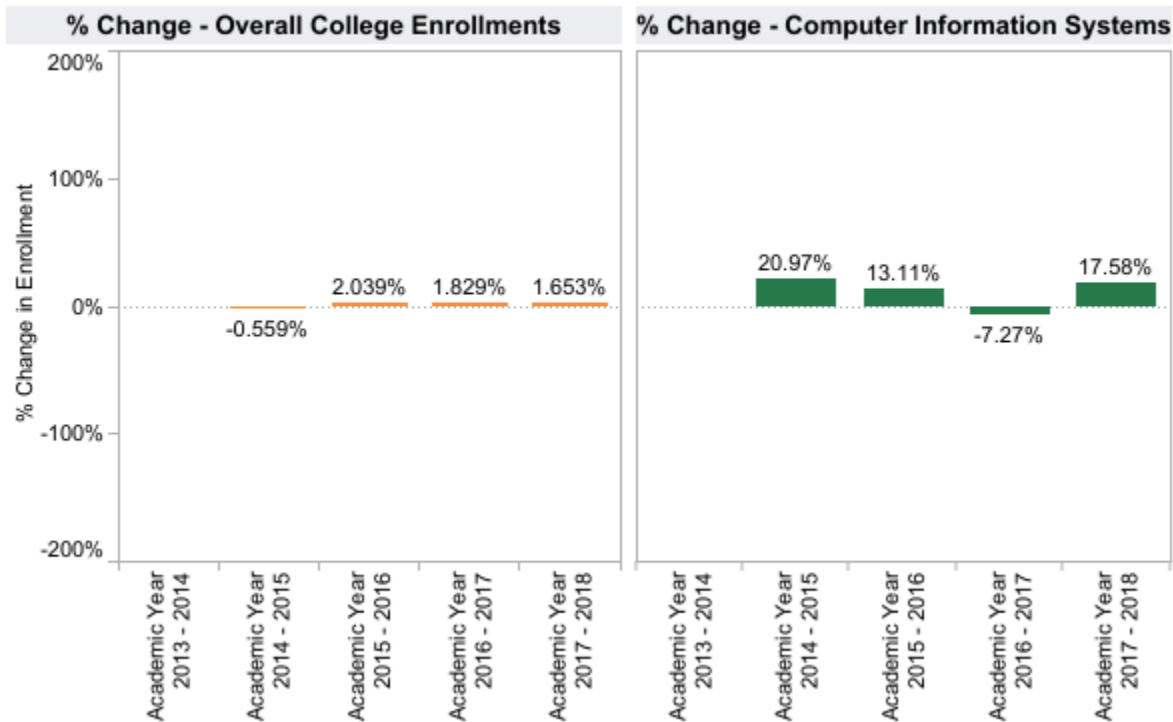
Institutional Objectives 5.2 Identify and develop sources of revenue beyond annual state allocations to support institutional effectiveness.

Institutional Objectives 5.3 Identify and implement strategies to address the rising costs of employee retirement obligations (CalSTRS and CalPERS) while maintaining support for institutional effectiveness.

We have not hired any new full-timers, rely on the part-time pool, and have thereby eliminated the rising costs of retirement obligations.

C. Cuesta College Institutional Learning Outcomes

Listed below are multiple CIS classes that align with institutional learning outcomes.

ILO 1. Personal, Academic, and Professional Development
Students achieving this outcome will be able to:
 • Recognize, assess, and demonstrate the skills and behaviors that promote academic
and professional development
 • Recognize, assess, and practice lifestyle choices that promote personal health and

well-being
- Demonstrate the professional skills necessary for successful employment

A sample of courses that achieve these outcomes are listed below:
- 1. CIS 201, CIS 210, CIS 231, CIS 232, CIS 233, and CIS 241 require comprehensive final examinations to promote the rigor of study behaviors necessary for success in four-year university systems.

Several classes have capstone projects that promote professional development.
These include:
- CIS 203 - IOS Development I - Semester App project
- CIS 204 - IOS Development II - Semester App project
- CIS 207 – Android Development I - Semester App project
- CIS 208 - Android Development II - Semester App project
- CIS 210 – Introduction to Computer Applications – Integrated Business Project.
- CIS 215 – Advanced Business Applications – Advanced Integrated Business Project.
- CIS 233 – Fundamental Computer Science III Data Structure Implementation

ILO 2. Critical Thinking and Communication

Students achieving this outcome will be able to:
- Analyze and evaluate their own thinking processes and those of others
- Communicate and interpret complex information in a clear, ethical, and logical manner

1. Algorithmic thinking is a key part of computer science. Students must look at problems and decompose them into smaller problems. They must then develop algorithms to solve the sub-problems and the overall problem.
2. Students must analyze their algorithms in order to determine the best way to implement a solution via programming code. They must not only determine the best constructs to use but also customize them using pattern-matching. Solutions need to be optimized using a combination of course content and practice.
3. Students need to evaluate all tasks and sub-tasks of a program in order to ascertain what algorithms and data structures are most appropriate for that particular task. Once they have identified the best options they need to select and implement those components as appropriate for the task, customizing as necessary.
4. Students must be able to communicate their decisions in writing and/or orally with an appropriate level of technical detail. This requires careful analysis of the problem as well as the most appropriate terms for communicating the key elements of that problem.

ILO 3. Scientific and Environmental Understanding

Students achieving this outcome will be able to:

- Draw conclusions based on the scientific method, computations or experimental and observational evidence
- Construct and analyze statements in a formal symbolic system
- Analyze the relationship between people's actions and the physical world
- Make decisions regarding environmental issues based on scientific evidence and reasoning

The CIS program fosters scientific and environmental understanding through extensive quantitative analysis in CIS 231, CIS 232, CIS 233, and CIS 241. Students are given a problem to solve which then requires the student use a symbolic system to construct a series of statements, then analyze the results and refine the statement constructs to successfully address the problem at hand.

ILO 4. Social, Historical, and Global Knowledge and Engagement

Students achieving this outcome will be able to:

- Analyze, evaluate, and pursue their opportunities and obligations as citizens in a complex world
- Demonstrate understanding of world traditions and the interrelationship between diverse groups and cultures
- Students demonstrate an understanding the role of computers in a modern global economy through the development of: web-based application in: CIS 103 and 106; as well as computer apps in: CIS 203, CIS 204, CIS 207 and CIS 208. These apps are specifically designed to meet the need of the global economy.

ILO 6. Technical and Informational Fluency

Students achieving this outcome will be able to:

- Recognize when information is needed, and be able to locate and utilize diverse sources effectively and ethically
- Produce and share electronic documents, images, and projects using modern software and technology

III. PROGRAM DATA ANALYSIS AND PROGRAM-SPECIFIC MEASUREMENTS

The data components are hyperlinked below.

General Enrollment (Insert Aggregated Data Chart)
Insert the data chart and explain observed differences between the program and the college.

SLOCCCD Program Review Data - Enrollment

Department:	Course:	Dual Enrollment:	Prison:
Computer Information Systems	All	All	All

Computer Information Systems Enrollments
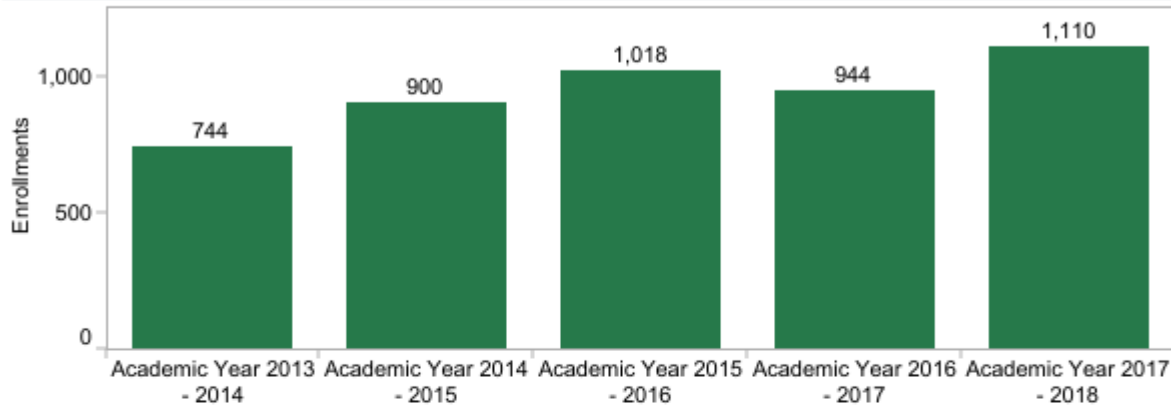
% Change - Overall College Enrollments
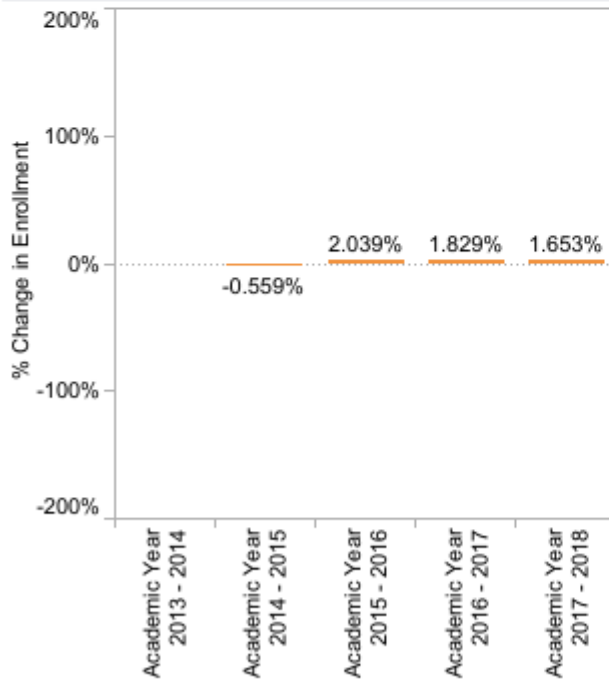
% Change - Computer Information Systems
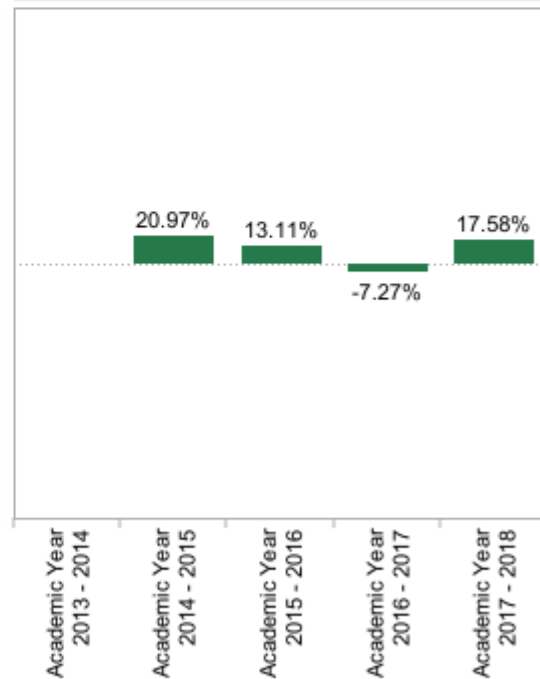
CIS Enrollment data has increased both the number of students at Cuesta and those taking Cuesta College courses vis Dual Enrollment (CCAP). From AY 2016-2017 to AY 2017-2018 enrollment in CIS courses increased from 848 to 987 for a 16.39% increased YOY. The Dual Enrollment increased from 96 to 123 students for a 28.13%. These numbers are well above the college average of 1.653%.

General Student Demand (Fill Rate) (Insert Aggregated Data Chart)
Insert the data chart and explain observed differences between the program and the college.

SLOCCCD Program Review Data - Student Demand (Fill Rate)

Department:	Course:	Dual Enrollment:	Prison
Computer Information Systems	All	Not Dual Enrollment	Not CMC:Prison

Fill Rate: The ratio of enrollments to class limits. Cross listed class limits are adjusted appropriately. Also, courses with zero class limits are excluded from this measure.

Fill rates for CIS courses over the past 5 years have oscillated between 73.24 to 86.71%.

General Efficiency (FTES/FTEF) (Insert Aggregated Data Chart)
Insert the data chart and explain observed differences between the program and the college.

