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OVERVIEW OF PROGRAM REVIEW AND PLANNING FOR INSTRUCTIONAL PROGRAMS

Program Review and Planning is about evaluating and assessing programs and documenting plans for improving student success rates. Through review of and reflection on key program elements, Program Review and Planning identifies program strengths and strategies necessary to improve the academic discipline, program, and/or services to support student success.

The College also uses Program Review and Planning as the conduit to request resources (human, technology, facilities and funding) to further help improve and support programs.

BASIC PROGRAM INFORMATION

Academic Year

2021-2022

Are you completing a comprehensive or annual PRP?

Annual

Division Name

Mathematics, Science and Engineering

Department Name

Computer Science and Information Systems

Department Chair Name

Anthony Smith

Discipline Name

Computer Science and Information Systems - Networking (CSNT)

Department Chair email

awsmith@palomar.edu

Please list the names and positions of everyone who helped to complete this document.Rand Green
David Meske**Website address for your discipline**<https://www.palomar.edu/csit>**Discipline Mission statement**

The mission of the Computer Network Administration discipline at Palomar College is to offer our students current and valid training and certification preparation for both transfer and direct employment in the industry of Computer Network Administration. Studies in Computer Network Administration lead towards multiple Associate of Science degrees and preparation for multiple industry certifications from the most accepted and current certification vendors. As a strong CTE program, students will train to be well-rounded professionals in the field and will be prepared to enter a rapidly growing industry.

([click here for information on how to create a mission statement](#))

Does your discipline have at least one degree or certificate associated with it?

Yes

Are any of your programs TOP coded as vocational (CTE/CE)?

Yes

List all degrees and certificates offered within this discipline.

A.S. Cybersecurity
A.S. Cloud Computing and Virtualization
A.S. Computer Network Administration - Cisco
A.S. Computer Network Administration - Microsoft
C.A. Computer Network Administration - Cisco
C.A. Computer Network Administration - Microsoft
C.A. Cyber Defense Infrastructure Support Specialist
C.A. Cybersecurity Specialist
C.A. Cloud Computing Technician

BASIC PROGRAM INFORMATION: FACULTY AND STAFFING RESOURCES

In this section, you will identify how many faculty and staff support your discipline's programs. This information is considered when you request permanent staff and faculty hires. It is also useful as you evaluate your program and the human resources and talent you have to support our students.

To help you answer questions in this section, you will need the two links below. An arrow will appear in the spreadsheet pointing to the data you will enter.

1) Permanent Faculty and Staff Count**2) FTEF LINK****How many permanent or full-time faculty support your discipline (program)?**

2

For this past fall semester, what was your Full-time FTEF assigned to teach classes?

1.67

For this past fall semester, what was your Part-time FTEF assigned to teach classes?

1.83

List the classified and other permanent staff positions that support this discipline.

Department ADA

List additional hourly staff that support this discipline and/or department

N/A

PROGRAM INFORMATION

In this section, you are asked to consider and evaluate your programs, including their program learning outcomes, the annual number of completions, goals for completions, and enrollment and efficiency trends.

PROGRAM LEARNING OUTCOMES

Begin this section by reviewing the Program Review reports for programs and courses in **Nuventive Improve** (TracDat). All active course and program learning outcomes should be systematically assessed over a 3-year cycle. First, look at program learning outcomes.

- **Program** = Leads to a degree or certificate
- **Discipline** = A group of courses within a discipline

*Programs will be able to complete program completion and outcome questions.

How well do your program's learning outcomes communicate the scope and depth of the degree/certificate offered?

Our program's learning outcomes communicate a comprehensive scope of learning outcomes students expect to be able to communicate, analyze, and/or demonstrate upon completing individual courses and their respective academic programs. These learning outcomes are associated with major industry learning standards and industry certificates. Since we map our courses to these industry certifications, students can associate the course and program learning objectives to common industry certifications that are generally recognized by those pursuing information technology careers.

How do they align with employer and transfer expectations?

The CSIT Networking discipline learning outcomes map directly to industry learning objectives necessary for equivalent industry certifications. By doing this Palomar College is aligning program learning outcomes with the expectations of employers, leading industry certification bodies, and four-year universities.

