



New and Expanded Cybersecurity and Nursing Programs: Progress Report - June 2023

Daryl Monear
Washington Student Achievement Council
June 2023

Information in this report was prepared in collaboration with Washington's public four-year institutions and the State Board for Community and Technical Colleges.

State Board for Community and Technical Colleges

Marie Bruin, Director of Workforce Education

Central Washington University

Bruce Palmquist, Interim Chair of Computer Science

Eastern Washington University

Donna Bachand, Nursing Program Administrator, Professor

Stu Steiner, Computer Science and Electrical Engineering, Assistant Professor

Alexandra Rosebrook, Director of Budget Services

University of Washington

Azita Emami, PhD, MSN, BSN, RN, FAAN, Robert G. and Jean A. Reid Executive Dean of Nursing

Allison Webel, RN, PhD, FAAN, Interim Executive Dean

David Reyes, DNP, MPH, RN, Dean, School of Nursing & Healthcare Leadership, Tacoma

Tatiana Sadak, PhD, PMHNP, ARNP, RN, FAAN, Associate Dean of Academic Affairs, School of Nursing, Seattle

Patrick Tufford, Director, Student Academic Services, School of Nursing, Seattle

Jessica Immerman, Director, Academic Services, School of Nursing & Healthcare Leadership, Tacoma

Jo Gray, Project Manager and Business Analyst, School of Nursing, Seattle

Washington State University

Krishnamoorthy Sivakumar, Associate Dean, Academic Affairs

Western Washington University

Jack Herring, Associate Vice President for Academic Affairs

Bill Lonneman, Nursing Program Director, Associate Professor

Table of Contents

SUMMARY	5
Background and Purpose of the Report.....	5
Progress Highlights.....	5
CYBERSECURITY PROGRAMS	9
State Board for Community and Technical Colleges (SBCTC)	11
SBCTC: EXPANDING ENROLLMENTS IN CYBERSECURITY	11
SBCTC CYBERSECURITY CENTER OF EXCELLENCE.....	13
Central Washington University (CWU)	15
Background on the Cybersecurity Program	15
Challenges	16
Program Expansion	16
Funding and expenditures	16
Enrollment.....	16
Eastern Washington University (EWU)	17
Background and Establishment of the Cybersecurity Program	17
Outreach Efforts.....	18
BSCS and BS Cyber Operations Degrees: Funding & FY23 Anticipated Expenses.....	18
Estimated future enrollments in the program.....	18
Washington State University (WSU)	18
Background and history of the cybersecurity program	18
Establishment of the program	19
Efforts aimed at improving equitable access.....	20
Funding and expenditures	20
Planned additional recruitment and retention strategies	21
Enrollment.....	21
Western Washington University (WWU)	21
Background on the Cybersecurity Program	21
Cyber Range Poulsbo: The Washington State Educational Cyber Range	22
Funding and expenditures	22
NURSING PROGRAMS	23
State Board for Community and Technical Colleges (SBCTC)	24
Background	24
Funding and Expenditures	24
Eastern Washington University (EWU)	28

Background and History of the Program	28
Outreach Efforts and Communication Strategies to Market the New Program.....	28
Efforts aimed at improving equitable opportunities in the field.....	28
Funding and Expenditures	28
Enrollment.....	29
UW Seattle School of Nursing	29
Background and History of the Program	29
Efforts aimed at improving equitable opportunities in the field.....	30
Outreach Efforts and Communication Strategies to Market the New Program.....	30
Challenges	30
Funding and Expenditures.	31
Enrollment.....	32
UW Tacoma School of Nursing	32
Background and History of the Program	32
Funding and Expenditures	32
Outreach Efforts and Communication Strategies to expand enrollment.....	33
Enrollment.....	34
Western Washington University (WWU)	34
RN-to-BSN Nursing Program	34
Efforts aimed at improving equitable opportunities in the field.....	35
Challenges	35
Outreach Efforts and Communication Strategies to expand enrollment.....	35
Funding and Expenditures	36
Enrollment.....	37
New WWU MSN Nursing Program	38
Background and History.....	38
Rationale for Creation of the Program	39
Challenges	40
Outreach efforts and communication strategies to market the new program.....	40
Efforts aimed at improving equitable opportunities in the field.....	41
Funding and expenditures	41
Enrollment.....	42
Conclusion.....	42
References	42

SUMMARY

Background and Purpose of the Report

On March 10, 2022, Engrossed Second Substitute Bill (ESSB) 5693 was passed by the state legislature. It provided funding to higher education institutions for cybersecurity and nursing, to either establish new programs or expand enrollments in existing programs. The Washington Student Achievement Council (WSAC) was directed to coordinate with the institutions of higher education and the state board for community and technical colleges to prepare a progress report on the new or expanded programs to be submitted to the appropriate committees of the legislature, pursuant to RCW 43.01.036, by June 30, 2023. A final report is due by December 1, 2024.