SLOCCCD Program Review Data - Efficiency (FTES/FTEF)

Department:
Computer Information Systems

Course:
All

Dual Enrollment:
Not Dual Enrollment

Prison:
Not CMC:Prison
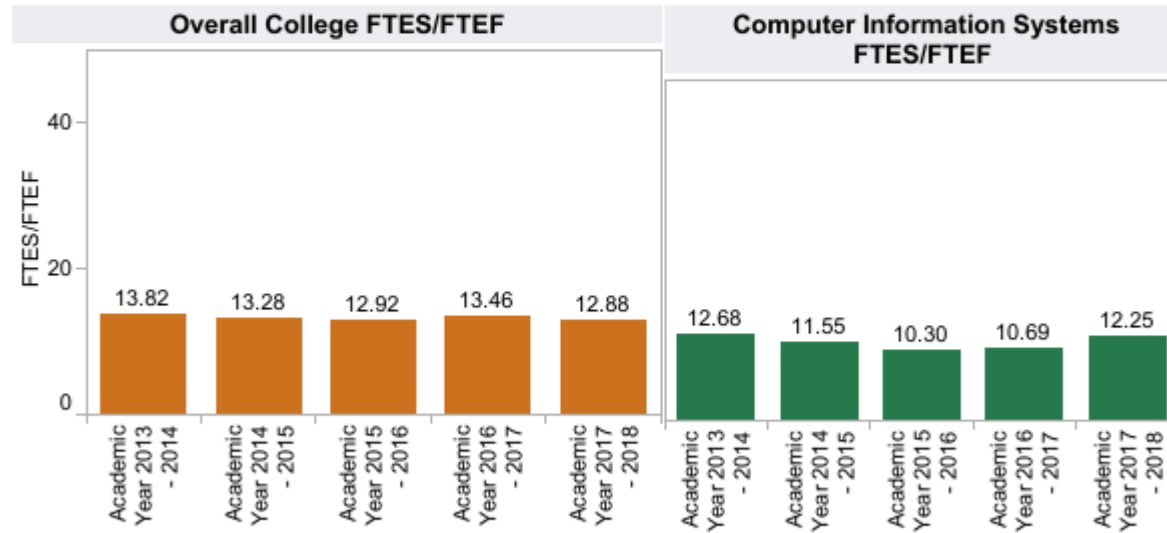
FTES/FTEF: The ratio of total FTES to Full-Time Equivalent Faculty

[Student Success—Course Modality (Insert Data Chart)](#)
Insert the data chart and explain observed differences between the program and the college.

SLOCCCD Program Review Data: Successful Course Completion

Select Department:
Computer Information Systems

Course:
All

Legend:
🟩 Face to Face Modality
🟥 Online Modality

Successful Course Competion by Modality -Computer Information Systems

Successful Course Competion by Modality Table - Computer Information Systems

		Academic Year 2013 - 2014	Academic Year 2014 - 2015	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018
Face to Face Modality	Department Success Rate	63.22%	69.50%	66.95%	69.92%	75.78%
	Total Department Enrollments	609.0	682.0	717.0	665.0	739.0
Online Modality	Department Success Rate	78.52%	75.70%	65.89%	57.19%	66.57%
	Total Department Enrollments	135.0	214.0	302.0	278.0	359.0

CIS 210 Only:

SLOCCCD Program Review Data: Successful Course Completion

Select Department:
Computer Information Systems

Course:
CIS210

Legend:
🟩 Face to Face Modality
🟥 Online Modality

Successful Course Competion by Modality -Computer Information Systems

		Academic Year 2013 - 2014	Academic Year 2014 - 2015	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018
Face to Face Modality	Department Success Rate	63.22%	69.50%	66.95%	69.92%	75.78%
	Total Department Enrollments	609.0	682.0	717.0	665.0	739.0
Online Modality	Department Success Rate	78.52%	75.70%	65.89%	57.19%	66.57%
	Total Department Enrollments	135.0	214.0	302.0	278.0	359.0

Caption: Successful Course Competion by Modality Table - Computer Information Systems

Degrees and Certificates Awarded (Insert Data Chart)

Insert the data chart and explain observed differences between the program and the college.

SLOCCCD Program Review Data: Degrees and Certificates Awarded

Program:
Computer Information Systems

Award Type:
All

Program Awards
Top Code Description(s): Computer Information Systems
Award(s): All

Program Awards Table

Award T..	Award	2013-2014	2014-2015	2015-2016	2016 - 2017	2017 - 2018
Associate in Science	Computer Science (AS)	9	8	9	10	8
	Total	9	8	9	10	8
Certificate 6-18 Cre..	Android Developer (CS)			2		
	Total			2		
Grand Total		9	8	11	10	8

Program Awards: The number of degress and certificates awarded by program type

Insert the data chart and explain observed differences between the program and the institutional set standards (as shown on the chart).

SLOCCCD Program Review Data: Successful Course Completion

Select Department:
Computer Information Systems

COURSE
All

Measure Names
- ▇ Department Success Rate
- ▇ Overall College Success Rate
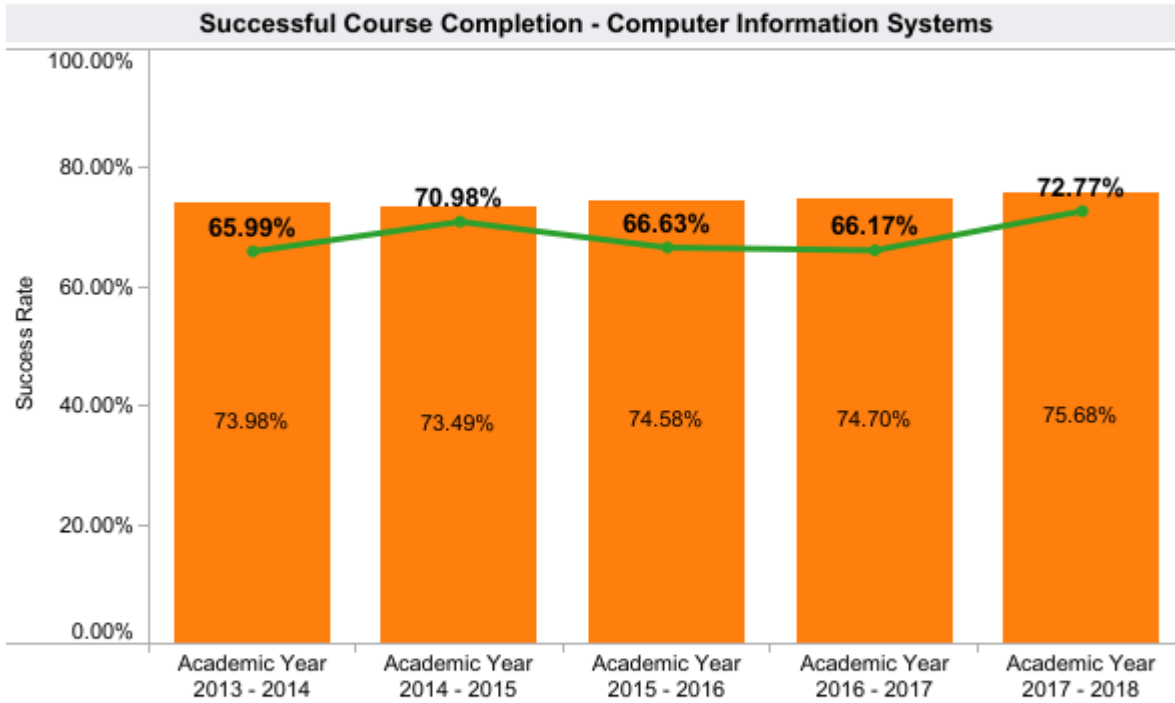
Successful Course Completion - Computer Information Systems

Computer Information Systems Success Rate Table

	Academic Year 2013 - 2014	Academic Year 2014 - 2015	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018
Department Success..	65.99%	70.98%	66.63%	66.17%	72.77%
Total Enrollments	744	896	1,019	943	1,098

CIS 201 Only:

SLOCCCD Program Review Data: Successful Course Completion

Select Department:	COURSE	Measure Names
Computer Information Systems	CIS201	🟩 Department Success Rate
		🟧 Overall College Success Rate

Successful Course Completion - Computer Information Systems
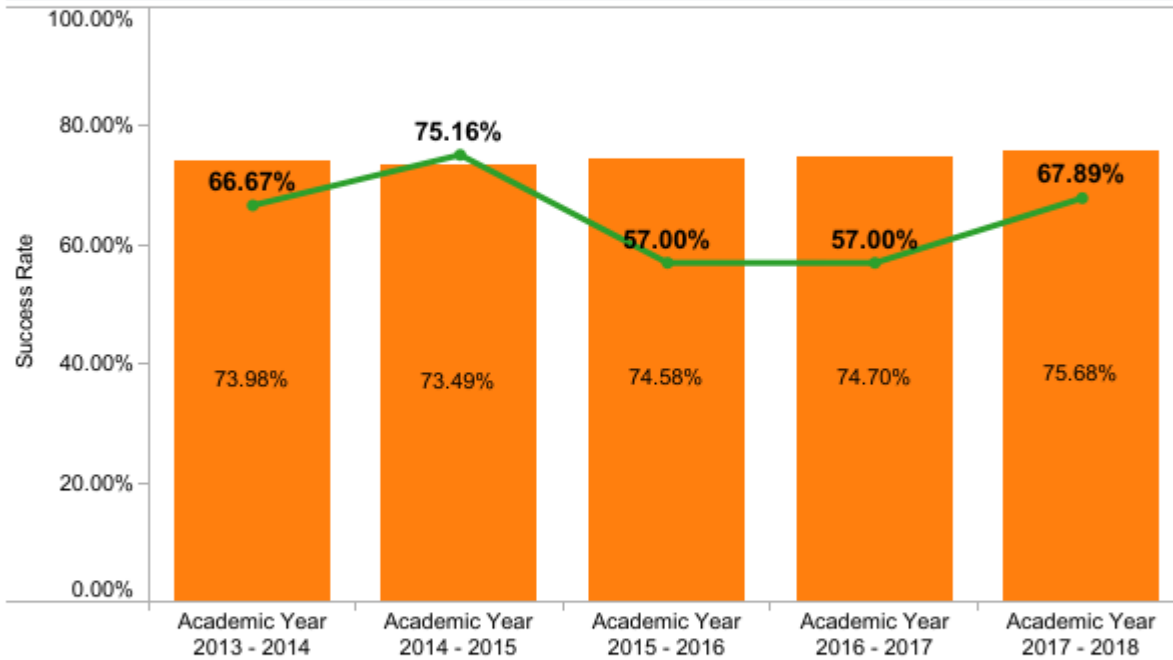
Computer Information Systems Success Rate Table

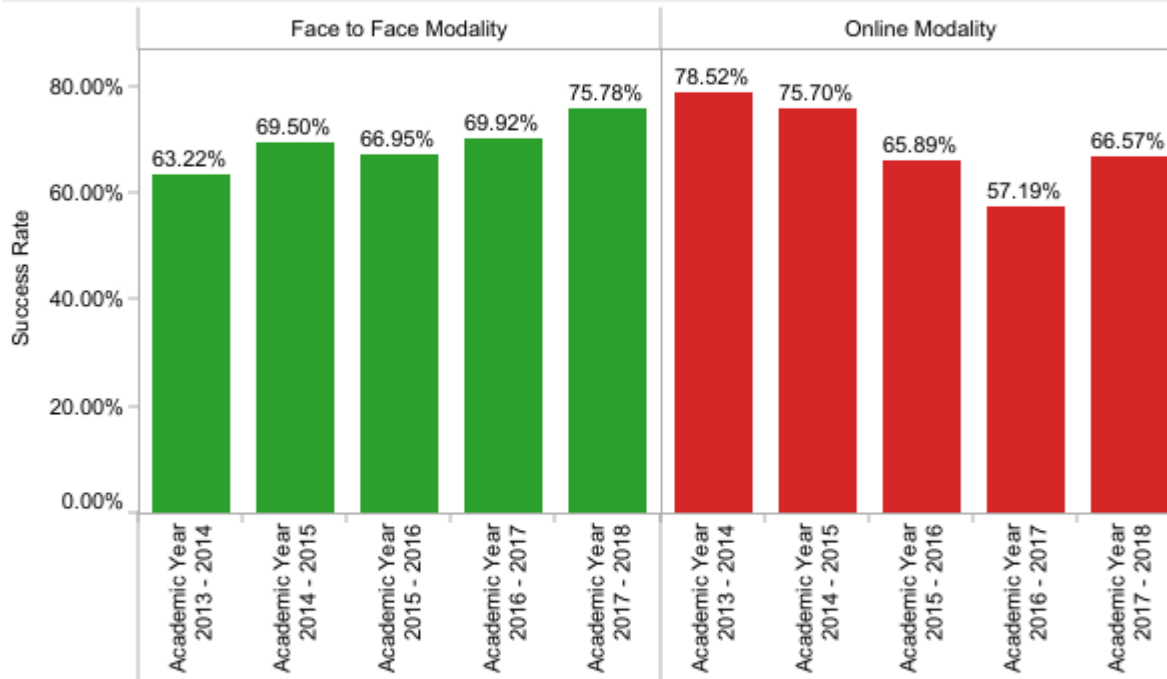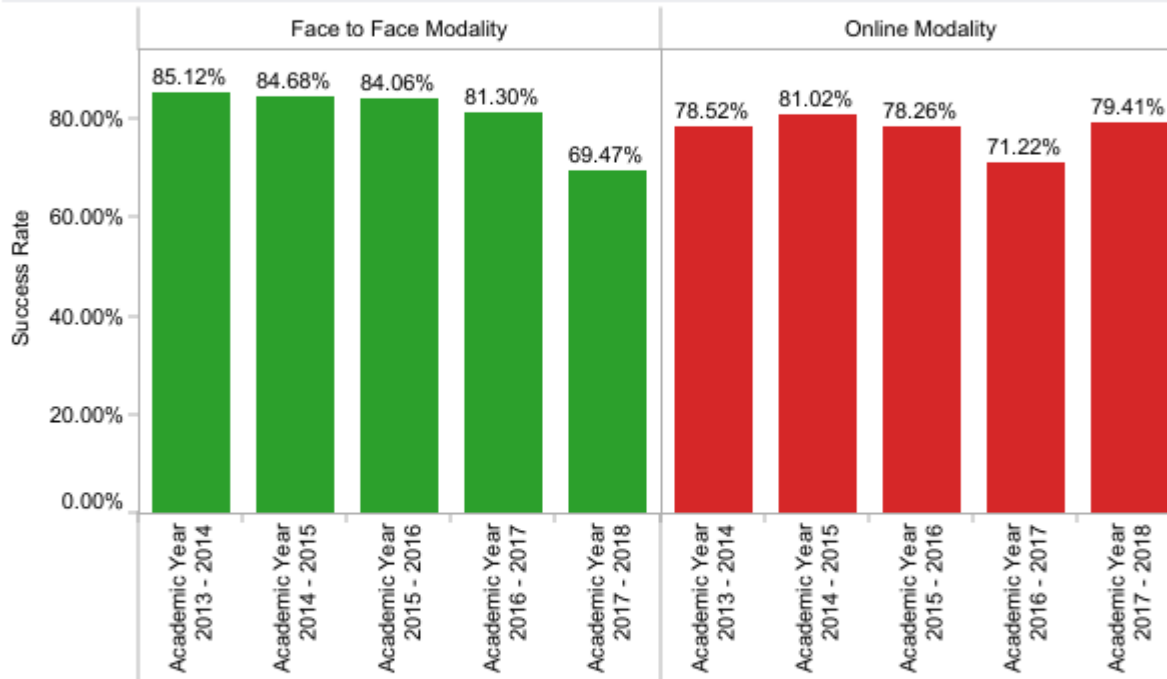|	Academic Year 2013 - 2014	Academic Year 2014 - 2015	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018
Department Success..	66.67%	75.16%	57.00%	57.00%	67.89%
Total Enrollments	57	153	200	293	355

