Program Review Summary Page
For Instructional Programs

Program or Area(s) of Study under Review: **Computer Studies**

Term/Year of Review: **Fall 2021**

Summary of Program Review:

A. Major Findings

1. Strengths:

- A new Computer Science AS-T Degree launched Fall 2021
- A new Information Technology Model Curriculum New Program (IT TMC) being implemented Spring 2022
- A new IT Technician Certificate of Achievement is in development Spring 2022
- The number of credit students enrolled (headcount) in the Computer Studies Program increased by 25.8% over the past three years. Credit enrollment within the Computer Studies Program increased by 30.1%.
- Average class size in the program increased by 22.2% between 2018-2019 and 2020-2021
- Alignment with Business Administration AS, AS-T and Entrepreneurship AS degrees.

2. Areas for Improvement:

Modality:

- Faculty should consider applying different strategies in the classroom to increase student engagement with the material. This includes offering concurrent sections with different modalities for greater access to students.

Faculty Personnel Needs:

- It is recommended to hire an additional adjunct-faculty with networking qualifications.

Supplemental Instruction:

- Request for additional classrooms with hardwired computers.
- Request to purchase and install BACC.net Gateway Interface.
  Request to install NETLAB+ virtual computer lab environment.

Diversity, Equity, and Inclusion:

- Opening up and adding to the Maker Space will benefit computer science students

- Offer an on-campus internship program. We hope to include a computer science project this year or next year.
- Explore HSI grant partnership for additional directed tutoring services.

Tutoring Services:
Align with tutoring center to ensure student success in this discipline.

Several courses, and certificates, and a program have been identified for archive due to low enrollment and low completion rates. Although the Computer Studies Program offers one degree and two certificates, the program did not confer any awards over the past three years.

3. Projected Program Growth, Stability, or Viability:

The number of credit students enrolled (headcount) in the Computer Studies Program increased by 25.8% over the past three years.

Credit enrollment within the Computer Studies Program increased by 30.1%. This is due to our alignment with the Business & Entrepreneurship program.

We are confident these numbers will INCREASE significantly more with the two new degrees being implemented. The program is in significant growth mode.

B. Program's Support of Institutional Mission and Goals

1. Description of Alignment between Program and Institutional Mission:

Napa Valley College prepares students for evolving roles in a diverse, dynamic, and interdependent world. The college serves students and the community in the following areas: transfer courses, career-technical education and training, basic skills, and self-supporting contract education and community education classes.

The Associate in Science in Computer Science for Transfer Degree is designed for students desiring advanced degrees in Computer Science. Upon completion of this degree (AS-T Computer Science), students will be able to apply standard computer control structures to solve problems and develop algorithms.

This degree is completely aligned with this mission.

2. Assessment of Program's Recent Contributions to Institutional Mission:

Napa Valley College is a community of people excited about learning, where students are first and foremost in everything we do. The Computer Studies program has archived an AS degree based on low enrollment and low fill rates and implemented a Transfer AS T degree. This degree was based on industry input, LMI reports, and student feedback.

Further, in keeping with the colleges Strategic Plan, this degree's purpose is to facilitate student success and completion. In addition, the program is linked to the Community College Mission of workforce development.

3. Recent Program Activities Promoting the Goals of the Institutional Strategic Plan and Other Institutional Plans/Initiatives:

The new Associate in Science in Computer Science for Transfer Degree is designed for students desiring advanced degrees in Computer Science. Upon completion of this degree (AS-T Computer Science), students will be able to apply standard computer control structures to solve problems and develop algorithms.

C. New Objectives/Goals:

Upon completion of this degree (AS-T Computer Science), students will be well-versed in the use of standard computer control structures to solve problems and develop algorithms. They will have developed skills in writing programs that utilize functions as a method of program organization and control. Additional areas of emphasis will include objects, object-oriented programming, data structures, and abstract data types. Computer science students will also obtain knowledge of computer architecture and organization. The Computer Science curriculum also requires the student to have significant skills in mathematics and the applications of those skills to real world problem solving.

D. Description of Process Used to Ensure "Inclusive Program Review"

This program review includes details from Computer Studies advisory meetings and industry professionals. It was co-authored by Professor Robert Miller and Program Coordinator Claudette Shatto with feedback from the Associate Dean of the MESA & STEM Programs, Luis Alcázar.

Program Review Report Fall 2021

This report covers the following program, degrees, certificates, area(s) of study, and courses (based on the Taxonomy of Programs on file with the Office of Academic Affairs):

Program	Computer Studies
Degree(s)/Certificate(s)	Computer Studies: AS Beginning Microsoft Office Software: LC Advanced Microsoft Office Skills: CoA
Courses	COMS 101/CISA 101
	COMS 110/CISA 110
	COMS 115
	COMS 120
	COMS 142/CISA 142
	COMS 150
	COMS 160/CISA 160
	COMS 165/CISA 165
	COMS 167/CISA 167
	COMS 186/CISA 186
	COMS 190
	COMS 215
	COMS 216
	COMS 217
	COMS 218
	COMS 284/CISA 284
	COMS 288
	BUSN 870
	BUSNC 600
	BUSNC 601
	BUSNC 605
	BUSNC 610
	BUSNC 615
	BUSNC 620
	BUSNC 625
	BUSNC 630