Cybersecurity and nursing are currently in high demand, and there is a shortage of skilled workers in both of these fields nationwide. The Washington economy reflects this trend in the form of widening workforce gaps. The programs covered in this progress report are working to help close these critical gaps.

Progress Highlights

The following tables provide high-level snapshots of where progress stands as of April 2023 at each institution and the State Board for Community and Technical Colleges. They include overviews of funding, program purpose, expenditures to date, enrollment expansions and new program developments. Table 1 covers cybersecurity programs and Table 2 covers nursing programs.

Table 1. Cybersecurity Programs – Progress as of April 2023

Institutions	Funding	Purpose	Expenditures	Expanded Enrollments to date	New Program Development
State Board for Community and Technical Colleges	\$4,500,000	Expand enrollments in cybersecurity 500 FTE	N/A	First enrollment increases are projected by the end of 2023 academic year (35 new FTE), with the majority of increases anticipated for 2024-25 academic year (465 new FTE by Spring of 2025).	Programs are still in development. New programs projected to start enrolling in 2024-25.
	\$2,350,000	Cybersecurity Equipment & Supplies	N/A		
	\$205,000	Establish a Cybersecurity Center of Excellence at Whatcom Community College	N/A		Program in development

Central Washington University	\$613,000	Expand enrollments in cybersecurity	\$53,000 – upgrade to campus supercomputer \$4,878 – faculty search	Anticipate 5 students in 24-25 AY / 15 students in 25-26 AY	
Eastern Washington University	\$2,810,000	Establish a Bachelor of Science in Cybersecurity degree option in the computer science program	2,810,000	Currently enrolling first group of students for fall 2023 (11 applicants)	Established two cybersecurity programs in fall 2022
Washington State University	\$2,056,000	Establish a bachelor's degree in cybersecurity operations	2,056,000 – \$182K clustered multi-node (WSU Central IT); \$686K program dev personnel costs; \$34K faculty searches; \$786K computer lab remodels / faculty startup	Enrollments are anticipated to ramp up to 225 FTE	Anticipated start date - Fall 2023
Western Washington University	\$769,000	Expand capacity of Cyber Range Poulsbo	\$769,000	N/A	Access to Cyber Range by students in K-12 and higher ed has increased by over 200%

Table 2. Nursing Programs - Progress as of April 2023

Institutions	Funding	Purpose	Expenditures	Expanded Enrollments to date	New Program Development
State Board for Community and Technical Colleges	\$350,000 FY22 \$350,000 FY23	Maintain enrollment in medical assisting (MA-C), nursing assistant (NAC), and RN programs at Peninsula College	N/A	RN Program – currently maintaining 32 students. NAC Program – 22 students admitted in 2022. MA-C Program - 10 admitted in 2021; 5 students admitted in 2022	
	\$3,760,000	Expand enrollments in nursing programs	N/A	Anticipate an increase of 210 FTEs by spring 2025	

Eastern Washington University	\$6,170,000	Establish a Bachelor of Science in Nursing program	\$6,170,000	40 students invited/15 waitlisted for fall 2023	Currently recruiting faculty/taking bids for simulation equipment
UW Seattle School of Nursing	\$969,000	Increase enrollments in Accelerated Bachelor of Science in Nursing (ABSN) Program	\$918,470 (7/1/22-5/31/23) \$50,530 Projected (6/1/23-6/30/23)	Expansion from 64 to 128 new ABSN students each year is ongoing. Now two cohorts start each year. The first new spring-start cohort started in March 2023.	
UW Tacoma School of Nursing	\$273,000	Establish a pre-licensure Bachelor of Science in Nursing (BSN) program	\$191,629 (7/1/22-6/16/23) \$81,370 Projected (6/16/23-6/30/23)	The goal is to admit the first cohort of pre-licensure BSN students in fall of the 2026-2027 academic year. This will require additional financial investments.	Program is still in development
Western Washington University	\$461,000	Establish a Master of Science in Nursing program	\$42,933	Anticipate 10 students per year beginning in fall 2024	Program is still in development
	\$433,000	RN to Bachelor's in Nursing program	\$102,830	Currently have 45 applicants for fall 2023. They anticipate 50 students per year going forward.	

CYBERSECURITY

State Board for Community and Technical Colleges

Cybersecurity. SBCTC has allocated funds for a planned expansion of 500 FTE by FY 2023-25, including a substantial amount of equipment and supplies purchases. The first enrollment increases have already begun in the 2023 academic year, with the greater part of the increase anticipated in 2024-25. SBCTC is also moving forward in establishing a Cybersecurity Center of Excellence at Whatcom Community College. This program is still in development.

Central Washington University

Cybersecurity. CWU is currently hiring additional faculty in their computer science department to expand capacity to offer the cybersecurity course more than once every two years, develop new cybersecurity courses, and expand enrollments. They anticipate an additional 5 students in the 2024-25 AY and 15

students in the 2025-26 AY. In addition, Central has added a critical upgrade to their campus supercomputer.

