

Program Review - Academic - Water Utility Science Latest Version

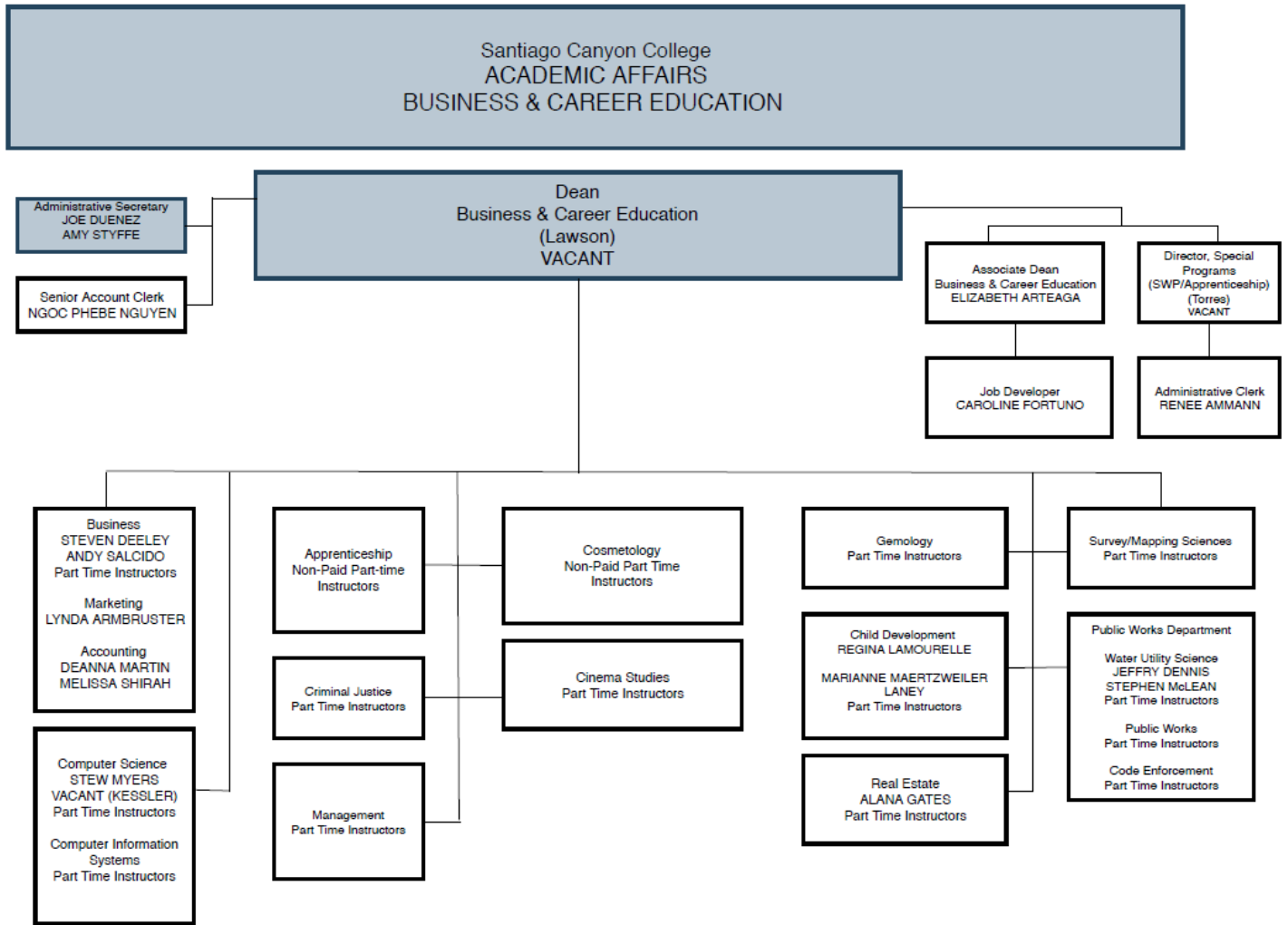
Overview

Program Review - Collaborators : Version by **McLean, Stephen** on **03/11/2020 18:04**

Collaborators
Jeffrey Dennis
Stephen McLean

Program Review Overview - Organizational Chart : Version by **McLean, Stephen** on **03/10/2020 21:03**

Please insert the organizational chart for this program or service area.



Program Review Overview - Award Programs : Version by **McLean, Stephen** on **03/10/2020 22:18**

For Water Treatment, Water Distribution, and Wastewater Treatment, the Certificates of Proficiency (CERT), Certificates of Achievement (CA), and Associate of Science (AS) awards are "stacked," allowing students to progress through these awards.

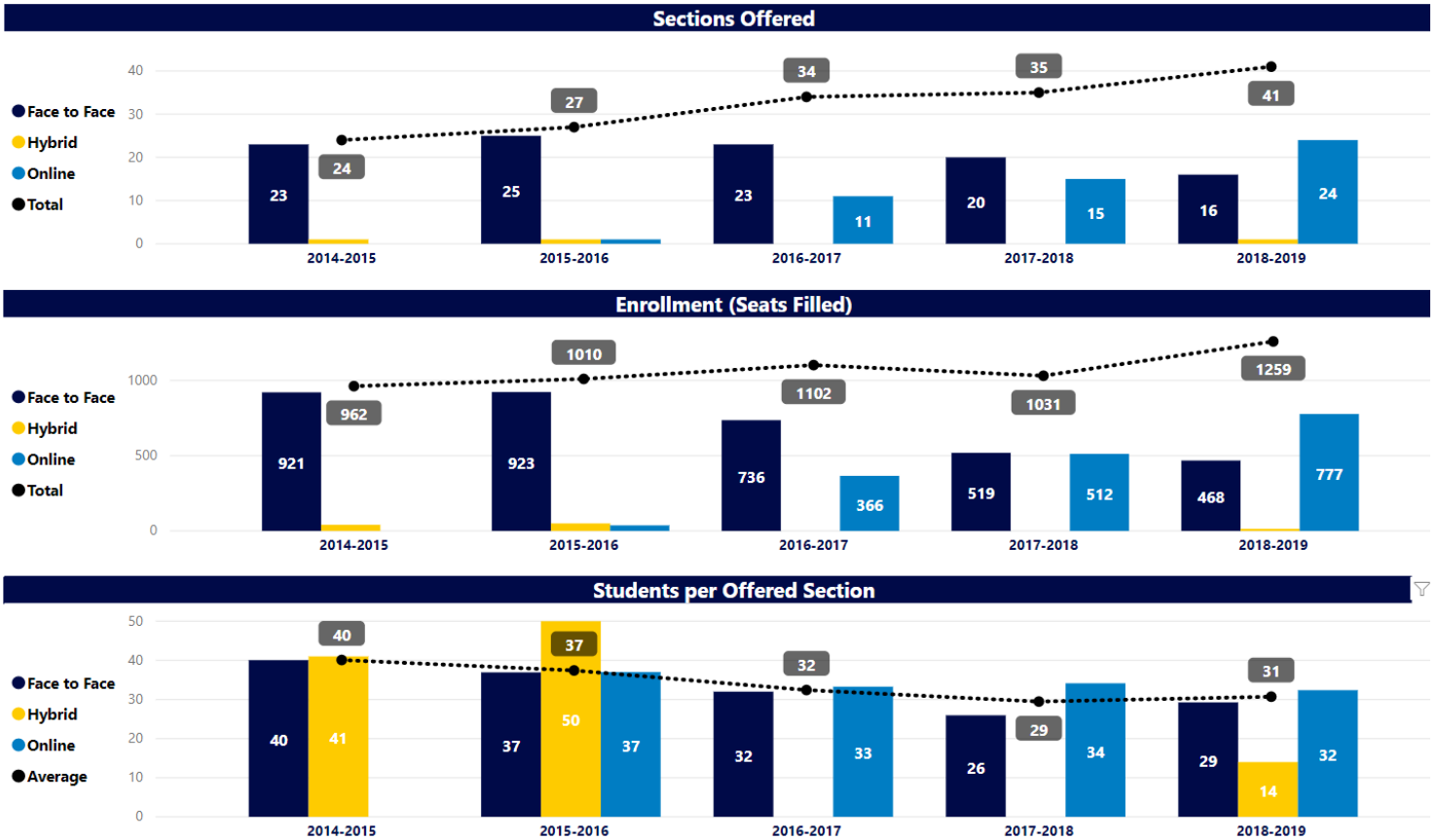
The other three Certificates of Proficiency are in specialized subareas of study and careers.