CIS 210 Only:

SLOCCCD Program Review Data: Successful Course Completion

Select Department:
Computer Information Systems

COURSE
CIS210

Measure Names
- Department Success Rate
- Overall College Success Rate

Successful Course Completion - Computer Information Systems
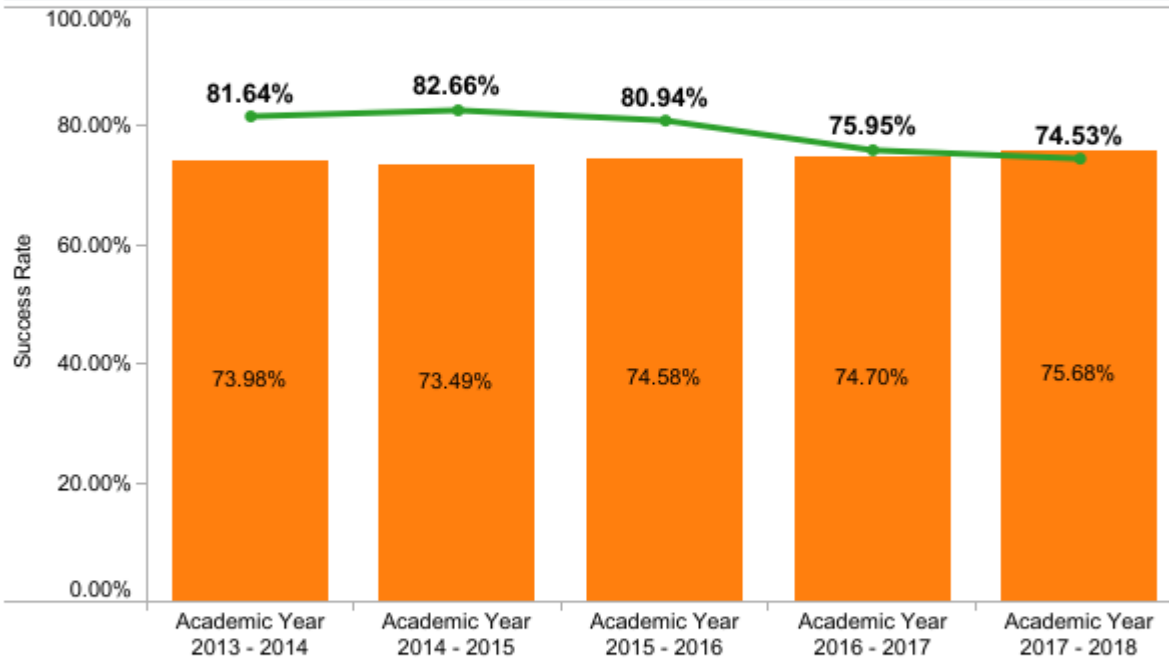
Computer Information Systems Success Rate Table

	Academic Year 2013 - 2014	Academic Year 2014 - 2015	Academic Year 2015 - 2016	Academic Year 2016 - 2017	Academic Year 2017 - 2018
Department Success..	81.64%	82.66%	80.94%	75.95%	74.53%
Total Enrollments	256	248	299	262	267

Review the Disaggregated Student Success charts; include any charts that you will reference.

The two most telling disaggreagations for CIS were for low income students and also by age group. (See charts inserted below on next page.)

Successful Course Completion by Student Subpopulation

Computer Information Systems Success Percent by Academically Disadvantaged
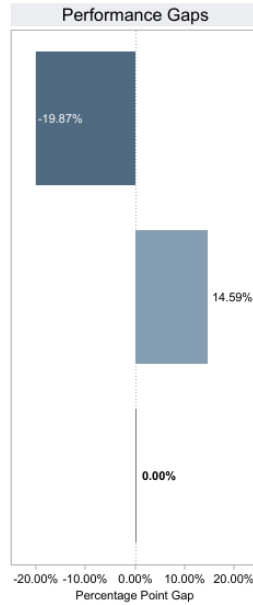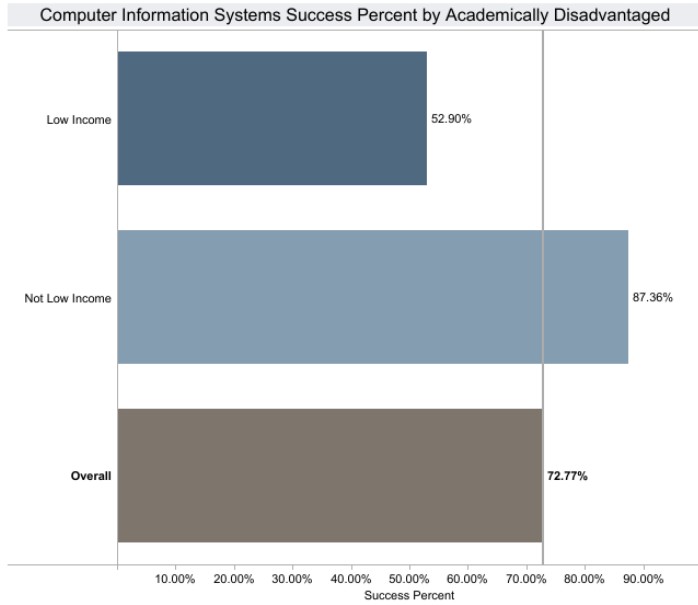
Subpopulation	Success Percent
Low Income	52.90%
Not Low Income	87.36%
Overall	72.77%

Performance Gaps

Subpopulation	Percentage Point Gap
Low Income	-19.87%
Not Low Income	14.59%
Overall	0.00%

Note: Successful Course Completion is the ratio of enrollments resulting in a final grade of A, A-, B+, B, B-, C+, C, CR or P to all valid grades.

Low income students are at an incredible disadvantage when taking CIS courses. This is likely due to less familiarity and access to computers and relate software and hardware in the household.

Successful Course Completion by Student Subpopulation

Computer Information Systems Success Percent by Age Group

Age Group	Success Percent
age_20_24	68.38%
age_25_29	77.50%
age_30_34	64.06%
age_35_39	77.36%
age_40_49	80.00%
age_over_50	57.58%
age_under_20	76.07%
Overall	72.77%

Performance Gaps

Age Group	Percentage Point Gap
age_20_24	-4.39%
age_25_29	4.73%
age_30_34	-8.71%
age_35_39	4.59%
age_40_49	7.23%
age_over_50	-15.19%
age_under_20	3.30%
Overall	0.00%
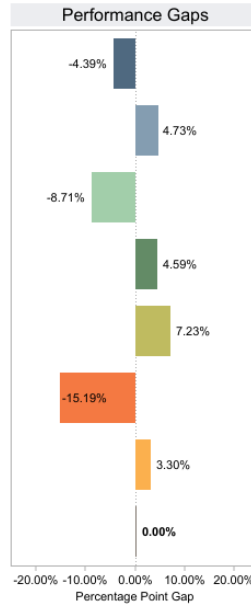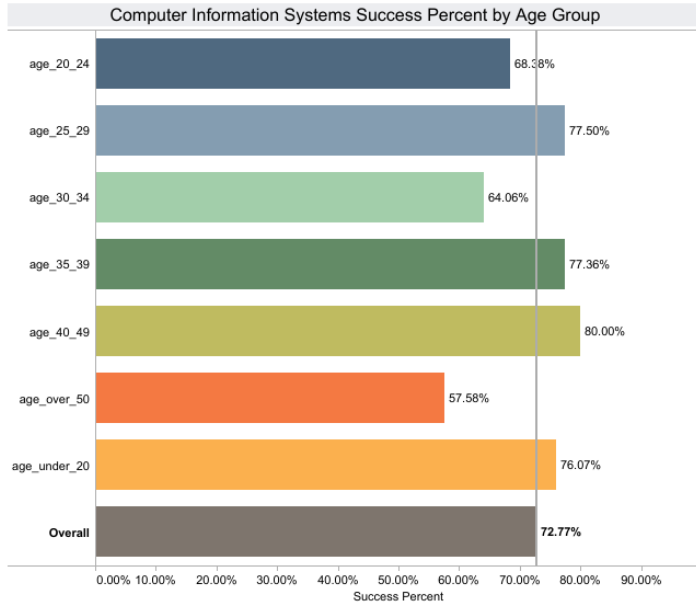
Note: Successful Course Completion is the ratio of enrollments resulting in a final grade of A, A-, B+, B, B-, C+, C, CR or P to all valid grades.

As one would expect, younger students who grew up with technology perform better in CIS courses that the over 50 age group. What is unexpected however, is the lower success for the 30 to 34 aged cohort. There are no obvious answers for this anomaly.

Describe any departmental or pedagogical outcomes that have occurred as a result of programmatic discussion regarding the data presented.

- Other Relevant Program Data (optional)
  Provide and comment on any other data that is relevant to your program such as state or national certification/licensure exam results, employment data, etc
  If necessary, describe origin and/or data collection methods used.

IV. CURRICULUM REVIEW

A. List all courses and degrees/certificates that have been created, modified, or deactivated (and approved by the Curriculum Committee) since the last CPPR. Complete the Curriculum Review Template and submit the form within your CPPR.

None.

B. Completing the template will provide evidence that the curriculum (including course delivery modalities) has been carefully reviewed during the past five years for currency in teaching practices, compliance with current policies, standards, regulations, and with advisory committee input. The form requires you to include evidence that the following entries on the course outline of record (CurricUNET format) are appropriate and complete:

- Course description
- Student learning outcomes
- Caps
- New DE addendum is complete
- MQDD is complete
- Pre-requisites/co-requisites
- Topics and scope
- Course objectives
- Alignment of topics and scopes, methods of evaluation, and assignments with objectives
- Alignment of SLOs and objectives with approved requirement rubrics (General Education, Diversity, Health, Liberal Arts)
- Textbooks
- CSU/IGETC transfer and AA GE information
- Degree and Certificate information

The template also includes a calendar of a five-year cycle during which all aspects of the course outline of record and program curriculum, including the list above, will be reviewed for currency, quality, and appropriate CurricUNET format.

Reviewer _____

1. Courses

- List all courses, which were active in your program at the time of the last CPPR.
- Review the current CurricUNET Course Outline of Record (COR) for each course and indicate yes/no for each column below.
- For each new, modified, and deactivated course provide the effective term posted on CurricUNET.

Course (Prefix / Number)	Currently active	New course since last CPPR	Major modification since last CPPR	Minor modification since last CPPR	Deactivated since last CPPR Notified impacted program(s)*

CIS 101	Yes	Yes	No	No	No
CIS 103	Yes	No	No	No	No
CIS 106	Yes	No	No	No	No
CIS 154	Yes	No	No	No	No
CIS 156	Yes	No	No	No	No
CIS 173	Yes	No	No	No	No
CIS 201	Yes	No	No	No	No
CIS 203	Yes	No	No	No	No
CIS 204	Yes	No	No	No	No
CIS 207	Yes	No	No	No	No
CIS 208	Yes	No	No	No	No
CIS 210	Yes	No	No	No	No
CIS 215	Yes	No	No	No	No
CIS 216	Yes	Yes	No	No	No
CIS 217	Yes	No	No	No	No
CIS 231	Yes	No	No	No	No
CIS 232	Yes	No	No	No	No
CIS 233	Yes	No	No	No	No
CIS 240	Yes	No	No	No	No
CIS 241	Yes	No	No	No	No
CIS 271	Yes	No	No	No	No

2. Course Review

- Please review the current CurricUNET CORs for all active courses in your program for currency and accuracy and annotate the items below.
- If you find any mistakes in the CORs (e.g. non-content related items such as typos), contact the Curriculum Chair or Curriculum Specialist for correction.
- All other changes require either a minor or major modification. Your curriculum representative will assist you.
- Some modifications need to be processed in the current term (see annotations # 2 and #3 below).
- Some modifications can be done over the period of the next five years (see annotation #1 below).