Taxonomy of Programs, June 2021

I. PROGRAM DATA

A. Demand

1. Headcount and Enrollment

	2018-2019	2019-2020	2020-2021	Change over 3-Year Period
Headcount				
Credit Headcount	291	285	366	25.8%
Non-Credit Headcount	26	31	--	-100%
Total Headcount	316	311	366	15.8%
Institution Credit Headcount	8,176	8,181	7,208	-11.8%
Institution Non-Credit Headcount	3,175	1,085	489	-84.6%
Enrollments				
Credit Enrollments				
COMS-101	44	53	85	93.2%
COMS-110	77	65	105	36.4%
COMS-120	40	46	49	22.5%
COMS-121	11	11	--	-100%
COMS-165	31	31	110	255%
COMS-183	6	--	--	-100%
COMS-186	4	--	--	-100%
COMS-215	88	94	56	-36.4%
COMS-216	38	32	36	-5.3%
Credit Total	**339**	**332**	**441**	**30.1%**
Across the Institution	**32,545**	**33,102**	**30,409**	**-6.6%**
Non-Credit Enrollments				
BUSN-870	35	--	--	-100%
BUSNC-601	--	11	--	--
BUSNC-605	--	10	--	--
BUSNC-610	--	6	--	--
BUSNC-620	--	14	--	--
BUSNC-625	--	8	--	--
Non-Credit Total	**35**	**49**	**--**	**-100%**
Across the Institution	**5,297**	**2,031**	**1,062**	**-80.0%**
Source: SQL Enrollment Files				

RPIE Analysis: The number of credit students enrolled (headcount) in the Computer Studies Program increased by 25.8% over the past three years, while credit headcount across the institution decreased by

11.8%. Credit enrollment within the Computer Studies Program increased by 30.1%, while credit enrollment across the institution decreased by 6.6%.

The number of non-credit students enrolled (headcount) in the Computer Studies Program decreased by 100% over the past three years, while non-credit headcount across the institution decreased by 84.6%. Non-credit enrollment within the Computer Studies Program decreased by 100%, while non-credit enrollment across the institution decreased by 80.0%.

Enrollment in the following courses changed by more than 10% (±10%) between 2018-2019 and 2020-2021:

Courses with enrollment increases:

- *COMS-165 (255%)*
- *COMS-101 (93.2%)*
- *COMS-110 (36.4%)*
- *COMS-120 (22.5%)*

Courses with enrollment decreases:

- *COMS-121 (-100%)*
- *COMS-183 (-100%)*
- *COMS-186 (-100%)*
- *BUSN-870 (-100%)*
- *COMS-215 (-36.4%)*

Program Reflection:

COMS 101 and COMS 110 have been removed from the new BUSI AS- T degree (2.0). We reviewed our Business Administration articulation agreements with all 23 CSU campuses. There are eight (8) campus that have articulated specific computer skills courses. COMS 101 meets the criteria for IT IS 120 in the Course Identification Numbering System.

We considered archiving both COMS 101 and COMS 110. However, based on the following ASSIST Research Request- we have decided to only archive COMS 110. The above data is consistent with our decision.

CSU Campuses Articulating Computer Skills Courses with NVC for Business Administration Major

Campus	Courses
CSU Chico	COMS 165
CSU Dominguez Hills	COMS 101

CSU Fresno	COMS 101
CSU Monterey Bay	COMS 101
CSU Northridge	COMS 101
CSU Sacramento	COMS 101, COMS 110, COMS 165, COMS 186, COMS 288
San Francisco State	COMS 101, COMS 110, COMS 165
San Jose State	COMS 101

- **COMS 121 Advanced Programming Logic** was archived 8/13/21 due to low interest/ low enrollment.

- **COMS 183 Web Development: Software** was archived 8/14/20 due to low interest/ low enrollment.

- **COMS 186 Microsoft Word: Beginnin**g was originally moved to non-credit. However, based on an agreement with the Director, Upper Valley Campus and Community Education, the Principal at Napa Valley Adult Education and the Senior Dean Career Education & Workforce Development the Microsoft Suite courses are being archived. This ensures we do not have redundancy with our partnering Adult School and can have clear transitions and pathways between our offerings.

- **COMS 215 Programming Concepts and Methodology I**. We should see increase enrollment with the implementation of the new Computer Science AS-T Degree.

2. Average Class Size

	2018-2019		2019-2020		2020-2021		Three-Year	
	Sections	**Average Size**	**Sections**	**Average Size**	**Sections**	**Average Size**	**Average Section Size**	**Trend**
COMS-101	2	22.0	2	26.5	3	28.3	26.0	28.6%
COMS-110	3	25.7	2	32.5	4	26.3	27.4	2.3%
COMS-120	2	20.0	2	23.0	2	24.5	22.5	22.5%
COMS-121	1	11.0	1	11.0	--	--	11.0	-100%
COMS-165	1	31.0	1	31.0	4	27.5	28.7	-11.3%
COMS-183	1	6.0	--	--	--	--	6.0	-100%
COMS-186	1	4.0	--	--	--	--	4.0	-100%
COMS-215	3	29.3	4	23.5	2	28.0	26.4	-4.4%
COMS-216	2	19.0	2	16.0	2	18.0	17.7	-5.3%
Program Average*	16	21.2	14	22.7	17	25.9	23.7	22.2%
Institutional Average*	1,313	24.8	1,348	24.6	1,171	25.9	25.1	4.4%

Source: SQL Enrollment and Course Sections Files

Average Section Size across the three-year period for courses, and both within academic years and across the three-year period for the program and institutional levels is calculated as:

$$\frac{\text{Total \# Enrollments}}{\text{Total \# Sections}}.$$

It is not the average of the three annual averages.