Describe your program's plan for assessing program learning outcomes.

The CSNT discipline primarily utilizes exams and labs to assess student learning outcomes. Faculty within the discipline review the learning outcomes of the program while reviewing and updating the program courses on a rotating basis. Since technology changes frequently, each of the program's degree offerings are reviewed frequently.

Summarize the major findings of your program outcomes assessments.

The primary finding of the CSNT program outcome assessment is that more quantitative data is needed to most effectively assess the program's outcomes. CSNT faculty will be reviewing options to better correlate course learning assessments with the growing CSNT program learning outcomes.

PROGRAM COMPLETIONS

Student success is at the core of what we do in assisting students in achieving their goals.

The Chancellor's Office Vision for Success stresses the importance of Program Completion as a major goal for our students. In addition, transfer and career readiness are key components of Palomar College's mission statement. This year, our funding formula has also changed reflecting this emphasis, providing additional funding as a function of the number of completions.

In this section, you will reflect upon the number of completions students earned for EACH degree/certificate you offer. As required for accreditation, you are also asked to set a standard which represents the lowest acceptable number of completions and a stretch goal for increasing the number of awards.

Link to **Program: Completions**

Copy and paste five years of completion data for each of your discipline's degrees and certificates.

Considering that not all current degrees and certificates were active during this assessment period, the following program completion data is listed. This data also includes the A.S. Cybersecurity degree that is incorrectly listed in the CSIT discipline.

A.S. DEGREES

2016/17 Microsoft (6), Cisco (8), Linux (5), Cybersecurity (N/A), Total (19)
2017/18 Microsoft (8), Cisco (7), Linux (0), Cybersecurity (N/A), Total (15)
2018/19 Microsoft (3), Cisco (12), Linux (0), Cybersecurity (N/A), Total (15)
2019/20 Microsoft (5), Cisco (3), Linux (0), Cybersecurity (4), Total (12)
2020/21 Microsoft (1), Cisco (3), Linux (0), Cybersecurity (8), Total (12)

CERTIFICATES

2016/17 Microsoft (10), Cisco (11), Linux (6), Cybersecurity (N/A) Cisco/Linux (1), CP (2), Total (30)
2017/18 Microsoft (10), Cisco (13), Linux (0), Cybersecurity (N/A), Total (23)
2018/19 Microsoft (4), Cisco (12), Linux (0), Cybersecurity (N/A), Total (16)
2019/20 Microsoft (6), Cisco (3), Linux (0), Cybersecurity (N/A), Total (9)
2020/21 Microsoft (2), Cisco (4), Linux (0), Cybersecurity (N/A), Total (6)

Have your program completions Increased, decreased, or stayed the same over the last 5 years?

Decreased

What factors have influenced your completion trends?

Over the last few years, course cancellations have dramatically impacted the program. Also, the lack of support for dual enrollment by the administration of the college has contributed greatly to the decline. Program completions are impossible if the college will not run the courses needed.

Our accrediting body, ACCJC, and the Federal Department of Education requires that colleges establish standards and goals for student success and completion.

A program-set standard for completion represents the lowest number of program completion you deem acceptable for your program. In other words, if you were to notice a drop below the set standard, you would seek further information to examine why this occurred and strategies to increase completions.

A program stretch goal for completions is the number of completions you aspire to award for each program in your discipline.

To determine your stretch goal, consider the number of annual completions you typically award over time, then consider strategies or efforts you are making to increase completions in your program. Then identify the NUMBER you want to set as your goal.

Program Information Summary

In this section you are asked to evaluate your programs by considering their program learning outcome assessments, the annual number of completions, goals for completions, enrollment and efficiency trends and any other internal or external factors that had an impact on your program.

What factors have contributed to the success of your program(s)? Describe how they have contributed.

While the CSNT discipline has seen decreases in these important metrics in recent years, the faculty have adapted to phase out discipline-specific programs that are not performing well and introducing new degree programs that align with the industry trends.

What factors have presented challenges for your program(s)? Describe the impact of these challenges.