- Indicate on the Five-Year Cycle Calendar below when a minor or major modification will be submitted.

Course Number	CIS 101	CIS 103	CIS 106	CIS 154
1. Effective term listed on COR	Date: Spring 2017	Date: 2008	Date: Spring 2015	Date: Fall 2015
2. Catalog / schedule description is appropriate	Yes	Yes	Yes	Yes
3. Pre-/ co-requisites / advisories (if applicable) are appropriate	Yes	Yes	Yes	Yes
4. "Approved as Distance Education" is accurate (and new addendum complete)	No	Yes	Yes	Yes
5. Grading Method is accurate	Yes	Yes	Yes	Yes
6. Repeatability is zero	Yes	Yes	Yes	Yes
7. Class Size is accurate	Yes	Yes	Yes	Yes
8. Objectives are aligned with methods of evaluation	Yes	Yes	Yes	Yes
9. Topics / scope are aligned with objectives	Yes	Yes	Yes	Yes
10. Assignments are aligned with objectives	Yes	Yes	Yes	Yes
11. Methods of evaluation are appropriate	Yes	Yes	Yes	Yes
12. Texts, readings, materials are dated within last 5 years	Yes	Yes	Yes	Yes
13. CSU / IGETC transfer & AA GE information (if applicable) is correct	Yes	Yes	Yes	Yes
14. Degree / Certificate information (if applicable) is correct	Yes	Yes	Yes	Yes
15. Course Student Learning Outcomes are accurate	Yes	Yes	Yes	Yes
16. Library materials are adequate and current *	Yes	Yes	Yes	Yes

Course Number	CIS 156	CIS 173	CIS 201	CIS 203
1. Effective term listed on COR	Date: Fall 2014	Date: Fall 2014	Date: Fall 2014	Date: Fall 2015
2. Catalog / schedule description is appropriate	Yes	Yes	Yes	Yes

3. Pre-/ co-requisites / advisories (if applicable) are appropriate	Yes	Yes	Yes	Yes
4. "Approved as Distance Education" is accurate (and new addendum complete)	No	Yes	Yes	Yes
5. Grading Method is accurate	Yes	Yes	Yes	Yes
6. Repeatability is zero	Yes	Yes	Yes	Yes
7. Class Size is accurate	Yes	Yes	Yes	Yes
8. Objectives are aligned with methods of evaluation	Yes	Yes	Yes	Yes
9. Topics / scope are aligned with objectives	Yes	Yes	Yes	Yes
10. Assignments are aligned with objectives	Yes	No	Yes	Yes
11. Methods of evaluation are appropriate	Yes	Yes	Yes	Yes
12. Texts, readings, materials are dated within last 5 years	Yes	Yes	Yes	Yes
13. CSU / IGETC transfer & AA GE information (if applicable) is correct	Yes	Yes	Yes	Yes
14. Degree / Certificate information (if applicable) is correct	Yes	Yes	Yes	Yes
15. Course Student Learning Outcomes are accurate	Yes	Yes	Yes	Yes
16. Library materials are adequate and current *	Yes	Yes	Yes	Yes

Course Number	CIS 204	CIS 207	CIS 208	CIS 210
1. Effective term listed on COR	Date: Fall 2015	Date: Fall 2015	Date: Fall 2015	Date: Fall 2015
2. Catalog / schedule description is appropriate	Yes	Yes	Yes	Yes
3. Pre-/ co-requisites / advisories (if applicable) are appropriate	Yes	Yes	Yes	Yes
4. "Approved as Distance Education" is accurate (and new addendum complete)	Yes	Yes	Yes	Yes
5. Grading Method is accurate	Yes	Yes	Yes	Yes
6. Repeatability is zero	Yes	Yes	Yes	Yes
7. Class Size is accurate	Yes	Yes	Yes	Yes
8. Objectives are aligned with methods of evaluation	Yes	Yes	Yes	Yes

9. Topics / scope are aligned with objectives	Yes	Yes	Yes	Yes
10. Assignments are aligned with objectives	Yes	Yes	Yes	Yes
11. Methods of evaluation are appropriate	Yes	Yes	Yes	Yes
12. Texts, readings, materials are dated within last 5 years	Yes	Yes	Yes	Yes
13. CSU / IGETC transfer & AA GE information (if applicable) is correct	Yes	Yes	Yes	Yes
14. Degree / Certificate information (if applicable) is correct	Yes	Yes	Yes	Yes
15. Course Student Learning Outcomes are accurate	Yes	Yes	Yes	Yes
16. Library materials are adequate and current *	Yes	Yes	Yes	Yes

Course Number	CIS 215	CIS 216	CIS 217	CIS 231
1. Effective term listed on COR	Date: Fall 2014	Date: Fall 2017	Date: 2004	Date: Fall 2014
2. Catalog / schedule description is appropriate	Yes	Yes	Yes	Yes
3. Pre-/ co-requisites / advisories (if applicable) are appropriate	Yes	Yes	Yes	Yes
4. "Approved as Distance Education" is accurate (and new addendum complete)	Yes	Yes	Yes	Yes
5. Grading Method is accurate	Yes	Yes	Yes	Yes
6. Repeatability is zero	Yes	Yes	Yes	Yes
7. Class Size is accurate	Yes	Yes	Yes	Yes
8. Objectives are aligned with methods of evaluation	Yes	Yes	Yes	Yes
9. Topics / scope are aligned with objectives	Yes	Yes	Yes	Yes
10. Assignments are aligned with objectives	Yes	Yes	Yes	Yes
11. Methods of evaluation are appropriate	Yes	Yes	Yes	Yes
12. Texts, readings, materials are dated within last 5 years	Yes	Yes	Yes	Yes

13. CSU / IGETC transfer & AA GE information (if applicable) is correct	Yes	Yes	Yes	Yes
14. Degree / Certificate information (if applicable) is correct	Yes	Yes	Yes	Yes
15. Course Student Learning Outcomes are accurate	Yes	Yes	Yes	Yes
16. Library materials are adequate and current *	Yes	Yes	Yes	Yes

Course Number	CIS 232	CIS 233	CIS 240	CIS 241
1. Effective term listed on COR	Date: Spring 2013	Date: Spring 2013	Date: Spring 2013	Date: Fall 2014
2. Catalog / schedule description is appropriate	Yes	Yes	Yes	Yes
3. Pre-/ co-requisites / advisories (if applicable) are appropriate	Yes	Yes	Yes	Yes
4. "Approved as Distance Education" is accurate (and new addendum complete)	Yes	Yes	Yes	Yes
5. Grading Method is accurate	Yes	Yes	Yes	Yes
6. Repeatability is zero	Yes	Yes	Yes	Yes
7. Class Size is accurate	Yes	Yes	Yes	Yes
8. Objectives are aligned with methods of evaluation	Yes	Yes	Yes	Yes
9. Topics / scope are aligned with objectives	Yes	Yes	Yes	Yes
10. Assignments are aligned with objectives	Yes	Yes	Yes	Yes
11. Methods of evaluation are appropriate	Yes	Yes	Yes	Yes
12. Texts, readings, materials are dated within last 5 years	Yes	Yes	Yes	Yes
13. CSU / IGETC transfer & AA GE information (if applicable) is correct	Yes	Yes	Yes	Yes
14. Degree / Certificate information (if applicable) is correct	Yes	Yes	Yes	Yes
15. Course Student Learning Outcomes are accurate	Yes	Yes	Yes	Yes
16. Library materials are adequate and current *	Yes	Yes	Yes	Yes

Course Number	CIS 271
1. Effective term listed on COR	Date: Spring 2015
2. Catalog / schedule description is appropriate	Yes
3. Pre-/ co-requisites / advisories (if applicable) are appropriate	Yes
4. "Approved as Distance Education" is accurate (and new addendum complete)	Yes
5. Grading Method is accurate	Yes
6. Repeatability is zero	Yes
7. Class Size is accurate	Yes
8. Objectives are aligned with methods of evaluation	Yes
9. Topics / scope are aligned with objectives	Yes
10. Assignments are aligned with objectives	Yes
11. Methods of evaluation are appropriate	Yes
12. Texts, readings, materials are dated within last 5 years	Yes
13. CSU / IGETC transfer & AA GE information (if applicable) is correct	Yes
14. Degree / Certificate information (if applicable) is correct	Yes
15. Course Student Learning Outcomes are accurate	Yes
16. Library materials are adequate and current *	Yes

3. Programs
- List all programs/certificates that were active at the time of the last CPPR.
- Review the CurricUNET "Program of Study" outline and indicate yes/no for each program/certificate.
- For each deactivated program provide the effective term posted on CurricUNET.

Program / Certificate Title	Currently active	New program since last CPPR	Program modification since last CPPR	Deactivated since last CPPR
Android Developer / Certificate of Specialization	Yes	No	No	No
Computer Science / AS	Yes	No	No	No
Internet Application Developer / Certificate of Specialization	Yes	No	No	No
iOS Developer / Certificate of Specialization	Yes	No	No	No
Management Information Systems / AS	Yes	No	No	No

4. Program Review

- Review the CurricUNET "Program of Study" outline for each active program/certificate and indicate yes/no for each column below.

Currently active Program / Certificate: Title	Required courses and electives, incl. course numbers, course titles, and course credits, are accurate	Program description is current	Program Learning Outcomes are accurate and include method of assessment
Android Developer	Yes	Yes	Yes
Computer Science	Yes	Yes	Yes
Internet Application Developer	Yes	Yes	Yes
iOS Developer	Yes	Yes	Yes
Management Information Systems	Yes	Yes	Yes

* If not, program modification is needed.

** If not, Program Learning Outcomes modification is needed.

5. Five-Year Cycle Calendar

- During the following five-year cycle all aspects of the course outline of record and program curriculum will be reviewed for currency, quality, and appropriate CurricUNET format.
- Indicate if a course needs a major or minor modification based on the current course review. Your curriculum representative will assist you.

- When submitting a major or minor modification, please <u>enter or update the Student Learning Outcomes</u> for each course.

COURSES

Course Number	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
CIS 101		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 103		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 106		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 154		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 156		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 173		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 201		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 203		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 204		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 207		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 208		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 210		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 215		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 216		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 217		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 231		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 232		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 233		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 240		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor

CIS 241		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor
CIS 271		major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor	major / minor

PROGRAMS / CERTIFICATES

Program/Certificate Title	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
Android Developer		modify	modify	modify	modify	modify	modify	modify	modify	modify
Computer Science		modify	modify	modify	modify	modify	modify	modify	modify	modify
Internet Application Developer										
iOS Developer		modify	modify	modify	modify	modify	modify	modify	modify	modify
Management Information Systems		modify	modify	modify	modify	modify	modify	modify	modify	modify

V. PROGRAM OUTCOMES, ASSESSMENT AND IMPROVEMENTS

A. Attach or insert the assessment calendar for your program for the next program review cycle.

San Luis Obispo County Community College District Timeline of Learning Outcome Assessment

Department:
Computer Information S... ▾

Course timeline chart showing Last Assessed (□) and Planned Assessment (+) markers for CIS courses by Year:

Course	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
CIS 103		□					+		+			+			+	
CIS 154		□						+	+		+		+		+	
CIS 156		□						+	+		+		+		+	
CIS 173						□		+		+		+		+		
CIS 201						□	+		+		+		+		+	
CIS 203						□	+		+		+		+		+	
CIS 204					□		+		+		+		+		+	
CIS 207	□						+		+		+		+		+	
CIS 208					□		+		+		+		+		+	
CIS 210						□	+		+		+		+		+	
CIS 210AG						□		+		+		+		+		
CIS 215					□		+		+		+		+		+	
CIS 217					□		+		+		+		+		+	
CIS 231						□	+		+		+		+		+	
CIS 232						□			+			+			+	
CIS 233						□			+			+			+	
CIS 240		□					+		+		+		+		+	
CIS 241	□							+		+			+			
CIS 271						□		+		+			+			

Year

Assessment
□ Last Assessed
+ Planned Assessment
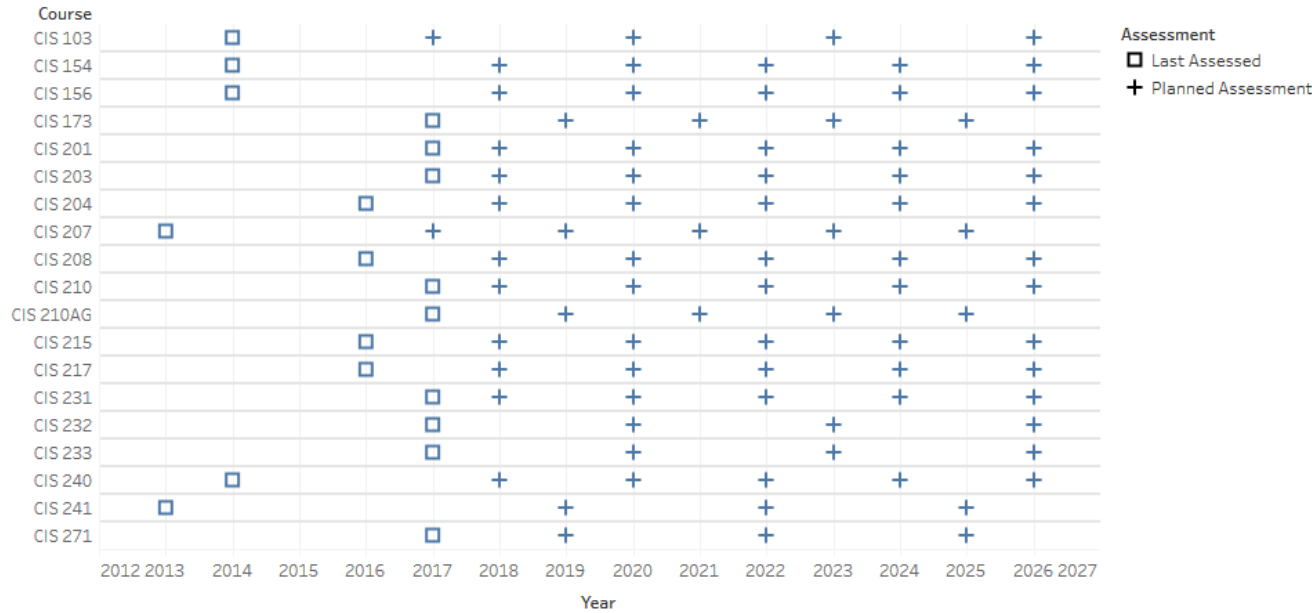
B. Have you completed all course assessments in eLumen? If no, explain why you were unable to do so during this program review cycle and what plan(s) exist for completing this in the next program review cycle.
Yes.