Award Programs
Wastewater Treatment, CERT
Wastewater/Environmental Sanitation, AS
Wastewater/Environmental Sanitation, CA
Water Conservation, CERT

Award Programs

Water Distribution, AS
Water Distribution, CA
Water Distribution, CERT
Water Equipment Operation and Maintenance, CERT
Water Treatment, AS
Water Treatment, CA
Water Treatment, CERT
Water Utility Management, CERT

Program Review Overview - Course Offerings: Unique Courses : Version by McLean, Stephen on 03/10/2020 22:22



Unique Courses in 2014-2015	Unique Courses in 2015-2016	Unique Courses in 2016-2017	Unique Courses in 2017-2018
16	16	18	22

Program Review Overview - Course Offerings - Number of Sections Offered : Version by McLean, Stephen on 03/11/2020 18:22

Number of Sections Offered	2014-2015	2015-2016	2016-2017	2017-2018
	24	27	34	35

Program Review Overview - Course Offerings - Total Enrollment : Version by McLean, Stephen on 03/11/2020 18:22

Total Enrollment (Seats Filled)	2014-2015	2015-2016	2016-2017	2017-2018
	962	1010	1102	1031

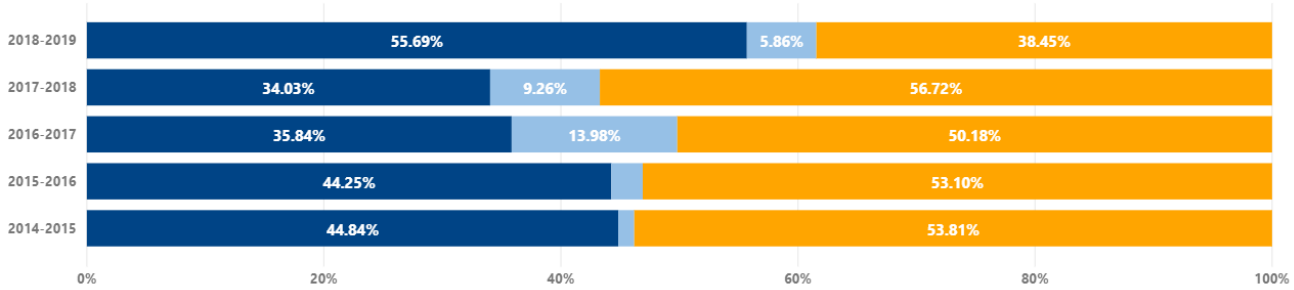
Program Review Overview - Course Offerings - Students per Offered Section : Version by McLean, Stephen on 03/11/2020 18:22

Students per Section	2014-2015	2015-2016	2016-2017	2017-2018
	40	37	32	29

Program Review Overview - Faculty Workload LHE : Version by McLean, Stephen on 03/11/2020 18:22

Instructional LHE Proportion by Contract Type

TYPE ● Full-Time ● Overload ● Part-Time



Terms
 Fall
 Intercession
 Spring
 Summer

Subjects
 WATR

2017-2018						2018-2019					
Contract	LHE	% LHE	Faculty Count	LHE/Faculty	FTEF	Contract	LHE	% LHE	Faculty Count	LHE/Faculty	FTEF
Full-Time	30.0	34.03%	1	30.00	1.00	Full-Time	57.0	55.69%	2	28.50	1.90
Overload	8.2	9.26%	1	8.16	0.27	Overload	6.0	5.86%	1	6.00	0.20
Part-Time	50.0	56.72%	8	6.25	1.67	Part-Time	39.4	38.45%	7	5.62	1.31
Total	88.2	100.00%	9	9.80	2.94	Total	102.4	100.00%	9	11.37	3.41

2014-2015						2015-2016						2016-2017					
Contract	LHE	% LHE	Faculty Count	LHE/Faculty	FTEF	Contract	LHE	% LHE	Faculty Count	LHE/Faculty	FTEF	Contract	LHE	% LHE	Faculty Count	LHE/Faculty	FTEF
Full-Time	30.0	44.84%	1	30.00	1.00	Full-Time	30.0	44.25%	1	30.00	1.00	Full-Time	30.0	35.84%	1	30.00	1.00
Overload	0.9	1.35%	1	0.90	0.03	Overload	1.8	2.65%	1	1.80	0.06	Overload	11.7	13.98%	1	11.70	0.39
Part-Time	36.0	53.81%	7	5.14	1.20	Part-Time	36.0	53.10%	7	5.14	1.20	Part-Time	42.0	50.18%	6	7.00	1.40
Total	66.9	100.00%	8	8.36	2.23	Total	67.8	100.00%	8	8.48	2.26	Total	83.7	100.00%	7	11.96	2.79

For 2018-2019

Full-time LHE #	Full-time LHE %	Part-time LHE #	Part-time LHE	Overload LHE #	Overload LHE %	Total LHE #	Total LHE %
57	55.69%	39.4	38.45%	6	5.8%	102.4	100%

Program Review Overview - Faculty Workload Faculty Headcount : Version by McLean, Stephen on 03/11/2020 18:17

For 2018-2019

Full-time Faculty Headcount	Part-time Faculty Headcount	Overload Faculty Headcount	Total Faculty Headcount
2	7	1	9

Program Review Overview - Faculty Workload LHE per Faculty : Version by McLean, Stephen on 03/11/2020 18:21