RPIE Analysis: Over the past three years, the Computer Studies Program has claimed an average of 23.7 students per section. The average class size in the program has been lower than the average class size of 25.1 students per section across the institution during this period. Average class size in the program increased by 22.2% between 2018-2019 and 2020-2021. Average class size at the institutional level increased by 4.4% over the same period.

Average class size in the following courses changed by more than 10% (±10%) between 2018-2019 and 2020-2021:

Courses with increases in average class size:

- *COMS-101 (28.6%)*
- *COMS-120 (22.5%)*

Courses with decreases in average class size:

- *COMS-121 (-100%)*
- *COMS-183 (-100%)*
- *COMS-186 (-100%)*
- *COMS-165 (-11.3%)*

Program Reflection:

- **COMS 121 Advanced Programming Logic** was archived 8/13/21 due to low interest/ low enrollment.
- **COMS 183 Web Development: Software** was archived 8/14/20 due to low interest/ low enrollment.
- **COMS 186 Microsoft Word: Beginnin**g was originally moved to non-credit. However, based on an agreement with the Director, Upper Valley Campus and Community Education, the Principal at Napa Valley Adult Education and the Senior Dean Career Education & Workforce Development the Microsoft Suite courses are being archived. This ensures we do not have redundancy with our partnering Adult School and can have clear transitions and pathways between our offerings.
- **COMS 165 Microsoft Excel** the course sized decreased because the offerings doubled.

3. Fill Rate and Productivity

Fill Rate*			
	Enrollments*	**Capacity**	**Fill Rate**
2018-2019	304	435	69.9%
2019-2020	259	355	73.0%
2020-2021	359	420	85.8%
Three-Year Program Total	922	1,210	76.2%
Institutional Level	83,156	101,258	82.1%
Productivity*			
	FTES	**FTEF**	**Productivity**
2018-2019	31.5	3.1	10.2
2019-2020	32.9	2.9	11.3
2020-2021	40.3	3.0	13.4
Three-Year Program Total	104.7	9.0	11.6
Source: SQL Enrollment and Course Sections Files			

RPIE Analysis: Fill rates within the Computer Studies Program tend to be lower than the fill rate at the institutional level. [Compare program-level rate of 76.2% to institution-level rate of 82.1% over the past three years.] Between 2018-2019 and 2019-2020, both enrollment and capacity decreased, resulting in an increase in fill rate (due to a higher rate of decrease in capacity). Between 2019-2020 and 2020-2021, both enrollment and capacity increased, resulting in an increase in fill rate (due to a higher rate of increase in enrollment).

Productivity increased from 10.2 to 13.4 over the three-year period. [Productivity has not been calculated at the institutional level.] The three-year program productivity of 11.6 is lower than the target level of 17.5, which reflects 1 FTEF (full-time equivalent faculty) accounting for 17.5 FTES (full-time

equivalent students) across the academic year. (This target reflects 525 weekly student contact hours for one full-time student across the academic year.)

**Note: Fill rates and productivity reported in the table do not include seven Computer Studies section offerings for summer terms over the past three years. As a result, the enrollment figures reported here might differ from those reported in Section I.A.1.*

Program Reflection:

The Computer Studies met with their advisory committee over the last several years. Due to low fill rates and completions, it was recommended that we archive the Microsoft Office course offerings and local AS degree and move toward a Computer Science AS-T Degree. This is consistent with the LMI report that was run on 2/18/21.

Specifically, in an advisory committee meeting held 10/4/17 it was proposed that we offer a Computer Science AS-T (Transfer Model Curriculum) including two new courses:

A. COMS 217 Computer Architecture and Organization
B. COMS 218 Discrete Structures

4. Labor Market Demand

Economic Development Department Standard Occupational Classification Description (SOC Code): 11-3021, 15-1142	Numeric Change in Employment	Projected Growth (% Change in Employment)	Average Annual Job Openings (New Jobs + Replacement Needs)
Napa County (2018-2028)	20	+15.4%	120
Bay Area[A] (2018-2028)	6,620	+14.3%	44,050
California (2018-2028)	14,800	+13.3%	104,980

Source: Economic Development Department Labor Market Information, Occupational Data, Occupational Projections (http://www.labormarketinfo.edd.ca.gov)
[A]Bay Area counties include: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma. Figures also include San Benito County (reported with projections for Santa Clara County).