C. Include the most recent "PLO Summary Map by Course" from eLumen which shows the Course-level SLOs mapped to the Program-level SLOs.

ILO/PLO Summary Map by Course/Context

Map Origin: AS_COMP_SCI

Map Target: AS_COMP_SCI

AS_COMP_SCI SLOs	AS_COMP_SCI			
	Achieve a core understanding of Computer Science principles commensurate with that of the first two years of any university program and the ACM Guidelines Associate-Degree Curricula in Computer Science.	Develop verbal and non-verbal communication skills that empower students to be credible and able to advance in a diverse workplace.	Employ a code of ethics and standards consistently and appropriately in the workplace to develop skills for leadership, teamwork, and personal improvement to achieve one's potential.	Exhibit the ability to evaluate information sensibly and consistently in making decisions and solving problems dealing with professional and personal issues/concerns.
CHEM201A				
Communicate chemical concepts through the use of molecular formulas, structural formulas, and names of compounds.				X
Describe the chemical and physical properties of a chemical substance based on the atomic and molecular structure including orbital theory, the type of chemical bond, and the shape of the molecule.				X
Evaluate and interpret numerical and chemical scientific information.				X
Perform laboratory experiments based on gravimetric, volumetric, qualitative and instrumental analysis techniques, and effectively utilize the appropriate experimental apparatus.				X
Solve stoichiometry problems, including mass/mass, mass/volume, and volume/volume relationships.				X

AS_COMP_SCI SLOs	AS_COMP_SCI			
	Achieve a core understanding of Computer Science principles commensurate with that of the first two years of any university program and the ACM Guidelines Associate-Degree Curricula in Computer Science.	Develop verbal and non-verbal communication skills that empower students to be credible and able to advance in a diverse workplace.	Employ a code of ethics and standards consistently and appropriately in the workplace to develop skills for leadership, teamwork, and personal improvement to achieve one's potential.	Exhibit the ability to evaluate information sensibly and consistently in making decisions and solving problems dealing with professional and personal issues/concerns.
CHEM201B				
Use chemical evidence to develop a qualitative analysis scheme, and use the scheme for the determination of unknown cations in solution				X
Evaluate and interpret numerical and chemical scientific information, including the determination of a rate law or equilibrium constant based on experimental data.				X
Solve mathematical problems in chemistry, including equilibrium calculations, kinetics, electrochemistry, and energetics.				X
Communicate chemical concepts through the use of molecular formulas, structural formulas, and names of compounds.				X
Perform laboratory experiments based on qualitative, gravimetric, volumetric, and instrumental analysis techniques and effectively utilize the appropriate experimental apparatus and technology.				X
CIS201				
Describe the software development life cycle.	X	X		X

AS_COMP_SCI	AS_COMP_SCI			
AS_COMP_SCI **SLOs**	Achieve a core understanding of Computer Science principles commensurate with that of the first two years of any university program and the ACM Guidelines Associate-Degree Curricula in Computer Science.	Develop verbal and non-verbal communication skills that empower students to be credible and able to advance in a diverse workplace.	Employ a code of ethics and standards consistently and appropriately in the workplace to develop skills for leadership, teamwork, and personal improvement to achieve one's potential.	Exhibit the ability to evaluate information sensibly and consistently in making decisions and solving problems dealing with professional and personal issues/concerns.
Describe the principles of structured programming and be able to describe, design, implement, and test structured programs using currently accepted methodology.	X	X	X	X
Explain what an algorithm is and its importance in computer programming.	X	X		X
CIS231				
Demonstrate an understanding of the fundamental concepts of computing.	X	X		X
Identify and analyze the component parts of problems of moderate complexity.	X			X
Formulate algebraic expressions that describe mathematically the solutions to problems which are presented verbally.	X			X
Construct modular algorithmic problem solutions using modern software engineering techniques.	X			X
Use a modern high-level programming language to write computer programs which will implement previously defined algorithms.	X			X

AS_COMP_SCI	AS_COMP_SCI			
AS_COMP_SCI **SLOs**	Achieve a core understanding of Computer Science principles commensurate with that of the first two years of any university program and the ACM Guidelines Associate-Degree Curricula in Computer Science.	Develop verbal and non-verbal communication skills that empower students to be credible and able to advance in a diverse workplace.	Employ a code of ethics and standards consistently and appropriately in the workplace to develop skills for leadership, teamwork, and personal improvement to achieve one's potential.	Exhibit the ability to evaluate information sensibly and consistently in making decisions and solving problems dealing with professional and personal issues/concerns.
Devise test procedures that prove logically and mathematically that a computer program performs correctly and accurately.	X			X
Demonstrate the ability to make use of new tools, environments, and languages without assistance.	X	X		X
Demonstrate an awareness of social and ethical issues in computing.	X	X	X	X
Employ basic graphical user interfaces and the use of their related components.	X			X
Apply basic software engineering concepts.	X	X		X
Apply the principles of interface, inheritance and class hierarchy.	X			X
CIS232				
Analyze problems, design algorithms, and implement and test the algorithm in a modern object oriented programming language.	X	X	X	X
Apply procedural and object oriented methods in developing computer software.	X			X
Use classic algorithmic techniques such as recursion, exception, sorting and searching.	X			X

AS_COMP_SCI SLOs	AS_COMP_SCI			
	Achieve a core understanding of Computer Science principles commensurate with that of the first two years of any university program and the ACM Guidelines Associate-Degree Curricula in Computer Science.	Develop verbal and non-verbal communication skills that empower students to be credible and able to advance in a diverse workplace.	Employ a code of ethics and standards consistently and appropriately in the workplace to develop skills for leadership, teamwork, and personal improvement to achieve one's potential.	Exhibit the ability to evaluate information sensibly and consistently in making decisions and solving problems dealing with professional and personal issues/concerns.
Perform simple formal and empirical analysis of algorithms.	X	X	X	X
Define the Abstract Data Types covered, including arrays, vectors, collections, lists, stacks, queues and collections.	X			X
CIS233				
Contrast array and linked implementations of the Abstract Data Types.	X			X
Use the Abstract Data Types in applications.	X			X
Analyze for performance the algorithms used for methods in the Abstract Data Types.	X	X		X
Define the shortest distance, minimal spanning tree, iteration, search and sorting algorithms covered, including bubble sort, insertion sort, merge sort, heapsort, and quicksorst.	X			X
Employ by hand examples of the shortest distance, minimal spanning tree, iteration, search, and sorting.	X			X
Demonstrate and test the shortest distance, minimal spanning tree, iteration, search, and sorting algorithms through generic programs.	X	X		X

AS_COMP_SCI SLOs	AS_COMP_SCI			
	Achieve a core understanding of Computer Science principles commensurate with that of the first two years of any university program and the ACM Guidelines Associate-Degree Curricula in Computer Science.	Develop verbal and non-verbal communication skills that empower students to be credible and able to advance in a diverse workplace.	Employ a code of ethics and standards consistently and appropriately in the workplace to develop skills for leadership, teamwork, and personal improvement to achieve one's potential.	Exhibit the ability to evaluate information sensibly and consistently in making decisions and solving problems dealing with professional and personal issues/concerns.
Analyze for performance the algorithms used for shortest distance, minimal spanning tree, iteration, search and sorting.	X	X		X
Evaluate correctness and effectiveness of procedures.	X	X	X	X
CIS240				
Examine the Von Neumann architecture model and basic computer components.	X			X
Analyze Instruction Set Architecture (ISA) and hardware.	X	X		X
Design low level programs using basic control structures.	X			X
Investigate assembly process.	X	X		X
Examine Input / Output methods and instructions.	X			X
Analyze stack operation.	X			X
Analyze C language constructs assembly language.	X			X
CIS241				
Apply the theory of sets to the description and development of equivalence and order relations, equivalence classes and well ordered sets, and the definition of one-one, onto, and invertible functions.	X	X		X

AS_COMP_SCI			
AS_COMP_SCI **SLOs**	Achieve a core understanding of Computer Science principles commensurate with that of the first two years of any university program and the ACM Guidelines Associate-Degree Curricula in Computer Science.	Develop verbal and non-verbal communication skills that empower students to be credible and able to advance in a diverse workplace.	Employ a code of ethics and standards consistently and appropriately in the workplace to develop skills for leadership, teamwork, and personal improvement to achieve one's potential.	Exhibit the ability to evaluate information sensibly and consistently in making decisions and solving problems dealing with professional and personal issues/concerns.
Use the concepts and techniques of propositional and predicate logic to describe the structure of mathematical proofs (including mathematical induction), analyze control structures in computer programs and algorithms, and determine program correctness.	X	X		X
Use basic combinatorical concepts (inclusion-exclusion and pigeonhole principles, permutations and combinations) to derive the binomial theorem, solve recurrence equations, and analyze and compare the complexity of algorithms.	X	X		X
Demonstrate different traversal methods for trees and graphs and apply these concepts to the determination of optimal spanning and routing trees, and the development and analysis of efficient searching and sorting algorithms.	X	X		X
Derive the basic principles of discrete probability theory (independence, conditional probability, and Bayes' theorem) using the theory of sets, and apply these concepts to the definition of discrete random variables, and the derivation of the Law of Large Numbers.	X	X	X	X

AS_COMP_SCI SLOs	AS_COMP_SCI			
	Achieve a core understanding of Computer Science principles commensurate with that of the first two years of any university program and the ACM Guidelines Associate-Degree Curricula in Computer Science.	Develop verbal and non-verbal communication skills that empower students to be credible and able to advance in a diverse workplace.	Employ a code of ethics and standards consistently and appropriately in the workplace to develop skills for leadership, teamwork, and personal improvement to achieve one's potential.	Exhibit the ability to evaluate information sensibly and consistently in making decisions and solving problems dealing with professional and personal issues/concerns.
MATH265A				
Compute limits algebraically, graphically and using L'Hopital's rule.				X
Compute derivatives of single-variable functions using product rule, quotient rule, chain rule, and differentiation rules for polynomials, trigonometric, inverse trigonometric, exponential, and logarithmic functions.				X
Apply derivatives to investigate the graphs of functions through tangent lines, extrema, and concavity.				X
Apply derivatives to solve related rates and optimization problems.				X
Evaluate definite and indefinite integrals of single-variable functions using Riemann sums, basic integration rules, and substitution.				X
Apply definite integrals to find areas and the average value of a function.				X
MATH265B				
Solve integration problems using methods such as substitution, parts, trigonometric substitution, tables, and partial fractions.				X

AS_COMP_SCI	AS_COMP_SCI			
AS_COMP_SCI **SLOs**	Achieve a core understanding of Computer Science principles commensurate with that of the first two years of any university program and the ACM Guidelines Associate-Degree Curricula in Computer Science.	Develop verbal and non-verbal communication skills that empower students to be credible and able to advance in a diverse workplace.	Employ a code of ethics and standards consistently and appropriately in the workplace to develop skills for leadership, teamwork, and personal improvement to achieve one's potential.	Exhibit the ability to evaluate information sensibly and consistently in making decisions and solving problems dealing with professional and personal issues/concerns.
Use Riemann sums and integration to solve problems that apply to fields like geometry, physics, economics, and probability theory.				X
Use algebraic, geometric and numeric techniques to analyze and solve differential equations.				X
Analyze numeric series and power series and utilize these series to approximate functions. Determine series convergence using tests such as the Integral Test, Ratio Test, Comparison Test, Limit Comparison Test, nth Term Test and Alternating Series Test.				X
Combine vectors through addition, subtraction, scalar multiplication, dot product and cross product.				X
PHYS208A				
Apply work-energy equations when appropriate to solve problems in mechanics				X
Perform laboratory experiments effectively utilizing appropriate experimental apparatuses				X
Solve static and dynamic systems by utilizing Newton's Laws of Motion				X