For 2018-2019

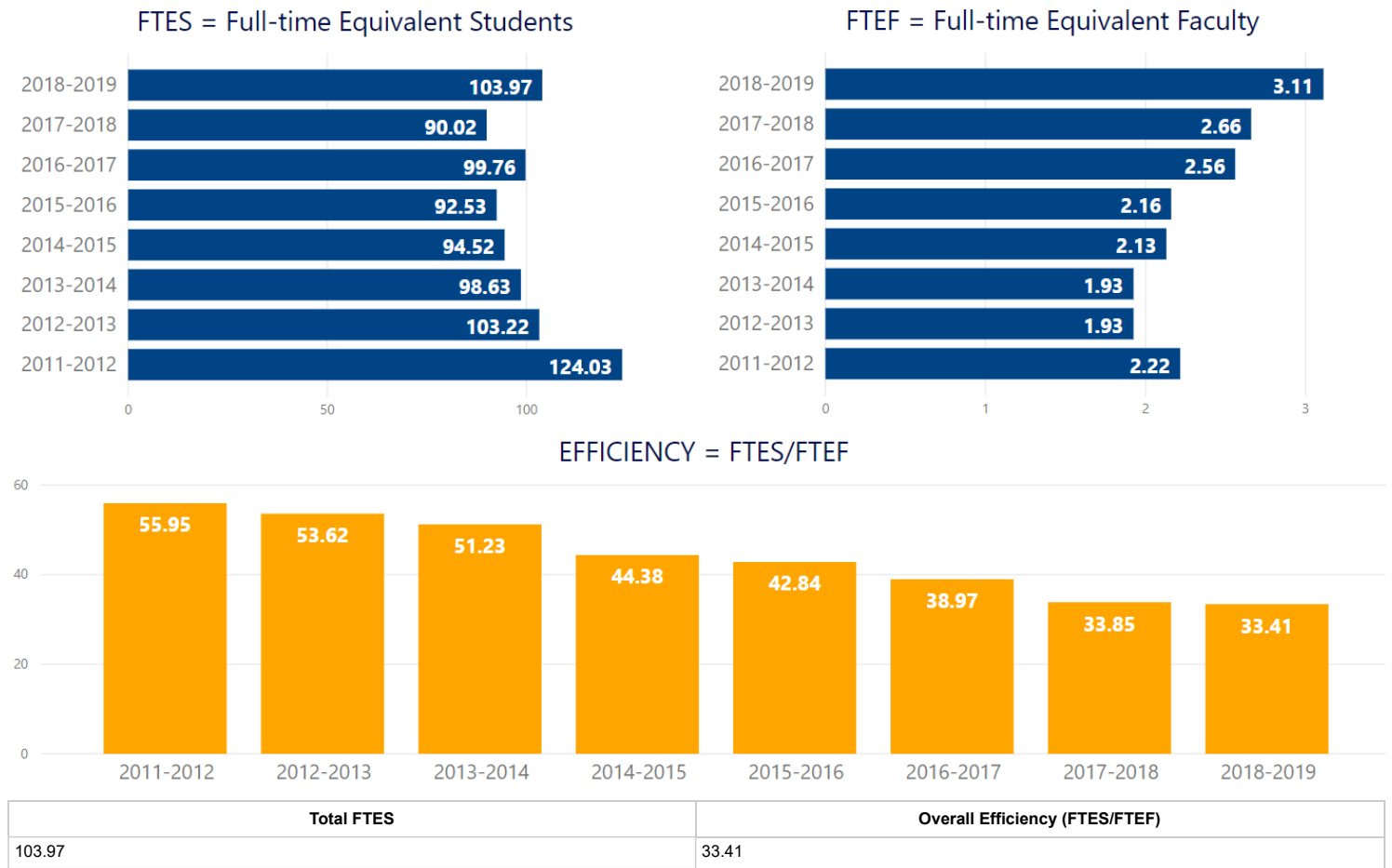
Full-time LHE per Faculty	Part-time LHE per Faculty	Overload LHE per Faculty	Total LHE per Faculty
28.5	5.62	6	11.37

Program Review Overview - Faculty Workload FTEF (LHE/30) : Version by McLean, Stephen on 03/11/2020 18:21

For 2018-2019

Full-time FTEF	Part-time FTEF	Overload FTEF	Total FTEF
1.9	1.31	0.2	3.41

Program Review Overview - Faculty Workload FTES and Efficiency : Version by **McLean, Stephen** on **03/10/2020 22:55**



Goals and Objectives

Program Review Goals & Objectives - Process and Mission Statement Alignment : Version by **McLean, Stephen** on **03/11/2020 18:25**

What processes does your program/service area follow to create, evaluate, and update annual plan goals?

As a Career Education program, our plans and goals are informed annually by our Technical Advisory Committee and the input of its members, who are all professionals in the field of Water Science, and members of our local Orange County service area. Our faculty, both full time and adjunct, are active or retired professionals in this same industry, who also inform our planning efforts.

Our full time faculty create, evaluate, and update our annual plan goals based upon the input of all of these professionals. Over the past several years, this process has resulted in the development of six new Certificates of Proficiency and several new courses, including five courses developed explicitly to assist students in their preparations for certification as Water Treatment, Water Distribution, and Wastewater Treatment Operators by the California State Water Resources Control Board. We have also dramatically increased our online course offerings and short-term course offerings.

We continue to align our curriculum to meet the standards and requirements of the SWRCB, as these certifications are mandatory for employment in the Water industry.

How is SCC's mission statement (<https://www.sccollege.edu/About/Pages/CollegeMissionStatement.aspx>) reflected in your goals?

Santiago Canyon College is an innovative learning community dedicated to intellectual and personal growth. Our purpose is to foster student success and to help students achieve these core outcomes: to learn, to act, to communicate and to think critically. We are committed to maintaining standards of excellence and providing the following to our diverse community: courses, certificates, and degrees that are accessible, applicable, and engaging.

Our Water program remains the largest and oldest -- and we are confident, the best -- such program in the California Community College system. We believe that this fosters student success as they move into meaningful, important careers in this essential industry. To be successful within this industry, our students must act, communicate, and think critically each and every day. Our program goals are focused on these objectives.