The biggest factor that has been a challenge is maintaining a high fill rate while providing courses to the greatest number of students. Many of our courses are taught once per semester and many close early leaving students to take similar courses elsewhere when there isn't a second session of a course.

COURSE INFORMATION

In this section, you will review how students perform in the courses you offer as part of your program. The Chancellor's Office Vision for Success stresses the importance of reducing equity gaps through faster improvements of underrepresented groups.

Data are provided to help you examine differences in course success rates (C or better) across student demographic categories (e.g., gender) and course type (e.g., face-to-face, online).

After you complete your review of course success data, you are asked about the assessment of student learning outcomes at the course level, progress you have made in these assessments, and changes you have implemented as a result/

COURSE SUCCESS AND RETENTION

ACCJC also requires that colleges establish institutional and program level standards and stretch goals for course success rates.

Program-set standards for course success rates represent the lowest success rate deemed acceptable by your discipline. In other words, if you were to notice a drop below the rate, you would seek further information to examine why the drop occurred and strategies to address the rate. The College's institution-set standard for course success rates is 70%

Program-set stretch goals for course success rates represent the success rates you aspire your students to achieve.

Link to Course Information

The data includes overall success (% C or better) and retention rates (% No Ws) . The data tables include course rates by gender, age, ethnicity, special population, location, and modality (You can access the Student Equity Plan on the SSEC website <https://www2.palomar.edu/pages/ssec/>)

What is your program's standard for Discipline COURSE Success Rate?

70.0%

Why did you choose this standard?

The CSNT discipline utilizes the institutional standard for the program's success rate. Historically, the program's success rate fluctuates between 71% and 80%, however, due to many institutional and student factors, success rates vary year to year. CSNT faculty are engaged to minimize programmatic and instructional factors that may influence success rates negatively by engaging students at a personal level and attempting to engage students to increase the successful completion of every course on time. In the 20/21 academic year, CSNT discipline saw a 14% decrease in enrollment (-41 students) and the overall success rate dropped to 67%.

What is your stretch goal for course success rates?

75.0%

How did you decide upon the goal?

This goal has been primarily based on calculating the average success rate over the past five years, which is currently 72.5%. While the Fall 2016 and 2018 semesters had a 75% success rate or better, the CSNT discipline will be working to achieve at least a 75% success rate over the next three years.

COURSE STUDENT LEARNING OUTCOMES (SLOs)

Summarize the major findings of your course level student learning outcomes assessments.

The primary finding of course-level learning outcomes is that most students are meeting all student learning outcomes, when students complete the assignments used to assess the SLOs.

Excluding courses that haven't been offered in the last three years, confirm that all of your courses have been assessed in the last three years.

Yes

This section is intentionally blank for annual PRPs. Please click "Next" to continue.

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CAREER AND LABOR MARKET DATA

The following websites are for CTE related data:

- [Centers of Excellence](#) (many other data resources besides supply and demand) Password: GetLMI
- [LaunchBoard](#)
- [LaunchBoard Resource Library](#)
- [Chancellor's Office Data Mart](#)
- [Career Coach-San Diego Workforce Partnership](#)
- [EDD Labor Market Info](#)
- [Career One Stop](#)

Do you want more information about or need assistance integrating work-based learning into your program?

No

What is the regional three-year projected occupational growth for your program(s)?

Based on the San Diego Workforce Partnership data, occupational growth for network administration occupations will be increasing over the next three years and continue to increase through 2029. For information security analyst positions, employment counts in the region will also be increasing at an even higher rate. According to cyberseek.org, the San Diego region has nearly 4,600 open positions in the cybersecurity field and the supply of workers is listed in the Very Low category

What is being done at the program level to assist students with job placement and workforce preparedness?

At the program level, assistance or students with job placement is performed on a student-by-student basis by individual faculty members. The CSNT discipline does not have a formal job placement or workforce preparedness program in place.

When was your program's last advisory meeting held? What significant information was learned from that meeting?

11/20/2020

What are the San Diego County/Imperial County Job Openings?

Most job openings are for cybersecurity analysts and according to cyberseek.org, there are over 4,600 job openings in the San Diego metro area for cybersecurity-based jobs. According to the San Diego Workforce Partnership data, occupational growth for network administration occupations will be increasing over the next three years and continue to increase through 2029.