Eastern Washington University

Cybersecurity. EWU established two bachelor of science degrees in cyber operations in fall 2022. The budget for this expansion includes 4 professor positions, 2 senior lecturers, a business manager, a cybersecurity technician, and graduate assistants. Eastern is also retrofitting their lab with specialized equipment and computer security features for the students to get the necessary training and experience for career success. They are enrolling the first group of students for fall 2023 and currently have 11 applicants. Once full capacity is reached, the expectation is that the number of students will exceed 150.

Washington State University

WSU has established a new Bachelor of Science in Cybersecurity (BSCyber) degree program that will be offered in the Pullman, Everett, and Tri-Cities campuses. The WSU Board of Regents approved the program in March 2023 and was subsequently approved by the Northwest Commission on Colleges and Universities (NWCCU). They have begun advertising the program and the planned start date is fall 2023. Once the program is fully implemented, in about six years, WSU expects to have 150 students in Pullman, 45 in Tri-Cities, and 30 in Everett, for a total of 225.

Washington State University

WWU received \$769,000 in funds for FY 2023 from the workforce education investment account for upgrading Cyber Range equipment and hiring additional personnel to support the range. This funding has allowed Cyber Range Poulosbo to significantly broaden the projects available for inclusion in the curriculum and to expand its ability to support other schools. Prior to receiving the funding, Cyber Range Poulosbo supported approximately 3-400 students per year. This year, the range has supported 1103 students, including 350 in K-12 schools for 8 districts across the state.

NURSING

State Board for Community and Technical Colleges

Nursing. SBCTC is working to expand enrollments in their nursing programs. They are in the process of hiring full-time faculty, adjunct faculty, and clinical placement coordinators, as well as creating new positions or increasing hours for simulation coordinator positions. An increase of 210 FTEs across 13 campuses is anticipated by spring 2025. *Peninsula College* is currently maintaining 32 students in its registered nursing program, in line with their goal. Enrollments in their nursing assistant-certified (22 students admitted in 2022) and medical assistant-certified programs (10 students admitted in 2021 and 5 in 2022) are below the targets for those programs. They had a small increase in 2019. But enrollments dropped in 2020 due to the pandemic. Peninsula faced setbacks in enrollments as a result of the pandemic and other challenges, but they are optimistic that outreach efforts and partnerships with employers will increase enrollments next year and beyond.

Eastern Washington University

EWU has established a new bachelor of science in nursing program. The nursing commission granted initial approval to launch in August of 2022, and the Northwest Commission on Colleges and Universities (NWCCU) approved the program in March 2023. They are currently recruiting faculty and taking bids for simulation equipment. Eastern has invited 40 students and waitlisted 15 for fall 2023. An additional 40 students will be admitted in January 2024. The intention is to have a 40 student Fall Cohort and Spring Cohort over 2 years for a total of 4 cohorts. In spring 2025 they anticipate having 160 students in the pipeline.

University of Washington

UW-Seattle School of Nursing is making good progress in increasing enrollments in their Accelerated Bachelor of Science in Nursing (ABSN) Program. It is being expanded from 64 to 128 new students starting each year, with 64 spots continuing to open each fall and now an additional 64 spots opening each spring. Currently there are two cohorts each year, and the first spring-start ABSN cohort began on March 27, 2023.

UW-Tacoma School of Nursing is working to establish a pre-licensure Bachelor of Science in Nursing (BSN) program. At this time, it is still in development. During this current fiscal period, proviso funds have been used to support the planning phase for the pre-licensure BSN program, including developing simulation modules, faculty simulation education, faculty salaries and stipends for students participating in the simulation module development. The goal is to admit the first cohort of pre-licensure BSN students in fall of the 2026-27 academic year. But this will require additional financial investments.

Western Washington University

RN to Bachelor's in Nursing program. WWU is making progress in expanding enrollments in this program. They currently have 45 applicants for fall 2023 and anticipate that enrollment will expand to around 50 students per year, close to capacity, as enrollment in their Associate Degree Nursing (ADN) partner programs at Bellingham Technical, Whatcom CC, and Skagit Valley CC expand.

Master of Science in Nursing program. As of April 2023, this program is still in the development stage. The MSN will offer two specialty tracks, one in nursing leadership and administration and the other in nursing education. The plan is to have the first cohort of students begin in fall 2024, with 10 students per year.

General Comments

Overall, the State Board for Community and Technical Colleges and the state's four-year higher education institutions have made significant progress in advancing their goals for cybersecurity and nursing. The ongoing expansion of enrollments in existing programs and the planned new programs, once fully established, will play a vital role in addressing workforce shortages in these critical fields.

Efforts aimed at improving equitable opportunities. The institutions are fully engaged in outreach activities to expand equitable opportunities in cybersecurity and nursing. Efforts range from employing recruiting strategies that include a focus on underrepresented populations to providing targeted support to help underrepresented minority and first-generation students as they persist in their studies and complete programs.