Program Review Goals & Objectives - Annual Plan Goals Not Aligned with EMP Goals

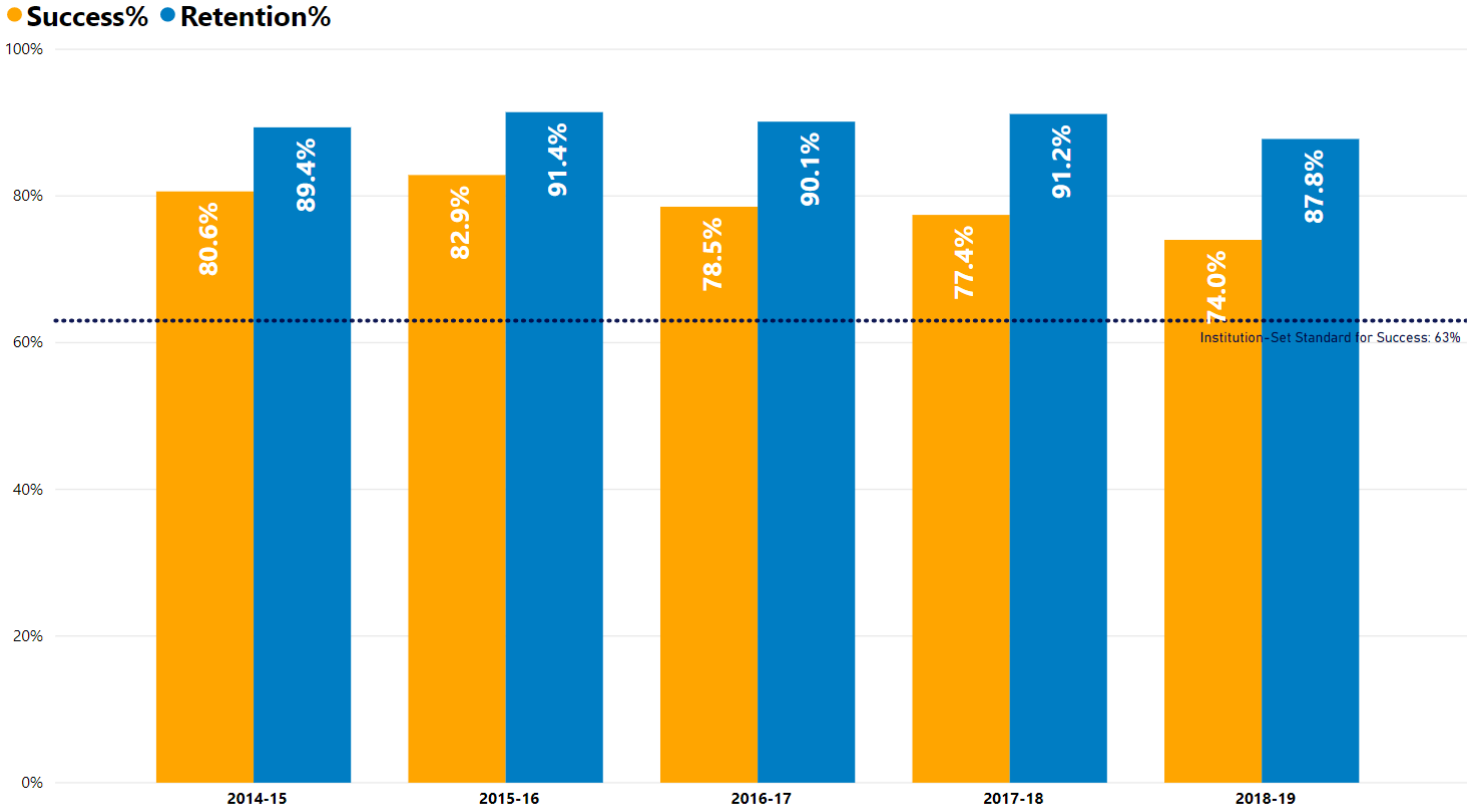
Annual Plan Goal
undefined

Data Analysis

Program Review Data Analysis - 1 to 4 : Version by **McLean, Stephen** on **03/10/2020 23:29**

Performance has consistently surpassed the institution-set standards. Consequently, no significant changes are indicated or have been made.

What is the successful course completion rate (grades of A, B, C, Credit or Pass) for courses within the program and how does this compare to the institution-set standard for successful course completion of **63%**?



For 2018-2019:
Percent Success = 74.0%

What is the successful course completion rate in basic skills courses (grades of A, B, C, Credit or Pass) within the program?

N/A

What is the course retention rate (any grade except W) for courses within the program?

For 2018-2019:

Percent Success = 87.8%

What is the course retention rate in basic skills courses (any grade except W) within the program?

N/A

Program Review Data Analysis - 5 : Version by **McLean, Stephen** on **03/10/2020 23:39**

We attribute the high numbers for CAs for Water Distribution and Water Treatment to the recent availability of these awards in a completely online fashion. We are drawing students from all around the State to our Water program, as similar programs are rare in the State -- despite the need for people in this field in every community within the State.

We are exploring ways that we might be able to expand our online opportunities for academic awards even further.

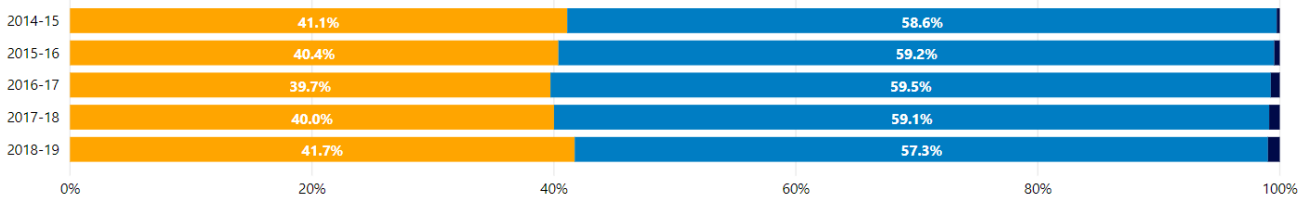
Number of Awards in the Following Programs:	2014-2015	2015-2016	2016-2017	2017-2018
Wastewater Treatment, CERT				2
Wastewater/Environmental Sanitation, AS	13	7	13	10
Wastewater/Environmental Sanitation, CA	15	13	9	17
Water Conservation, CERT				1
Water Distribution, AS	16	17	14	14
Water Distribution, CA	34	29	18	44
Water Distribution, CERT				8
Water Equipment Operation and Maintenance, CERT				2
Water Treatment, AS	17	15	22	15

Number of Awards in the Following Programs:	2014-2015	2015-2016	2016-2017	2017-2018
Water Treatment, CA	29	34	21	40
Water Treatment, CERT				5
Water Utility Management, CERT				2

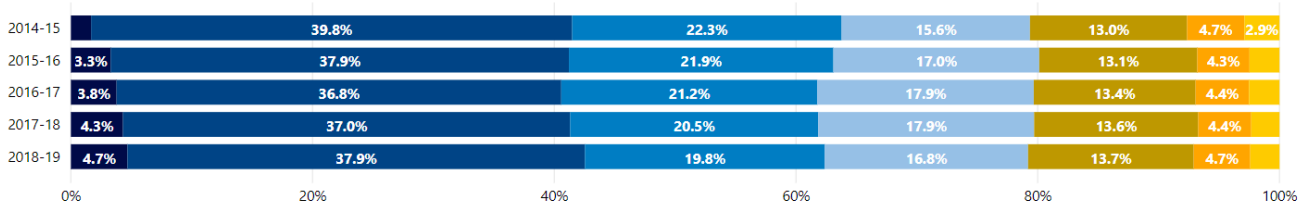
Program Review Data Analysis - 6 to 13 : Version by McLean, Stephen on 03/11/2020 19:35

Are there any patterns, trends, or anomalies in the Student Demographic Data (Ethnicity, Age, Gender, Veteran Status, etc.)?