The Chancellor's Office Vision for Success stresses the importance of increasing the percent of exiting students who report being employed in their field of study. It is important for us to consider how all of our programs connect to future careers.

Go to this website <https://www.onetonline.org/> and enter your discipline in the bubble on the top right for ideas about potential occupations. Click on an example to see more detail.

What kinds of careers are available for people who complete your programs (and/or transfer)? (Refer to link above) Are there any new or emerging careers? If so, how would the new or emerging careers impact your future planning?

There are various careers that are available to students that complete programs in the CSNT discipline including network administrator, network specialist, network analyst, server administrator, server OS specialist, systems analyst, cybersecurity analyst, and cybersecurity specialist. Our new programs in cybersecurity and cloud computing are examples of the discipline capitalizing on the emerging careers in the field. The next few years will focus on building out these two programs fully

What are the associated knowledge, skills, abilities (KSA's) needed for the occupations listed above? (click examples in the link above to get ideas)

There are many KSAs that are needed for the above-mentioned occupations and below list just a few:

- Knowledge of computer networking concepts and protocols, and network security methodologies.
- Knowledge of cyber threats and vulnerabilities.
- Knowledge of system and application security threats and vulnerabilities (e.g., buffer overflow, mobile code, cross-site scripting, Procedural Language/Structured Query Language [PL/SQL] and injections, race conditions, covert channel, replay, return-oriented attacks, malicious code).
- Knowledge of installation, integration, and optimization of system components.
- Knowledge of network security architecture concepts including topology, protocols, components, and principles (e.g., application of defense-in-depth).
- Skill in designing the integration of hardware and software solutions.
- Skill in conducting vulnerability scans and recognizing vulnerabilities in security systems.
- Ability to communicate complex information, concepts, or ideas in a confident and well-organized manner through verbal, written, and/or visual means.
- Ability to collaborate effectively with others.
- Ability to apply network security architecture concepts including topology, protocols, components, and principles (e.g., application of defense-in-depth).

How does your program help students build these KSA's?

Faculty within the discipline work to include activities and assignments that focus on building these KSAs including soft skills such as written and verbal communication through reports, written assignments and presentations.

Work Based Learning

Applied and work-based learning (WBL) allows students to apply classroom content in professional settings while gaining real-world experience. WBL exists on a continuum that reflects the progress of experiences from awareness-building to training. Students often cycle back through the continuum many times throughout college and throughout their career. Faculty play a critical role in ensuring these experiences are embedded into curriculum and support learning.

Have you incorporated work based learning (work experience, internships, and/or service learning) into your program?

No

How do you engage with the community to keep them apprised of opportunities in your program?

We primarily rely on the Communications, Marketing, and Public Affairs office for advertising programs within the CSNT discipline. We also participate in the Dual Enrollment program and offer a 4-course sequence to high school students interested in computer networking and cybersecurity.

Program Goals

In the previous sections, you identified opportunities for improvement. Using these opportunities, develop 3-year **SMART goals** for your department. Goals should be Specific, Measurable, Attainable, Relevant, Time-Specific. Ensure your goals align with the mission of your department and/or **the College's Strategic Plan**.

Please list all discipline goals for this three-year planning cycle. [Click here for previous PRPs and goal information](#).

If you require any additional resources beyond your exiting budget, please be sure to request those resources in the next section titled "Resources".

Goals

Goal 1

Brief Description

Increase enrollment in CSNT discipline to more than 700 students by 2020/2021 academic year

Is this a new or existing goal?

Existing

Goal Status

Ongoing

How will you complete this goal?

This goal was to increase student enrollment by over 250 students through offering and marketing the Cisco, Microsoft, and Cybersecurity programs. Unfortunately, these programs saw course cutbacks resulting in decreasing student enrollment for the College and this discipline specifically. Furthermore, due to the COVID pandemic, enrollment was further strained and Fall 2020 enrollment data is not available to assess this goal entirely, though it is likely that enrollment numbers declined even further. The discipline will keep this goal in hopes that market conditions improve so that this goal can be achieved.