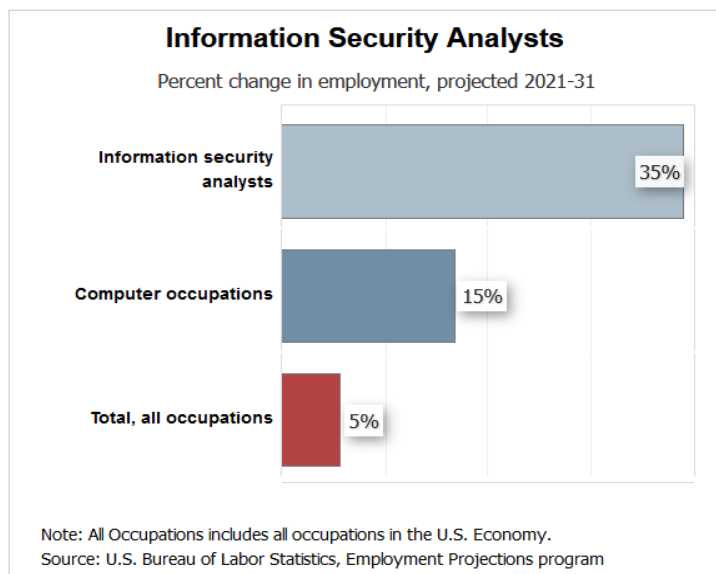
CYBERSECURITY PROGRAMS

Over the past five years, cybersecurity-related job postings have surged markedly, as employers sought skilled workers in areas such as emerging infrastructure and hardware, artificial intelligence, data, and next generation cybersecurity. Demand for cybersecurity analysts is predicted to grow 32 percent by 2028 and jobs for information security analysts is projected to grow by 35 percent from 2021 to 2031.¹

As shown in Figure 1, this far exceeds the average growth rate for all occupations.

As more businesses focus on enhancing cybersecurity, they need information security analysts to secure new technologies from outside threats or hacks. A growing shift to more remote work and the rise of e-commerce have increased the need for enhanced security, contributing to the projected employment growth of cybersecurity workers over the decade. Demand is likely to increase across a diverse range of industries. For example, strong growth in digital health services and telehealth will increase data security risks for healthcare providers. More analysts are likely to be needed to safeguard patients' personal information and data.²

Figure 1. Projected percent change in employment 2021-31



The shortage of cybersecurity workers exists across the nation, but it is even more pronounced in Washington State. According to CyberSeek.org, a project supported by the National Initiative for Cybersecurity Education dedicated to helping close the cybersecurity skills gap, Washington State had 24,190 individuals employed in the cybersecurity workforce in spring 2023 but nearly 10,000 cybersecurity job openings. The supply of workers in Washington is classified as “very low” with a supply/demand ratio of 2.4, compared to 2.1 nationally.³

Washington State is experiencing a shortage of cybersecurity trained professionals to fill available jobs. But the gap is not due to a lack of interest among prospective employees. A primary driver of the gap is a shortage of education and training opportunities. Colleges and universities do not have the capacity to teach enough people to keep up with employer demand. In the last year, Washington State saw increases in the number of people employed in the technology industry and in its economic impact to the state. According to the CompTIA Cyberstates 2021 research report, Washington State gained 5,222 technology jobs between 2019 and 2020, third in the nation behind Texas and California⁴. The report also ranks Washington State as first in the country for technology’s economic impact as a percent of the state’s economy. As operations in many industries are becoming increasingly digital, demand for skilled information security and cybersecurity experts in Washington is likely to continue to expand.

The National Initiative for Cybersecurity Education (NICE) has established a framework to better define the cybersecurity workforce⁵. It has become a fundamental reference for describing and sharing information about cybersecurity work by dividing it into categories and tasks. Table 3 provides an overview of this framework, with estimates of job openings in spring 2023 for each category.⁶

Table 3. NICE Framework Common Cybersecurity Job Categories

Security Provision (8,166 openings)	Conceptualizes, designs, procures, and/or builds secure information technology (IT) systems, with responsibility for aspects of system and/or network development.
Operate and Maintain (8,039 openings)	Provides the support, administration, and maintenance necessary to ensure effective and efficient information technology (IT) system performance and security.
Protect and Defend (5,936 openings)	Identifies, analyzes, and mitigates threats to internal information technology (IT) systems and/or networks.
Oversee and Govern (5,871 openings)	Provides leadership, management, direction, or development and advocacy so the organization may effectively conduct cybersecurity work
Analyze (3,682 openings)	Performs highly specialized review and evaluation of incoming cybersecurity information to determine its usefulness for intelligence.

According to Cyberseek.org, employment gaps exist in every cybersecurity workforce category. The programs discussed in this section, whether focused on expanding enrollments or on the development of a new program, are all designed to address this rising demand.