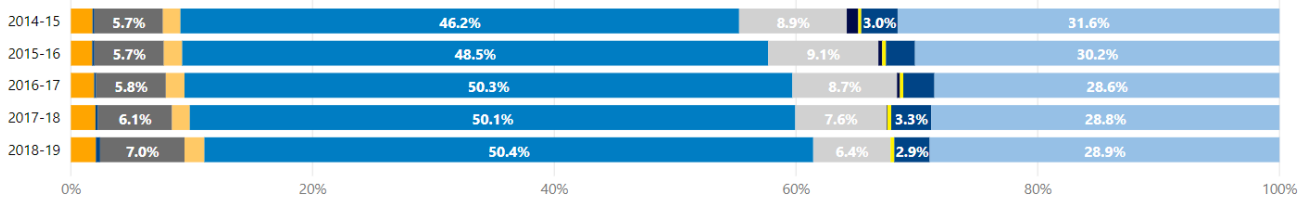
Gender ● Female ● Male ● Unknown



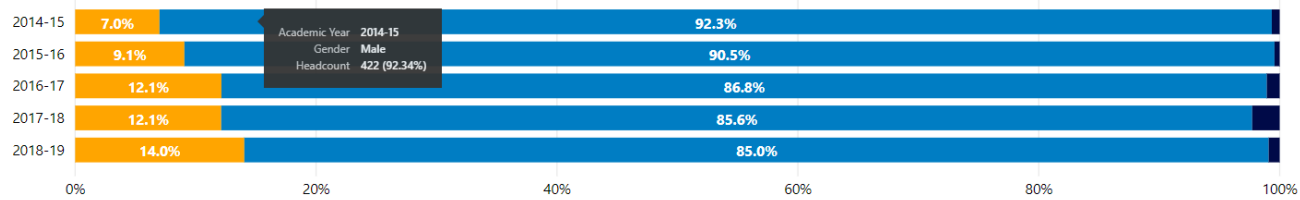
Age ● 17 and under ● 18-21 ● 22-24 ● 25-29 ● 30 - 39 ● 40 - 49 ● 50 and over



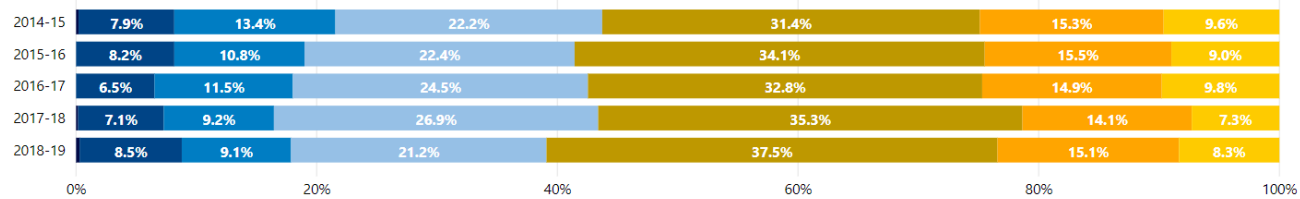
Ethnicity ● African-American ● American Indian/Alaskan ● Asian ● Filipino ● Latino ● Multi-Race ● Other ● Pacific Islanders ● Unknown ● White



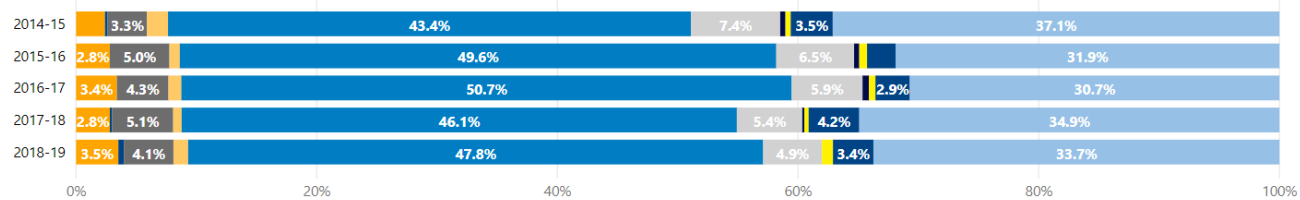
Gender ● Female ● Male ● Unknown



Age ● 17 and under ● 18-21 ● 22-24 ● 25-29 ● 30 - 39 ● 40 - 49 ● 50 and over



Ethnicity ● African-American ● American Indian/Alaskan ● Asian ● Filipino ● Latino ● Multi-Race ● Other ● Pacific Islanders ● Unknown ● White



SUBJECTS

- ACA
- ACCT
- ACE
- ACPD
- ACS
- AEL
- AIN
- AME
- AMF
- AMM
- AMW
- ANTH
- AOE
- APD
- APL
- APST
- ART
- ASL
- ASTR
- ASV
- BIOL
- BUS

SUBJECTS

- WATR

Probably the most glaring disparity between the overall SCC student demographics and those for the Water program is in gender: the Water industry has long been male-dominated. The

trend within the industry and our Water program has been for improved female participation, with our program numbers doubling in the past five years. We expect to see further expansions in such opportunities and labor participation.

Labor market trends and needs: Review the labor market data on the [California Employment Development Department \(http://www.labormarketinfo.edd.ca.gov/Content.asp?pageid=1011\)](http://www.labormarketinfo.edd.ca.gov/Content.asp?pageid=1011) website for jobs related to your program.

1. What occupations are related to your program?
2. What are the occupational projections for employment?
3. How do these projections affect planning for your program?

1. There are many different occupations related to our Water program. These include water quality professionals, including chemists and biologists; engineers for planning, design, and management; other supervisory and management positions; customer service agents, water conservation representatives, billing and accounting agents, warehouse and maintenance personnel, public relations representatives, and other administrative and related job functions. Many of the preceding occupations require additional post-secondary education. However, our program's main focus has been for Water Treatment, Water Distribution, and Wastewater Treatment Operators, as certified by the California State Water Resources Control Board.
2. Statewide, there are over 50,000 SWRCB certified Operators. According to the American Water Works Association, the average age for workers in this industry is over 50, and they estimate a 50% turnover in personnel in the next decade. That translates to about 200 new positions every month statewide over the next decade. Statewide data is relevant to our Water program, as there are less than 10 California Community Colleges with Water programs, with SCC's being the largest by far, and also having the largest online student population, and thus reaching students statewide. Typical starting salaries for these positions are \$50k-\$60k annually. Many of these positions lead to annual salaries >\$100k in about five years.
3. We plan to continue to align our curriculum and course offerings to the certification requirements of the SWRCB. Further, we plan to continue to expand our online course offerings to better serve the entire State that is in need of trained professionals in this industry.

Please provide comment on the rates of progress through the basic skills course sequence within your program using the California Community College Chancellor's Office Data Mart [Basic Skills Program Tracker \(http://datamart.cccco.edu/Outcomes/BasicSkills_Cohort_Tracker.aspx\)](http://datamart.cccco.edu/Outcomes/BasicSkills_Cohort_Tracker.aspx).

N/A

Please provide comment on student survey results administered by the program, if any.

N/A

Please provide comment on program exit exams or other assessments of graduating students, if any.

N/A

Please provide the number of students who take and pass external license examinations, if relevant to the program.

External licensing through the State Water Resources Control Board is extremely relevant to our program. However, we have no data on how our students have performed on these certification exams. Statewide, passing rates are approximately 50%. Based upon anecdotal student feedback, we believe our student success rate to be significantly higher. However, we have no hard data to support this belief.

Please provide data on former students' post-SCC experiences (e.g. transfer success, career advances, post-graduation surveys), if any.

Again, no real data is available. And again, anecdotally, we have reports from students and TAC members that many of our students have entered into the Water work force locally following graduation.

Please provide data pertaining to the instruction or delivery of service, if any.