Outcome(s) expected (qualitative/quantitative)

We expect to see the following outcomes by 2024/25.

Outcome metrics expected include:

2024/2025 +90 student enrollment in Cybersecurity (CSNT 181, 250, 255) (doubling course offerings)

2024/2025 +28 student enrollment in Cisco (CSNT 160, 161, 260, 261)

2024/2025 +30 student enrollment in Microsoft

2024/2025 +30 student enrollment in Cloud Computing and Virtualization (CSNT 150-153)

2024/2025 +80 student enrollment in general CSNT 110/111 courses

2024/2025 Total enrollment increase in CSNT +258

How does this goal align with your department mission statement, the college strategic plan, and /or Guided Pathways?

This goal aligns with all three of these areas in support of reaching as many students as possible and ensuring they meet their student and career objectives. Once students are enrolled in the CSNT courses, department instructors will be able to work with students to ensure their success in the program.

Expected Goal Completion Date

9/1/2025

Goal 2

Brief Description

Is this a new or existing goal?

How will you complete this goal?

Outcome(s) expected (qualitative/quantitative)

How does this goal align with your department mission statement, the college strategic plan, and /or Guided Pathways?

Expected Goal Completion Date

RESOURCES

Congratulations! You are nearing completion. In this section, you will consider the resources you need to implement your three-year program review plan and/or address any findings from your assessment of your discipline.

The section is organized into the following four parts:

PART 1: Staffing Needs (Faculty and Additional Staff)

PART 2: Budget Review

PART 3: Technology and Facilities Needs

PART 4: One Time Request for Other Needs (NonTechnology Equipment, Supplies, Operating Expenses, Travel)

PART 1: STAFFING NEEDS

Requests for faculty will follow the prioritization process currently in place in IPC, and the IPC Subcommittee. Requests for new staff positions will be prioritized at the division level and reviewed at Exec.

Are you requesting additional full-time faculty?

No

NOTE: If you are requesting full-time faculty, you must go back to the Labor Market section of the form to complete that section. It is required when requesting additional faculty positions.

Are you requesting new Classified, CAST or AA positions?

No

PART 2: BUDGET REVIEW

Review your Budget/Expenditure reports for fiscal year 2019, 2020, 2021. Consider your three-year PRP plan.

Click on the link below to access directions to the *Available Budget Report* to complete this section.

[How to Request the Available Budget Report](#)

Reflecting on your three-year PRP plan, are there any budget considerations you would like your dean/supervisor to be aware of for the upcoming year?

No

NOTE: PARTS 3, 4 and 5 – TECHNOLOGY, FACILITIES AND OTHER NEEDS

1. One-Time Fund Requests. The college is implementing a process for prioritizing and allocating funds for one-time needs/requests tied to Program Review and Planning. Prioritization will take place through participatory governance in planning councils and the Budget Committee. Then, a recommendation will be made to Exec for funding of request utilizing various funding sources.

For more information about funding sources available, see [IELM BLOCK GRANT, LOTTERY, PERKINS AND STRONG WORKFORCE GUIDELINES](#).

Consider submitting one-time requests only if you have verified that you cannot fund the request using your general discretionary funds or other funds.

2. Technology and Facilities Review. From now on, ALL requests for technology will go through an institutional review process. If you request technology here, you will see a description of the process below.

PART 3: TECHNOLOGY AND FACILITIES NEEDS

Will you be requesting any technology (hardware/software) this upcoming year?

No

Part 4: Facilities Requests

Do you have resource needs that require physical space or modification to physical space?

No

PART 5: OTHER ONE-TIME NEEDS

For more information about funding sources available, see [IELM BLOCK GRANT, LOTTERY, PERKINS AND STRONG WORKFORCE GUIDELINES](#). Please check with your department chair on the availability for this cycle.

Do you have one-time requests for other items (e.g., Non-Technology Equipment, Supplies, Operating Expenses, Travel) that your budget or other funding sources will NOT cover?

No

I confirm that all full-time faculty in this discipline have reviewed the PRP. The form is complete and ready to be submitted.

Yes

Enter your email address to receive a copy of the PRP to keep for your records.

rgreen@palomar.edu