State Board for Community and Technical Colleges (SBCTC)

Background and History of the Cybersecurity Program

In response to growing demand for cybersecurity workers, Washington State's community and technical college system is planning to expand cybersecurity program offerings by an additional 500 fulltime student enrollments (FTE) by Spring of 2025. These graduates will contribute to filling cybersecurity specialist positions beginning as early as Summer of 2023. In 2019-20, Washington's community and technical colleges enrolled approximately 2,500 students in 30 cybersecurity programs across the state. Of those, approximately 140 students were in certificate programs, 1,760 enrollments were in associate-level programs, and 623 are in applied bachelor's degree programs. Nearly all colleges report having waiting lists for their cybersecurity programs.

Some of the most popular programs currently include Associate of Applied Science (AAS) and Bachelor of Applied Science (BAS) in Cybersecurity, AAS in Cyber Defense Forensics, AAS and BAS in Cybersecurity & Networks, and AAS in Cybersecurity Network Administration. Additionally, several colleges offer transfer degrees with a focus on cybersecurity.

The majority of Washington State's community and technical college cybersecurity programs fall under the "Operate and Maintain" category in the National Initiative for Cybersecurity Education framework described above. Some of the most common job titles in this category include Systems Security Analyst, Network Operations Specialist, System Administrator, Data Analyst, Technical Support Specialist, and Database Administrator.

The second most common program area is "Oversee and Govern," which includes jobs such as: Cyber Instructor, Curriculum Developer, Information Systems Security Manager, IT Project Manager, IT Program Auditor and Cyber Policy and Strategic Planner.

There are significant gaps among race and gender in technology employment in Washington State. Black Washingtonians represent 5 percent of the State's workforce but fill only 2 percent of technology jobs. Latinos represent 11 percent of the workforce but only 4 percent of technology jobs. Women represent 48 percent of the workforce but fill only 24 percent of technology occupations.

Community and technical colleges in Washington are at the forefront of efforts to address racial and economic injustices, including closing skills gaps as people pursue employment opportunities like those in technology. Nearly half of the state's community and technical college students are students of color and most are low or moderate income.

Many are working adults, often parents with children. Expanding pathways to high-wage jobs, like cybersecurity and others in the information technology sector is a fundamental step in achieving racial equity and social justice.

SBCTC: EXPANDING ENROLLMENTS IN CYBERSECURITY

Funding and expenditures

SBCTC's use of funds in efforts to expand enrollments in cybersecurity fall under two categories:

- Cyber500 FTES: 500 FTE Enrollments at \$9,000 FY 2023-25 = \$4,500,000
- Cybersecurity One-time Equipment & Supplies FY 2023 = \$2,350,000

Cyber500 FTES

Table 4 below provides a visual breakdown of the funding distribution and anticipated increases in enrollments across a range of SBCTC campuses by Spring of 2025. Use of funds will vary by college. Most common uses will include faculty salaries, curriculum development, community outreach (including K-12, community-based organizations, Workforce Development Councils, Joint Base Lewis-McCord), student support services (including direct student aid, advising, navigation, career planning), and career-connected learning opportunities.

Table 4. SBCTC: Cyber500 FTE Allocation

College	Credential	Credit Bearing	Allocated FTE
FY23 Growth			
Renton	Short Cert & AAS-T	Y	35
FY24 Growth			
South Puget Sound	AAS	Y	15
FY25 Growth			
Edmonds	Certificate	Y	7
Tacoma	AAS	Y	5
Edmonds	Certificate	Y	16
Bellevue	AAS	Y	14
CC Spokane	Certificate	N	20
CC Spokane	Certificate	N	20
Olympic	AAS-T	Y	20
Tacoma	BAS	Y	21
Edmonds	Certificate	Y	24
Edmonds	Degree	Y	59
Green River	Certificate	N	21
Green River	BAS	Y	34
Green River	AAS-T	Y	59
Bellevue	BAS	Y	31
Bates	Cert, AAS, BAS	Y	33
Spokane Falls	AAS	Y	20
Lake Washington	AAS	Y	20
Peninsula	AAS, AAS-T	Y	26
TOTAL			500

Cybersecurity One-time Equipment & Supplies FY23

One-time equipment and supply funds were made available to colleges in support of FTE growth in the amount of \$2,350,000. The following table outlines the total dollar amount allocated to FTES and equipment funding that each college received.