RPIE Analysis: The figures reported in the table above pertain to Standard Occupational Classifications for the following positions:

- *computer and information systems managers*
- *network and computer systems administrators*

The Economic Development Department projects an increase of 20 positions for Napa County and an increase of 6,620 positions for the Bay Area for the types of positions described above by 2028 (compared to 2018). The increase in positions for Napa County translates into a 15.4% increase for the industry, and the increase for the Bay Area translates into a 14.3% increase. The projected growths for both Napa County and the Bay Area are consistent with the projected growth in California (for 2018-2028). Approximately 120 openings are projected each year in Napa County, while 44,050 openings are projected each year in the Bay Area (through 2028).

Program Reflection:

In a Program Advisory Committee Meeting dated 12/3/21 industry experts weighed in on IT IS pathway. They approved the need for:

A. Information Technology Model Curriculum New Program (IT TMC)

B. Two new courses
   a. NEW: IT IS 110 Information & Communication Technology Essentials (4)
   b. NEW: CISN 110 Computer Network Fundamentals (3)

and approved the need for Napa Valley College to offer stackable IT IS certificates and associates degree. This would include the addition of:

C. **Cyber Security** IT IS 160, 164, 165
   a. NEW: IT IS 160 Introduction to Information Systems Security (3)
   b. NEW: IT IS 164 Introduction to Cybersecurity (3)
   c. NEW: IT IS 165 Digital Forensics Fundamentals (3)

D. **System & Network Essentials:** IT IS 140, 151 & 155
   a. NEW: IT IS 140 Introduction to Systems Analysis and Design (3)
   b. NEW: IT IS 151 Switching, Routing and Wireless Essentials (3)
   c. NEW: IT IS 155 Systems and Network Administration (3)

B. Momentum

1. Retention and Successful Course Completion Rates

Level	Retention Rates (Across Three Years)			Successful Course Completion Rates (Across Three Years)		
	Rate	Course Rate vs. Program Rate		Rate	Course Rate vs. Program Rate	
		Above	Below		Above	Below
COMS-101	92.3%	X		77.5%	--	--
COMS-110	90.8%	X		81.2%	X	
COMS-120	85.8%		X	***67.2%***		***X***
COMS-121	84.2%		X	57.9%		X
COMS-165	***81.2%***		***X***	75.8%		X
COMS-183	66.7%		X	50.0%		X
COMS-186	100%	X		100%	X	
COMS-215	88.7%	--	--	81.8%	X	
COMS-216	88.6%	--	--	82.9%	X	
Program Level	88.1%			77.8%		
Institutional Level	90.3%			75.6%		

Source: SQL Enrollment Files
-- Indicates a value that is within 1% of the program-level rate.
Bold italics denote a statistically significant difference between the course-level rate and the program-level rate.
Bold denotes a statistically significant difference between the program-level rate and the institutional rate.
Note: Grades of EW (Excused Withdrawal) for spring 2020 and beyond are not included in the calculations of the three-year retention and successful course completion rates reported above. This approach reflects the standard recommended research practice of not including EWs in either the numerator or the denominator for these rates.

RPIE Analysis: Over the past three years, the retention rate for the Computer Studies Program was lower than the rate at the institutional level. (The difference was not statistically significant.) The retention rate for COMS-165 was significantly lower than the program-level rate. The retention rate for the Computer Studies Program falls in the 14th percentile among program-level retention rates (across 59 instructional programs, over the past three years).

Over the past three years, the successful course completion rate for the Computer Studies Program was higher than the rate at the institutional level. (The difference was not statistically significant.) The successful course completion rate for COMS-120 was significantly lower than the program-level rate. The successful course completion rate for the Computer Studies Program falls in the 41th percentile

among program-level successful course completion rates (across 59 instructional programs, over the past three years).

Over the past three years, the difference between retention and successful course completion at the program level (10.3%) was significantly lower than the difference at the institutional level (14.7%). This figure represents the proportion of non-passing grades assigned to students (i.e., grades of D, F, I, NP).

The following Computer Studies courses claimed differences (between retention and successful course completion) that exceeded 10%:

- *COMS-121 (26.3%)*
- *COMS-120 (18.6%)*
- *COMS-183 (16.7%)*
- *COMS-101 (14.8%)*

Program Reflection:

- **COMS 121 Advanced Programming Logic** was archived 8/13/21 due to low interest/ low enrollment.

- **COMS 120 Introduction to Programming Concepts and Methodologies** is a recommended prereq to COMS 215 Programming Concepts and Methodology I. We should see increase enrollment with the implementation of the new Computer Science AS-T Degree.

- **COMS 183 Web Development: Software** was archived 8/14/20 due to low interest/ low enrollment.

- **COMS 101 Computer Information Systems** has been removed from the BUSI AS- T degree. We reviewed our Business Administration articulation agreements with all 23 CSU campuses. We considered archiving both COMS 101 and COMS 110. However, based on the ASSIST Research Request* (see pg 3) we have decided to only archive COMS 110. Even though COMS 110 is no longer going to be required for the AS-T. The course is considered "advisory" and students can select the courses based on the specific major preparation required per Cal State major.

  COMS 101 meets the criteria for IT IS 120 in the course identification numbering system (C-ID). We plan to offer the course at the high schools and build the course into stackable certificates.

  This will help students get interested in the different COMS pathways offered at NVC. We will also explore CCAP and articulation agreements with our high school partners.