SLOs / AS_COMP_SCI	AS_COMP_SCI			
	Achieve a core understanding of Computer Science principles commensurate with that of the first two years of any university program and the ACM Guidelines Associate-Degree Curricula in Computer Science.	Develop verbal and non-verbal communication skills that empower students to be credible and able to advance in a diverse workplace.	Employ a code of ethics and standards consistently and appropriately in the workplace to develop skills for leadership, teamwork, and personal improvement to achieve one's potential.	Exhibit the ability to evaluate information sensibly and consistently in making decisions and solving problems dealing with professional and personal issues/concerns.
Utilize impulse and momentum concepts to solve problems				X
PHYS208B				
Analyze and compute electric and magnetic forces, fields, and energy				X
Describe the mechanics of wave motion by utilizing Newton's Laws of Motion				X
Model optical systems				X
Perform laboratory experiments effectively utilizing appropriate experimental apparatuses				X

ILO/PLO Summary Map by Course/Context

Map Origin: AS_MGMT_INFO

Map Target: AS_MGMT_INFO

AS_MGMT_INFO SLOs	AS_MGMT_INFO			
	Apply the methods of differential calculus to solve problems involving functions unique to business applications. (MATH 255)	Analyze problems, design algorithms, and implement and test the algorithm in a modern object oriented programming language. (CIS 201, CIS 231, CIS 232)	Apply concepts of accounting, business law and economics to solve business orientated problems. (BUS 201 A&B, BUS 218, ECON 201 A&B)	Demonstrate proficiency in business applications of spreadsheets and database to solve business problems. (CAOA 261, CAOA 264)
BUS201A				
Analyze accounting information.			X	
Demonstrate understanding of accounting terminology, principles and procedures.			X	
Prepare accounting information following generally accepted accounting principles.			X	
Demonstrate effective written and oral communication. This includes demonstrating professional and ethical behaviors and using technology effectively.			X	
BUS201B				
Analyze financial data to form business decisions for planning, directing and controlling a business.			X	
Demonstrate understanding of accounting terminology, procedures and functions within a business.			X	
Prepare accounting information for internal and external users using various costing models.			X	

AS_MGMT_INFO SLOs	AS_MGMT_INFO			
	Apply the methods of differential calculus to solve problems involving functions unique to business applications. (MATH 255)	Analyze problems, design algorithms, and implement and test the algorithm in a modern object oriented programming language. (CIS 201, CIS 231, CIS 232)	Apply concepts of accounting, business law and economics to solve business orientated problems. (BUS 201 A&B, BUS 218, ECON 201 A&B)	Demonstrate proficiency in business applications of spreadsheets and database to solve business problems. (CAOA 261, CAOA 264)
Demonstrate effective written and oral communication. This includes demonstrating professional and ethical behaviors and using technology effectively.			X	
BUS218				
Identify the different sources and types of American law and demonstrate how American law is created, changed, and classified.			X	
Distinguish between the ethical and social responsibilities in the field of business that are imposed by law versus by custom.			X	
Use the IRAC (Issue, Rule, Analysis, Conclusion) method to analyze legal cases.			X	
Describe the federal and state court systems along with court procedures such as litigation and alternative dispute resolution procedures such as mediation and arbitration and the use of these procedures in resolving business disputes.			X	
Differentiate among the different areas of substantive law relevant to business such as contract, tort, and property law and describe the impact these areas of the law have on the field of business.			X	

AS_MGMT_INFO SLOs	Apply the methods of differential calculus to solve problems involving functions unique to business applications. (MATH 255)	Analyze problems, design algorithms, and implement and test the algorithm in a modern object oriented programming language. (CIS 201, CIS 231, CIS 232)	Apply concepts of accounting, business law and economics to solve business orientated problems. (BUS 201 A&B, BUS 218, ECON 201 A&B)	Demonstrate proficiency in business applications of spreadsheets and database to solve business problems. (CAOA 261, CAOA 264)
Apply the knowledge acquired in this course to make legal and business decisions based on reasoned analysis and application of legal principles.			X	
CIS201				
Describe the software development life cycle.		X		
Describe the principles of structured programming and be able to describe, design, implement, and test structured programs using currently accepted methodology.		X		
Explain what an algorithm is and its importance in computer programming.		X		
CIS210				
Demonstrate an understanding of the development and use of information systems in business.		X		
Discuss security, ethical and privacy issues resulting from the use of computer technology.		X		
Demonstrate the process to create basic word processing documents, spreadsheets, databases and presentation software.		X		

AS_MGMT_INFO SLOs	AS_MGMT_INFO			
	Apply the methods of differential calculus to solve problems involving functions unique to business applications. (MATH 255)	Analyze problems, design algorithms, and implement and test the algorithm in a modern object oriented programming language. (CIS 201, CIS 231, CIS 232)	Apply concepts of accounting, business law and economics to solve business orientated problems. (BUS 201 A&B, BUS 218, ECON 201 A&B)	Demonstrate proficiency in business applications of spreadsheets and database to solve business problems. (CAOA 261, CAOA 264)
Demonstrate application of the information systems concepts and methods through the completions of a comprehensive project using computer-based-solutions to business problems.		X		
CIS215				
Apply a professional understanding of intermediate to advanced skills in word processing, spreadsheets and database application software.				X
Demonstrate the ability to apply advanced skills in word processing, spreadsheet applications and database software through the creation of an integrated project.				X
Demonstrate proficiency at analyzing business scenarios using word processing, spreadsheet and database software.				X
CIS231				
Demonstrate an understanding of the fundamental concepts of computing.		X		
Identify and analyze the component parts of problems of moderate complexity.		X		
Formulate algebraic expressions that describe mathematically the solutions to problems which are presented verbally.		X		

AS_MGMT_INFO SLOs	AS_MGMT_INFO			
	Apply the methods of differential calculus to solve problems involving functions unique to business applications. (MATH 255)	Analyze problems, design algorithms, and implement and test the algorithm in a modern object oriented programming language. (CIS 201, CIS 231, CIS 232)	Apply concepts of accounting, business law and economics to solve business orientated problems. (BUS 201 A&B, BUS 218, ECON 201 A&B)	Demonstrate proficiency in business applications of spreadsheets and database to solve business problems. (CAOA 261, CAOA 264)
Construct modular algorithmic problem solutions using modern software engineering techniques.		X		
Use a modern high-level programming language to write computer programs which will implement previously defined algorithms.		X		
Devise test procedures that prove logically and mathematically that a computer program performs correctly and accurately.		X		
Demonstrate the ability to make use of new tools, environments, and languages without assistance.		X		
Demonstrate an awareness of social and ethical issues in computing.		X		
Employ basic graphical user interfaces and the use of their related components.		X		
Apply basic software engineering concepts.		X		
Apply the principles of interface, inheritance and class hierarchy.		X		
CIS232				
Analyze problems, design algorithms, and implement and test the algorithm in a modern object oriented programming language.		X		

AS_MGMT_INFO SLOs	AS_MGMT_INFO			
	Apply the methods of differential calculus to solve problems involving functions unique to business applications. (MATH 255)	Analyze problems, design algorithms, and implement and test the algorithm in a modern object oriented programming language. (CIS 201, CIS 231, CIS 232)	Apply concepts of accounting, business law and economics to solve business orientated problems. (BUS 201 A&B, BUS 218, ECON 201 A&B)	Demonstrate proficiency in business applications of spreadsheets and database to solve business problems. (CAOA 261, CAOA 264)
Apply procedural and object oriented methods in developing computer software.		X		
Use classic algorithmic techniques such as recursion, exception, sorting and searching.		X		
Perform simple formal and empirical analysis of algorithms.		X		
Define the Abstract Data Types covered, including arrays, vectors, collections, lists, stacks, queues and collections.		X		
ECON201A				
Illustrate the economic way of thinking, including but not limited to: marginal analysis, opportunity cost, and how people respond to incentives.			X	
Identify assumptions of economic models and use economic models to make predictions of outcomes when factors in the economy change.			X	
Calculate and critically analyze key economic variables such as unemployment, inflation and national income.			X	
Evaluate factors that contribute to economic growth.			X	

AS_MGMT_INFO SLOs	AS_MGMT_INFO			
	Apply the methods of differential calculus to solve problems involving functions unique to business applications. (MATH 255)	Analyze problems, design algorithms, and implement and test the algorithm in a modern object oriented programming language. (CIS 201, CIS 231, CIS 232)	Apply concepts of accounting, business law and economics to solve business orientated problems. (BUS 201 A&B, BUS 218, ECON 201 A&B)	Demonstrate proficiency in business applications of spreadsheets and database to solve business problems. (CAOA 261, CAOA 264)
Identify the role that monetary policy, fiscal policy and international trade play in shaping the national economy.			X	
ECON201B				
Utilize microeconomic concepts and models to critically evaluate and make predictions of outcomes in the short and long run when factors in the economy change.			X	
Illustrate economic perspective and analysis when responding to choices.			X	
Critically evaluate issues of the economy as they pertain to microeconomic analysis; including but not limited to, market failure, income inequality, and international trade and finance.			X	
MATH255				
Determine derivatives of functions involving constants, sums, differences, products, quotients, real numbered powers, and the composition of two or more functions.	X			
Determine derivatives of functions involving exponentials, logarithms or combinations of these functions.	X			

	AS_MGMT_INFO			
AS_MGMT_INFO **SLOs**	Apply the methods of differential calculus to solve problems involving functions unique to business applications. (MATH 255)	Analyze problems, design algorithms, and implement and test the algorithm in a modern object oriented programming language. (CIS 201, CIS 231, CIS 232)	Apply concepts of accounting, business law and economics to solve business orientated problems. (BUS 201 A&B, BUS 218, ECON 201 A&B)	Demonstrate business appl spreadsheets solve busines (CAOA 261, C
Determine the indefinite integral of functions involving powers, exponentials, logarithms or combinations of these functions.	X			
Evaluate definite integrals using integration by substitution and the fundamental theorem of calculus.	X			
Apply the methods of differential calculus to solve problems involving functions unique to business applications.	X			

D. Highlight changes made at the course or program level that have resulted from SLO assessment.

Unfortunately, in looking at the assessment report in eLumen for data entered from Fall 2016 to Spring 2018, there is little grouping that can be done. For example, CIS 231 – The Fundamentals of Computer Science, one of the SLOs is "Construct modular algorithmic problem solutions using modern software engineering techniques" for Fall 2016 had 19.67% of students marked as "Does not meet expectations" while in Fall 2017 only 6.67% of students were marked as "Does not meet", but in Spring 2017, this ticked up to 9.09%. Across the terms this represents 13.67% of students marked as "Does Not Meet". Over time, students ability to meet expectations, first dropped in many instances, and then raised, and in a few, it raised in the subsequent semester, only to drop in the following semester. At this time, we continue to enter and monitor data to look out for areas of concern, but at this time, CIS has not made any changes directly attributable to SLO assessment.

E. Identify and describe any budget or funding requests that are related to student learning outcome assessment results. If applicable, be sure to include requests in the Resource Plan Worksheet.

9 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
I n s t r u c t i o n a l   C o m p r e h e n s i v e   P r o g r a m   P l a n n i n g   &   R e v i e w
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VI. PROGRAM DEVELOPMENT

Indicate how the program supports efforts to achieve any of the following:

A. Institutional Goals and Objectives
B. Institutional Learning Outcomes
C. Program outcomes

10 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
I n s t r u c t i o n a l   C o m p r e h e n s i v e   P r o g r a m   P l a n n i n g   &   R e v i e w
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The CIS program will continue to offer courses in the Distance Education and Hybrid modality and increase their availability. The CIS program has successfully met Institutional Objective 1.3: Increase successful completions in distance education courses by 2% annually. The program has been able to improve its distance education completion rate to 77.48%, largely via improvements in the completion rate of CIS 201.

Additionally CIS faculty and Cuesta staff worked with Lucia Mar School district to create a dual computer lab similar to that on the San Luis Obispo campus on the campus of Central Coast New Tech High School. This lab allowed the college to enhance and expand the success in dual enrollment as well as enabling Cuesta College to offer CIS courses in the South County. These actions support Institutional Objective 2.2: Increase the local high school capture rate by 2% annually.

B. New or modified action steps for achieving Institutional Learning Outcomes

Professional Development/Outreach for Randy Scovil includes:

- Active member of Softec, the local technology non-profit advocacy group
- Speaker at multiple Softec Tech Brews
- Panelist for SLO High Tech Symposium
- Mentor for SLO Startup Weekend
- Participant in Statewide Entrepreneurship grant, focusing on fostering tech entrepreneurism
- Founder and head of the SLO chapter of CocoaHeads, the worldwide user group for Cocoa (Apple – iOS and Mac) developers. This group meets monthly and allows students and local professionals to interact and learn the latest tech developments
- Attended the following public conferences: WWDC, MPICT (Winter and Summer), CocoaConf, iOS Tech Talk, the Online Teaching Conference, Google Cloud Next, Google Cloud Faculty Institute, and Swift Cloud Workshop.
- •Attended several "undisclosed" invitation-only events at leading tech companies in Silicon Valley. Number of invitee's world-wide c. 20. In almost every case was only community-college instructor (at most one of two) invited.
- Networking with Deputy Sector Navigators for Business and ICT
- Co-founder of Cuesta HDTV production project. Relevant given the growing recognition of media of computers under the ICT banner.

C. New or modified action steps for achieving program outcomes

CIS is an extremely dynamic field and arguably the most dynamic at the college. Several of our courses involve technologies that did not exist in their current form as recently as ten years ago. Other areas have grown in importance, especially for the job market. As such this program is one of the most active in the college in the area of curriculum development.