N/A

Outcomes Assessment

Program Review Outcomes Assessment - Course and Section Count : Version by McLean, Stephen on 03/11/2020 19:44

Courses	Section Count
WATR020 - Introduction to Water Science	1
WATR020 - Introduction to Water Science	1
WATR048 - Wastewater Operator Exam Review	1
WATR048 - Wastewater Operator Exam Review	1
WATR050 - Water Mathematics and Hydraulics	5
WATR050 - Water Mathematics and Hydraulics	3
WATR052 - Water Conservation Practitioner	2
WATR052 - Water Conservation Practitioner	1
WATR053 - Water Reclamation and Reuse	1
WATR053 - Water Reclamation and Reuse	1
WATR054 - Advanced Treatment Exam Preparation	1
WATR054 - Advanced Treatment Exam Preparation	1
WATR056 - Treatment Exam Preparation	3
WATR056 - Treatment Exam Preparation	1
WATR057 - Water Distribution Test Preparation	3
WATR057 - Water Distribution Test Preparation	1
WATR059 - Advanced Distribution Exam Preparation	1
WATR059 - Advanced Distribution Exam Preparation	1
WATR061 - Water Distribution	2
WATR061 - Water Distribution	1
WATR062 - Advanced Water Distribution	1
WATR062 - Advanced Water Distribution	1
WATR063 - Electrical Wiring and Controls for Operators	1
WATR064 - Pumps and Pumping	1

Courses	Section Count
WATR064 - Pumps and Pumping	2
WATR065 - Backflow Prevention Devices	1
WATR065 - Backflow Prevention Devices	2
WATR071 - Water Treatment Fundamentals	1
WATR071 - Water Treatment Fundamentals	3
WATR072 - Advanced Water Treatment	1
WATR072 - Advanced Water Treatment	2
WATR073 - Water Quality	2
WATR073 - Water Quality	1
WATR081 - Wastewater Treatment	1
WATR082 - Advanced Wastewater Treatment	1
WATR082 - Advanced Wastewater Treatment	1
WATR083 - Collection Systems	1
WATR083 - Collection Systems	1
WATR092 - Water Utility Management	1
WATR092 - Water Utility Management	1
WATR107 - California Water Resources	2
WATR107 - California Water Resources	1

Program Review Outcomes Assessment - CSLOs : Version by McLean, Stephen on 03/11/2020 19:44

Student Learning Outcomes	CSLO Count	CSLOs Measured
WATR020 - Introduction to Water Science		
Describe the water supply infrastructure of the State of California including major water sources, regional water and wastewater treatment facilities, and local drinking water distribution systems.		
Analyze a drinking water Consumer Confidence Report to determine if a water supply meets applicable health and safety standards.		
WATR048 - Wastewater Operator Exam Review		
Evaluate common wastewater treatment processes with respect to their effectiveness in complying with public health and safety regulations.		
Calculate areas, volumes, flow rates, velocities, activated sludge process variables, and chemical feed rates for a public wastewater system.		
WATR050 - Water Mathematics and Hydraulics		
Solve basic mathematical problems including the calculations of areas, volumes, and flow rates.		
Calculate chemical dosages required to provide drinking water that meets public health standards established by the State of California.		
WATR052 - Water Conservation Practitioner		
Analyze a variety of residential, commercial, industrial, and landscaping scenarios for water consumption and potential water savings.		
Calculate water consumption and water savings in a variety of residential, commercial, industrial, and landscaping applications.		
WATR053 - Water Reclamation and Reuse		
Assess regulations that govern reclaimed water uses in Orange County.		
Differentiate among water quality parameters of wastewater following various treatment processes.		
WATR054 - Advanced Treatment Exam Preparation		

Student Learning Outcomes	CSLO Count	CSLOs Measured
Evaluate conventional and advanced water treatment processes with respect to their effectiveness in complying with public health and safety regulations.		
Calculate areas, volumes, flow rates, velocities, pressures, and chemical feed rates in complex problems for a public drinking water system.		
WATR056 - Treatment Exam Preparation		
Evaluate common water treatment processes with respect to their effectiveness in complying with public health and safety regulations.		
Calculate areas, volumes, flow rates, velocities, pressures, and chemical feed rates for a public drinking water system.		
WATR057 - Water Distribution Test Preparation		
Evaluate common water distribution system components and practices with respect to their effectiveness in complying with public health and safety regulations.		
Calculate areas, volumes, flow rates, velocities, pressures, and chemical feed rates for a public drinking water system.		
WATR059 - Advanced Distribution Exam Preparation		
Evaluate complex water distribution system components and practices with respect to their effectiveness in complying with public health and safety regulations.		
Calculate areas, volumes, flow rates, velocities, pressures, chemical feed rates, blending rates, hydraulic grade lines, and pump hydraulic measurements for a public drinking water system.		
WATR061 - Water Distribution		
Describe the components of a public drinking water distribution system, as required to meet public health and safety standards.		
Calculate volumes, flow rates, velocities, pressures, and chemical feed rates for a public drinking water distribution system.		
WATR062 - Advanced Water Distribution		
Evaluate water distribution system components with respect to operations, maintenance, reliability, water quality impacts, and cost.		
Calculate the operational costs associated with water distribution system pumps.		
WATR064 - Pumps and Pumping		
Compare and contrast general hydraulic performance characteristics of dynamic and positive displacement pumps.		
Calculate various pump hydraulic measurements including total static head, total dynamic head, water horsepower, brake horsepower, motor horsepower, pump system efficiency, and cost of operation.		
WATR065 - Backflow Prevention Devices		
Compare and contrast general performance characteristics of the following backflow prevention devices: pressure vacuum breakers, spill resistant pressure vacuum breakers, double check valves, and reduced pressure principle devices.		
Evaluate common backflow prevention devices with respect to their effectiveness in complying with public health and safety regulations.		
WATR071 - Water Treatment Fundamentals		
Evaluate common water treatment processes with respect to their effectiveness in complying with public health and safety regulations.		

Student Learning Outcomes	CSLO Count	CSLOs Measured
Differentiate among the Primary Drinking Water Standards categories of Inorganic, Organic, Disinfectant/Disinfection By-Product, and Microbiological contaminants.		
WATR072 - Advanced Water Treatment		
Evaluate common water disinfection processes with respect to their effectiveness in complying with public health and safety regulations.		
Evaluate non-conventional water treatment processes with respect to their effectiveness in complying with public health and safety regulations.		
WATR073 - Water Quality		
Analyze water quality principles, including related State of California public health and safety regulations.		
Perform and interpret a variety of water quality analyses.		
WATR082 - Advanced Wastewater Treatment		
Analyze the appropriate use and application of advanced wastewater treatment technologies to ensure compliance with public health and safety regulations.		
Calculate advanced mathematical measurements related to wastewater treatment including those for activated sludge, chlorination, dechlorination, filtration, and sludge handling processes.		
WATR083 - Collection Systems		
Analyze a wastewater collection system and its components for operational, maintenance, and safety concerns.		
Calculate volumes, flow rates, velocities, and other applied mathematics measurements related to wastewater collection system operation and maintenance.		
WATR092 - Water Utility Management		
Assemble and organize project teams to perform essential tasks and execute various critical functions in the Water Industry.		
Examine the roles and interactions of the many government agencies involved in providing water in California.		
WATR107 - California Water Resources		
Examine the impacts of physical geography and meteorology on the supply and distribution of natural waters in California.		
Compare and contrast various southern California water sources with respect to water quantity, quality, and reliability.		

Program Review Outcomes Assessment - PSLOs : Version by **McLean, Stephen** on **03/11/2020 19:44**

Program Student Learning Outcomes	PSLO Count	PSLOs Measured
Water Utility Science*		
PSLO		

Program Review Outcomes Assessment - Assessment of CSLOs and PSLOs : Version by **McLean, Stephen** on **03/11/2020 19:44**

How does the program/service area systematically assess student learning outcomes and/or service area outcomes using specific and measurable performance criteria?