Table 5. SBCTC Cybersecurity Equipment & Supplies Allocation

College	Allocated FTE	FTE Funding	Equipment Funding	Application Total
Bates	33	\$297,000	\$144,309	\$441,309
Bellevue	31	\$279,000	\$135,563	\$414,563
Bellevue	14	\$126,000	\$85,000	\$211,000
Edmonds	7	\$63,000	\$85,000	\$148,000

Edmonds	24	\$216,000	\$104,952	\$320,952
Edmonds	59	\$531,000	\$258,007	\$789,007
Edmonds	16	\$144,000	\$85,000	\$229,000
Green River	21	\$189,000	\$91,833	\$280,833
Green River	34	\$306,000	\$148,682	\$454,682
Green River	59	\$531,000	\$258,007	\$789,007
Lake Washington	20	\$180,000	\$85,000	\$265,000
Olympic	20	\$180,000	\$85,000	\$265,000
Peninsula	26	\$234,000	\$113,698	\$347,698
Renton	35	\$315,000	\$153,055	\$468,055
Spokane CC	20	\$180,000	\$85,000	\$265,000
Spokane CC	20	\$180,000	\$85,000	\$265,000
Spokane Falls	20	\$180,000	\$85,000	\$265,000
South Puget Sound	15	\$135,000	\$85,000	\$220,000
Tacoma	5	\$45,000	\$85,000	\$130,000
Tacoma	21	\$189,000	\$91,833	\$280,833
TOTAL	500	\$4,500,000	\$2,349,939	\$6,849,939

SBCTC CYBERSECURITY CENTER OF EXCELLENCE

Background and History

Washington state’s twelve Centers of Excellence link business, industry, labor, and educational systems to create a highly skilled and readily available workforce critical to the success of the state’s economy. Through ongoing investment, centers are charged with narrowing the gap between employer workforce needs and the colleges’ supply of work-ready graduates. They are critical to the state’s strategy of sustaining an innovative and vibrant economy. SBCTC established these Centers of Excellence in 2004 to help the state maintain its competitive economic and industry advantage. In 2009, the Legislature established the centers in state statute and tasked them with closing skills gaps and building “a diverse workforce for strategic industries.”

Each center specializes in an economic area important to Washington’s economy, benefiting all community and technical colleges in the state. Advised by representatives from business, labor and education, the centers serve as a way for each sector to stay current on emerging trends and training and workforce needs. Centers are hosted by a local community or technical college, ensuring strong links between education, business, and labor sectors. Each center is expected to play a critical role in five key areas, as shown in Table 6.

Table 6. Centers of Excellence – Critical roles in five key areas

Economic Development	Support workforce development and its local economic driver industry by serving as the link between local, regional, national, and international education, labor, and business organizations.
Industry Sector Strategy	Act as a link between education and industry, ensuring that teachers, counselors, and others have the latest knowledge of the field and curricula accurately reflect evolving business needs.
Education, Innovation, & Efficiency	Continually look for ways to improve what and how students learn. In addition to keeping curriculum current, the centers advocate for expanded apprenticeship opportunities, credit for prior learning and industry-recognized credentials.

Workforce Supply and Demand	Provide research and analysis to their partners on the latest information specific to their driver industry. Sectors use that information to find ways to close skills gaps, expand training capacity and incorporate best practices into educational programs.
Equity and Access	Work with industry and colleges to maximize student and workforce potential within a culture that advances racial, social, and economic justice in service to their diverse communities.

The Center of Excellence for Cybersecurity (Cyber COE) at Whatcom Community College (WCC) partners with the National Cybersecurity Training & Education Center (NCyTE) to support the cybersecurity workforce education pipeline in Washington state. The state faces a daily onslaught of hacking and ransomware attacks and a dangerous shortage of cybersecurity experts. In combination with attending to the 5 core COE duties, the Cyber COE will provide support to the community and technical colleges that are working to expand capacity to enroll 500 more full-time cybersecurity students.

Challenges

The major challenge to early implementation of the Cyber COE was staffing. The tight labor market and extraordinary demand for cybersecurity professionals with additional leadership capabilities required WCC to recruit a leader over an extended period of time, from mid-summer into late fall of 2022. The posting was distributed widely across statewide and national hiring venues. Despite this challenge, the COE launched under the capable interim leadership of staff from Whatcom Community College’s NCyTE Center (National Cybersecurity Center). A highly qualified director was hired in December 2022 and has been at the helm since.

Establishment of the program

The Cyber COE was established on July 1, 2022, through an allocation from SBCTC to the Center’s host college, WCC. The COE’s FY 2023 annual workplan focuses on five primary activities and outcomes:

1. Establishing an operational COE: Hiring a director, launching a website, establishing an advisory committee, developing an annual plan, and building relationships with other COEs.
2. Developing employer engagement and industry connection seminars for professional-technical faculty and deans at four community and technical college (CTC) locations statewide.
3. Collaborating with EWU to develop a cybersecurity endorsement for secondary educators in order to create pathways between high schools and colleges.
4. Establishing and leveraging statewide partnerships with industry leaders to promote industry awareness of the CTC talent pool and provide direct feedback to instructional programs to meet the rapidly changing needs of employers.
5. Offer instructional program development workshops to CTCs to support Cyber500 program expansion and alignment with industry standards.