D. Anticipated changes in curriculum and scheduling

11 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
I n s t r u c t i o n a l   C o m p r e h e n s i v e   P r o g r a m   P l a n n i n g   &   R e v i e w
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We are currently developing an extensive set of offerings in Cloud Computing that will include at least one certificate.. Curriculum addressing web development will be looked into to address new opportunities to create more courses should there be sufficient instructor resources.. Scheduling will continue of offer degree courses within a year rotation.

CIS has continued to experience a phenomenal growth rate, even with its inherent challenges due to lack of full-time faculty and the difficulty in recruiting/retaining part-time instructors given the excellent salaries available in industry. This situation was further impacted by the retirement of full time instructor Michele McAustin after the 2017-2018 school year.

New sections fill immediately when we have been given the opportunity to offer them. Our biggest challenge is finding qualified faculty to teach these and potentially new course as the field continues to broaden. This also may require faculty to undergo extensive training, which is very detailed and very time-intensive.

E. Levels or delivery of support services

As the CIS program continues to grow additional computer service staff will be needed to ensure that the teaching labs are ready at the start of the semester. Also with increased DE course offerings the College will need increased DE instructional and technical support.

F. Facilities changes

The primary classrooms, 3412 and 3413, were updated in the past few years and are still viable. There may be a need to update 3413 in the next few years. The new South County lab should be viable for the foreseeable future. 3413 is acquiring a new Smart Board as the current one was damaged by unauthorized room users in the past and has been deemed irrepairable.

G. Staffing projections

The CIS program currently has an on-going part-time hiring pool which still is unable to meet our growing needs. Additionally Cal Poly part time faculty are paid at least 50% higher than Cuesta College faculty, thus we lose many qualified part time faculty to Cal Poly. The program needs to have an additional full-time CIS faculty member to reliably manage growth.

H. Strategies for responding to the predicted budget and FTES target for the next academic year

In order to meet the FTES target for the next academic year our major need is another full-time faculty member. Our program has grown significantly and has the potential to grow even more, faculty permitting.

VII.   END NOTES

12 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
I n s t r u c t i o n a l   C o m p r e h e n s i v e   P r o g r a m   P l a n n i n g   &   R e v i e w
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The following pages include minutes from CIS Advisory Committee meetings for the past five years, including the current academic year. Our next advisory committee meeting is tentatively scheduled for February 7, 2020 for the 2019-2020 academic year.

CIS students have become very successful since leaving Cuesta. Students in the program have transferred to most if not all UC campuses, a majority of CSUs, and several schools out of state. Alumni have or are currently working for companies such as Google, Amazon, Microsoft, Apple, as well as several other companies.

        *** ac min for 14-15, 15-16, 16-17, 17-18, 18-19

13 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
I n s t r u c t i o n a l   C o m p r e h e n s i v e   P r o g r a m   P l a n n i n g   &   R e v i e w
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Computer Information Systems Advisory Meeting Minutes, Cuesta College

Friday, March 27, 2015

In attendance: Roberto Monge; Stefan Ayala; Rob Ross; Tyler Penney; Vanessa Salas, Clint Staley; Jessie Dundon; Mike Maxwell; Kyle Wiens; Stephen Schmidt; Michele McAustin; Randy Scovil; Don Norton

- Randy thanked everyone for participating, and everyone introduced themselves.
- Overview of CIS Program **Core transfer courses** and C-ID Statewide Articulation (SB1440):
    - Randy shared that our CIS 201 course is now using JavaScript and has grown to 3 sections a semester from 1 a year ago.
    - CIS 231 will be changing some in Fall 2015 in an effort to align with the changes Cal Poly is implementing.
    - CIS 241 may be moving to an upper division course at Cal Poly so Cuesta College will need to look at how the demand changes.
- **Support courses for other majors**.
    - McAustin shared that the reframing of the CAOA program has generated a new course CIS 215 Advanced Business Applications. This course is now part of the Business Administration transfer degree and Library Technology degree.
- **Other CIS courses**:
    - Tyler Penney shared that CIS 106 is a project based course where the "learn by doing" philosophy is applied.
    - Randy shared that the 4 mobile development courses have good enrollment and the College is looking for faculty to teach these classes.
- **College updates**
    - Randy shared that the CIS program continues to have strong enrollment growth counter to the College's trend. Growth has been 40% over last year and 30% over the 3 previous years.
    - The CIS program is expanding especially in Distance Education. CIS 201 and 231 are being offered as a hybrid course: 1 face-to-face meeting a week and having strong success and retention rates.
    - Curriculum changes have been submitted for the 4 mobile development courses and will be offered online where demonstrated demand occurs.

- Vanessa Salas (current student)– is taking IOS and web courses to develop a new skill to market herself and start her own business. She would like to see more online courses so she can take classes and also work part-time. She is taking pre-reqs to get into the Master's program at Cal Poly
- Clint Staley (CSC Instructor Cal Poly) is developing online materials for Cal Poly. He is working cooperatively with faculty who do face-to-face Distance education.
- Stefan Ayala (former student now works at iFixit) mentioned that JavaScript is and important skill for students to have, and that Django and Ruby are being used more extensively. He mentioned that the latter two have excellent demo projects that can be used in instruction.

- Stephen Schmidt (current student and employed at Rosetta) shared that he felt he learned more detail regarding coding at Cuesta College than Cal Poly. Stephan felt if he had not had the foundation from Cuesta College the transition would have been difficult. He also shared that both institutions need to stress working on a team to complete a programming task.
- Jessie Dundon (CEO at Hathaway) sees the biggest need for his staff is Continuing Education. Sees the use of WordPress and Drupal growing. Also the need for User Experience Design – UX.
- Mike Maxwell (Dir. of Engineering at Hathaway) Mike shared it is very difficult to hire User Experience Designers from this area, which Kyle seconded. Both needed to hire from out of the area. Also sees a need for Computer Analytics and Computer Security. Randy and Tyler shared they are seeing strong design ability coming out of students in the mobile design and internet fundamental courses. All agreed that the need to look outside of traditional avenues for designers is needed.
- Several other members of the group echoed Jessie and Mike's thoughts on UX and its rapidly growing importance in the field. There was an active discussion between faculty and the committee members about what a course/program in UX might comprise and also how to identify potential instructors.
- Kyle Wiens (CEO/Co-Founder of IfitIT) Kyle stressed the need to for more training in the design review process. This process allows for students to receive feedback from instructors and students. Stefan added when we hire students we like to see outside work or demonstration of what students have produced.
- Stephen believes he has received a solid education in coding practices and documentation. The issue of looking at a large piece of software and being able to modify this is a critical skill needed in industry. Also testing strategies are needed.
- Clint and others mentioned the possibility of creating (or identifying) a large open-source project that can be used in a class to give students experience with reviewing, test, and augmenting code.
- Roberto Monge asked about the possibility of shorter courses focused on specific industry skills (e.g. source control management) for both students and existing employees.
- Roberto Monge suggested investigating the possibilities of incorporating "big data" topics within courses and/or as its own course.
- Kyle Wiens mentions that he we wants all of his employees (including those in non-technical roles) to become familiar with SQL. He said that CIS 201 might be a good class for them to become familiar with programming topics.
- Mike added that he sees Angular as being an important skill for employees to have.

Computer Information Systems Advisory Meeting Minutes, Cuesta College

Friday, February 26, 2016

In attendance: Randy Scovil; Rob Ross; Jennifer Hubbard: John Cascamo; Sabrina Robertson: Gayla Jurevich; Clint Staley; Kyle Wiens; Robert Hope; Bartt Frey; Derek Halman; Rachel Peterson;

- Randy thanked everyone for participating, and everyone introduced themselves.
- **Overview of CIS Program**:
  - Randy mentioned that their was no new curriculum for the coming year and that the focus was on increasing offerings of existing courses due to increased enrollment
  - Randy shared that the program's enrollment is in the middle of another growth period, currently at 24% over the past two years.
  - Staffing needs were temporarily addressed by the addition of a full-time temporary faculty member.
  - The Perkins Core Indicators were shared with the committee.
  - Cuesta sent five students to the recent Softec Women In Tech night with support from Business Deputy Sector Navigator Gayla Jurevich. Gayla and student advisory committee member Rachel Peterson (who attended the event) said it was very beneficial for the students who attended. John Cascamo suggested that perhaps Gayla and ICT DSN Paula Hodge could sponsor a similar event in the future. Clint Staley also offered potential contacts and opportunities (primarily the annual Grace Hopper contacts) that Cal Poly has been involved in that he believes could be helpful to Cuesta students as well. Jennifer Hubbard mentioned that she has tried to encourage her female students to continue further in the discipline. Randy added that part-time instructor Jennifer Nunley has been bringing guest speakers from her employer (Transunion) into class to further encourage female students.
- **Faculty Recruitment**:
  - Randy shared that the CIS program had been granted a new full-time tenure-track position that would start in Fall 2016. However this and most other new tenure-track positions were canceled shortly before the meeting.
  - Randy stressed the need for additional part-time faculty to maintain the program given that the full-time temp position was for only this year and the tenure-track position to follow it had been cancelled. As many as 8-10 sections may be cancelled in the coming year due to the loss of this full-time position.
- **Dual Enrollment**:
  - Cuesta will be offering CIS 201 and CIS 210 at local high schools during the regular school day staring in Fall 2016.
  - The courses will be initially offered at New Tech High School in Nipomo and Paso Robles High School. Other schools in the county may be participating as well.
  - Bartt Frey (Paso Robles High School) spoke about how the courses will be implemented at his school and integrated into his existing offerings.

16 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
I n s t r u c t i o n a l   C o m p r e h e n s i v e   P r o g r a m   P l a n n i n g   &   R e v i e w
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- o   Bartt also stressed the importance of getting support for making computer science an "A-G" course for UC preparation in order to make it easier for college-bound students to fit it into their schedule.
- **South County Courses;**
  - o   Randy shared that the CIS program will begin offering courses in South County at a new lab shared with its host facility, New Tech High School. The first class will be CIS 203 (iOS Development I) in Fall 2016.
- **Short Courses for Grizzly Academy;**
  - o   John Cascamo gave some background on the 1-unit courses that Cuesta has been offering for students at Grizzly Academy, a local program for at-risk students. Several Cuesta programs, including CIS, currently offer classes for these students.
  - o   The CIS course is in web design and programming, and began in Spring 2016
- **Potential New Courses/Programs;**
  - o   Jennifer Hubbard addressed the idea of a course in UX/UI (User Experience/User Interface) that had been broached in last year's meeting. She mentioned some of her research into what a course like this might look like and solicited input from the committee on what would best prepare students in this emerging specialty in the industry.
  - o   Randy mentioned that Paula Hodge is looking to offer a workshop on SQL in the SLO area as the first of potentially multiple ICT-related workshops. Clint Staley volunteered that he has been developing a very similar course at Cal Poly with extensive online material that would be well suited to a regional audience. He said that we would be very interested in being involved with the workshop. Other industry members of the workshop said that they would also like to be involved and/or send their employees to the workshop.
  - o   Randy asked if there were other areas that should be explored. Suggestions varied including ways to integrate key industry topics into existing courses.
- **Student Perspectives;**
  - o   Derek Halman (former student, transferred to and graduated from Cal Poly, now works as a Senior Software Engineer at Mentor eData) said that his coursework at Cuesta prepared him well, and in some cases better than some of the material he took at Cal Poly.
  - o   Rachel Peterson (current student, working as a manager at iFixit) said that her coursework at Cuesta trained her to speak eloquently on technical topics, which she has found invaluable in her industry work.

- Once the formal agenda was completed all participants had contributed to the discussion and felt that their concerns had been heard. At that time the meeting was formally adjourned and additional smaller conversations ensued.

17 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
I n s t r u c t i o n a l   C o m p r e h e n s i v e   P r o g r a m   P l a n n i n g   &   R e v i e w
Approved by Academic Senate 2017-05-12 Document to be Used for Submission Spring 2019

Computer Information Systems Advisory Meeting Minutes, Cuesta College

Friday, November 4, 2016

In attendance: Randy Scovil; Jennifer Hubbard: Robert Hope; Kyle Wiens; John Osumi; Derek Halman; Andrea Zwerdling

- Randy thanked everyone for participating, and everyone introduced themselves.
- **Overview of CIS Program**:
  - Randy mentioned that their was no new curriculum for the coming year and that the focus was on increasing offerings of existing courses due to increased enrollment
  - Randy shared that the program's enrollment is in the middle of another growth period, especially in CIS 201.
  - Cuesta will be offering a CIS 201 in North County in Spring 2017.
- **Faculty Recruitment**:
  - Randy stressed the need for additional part-time faculty to maintain the program given that the full-time temp position was for only this year and the tenure-track position to follow it had been cancelled. Several sections may be cancelled in the coming year due to the loss of this full-time position.
- **Dual Enrollment**:
  - Cuesta began offering CIS 201 and CIS 210 at local high schools during the regular school day staring in Fall 2016.
  - The courses are initially offered at New Tech High School in Nipomo and Paso Robles High School. Other schools in the county may be participating as well.
- **South County Courses;**
  - Randy mentioned that the CIS program has begun offering courses in South County at a new lab shared with its host facility, New Tech High School. The first class underway is CIS 203 (iOS Development I).
- **Short Courses for Grizzly Academy;**
  - Rob Hope presented an update on the CIS 101 course that he is teaching for this program and the unique challenges that it presents.
- **Potential New Courses/Programs;**
  - Given the current limitations on growth the discussion focused more on creating new learning opportunities inside and outside the classroom. Discussion points integrated opportunities provided before the meeting by CTEA (Sabrina Robertson) and regionally (Paula Hodge). They included:
    - Work-based learning involving industry
    - Workshop topics for future events based on the very-successful SQL workshop
  - The idea of focused workshops where new courses may not be practical (level of interest, articulation) seemed to be well-received. Kyle Wiens from iFixit said the SQL workshop was great - he had several employees, including his co-founder, attend. He said he's ready to send 50 more people.