Learning outcomes assessments are determined by individual instructors, and are generally based on multiple choice questions within midterm or final examinations.

What is your assessment cycle, how are assessments carried out, and who is involved in the assessment process?

Assessments are generally conducted annually for each course. The instructor is solely responsible for designing, conducting, and reporting the assessment. Faculty report their data to the Department Chair, and the Department Chair will enter the assessment results into eLumen.

Upon review of *course student learning outcome assessment data*, give at least one specific example of:

1. A *course student learning outcome* which students have definitely met and why you think students were successful.
2. A *course student learning outcome* which students have definitely **not** met and why you think students were unsuccessful. What changes have you considered making?

N/A

What changes has the program **already** made based on its assessment of *course student learning outcomes*? Give specific examples and describe how you know if the changes have increased success?

N/A
 Upon review of *program student learning outcome assessment data*, what patterns, trends, or anomalies did your program identify?
 N/A

Curriculum and Program Management

Program Review - Curriculum and Program Management : Version by **McLean, Stephen** on **03/11/2020 19:59**

With **SCC's Mission Statement** in mind, explain how your program/service area meets the academic, developmental, and vocational needs of SCC's diverse student population? *Santiago Canyon College is an innovative learning community dedicated to intellectual and personal growth. Our purpose is to foster student success and to help students achieve these core outcomes: to learn, to act, to communicate and to think critically. We are committed to maintaining standards of excellence and providing the following to our diverse community: courses, certificates, and degrees that are accessible, applicable, and engaging.*

Our Water program remains the largest and oldest -- and we are confident, the best -- such program in the California Community College system. We believe that this fosters student success as they move into meaningful, important careers in this essential industry. To be successful within this industry, our students must act, communicate, and think critically each and every day. Our program goals are focused on these objectives.

Does your program/service area offer sufficient courses, workshops or other services, with sufficient frequency, at appropriate times, and through appropriate delivery modes to meet the major requirements, transfer goals, and general education, co-curricular, and elective needs of the student body? If not, list what changes would help accomplish this.

Yes, although we continue to explore expanded online course offerings.

Does your program/service area offer learning opportunities that extend beyond the traditional classroom experience?

We have established internship relationships with several local Water agencies.

How do program/service area faculty and/or staff **review the processes** it uses to manage the curriculum and program, including the process of introducing new courses and/or workshops and services, the process of conducting quadrennial reviews for instruction, and the process of creating new programs and services?

This is the responsibility of the full-time faculty members (two, at present) and program facilitators (also two, at present). New initiatives are generated by all of the faculty and the TAC, and then the full-time faculty and facilitators work through the Curriculum and Instruction Council to process these initiatives.

How do program/service area faculty and/or staff coordinate activities with other college programs and services, including the Library? How do program/service area faculty and/or staff maintain their knowledge of other programs and services offered at SCC? If applicable, what contact does the program/service area have with outside advisory groups?

As noted previously, we have an active Technical Advisory Committee with which we consult for their off-campus perspective. On-campus, our full-time faculty participate in established committees (such as the CIC) to coordinate our activities with other college programs and services.

Upon consideration of the information you have presented in this section, what areas or issues will need attention from the program/service area in the next three years?

Continued expansion of online course delivery capabilities, and marketing of course availability.

Resources

Program Review Resources - Facilities Exclusive to Program/Service Area : Version by **McLean, Stephen** on **03/11/2020**

20:12

N/A

Classrooms	Labs	Offices	Storerooms	Conference Rooms
undefined	undefined	undefined	undefined	undefined

Program Review Resources - Facilities Shared with Other Programs/Service Areas : Version by **McLean, Stephen** on **03/14/2020 22:27**

Currently staging one class per week each semester, WATR 065, in B-103.
 Currently staging one class per week once per year, WATR 063, in B-102.
 Currently staging multiple classes (WATR 060, 064, 083), averaging two per semester, in E-206.
 Currently staging an average of 2-3 classes per semester in other lecture classrooms, primarily E-306.

Classrooms	Labs	Offices	Storerooms	Conference Rooms
5	1	0	0	0

Program Review Resources - Specialized Equipment and Resources : Version by **McLean, Stephen** on **03/11/2020 20:12**

Miscellaneous demonstration equipment, including various pumps and water quality laboratory equipment.

Equipment/Resource	Description
undefined	undefined

Program Review Resources - Funding Sources : Version by **McLean, Stephen** on **03/11/2020 20:12**

Funding Source	Description
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Funding Source	Description
Perkins	Federal act established to improve career-technical education programs, integrate academic and career-technical instruction, serve special populations, and meet gender equity needs.
Strong Work Force	SWP established to provide more and better career technical education, to increase social mobility, and fuel regional economies with skilled workers.

Program Review Resources : Version by McLean, Stephen on 03/14/2020 22:41

How well do the facilities used by the program/service area meet its needs? Do facilities and equipment meet appropriate safety criteria?

Adequate.

How sufficient are the program/service area's equipment, supplies, and materials? Does the program/service area have a budget and timeline for the purchase of needed equipment and supplies?

Adequate.

How well do technology resources (i.e., computers, software, media and presentation equipment) meet the needs of the program/service area?

Adequate.

How well do technology resources (i.e., computers and software), training, and technical support meet the **administrative** needs of the program/service area?

Adequate.

How adequate is staff support (provided by administrative assistants, lab assistants, learning facilitators, and instructional assistants, and other classified staff) to meet the instructional and operational needs of the program/service area?

Adequate.

Does your program/service area receive any categorical (Basic Skills, Student Equity, SSSP, Strong Workforce Program) and/or grant funding? If so, what major activities or resources has the funding allowed for? What impact has this had on your program/service area (address both positive *and* negative impacts)? If the college were to sustain these activities, which are critical to your program/service area and what would be required to institutionalize them?

Strong Workforce Program: Marketing and Outreach; ability to continue a few essential classes despite low enrollment.

Perkins: Professional and Curriculum development

Online Education Initiative: Marketing and Outreach; improvement of online course offerings

Automation Grant: Curriculum development and classroom equipment purchases.

These funds have allowed us to expand both our online offerings and our student population, as Water Science is an essential skill for every community in the State, but training programs such as ours are found in less than ten CCCs.

These funds are largely intended to build and expand programs. Once the funds are no longer available, there may some on-going minor classroom equipment replacement costs, but no other long-term impacts are anticipated.

Upon consideration of the information you have presented in this section, what areas or issues will need attention from the program/service area in the next three years?

Expanded full-time faculty.

Continued searches for part-time faculty.

Expanded online capabilities and course offerings.

Statewide marketing of online course offerings.

Designation of classrooms for exclusive use of the Water program.

Human Resources

Program Review Human Resources - Support Staff : Version by McLean, Stephen on 03/14/2020 16:56

Water Science shares support staff services with all of the other programs in the Division. There are zero support staff assigned exclusively to Water Science.

Title of Position	Count	Full-time or Part-time	Months per Year	Funding Source
Administrative	2	Full	12	?