In the two quarters of FY 2023 (year-to-date for this report), the COE developed multi-faceted plans for outreach, communication, and equitable access to opportunities that it is currently carrying out. Those efforts include:

- Coordinating and launching stipend promotion for WA faculty for three virtual faculty development and cybersecurity trainings facilitated by the Western Academy Support & Training

Center (WASTC). This included Intro to Cloud with Azure (01/28/23 – 02/25/23), Microsoft Security Operations (03/25/23 – 04/22/23), and IT Essentials v8 (03/25/23 – 04/22/23).

- Developing and delivering employer engagement and industry connection seminars for professional-technical faculty and deans at 4 locations across the state (Kent, Spokane, Vancouver, and Seattle).
- Engaging in developmental discussions with EWU faculty on establishing a K-12 teacher cyber endorsement.
- Building partnerships in Washington State, leveraging existing partnerships with the NCyTE Center in preparation for industry focus groups and employer engagement during the NICE conference in Seattle (June 2023).
- Creating instructional program development workshops by leveraging content developed by the NCyTE Center and delivering virtually to CTCs. These workshops will support CTCs as they develop or revise cybersecurity programs and expand enrollment capacity matched to industry standards.

Funding and expenditures

SBCTC's allocation to Whatcom Community College for the Cyber COE was \$205,000. Funding is budgeted for Center of Excellence Director and program coordination support, website hosting and design, basic office goods for one staff person, travel to community and technical colleges and major cybersecurity events, and one-time personal services contracts to create the COE website and digital collateral. This funding is leveraged with a contribution from the NCyTE Center to support coordination.

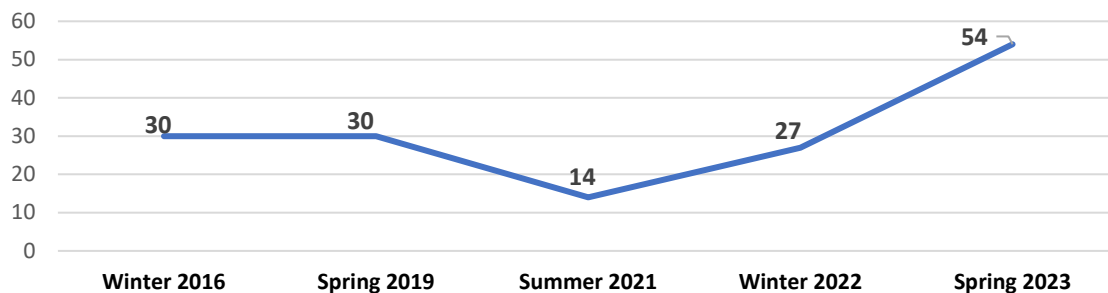
Central Washington University (CWU)

Background on the Cybersecurity Program

The current CWU Computer Science Department cybersecurity program consists of a single 4-credit cybersecurity course (CS 430) that students may choose as an elective in the B.S degree program in computer science. This course was first offered in winter 2016. The course focuses on the basic components of computer security; identifying and comparing different computer security threats; experimenting with and implementing cryptographic encoding/decoding methods; analyzing, developing, and utilizing encryption policies and software solutions. Since the B.S. computer science program is comprehensive, it prepares students for jobs that require selection, deployment, and development of cybersecurity tools. Recent graduates have been employed as cybersecurity specialists in state agencies and higher education. But, due to staffing issues and the need to focus on courses required for the major, the department has not offered the cybersecurity course very often in recent years.

Figure 2 below shows the variation in the number of students that were enrolled in the course since Winter 2016. In the quarters the course was offered in 2016, 2019 and 2022, there were several students waitlisted as well. In Spring 2023, enrollment is considerably higher, due to the course being offered in two sections.

Figure 2. Number of students enrolled in CWU CS 430 cybersecurity course 2016-2023



Challenges

The department still has personnel shortages. They currently don't have sufficient personnel to offer the cybersecurity course more than once every two years or to develop new cybersecurity courses. Because the course fills up quickly, students with early registration (such as seniors) are the only ones who get into the course. Under these circumstances, students who would normally qualify for early enrollment but have financial aid issues are often shut out of the course. This is a potential equity issue. The current funding from the state will expand capacity to help address this issue.

Program Expansion

During the 2022-23 academic year, CWU searched for a tenure-track faculty member with expertise in cybersecurity. As of April 2023, an offer has been presented to a highly qualified candidate, which is currently pending. The person hired for this position will be tasked with leading and expanding the program. In addition, a faculty member with expertise in cybersecurity will be transferring to the computer science department from a different department on campus starting in fall 2023.

The number of offerings and enrollment have been increasing. Based on student interest, CWU could offer this course every quarter, and hiring a faculty member with expertise in cybersecurity will allow them to develop more courses related to cyber security.

Funding and expenditures

CWU received \$613,000 from the workforce education investment account—state appropriation to expand CWU's cybersecurity capacity by adding additional faculty resources in the department of computer science. Expenditures to date include expenses associated with a faculty search, which included promoting the faculty position at Association for Information Systems, Association for Women in Science, and Association for Computing Machinery meetings (total -\$2,878) and interview travel costs (total -\$2,000). In addition, the CWU campus supercomputer has been upgraded (total - \$53,000).