2. Student Equity

	Retention Rates (Across Three Years)		Successful Course Completion Rates (Across Three Years)	
	Program Level	**Institution Level**	**Program Level**	**Institution Level**
African American/Black	***84.1%***	86.8%	54.5%	65.0%
Latinx/Hispanic			77.5%	***72.6%***
First Generation			79.2%	***74.4%***

Source: SQL Enrollment Files
Bold italics denote a statistically significant difference between rates at the program and institutional levels, with the lower of the two rates in ***bold italics***.
Shaded cells pertaining to retention rates indicate that statistically significant differences for those groups were not found at the institutional level.
Note: Grades of EW (Excused Withdrawal) for spring 2020 and beyond are not included in the calculations of the three-year retention and successful course completion rates reported above. This approach reflects the standard recommended research practice of not including EWs in either the numerator or the denominator for these rates.

RPIE Analysis: This analysis of student equity focuses on the three demographic groups with significantly lower retention and/or successful course completion rates found at the institutional level (vs. the corresponding rates among all other demographic groups, combined) over the past three years. Tests of statistical significance were conducted to compare program-level and institution-level rates among the three groups listed above.

Within the Computer Studies Program, the retention rate among African American/Black students was significantly lower than the rate at the institutional level.

Within the Computer Studies Program, the successful course completion rate African American/Black students was lower than the rate at the institutional level. (The difference was not statistically significant.)

This pattern for retention reflects the findings from the comparison of program vs. institutional level, where the institution-level rate exceeded the program-level rate. This pattern for successful course completion deviates from the findings from the comparison of program vs. institutional level, where the program-level rate exceeded the institution-level rate. (See Section I.B.1 above).

Program Reflection:

- Increase articulation with computer science majors art local universities
- The objectives include increasing enrollment, persistence, and graduation of computer science students, particularly Latinx and low-income students
- The grant could support further development of the program through outreach, infrastructure investment, etc.
- Opening up and adding to the Maker Space will benefit computer science students
- Offer an on-campus internship program. We hope to include a computer science project this year or next year.
- We plan on adding a computer science component to our STEM Summer Bridge Program

3. Retention and Successful Course Completion Rates by Delivery Mode (of Courses Taught through Multiple Delivery Modes, i.e., In-Person, Hybrid, and Online)

	Retention Rates (Across Two Years)			**Successful Course Completion Rates (Across Two Years)**		
	In-Person	Hybrid	Online	In-Person	Hybrid	Online
COMS-101		84.4%	95.2%		56.3%	90.5%
COMS-120	85.2%		94.7%	77.8%		79.0%
COMS-216		81.4%	84.6%		74.4%	76.9%
COMS-215						
In-person vs. Hybrid	80.8%	96.6%		80.1%	93.1%	
In-person vs. Online	80.8%		96.7%	80.8%		93.1%
Hybrid vs. Online		74.1%	93.3%		63.8%	83.3%
Program Total						
In-person vs. Hybrid	80.8%	89.6%		***80.1%***	93.1%	
In-person vs. Online	83.0%		95.0%	79.3%		85.0%
Hybrid vs. Online		***80.9%***	92.2%		***66.1%***	84.4%
Institutional Total						
In-person vs. Hybrid	90.8%	94.1%		84.4%	84.9%	
In-person vs. Online	88.1%		88.6%	71.6%		71.7%
Hybrid vs. Online		85.7%	***82.2%***		69.2%	***63.4%***

Source: SQL Course Sections Files
This table compares student performance in courses offered through multiple delivery modes within the same academic year.
Bold italics denote a significantly lower rate within that delivery mode.
Note: The analysis of retention and successful course completion by delivery mode does not include spring 2020 – spring 2021 because most courses shifted to an online/hybrid delivery mode beginning in spring 2020 due to the COVID-19 pandemic (thereby blurring the distinction between delivery modes).

RPIE Analysis: In 2018-2019 and 2019-2020, four courses within the Computer Studies Program were offered through at least two delivery modes within the same academic year. In 2018-2019,

COMS-215 was offered through hybrid and online formats, and in 2019-2020, COMS-215 was offered through in-person and hybrid formats. In 2018-2019, COMS-216 was offered through hybrid and online formats. In 2019-2020, COMS-101 was offered through hybrid the online formats, and COMS-120 was offered through in-person and online formats. This analysis focuses on program-level rates. Details for the course level are included in the table above.

Within the Computer Studies Program:

- *The retention rate in in-person sections was lower than the retention rate in hybrid sections. (The difference was not statistically significant.) This pattern reflects the findings at the institutional level, where the retention rate in in-person sections was lower than the rate in hybrid sections.*
- *The retention rate in in-person sections was lower than the retention rate in online sections. (The difference was not statistically significant.) This pattern deviates from the findings at the institutional level, where the retention rate in online sections reflected the rate in in-person sections.*
- *The retention rate in hybrid sections was significantly lower than the retention rate in online sections. This pattern deviates from the findings at the institutional level, where the retention rate in online sections was significantly lower than the rate in hybrid sections.*

Within the Computer Studies Program:

- *The successful course completion rate in in-person sections was significantly lower than the successful course completion rate in hybrid sections. This pattern deviates from the findings at the institutional level, where the successful course completion rate in hybrid sections mirrored the rate in in-person sections.*
- *The successful course completion rate in in-person sections was lower than the successful course completion rate in online sections. (The difference was not statistically significant.) This pattern deviates from the findings at the institutional level, where the successful course completion rate in online sections reflected the rate in in-person sections.*
- *The successful course completion rate in hybrid sections was significantly lower than the successful course completion rate in online sections. This pattern deviates from the findings at the institutional level, where the successful course completion rate in online sections was significantly lower than the rate in hybrid sections.*

Program Reflection:

The data suggests that the retention and completion rate for COMS courses is highest in online sections and that hybrid sections have better outcomes than in-person only sections.