Program Review Human Resources : Version by McLean, Stephen on 03/14/2020 17:30

What are faculty, staff, and administrators doing to remain current in knowledge of learning theory, counseling and student development theory, maintenance and operations practices, instructional strategies, and content? In which professional organizations and conferences do faculty, staff, and administrators participate?

Faculty are members of the American Water Works Association and the Water Environment Federation, national industry professional organizations. We attend conferences and seminars of these organizations. We are required to complete continuing education for the renewals of our professional certifications through the California State Water Resources Control Board, so we also attend supplemental conferences and seminars and online programs as needed to satisfy these requirements.

How do faculty, staff, and administrators participate in college-wide programs, shared governance bodies, and leadership activities? In what ways do faculty, staff, and administrators serve as resources for the community?

Faculty serve on college-wide committees, including the Curriculum and Instruction Council. We have also participated in Community Science Night, Earth Day, and various other student/college activities.

Are adequate numbers of qualified faculty, staff, and administrators available to teach and/or implement all components within a program/service area's offerings or services?

As seen above in the faculty workload numbers, including overload, only about 60 percent of the program's classes are taught by full-time faculty. This is well below State-mandated levels. This shortage is further exacerbated when our sister program, Public Works (with zero full-time faculty), is considered. And it will be further exacerbated as the new Electronic Technology (Automation) program is initiated.

Another consideration is that both of our full-time faculty members have already retired from their non-teaching careers, and may not remain with the program for an extended period. It would be beneficial to the program to have additional full-time faculty in place as the existing faculty retire over the next few years, so that leadership for the program can continue with few interruptions.

Are adequate and appropriate mentoring and professional development opportunities available and do department faculty, staff, and administrators regularly utilize these opportunities?

External professional development activities, as noted above, are adequate, and staff do regularly utilize these opportunities.

To what extent are adjunct faculty, part-time staff, and interim administrators knowledgeable about the program/service area's practices and standards? What opportunities are provided for adjunct faculty, part-time staff, and interim administrators to become engaged in program/service area activities and communication?

Adjunct faculty typically take part in our Division meeting and subsequent Water Science breakout session each semester. No other standing opportunities are scheduled. The Department Chair and Program Facilitators generally meet or communicate one-on-one with adjunct faculty members to inform them of college practices, requirements, resources, and opportunities.

Upon consideration of the information you have presented in this section, what areas or issues will need attention from the program/service area in the next three years?

The Water program will request at least one additional full-time faculty position.

We will also work with existing full-time faculty to prepare to replace them as needed as they retire.

Further integration with the faculty from the Public Works program and the new Electronic Technology program is an important objective.

These programs all have several very specialized courses which will require appropriate adjunct faculty as instructors.

Internal and External Communication

Program Review Internal & External Communication : Version by McLean, Stephen on 03/14/2020 18:45

When were the program/service area's catalog entries last updated to ensure currency and accuracy?

This is done annually by the Department Chair.

When was the program/service area's Annual Plan (formerly called DPP) last updated to ensure currency and accuracy?

Two years ago. The Department Chair will accomplish this task annually in the future.

How does the program/service area keep its website comprehensive and current? Does the website contain the program/service area's mission? Does the website contain current contact information (telephone numbers, email addresses, and office hours and locations) for program/service area faculty and/or staff? Are program/service area outcomes posted? Are outcome assessment results posted?

The Department Chair works with Division administrative staff to update the Water program web site.

Faculty contact information is provided.

Outcomes and outcome assessments are not posted at this time.

How does the program/service area keep instructional faculty, counselors, advisors, and/or service area personnel informed about course offerings, trainings, workshops, and related practices?

The Department Chair discusses with faculty members individually about their course schedule for coming semesters. After review of past enrollment records, and these discussions, a schedule is drafted and then sent to the Division. For the past three semesters, a short video with the next semester's course schedule has been produced, distributed to faculty, and posted on the program web site.

How well do faculty and staff communicate about and coordinate the work of the program/service area?

Adequate.

Upon consideration of the information you have presented in this section, what areas or issues will need attention from the program/service area in the next three years?

Conduct a thorough new annual plan, involving full-time and adjunct faculty, plus input from Division management. And do so for the first time in an integrated manner with the Public Works program, and with the new Electronic Technology program.

Planning Agenda

Program Review Planning Agenda : Version by McLean, Stephen on 03/14/2020 19:37

Actions for 2019-2022	Supporting Data	Resources Needed	Estimated Cost
Add one full-time professor	Less than 60% of WATR/PBLC instruction is by full time faculty	Full-time professor	undefined
Continue expansion of online offerings	Students per online class continue to increase over students per on-campus classes. Increasing out-of-OC area student population due to State-wide need for certified Water professionals.	Faculty time for curriculum development.	
Continue pursuit of dedicated Water classroom(s) with storage space for classroom equipment.	Nearly \$100,000 in grant-funded specialized classroom equipment is stored in the back of an unsecured classroom. More equipment can be added through grant funding, but there is no place to store it. And most of the equipment is too heavy to move any significant distance, so storage must be adjacent to the classroom.	A classroom dedicated to Water Science, with an adjacent, secure storage area of at least 200 sq.ft.	
Outreach to local high schools	Jobs are available in the Water Industry to students who complete as little as 6 units of college credit. Concurrent enrollment would enable students to go from high school to the work force immediately.	Faculty/staff time to work with local high schools.	
Fully integrate the Water program with the Public works and planned Electronic Technology programs.	There are several areas in these programs that are complimentary. Existing academic awards should be revised to include electives among these programs.	Faculty/staff time to analyze and revise academic awards and make any curriculum revisions to expand cross-over possibilities.	

Summary Report

Program Review Summary Report - What is and is not working : Version by **McLean, Stephen** on **03/14/2020 19:46**

Briefly describe and explain what is working well in your program/service area.

We like to brag that our Water Science program at SCC is the oldest, largest, and best such program in the State.

Moreover, we believe that the number of online Water Science students at SCC now exceeds the total number of such students at all other CCCs combined. We intend to continue our expansion of course offerings and academic awards that can be achieved completely online.

Briefly describe and explain what is not working well or needs attention in your program/service area.

The Water Science program has State-wide application -- and need -- yet very few CCCs have Water programs. We should be expanding our marketing/outreach efforts to inform potential students of our program and the wide availability of online courses and fully online academic awards.

Despite a few years of discussions with local high schools, and the development of an Introduction to Water Science course (WATR 020) specifically intended for high school students, we still have no courses/programs in place.

Program Review Summary Report - Resources : Version by **McLean, Stephen** on **03/14/2020 19:51**

Facilities	Technology	Equipment	Personnel
A dedicated Water Science classroom with adequate secure storage for existing and future classroom instruction equipment. This request is at least a decade old!		Assuming adequate secure storage space is available, additional classroom instructional equipment can be procured through local water agency donations and Perkins funds	Add one full-time professor to our staff, and prepare for retirements of existing staff members.

Program Review Summary Report - Initiatives and Other Findings : Version by **McLean, Stephen** on **03/14/2020 19:56**

What campus-wide initiatives intersect with your program's activities, operations and/or plans? (Please provide a hyperlink and a list of initiatives)

The Water program has participated in the following initiatives:

- Guided pathways
- CVC-OEI
- Automation program for OC CCC's

Summarize any other findings from your program/service area review and planning process that you would like to share with the college community.

No Value