18 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
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- - Topics mentioned as possible workshop areas:
      - iOS
      - Angular/React
      - Git/Source code management (and/or woven into other workshops)
      - DevOps
      - Magento/PHP
  - The industry members present (especially iFixit) said that they were very supportive of the idea of WBL and would be interested in being involved.
  - Other points of discussion included the feasibility of doing workshops for all age and skill levels (as early as Middle School)

- Once the formal agenda was completed all participants had contributed to the discussion and felt that their concerns had been heard. At that time the meeting was formally adjourned and additional smaller conversations ensued.

19 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
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Computer Information Systems Advisory Meeting Minutes, Cuesta College

Friday, February 2, 2018

In attendance:

Faculty:

Randy Scovil (Full-Time Instructor, Computer Science Lead)
Cinita Vanessa Salas* (Part-Time Instructor)
Robert Sfarzo, (Part-Time Instructor)
Peter Sullivan (Dual Enrollment Instructor, CCNTH)

Industry:

Drew Bentz, Trust Automation*
Tim Burks, Google
Fred Dyste, BizWatt
Nicholas Fisher, iFixit
Derek Halman, Sapient/Razorfish*
Kyle Lopez, Amazon*
Tyler Penney, County of San Luis Obispo
Rachel Peterson, Adventure Aide*
Kyle Wiens, iFixit

(*) Former Cuesta CIS Student

Unavailable (out of the country):
Robert Hope, Amazon/PT CIS Instructor
Roberto Monge, SAP

Education:

Paula Hodge, ICT Deputy Sector Navigator
Gayla Jurevich, Business Deputy Sector Navigator
Dr. Clinton Staley, Cal Poly Computer Science Professor

20 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
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- Randy thanked everyone for participating, and everyone introduced themselves.

- **Overview of CIS Program**:
  - Randy mentioned that their was no new curriculum for the coming year and that the focus was on increasing offerings of existing courses as resources allow.
  - Randy shared that the program's enrollment is in the middle of another growth period, especially in CIS 201.
  - Randy also mentioned that while the existing group of parttime instructors is very strong, there is an ongoing need for instructors with advanced degrees and/or specialized knowledge (e.g. mobile).
  - this full-time position.
- **Dual Enrollment**:
  - Cuesta began offering CIS 201 and CIS 210 at local high schools during the regular school day staring in Fall 2016.
  - The courses were initially offered at New Tech High School in Nipomo and Paso Robles High School, with San Luis Obispo High School coming on board this year. Other schools in the county may be participating as well.
  - Peter Sullivan mentioned that Dual Enrollment has been very popular at New Tech – not only with students, but parents as well. He said that once parents understand Dual Enrollment, they prefer is to AP courses for their children.
- **South County Courses;**
  - Randy mentioned that the CIS program has continued to offer courses in South County at a new lab shared with its host facility, New Tech High School. There was a section of CIS 231 that was offered at New Tech after school in Fall 2017 that drew a lot of interest and was very successful.
  - The program will continue to look at ways to offer more courses at this facility. This may not happen in 2018-19 as it is a stability year for Cuesta.
- **Potential New Courses/Programs;**
  - Randy led a discussion involving all attendees on possible formats and topics for additional ways to provide courses to the community. Possible venues suggested:
    - Regional workshops for students the community
    - Short courses focus on industry skills
    - Non-credit courses
  - There were many excellent suggestions and an agreement that short courses could be a good way to provide students with more detailed coverage of industry-specific skills.
  - Another bonus is that many potential instructors have interest but are unable to commit to a full schedule but would be available to teach short courses.
  - Some of the suggestions included:
    - IDEs (Integrated Development Environments)
    - Source code management
    - Advanced Command-line Skills
    - Continuous Integration
    - Issue-tracking tools

21 S a n L u i s O b i s p o C o u n t y C o m m u n i t y C o l l e g e D i s t r i c t
I n s t r u c t i o n a l C o m p r e h e n s i v e P r o g r a m P l a n n i n g & R e v i e w
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- o Paula indicated that there could be some regional support for classes like these similar to the very-successful SQL workshop presented in the past.
- **Student Opportunities/Employment**
    - o Randy reported that Cuesta students continue to have a strong track record in securing and performing in local internships and entry-level positions.
    - o Many employers express a preference for student with strong fundamental and conceptual skills for entry-level programming positions. They can train in their internal procedures and encourage them to finish their degrees.
    - o Commonly students who finish CIS 233 (capstone of the Computer Science A.S. degree) are very desirable but motivated students who have taken CIS 231 have also been successful, as have student that have taken mobile development courses (CIS 203/204, 207/208).
    - o One area where students can get a leg up is by learning more about how to succeed in a technical interview, which is very different that typical interviews.
        - ▪ To this end Randy and Tim have planned an event for later in the semester where 233 student will learn from Tim about the interview process at Google and observe a typical Google tech interview (with Randy as the test subject) and ask questions about the process.
        - ▪ There was strong support of this idea and discussion about how to scale it out if it is successful.
- **New Opportunities**
    - o Randy asked the group for ideas for potential opportunities directed at re-entry students. He has observed a number of students (especially those who already hold degrees) returning to school to learn computer science.
        - ▪ Gayla discussed recent research by the college that showed a strong interest in re-entry students taking programing courses as well as a very strong preference for shorter courses and online courses.
        - ▪ Discussion ensued on what could be successful formats for these courses. Short courses, especially those that have a series of standalone modules similar to the SQL workshop, were endorsed.
        - ▪
    - o Randy asked the group about their ideas on helping promote computer science to K-12 students.
        - ▪ Cuesta has made great inroads via Dual Enrollment and has also participated in local events like CCNTH's hackathons for middle and high school students.
        - ▪ Kyle mentioned his company's support of Hour of Code and its role as a gentle introduction to the field.
        - ▪ Vanessa gave an overview of an after-school program she and other parents conducted a local elemetary school for 3rd and 4th graders that was very hands-on and had many female participants.
        - ▪ There were suggestions that online and summer programs may be a good way to reach these students.

22 S a n L u i s O b i s p o C o u n t y C o m m u n i t y C o l l e g e D i s t r i c t
I n s t r u c t i o n a l C o m p r e h e n s i v e P r o g r a m P l a n n i n g & R e v i e w
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- Once the formal agenda was completed all participants had contributed to the discussion and felt that their concerns had been heard. At that time the meeting was formally adjourned and additional smaller conversations ensued.

23 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
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Computer Information Systems Advisory Meeting Minutes, Cuesta College

Friday, February 1, 2019

In attendance:

Faculty:

Randy Scovil (Full-Time Instructor, Computer Science Lead)
Cinita Vanessa Salas* (Part-Time Instructor)
Robert Sfarzo, (Part-Time Instructor)

Industry:

Addison Grant, iFixit*
Nathan Macfarlane, Tapestry Solutions*œ
John Osumi, Bishop Peak Technology*
Anthony Peach, IQMS (current student)
Rachel Peterson, Adventure Aide*

(*) Former Cuesta CIS Student

Education:

Dr. Clinton Staley, Cal Poly Computer Science Professor

Cuesta Administrative:

Dr. John Cascamo, Dean
Matthew Green
Kim Espino

- Randy thanked everyone for participating, and everyone introduced themselves.

- **Overview of CIS Program**:
  - Randy mentioned that their was no new curriculum for the coming year and that the focus was on increasing offerings of existing courses as resources allow.

24 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
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- o Randy shared that the program's enrollment is in the middle of another growth period, especially in CIS 201 and in the core computer science courses (CIS 231-233, 240-241).
- o Randy also mentioned that while the existing group of part-time instructors is very strong, there is an ongoing need for instructors with advanced degrees and/or specialized knowledge (e.g. mobile, cloud).

- **Dual Enrollment**:
  - o Cuesta began offering CIS 201 and CIS 210 at local high schools during the regular school day staring in Fall 2016.
  - o The courses were initially offered at New Tech High School in Nipomo and Paso Robles High School, with San Luis Obispo High School coming on board this year. Other schools in the county may be participating as well.

- **Potential New Courses/Programs;**
  - o Bob Sfarzo outlined the new curriculum Cuesta is developing in Cloud Computing in partnership with AWS Academy.
  - o The curriculum will be a combination of revising existing web-oriented courses along with new courses while leveraging existing mobile offering to provide a "mobile full stack" option for students.
  - o The revised courses are set to begin this coming Fall. Courses will eventual include Intro to Cloud, Cloud Development, Databases, Mobile Cloud, and Architecture/Security.
  - o The industry panelists were asked for their feedback on this new curriculum. The response was universally positive. They felt that this is a growth area with strong career opportunities and that there is a need for available training in this field.

- **Student Opportunities/Employment**
  - o Randy reported that Cuesta students continue to have a strong track record in securing and performing in local internships and entry-level positions.
  - o Many employers express a preference for student with strong fundamental and conceptual skills for entry-level programming positions. They can train in their internal procedures and encourage them to finish their degrees.
  - o Commonly students who finish CIS 233 (capstone of the Computer Science A.S. degree) are very desirable but motivated students who have taken CIS 231 have also been successful, as have student that have taken mobile development courses (CIS 203/204, 207/208).
  - o One area where students can get a leg up is by learning more about how to succeed in a technical interview, which is very different than typical interviews. Following up on last year's meeting, Randy and Tim Burks from Google (who attended that meeting) did a special presentation to the CIS 233 course where Tim went discussed the interview process at Google and conducted a typical Google tech interview (with Randy as the test subject). Students were able to ask questions about the process. This was seen as very favorable and there may be opportunities to expand this idea.

25 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
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- o John C. discussed some of the recent local tech apprenticeship programs and outlined for the group some of the disconnects with what is being presented publicly.
- o John C. asked for the group's feedback on these programs. Industry response was mixed, citing a variety of skill levels and preparation in graduates of these apprenticeship programs. They suggested that some "cherry-picking" is being done in candidate selection and it is not known if the program is sustainable. There were also concerns about the depth of the material students receive in these workshops and that it did not favorably compare to what students receive in an accredited college curriculum.
- o John C. also asked the industry panelists about claims that there could be a large number of remote jobs created locally by apprenticeships. The panelists felt this was very unlikely, especially some of the larger (c. 2000) number of jobs being cited by some. There was also a feeling that such jobs would not be particularly good jobs.

- **New Opportunities**
  - o Randy asked the group for ideas for potential opportunities for new courses or workshops. The panelists suggested industry skills that could be woven into some courses given time or perhaps offered as workshops or short-form courses.
  - o Areas cited by the panel included DevOps, Source Control Management, SQL Databases, and Command-Line Interface.

- Once the formal agenda was completed all participants had contributed to the discussion and felt that their concerns had been heard. At that time the meeting was formally adjourned and additional smaller conversations ensued.

26 S a n   L u i s   O b i s p o   C o u n t y   C o m m u n i t y   C o l l e g e   D i s t r i c t
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VIII. **After completing and submitting this document, please complete the <u>Overall Program Strength and Ongoing Viability Assessment</u> with your Dean before May 15, 2018.**

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SIGNATURE PAGE

Faculty, Director(s), Manager(s), and/or Staff Associated with the Program

Instructional Programs: All full-time faculty in the program must sign this form. If needed, provide an extra signature line for each additional full-time faculty member in the program. If there is no full-time faculty associated with the program, then the part-time faculty in the program should sign. If applicable, please indicate lead faculty member for program after printing his/her name.

Student Services and Administrative Services Programs: All full-time director(s), managers, faculty and/or classified staff in the program must sign this form. (More signature lines may be added as needed.)

| Division Chair/Director Name | Signature | Date |

| Name | Signature | Date |

| Name | Signature | Date |

| Name | Signature | Date |

| Name | Signature | Date |

| Name | Signature | Date |

| Name | Signature | Date |

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SUPPLEMENTAL DOCUMENTS

FACULTY HIRING PRIORITIZATION INFORMATION (IF APPLICABLE)

If your program requested a faculty position for consideration, please attach or embed the following worksheets that were presented to the College Council. The guidelines for faculty prioritization can be found here:
https://cuestacollege.sharepoint.com/Committees/IPPR/Committee%20Documents?viewpath=%2FCommittees%2FIPPR%2FCommittee%20Documents&id=%2FCommittees%2FIPPR%2FCommittee%20Documents%2FPrioritization%20Process%20Handbook%20Sept%5F25%5F2018%2Epdf&parent=%2FCommittees%2FIPPR%2FCommittee%20Documents

APPLICABLE SIGNATURES:

_____   _____
Vice President/Dean   **Date**

_____   _____
Division Chair/Director/Designee   **Date**

_____   _____
Other (when applicable)   **Date**

The above-signed individuals have read and discussed this review. The Director/Coordinator, Faculty, and staff in the program involved in the preparation of the CPPR acknowledge the receipt of a copy of the Vice President/ Dean's narrative analysis. The signatures do not necessarily signify agreement.