One option would be to schedule COMS courses firstly or primarily online with multiple section course when warranted to be offered in a hybrid format.

It is recommended that faculty or the program conduct a survey to assess if there are preferred modalities as they relate to student needs and scheduling. For hybrid sections, it may be necessary to explore additional options. Example: Where multiple sections are offered particularly in 100 level courses such as COMS 101, COMS 120, or COMS 165, to offer them in an online and/or hybrid format at a time that is convenient for both traditional college students and high school students to attend.

For COMS courses that have a lab component, faculty could consider requiring a minimum requirement for office hour visits. Example: Each student would be required to attend at least one office meeting during the semester in an effort to promote better faculty and student interaction. Faculty could also consider different strategies in instruction delivery such as teaching in a, "flipped" classroom approach and other strategies that encourage more student engagement with the material.

In addition, it is recommended for COMS faculty to consider using tools such as the Starfish Early Alert program. This program may help in identifying students that would benefit from additional help and resources that the campus offers.

Additional recommendations for consideration: Offer tutoring for 100 level COMS courses. Offer Supplemental Instruction for 200 level COMS courses.

C. Student Achievement

1. Program Completion

Although the Computer Studies Program offers one degree and two certificates, the program did not confer any awards over the past three years.

2. Program-Set Standards: Job Placement and Licensure Exam Pass Rates

Measure	Program-Set Standard* (& Stretch Goal)	Recent Performance			
		Year 1	Year 2	Year 3	Three-Year Total
Job Placement Rate	60% (75%)	67%	67%	67%	67%
Licensure Exam Pass Rate	Licensure exams are not required for this program				

Sources: Perkins IV Core 4 Employment data for Program (TOP Codes: 0702, 0707, and 0708) for job placement rates (https://misweb.cccco.edu/perkins/Core_Indicator_Reports/Summ_CoreIndi_TOPCode.aspx);
*Program-set standards and stretch goals reported in the table are the standards and goals established in 2019.

RPIE Analysis: Among Computer Studies Program students, job placement rates have consistently exceeded the program-set standard of 60%. The job placement rates have not met the stretch goal of 75%.

Program Reflection:

The Computer Studies met with their advisory committee over the last several years. Due to low fill and completion rates, it was recommended that we archive the Microsoft Office courses and move toward a Computer Science AS-T Degree. Specifically, in an advisory committee meeting held 10/4/17 it was proposed that we offer a Computer Science AS-T (Transfer Model Curriculum) including two new courses:

COMS 217 Computer Architecture and Organization
COMS 218 Discrete Structures

Additionally, in a Program Advisory Committee Meeting dated 12/3/21 industry experts weighed in on IT IS pathway. They approved the need for:

A. Information Technology Model Curriculum New Program (IT TMC)

B. Two new courses
   a. NEW: IT IS 110 Information & Communication Technology Essentials (4)
   b. NEW: CISN 110 Computer Network Fundamentals (3)

and approved the need for Napa Valley College to offer stackable IT IS certificates and associates degree. This would include the addition of:

C. Cyber Security IT IS 160, 164, 165
   a. NEW: IT IS 160 Introduction to Information Systems Security (3)

b. NEW: IT IS 164 Introduction to Cybersecurity (3)
c. NEW: IT IS 165 Digital Forensics Fundamentals (3)

D. System & Network Essentials: IT IS 140, 151 & 155
a. NEW: IT IS 140 Introduction to Systems Analysis and Design (3)
b. NEW: IT IS 151 Switching, Routing and Wireless Essentials (3)
c. NEW: IT IS 155 Systems and Network Administration (3)

II. CURRICULUM

A. Courses

Subject	**Course Number**	**Date of Last Review** *(Courses with last review dates of 6 years or more must be scheduled for immediate review)*	**Has Prerequisite*** Yes/No **& Data of Last Review**	**In Need of Revision** *Indicate Non-Substantive (NS) or Substantive (S)* ***& Academic Year***	**To Be Archived** *(as Obsolete, Outdated, or Irrelevant)* **& Academic Year**	**No Change**
COMS	101	06/01/2018	No	No		
COMS	110				To Be Archived 01/01/2022	
COMS	115	08/13/2021	No	No		
COMS	120	08/13/2021	No	No		
COMS	121				Archived 08/13/2021	
COMS	142				To Be Archived 01/01/2022	
COMS	150				To Be Archived 01/01/2022	
COMS	165	01/16/2018	No	No		
COMS	167				To Be Archived 01/01/2022	
COMS	183				Archived 08/14/2020	
COMS	186				To Be Archived 01/01/2022	
COMS	190	08/13/2021	No	No		
COMS	215	08/13/2021	No	No		
COMS	216	01/15/2016	Yes	Non-Substantive 2022		
COMS	217	08/16/2021	No	No		
COMS	218	08/13/2021	No	No		
COMS	284				Archive in Progress	
COMS	287				To Be Archived 01/01/2022	
COMS	288				Archived 01/16/2018	

*As of fall 2018, prerequisites need to be validated (in subsequent process) through Curriculum Committee.

B. Degrees and Certificates[+]

Degree or Certificate & Title	**Implementation Date**	**Has Documentation** Yes/No	**In Need of Revision+** *and/or Missing Documentation* **& Academic Year**	**To Be Archived*** *(as Obsolete, Outdated, or Irrelevant)* **& Academic Year**	**No Change**
Computer Science AS-T Degree	08/13/2021	Yes	No		X
IT Technician Certificate of Achievement:	08/01/2022				
Computer Studies AS Degree				To Be Archived 01/01/2022	
Advanced Microsoft Office Skills Certificate of Achievement: 8 to 15.5 units					
Beginning Microsoft Office Software Local Certificate					

*As of fall 2018, discontinuance or archival of degrees or certificates must go through the Program Discontinuance or Archival Task Force.

[+]Degrees and Certificates cannot be implemented until the required courses in them are approved and active.

Program Reflection:

A new Computer Science AS-T Degree has launched based on the recommendations of the advisory committee and needs of the community. In addition, an IT Technician Certificate of Achievement is being developed.

Due to low enrollments, completions, and in an effort not to overlap with our partnering Adult School we are archiving the Microsoft Office courses. This also ensures we have clear transitions and pathways between our offerings.

III. LEARNING OUTCOMES ASSESSMENT

A. Status of Learning Outcomes Assessment

Learning Outcomes Assessment at the Course Level

	Number of Courses with Outcomes Assessed		Proportion of Courses with Outcomes Assessed	
Number of Courses	Over Last 4 Years	Over Last 6 Years	Over Last 4 Years	Over Last 6 Years
	5	5	5	5

Learning Outcomes Assessment at the Program/Degree/Certificate Level

Degree/Certificate	Number of Outcomes*	Number of Outcomes Assessed		Proportion of Outcomes Assessed	
		Over Last 4 Years	Over Last 6 Years	Over Last 4 Years	Over Last 6 Years
	2	2	2	2	2

Program Reflection:

The results of courses which measured outcomes on a percentage basis were:

COMS 101: 64.12%, 65.9%;
COMS 110: 77%, 61.1%;
COMS 120: 87%;
COMS 165: 83%;
COMS 215: 77%, 77%;
COMS 216: 92%.

The collective average across these COMS sections was 75.57%.

Summary of Learning Outcomes Assessment Findings and Actions

Program Reflection:

Solutions using simulation software that could be accessed through a web browser. Other options would be to use products that are able to be accessed through a browser (example Microsoft Office 365) or to have the software housed either on campus on a server or software as a service in the cloud (example NETLAB+ for programming courses and Microsoft Office 365 for applications-based courses).

Using Simulation based training for certain skills had a positive impact on being able to demonstrate knowledge of the software.

Some of the courses may want to consider an overall comprehensive exam to better capture results. Example, combining multiple assessment methods into one overall exam

ACTION:
1. Professional development: Encouraging faculty to read and learn more about using Microsoft Office 365 and NETLAB+ (if subscribed to).

2. There seemed to be a theme that noted issues when using multiple operating systems (or versions of the product). Encouraging the use of software and services that are accessible through a web browser makes it easier for students to have a consistent user experience that is not dependent on the computer operating system (Apple macOS or Microsoft Windows versions). Below are some possible recommendations:

COMS 101, 110, 165:

- If a course requires downloaded software, explain, or use steps that will work on both Apple macOS and Microsoft Windows versions.
- Announce to students that the college has a laptop loaner program with preinstalled software.
- Use Simulation based Training to help increase skills in using the features especially when learning a new product where tasks may be practiced before being applied in the application.

COMS 120, 215, 216:

- Subscribe to Netlab+ where cloud-based programming software products (such as Microsoft Visual Studio) can be access through a web browser and/or
- Use other cloud-based products where a terminal can be accessed through a web browser (Example: Cengage MindTap).

IV. PROGRAM PLAN

Based on the information included in this document, the program is described as being in a state of:

- ○ Viability
- ○ Stability
- ◉ Growth

Two new degrees:

1. Computer Science AS-T Degree launched Fall 2021
2. Information Technology Model Curriculum New Program (IT TMC) Spring 2022

New Certificate in development:
IT Technician Certificate of Achievement is in development Spring 2022

Four new classes

1. COMS 217 Assembly Programming Course
2. COMS 218 Discrete Structures
3. COMS 190 Computer Network Fundamentals
4. COMS 161 Introduction to Database

Hired two new programming adjuncts:
1. Gerald Lamble
2. David Harden

*Please select ONE of the above.

This evaluation of the state of the program is supported by the following parts of this report:

The state of the program is supported by the RIPE data presented and the RIPE analysis.

- RIPE reported that the number of credit students enrolled (headcount) in the Computer Studies Program increased by 25.8% over the past three years.
- RIPE reported that credit enrollment within the Computer Studies Program increased by 30.1%.
- RIPE reported that the average class size in the program increased by 22.2% between 2018-2019 and 2020-2021.
- The RIPE labor market demand supports the addition of the new degrees and certificates.

Complete the table below to outline a three-year plan for the program, within the context of the current state of the program.

Program: Computer Studies
Plan Years: 2022-2023 through 2024-2025

Strategic Initiatives Emerging from Program Review	Relevant Section(s) of Report	Implementation Timeline: Activity/Activities & Date(s)	Measure(s) of Progress or Effectiveness
New COMS AST degree	I. Program Data 4. Labor Market Demand (pg. 11)	Fall 2021	Completions
New IT Tech Certificate	I. Program Data 4. Labor Market Demand (pg. 11)	Fall 2022	Completions
New IT MC degree	I. Program Data 4. Labor Market Demand (pg. 11)	Spring 2022	Completions
four new courses COMS 217, COMS 218 and COMS 190 and COMS 161	I. Program Data 4. Labor Market Demand (pg. 11)	Fall 2021	Enrollment
Archive of 8 courses	I. Program Data 1. Headcount & Enrollment (pg. 6)	Spring 2022	Completions and enrollments of the new courses

Describe the current state of program resources relative to the plan outlined above. (Resources include: personnel, technology, equipment, facilities, operating budget, training, and library/learning materials.) Identify any anticipated resource needs (beyond the current levels) necessary to implement the plan outlined above.

Note: Resources to support program plans are allocated through the annual planning and budget process (not the program review process). The information included in this report will be used as a starting point, to inform the development of plans and resource requests submitted by the program over the next three years.

Description of Current Program Resources Relative to Plan:

Modality:

- Faculty should consider applying different strategies in the classroom to increase student engagement with the material. This includes offering concurrent sections with different modalities.

Faculty Personnel Needs:

- It is recommended to hire an additional adjunct-faculty faculty in computer science programming qualifications.

- It is recommended to hire an additional adjunct-faculty with networking qualifications.

Supplemental Instruction:

- Request for additional classrooms with hardwired computers.
- Request to install NETLAB+ virtual computer lab environment
- Recommend hiring one Supplemental Instruction Leader to support 200 level courses.

Diversity, Equity, and Inclusion:

- Opening up and adding to the Maker Space will benefit computer science students
- Offer an on-campus internship program. We hope to include a computer science project this year or next year.
- Alignment with HSI awarded grant to address equity gaps through both outreach and program improvement.

Tutoring Services:

Recommend hiring one tutor to support 100 level courses.

Several courses, and certificates, and a program have been identified for archive due to low enrollment and low completion rates. Although the Computer Studies Program offers one degree and two certificates, the program did not confer any awards over the past three years.

V. PROGRAM HIGHLIGHTS

A. Recent Improvements

Two new degrees:

1. Computer Science AS-T Degree launched Fall 2021
2. Information Technology Model Curriculum New Program (IT TMC) Spring 2022

New certificate in development:
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Four new classes:

1. COMS 217 Assembly Programming Course
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3. COMS 190 Computer Network Fundamentals
4. COMS 161 Introduction to Database

Hired two new programming adjuncts:
1. Gerald Lamble
2. David Harden

B. Effective Practices

- Continued responsiveness to industry and student needs.
- Supporting faculty work & industry connections
- Strong linkages with business & community needs
- Monitoring legislation
- Monitoring industry trends

Completed by Supervising Administrator:

Dr. Douglas Marriott

Date:

11/19/21

Strengths and successes of the program, as evidenced by analysis of data, outcomes assessment, and curriculum:

Increased enrollment over past three years, increased headcount over past three years, new curriculum developed based on direct feedback from Advisory Board and industry partners, alignment with Business and Entrepreneurship degrees.

Areas of concern, if any:

Concerns over duplication with courses offered by Napa Valley Adult School have been addressed (as duplicative classes have been archived) to ensure a bridge to NVC and alignment with our partners. As an administrator I am concerned about the alignment with the deliverables of a recently received HSI grant that had the department cited as a key piece to ensure deliverables. I want to work with all administrators involved to ensure positive outcomes that benefit our students and the institution. A concern that was addressed in consultation with program faculty was alignment and participation in regional efforts that would benefit NVC and the students we serve (notably NETLAB).

Recommendations for improvement:

From the consultation with faculty, it was determined that the short-term, stackable certificates in Cyber Security and System & Network Essentials in development would benefit from alignment with Strong Workforce Local project support for NETLAB access, licensing, and marketing. It is recommended these short-term trainings be put into the approved list of Workforce Trainings and shared with area Workforce Development partners as a viable training for job seekers. It is recommended that all needed professional development of faculty be supported as it directly impacts upcoming course offerings and as the program content needs to stay relevant for the students we serve.

Anticipated Resource Needs:

Resource Type	**Description of Need (Initial, Including Justification and Direct Linkage to State of the Program)**
Personnel: Faculty	
Personnel: Classified	
Personnel: Admin/Confidential	
Instructional Equipment	
Instructional Technology	
Facilities	

Operating Budget	
Professional Development/ Training	
Library & Learning Materials	