Plans for remaining funds

Once the new cybersecurity faculty member signs a contract, CWU plans to use the remaining funds for the start-up package and to jumpstart items on the cybersecurity timeline (see page 17).

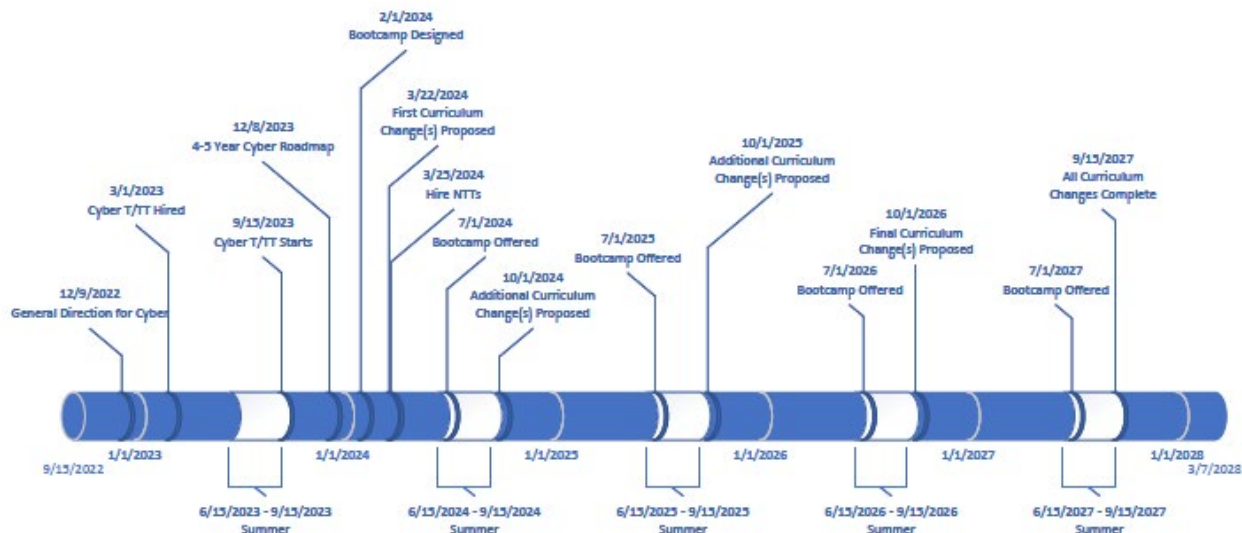
When hired, the new cybersecurity faculty member will be tasked with:

- Investigating program options, such as major and minor specializations and certificate programs.
- Establishing partnerships on campus with programs that would augment a computer science department cybersecurity program. For example, the Information Technology and Administrative Management (ITAM) department has some courses that teach students how to select and use cybersecurity software.
- Developing a program promotion and recruitment plan.

Enrollment

In fall 2022, the department chair formed an ad hoc committee to develop the following timeline for expanding CWU's cybersecurity program (see Figure 3).

Figure 3. Planned Timeline for CWU Cybersecurity Program



Enrollment increases are anticipated to begin after the 2023-23 academic year, since that year will be devoted to building the program. Estimated future enrollment increases include 5 students in a specialization, minor, or certificate program in the 2024-25 academic year and 15 students in the 2025-26 academic year.

Eastern Washington University (EWU)

Background and Establishment of the Cybersecurity Program

EWU developed two bachelor’s programs in this field in Fall 2022: a Bachelor of Science in Computer Science (BSCS) Cyber Operations and a Bachelor of Science (BS) in Cyber Operations. They currently have 11 students enrolled in the first group that will start in Fall 2023. The two programs are similar. The primary difference is that the BSCS Cyber Operations program requires more math and natural science coursework than the BS Cyber Operations program.

These programs focus on preparing graduates with the following cybersecurity-related skills:

- Reconnaissance skills: packet analysis, network traffic sniffing, forensics, network and system mapping, binary analysis, and reverse engineering.
- Offensive skills: network engineering, ethical hacking, penetration testing, Distributed Denial of Service (DDoS) attacks, and website exploitation.
- Defensive skills: incident response, network system administration, and cloud security.
- Critical thinking skills: analyzing large and complex data sets, engaging in proactive and reactive actions against threats.

The range of careers program graduates can prepare for include Cybersecurity Analyst, Security Operations Center Analyst, Software Developer, Penetration and Vulnerability Tester, Network Engineer, and Systems Engineer.

In association with these programs, EWU has hired talented faculty for the cybersecurity program and has established strong partnerships in the Spokane area. For example, they are partnering with the City of Spokane to work with the Wastewater Treatment Facility’s cybersecurity team. Eastern is also developing a master’s program in cybersecurity, which is anticipated to launch in September 2024. They are currently recruiting for a Cybersecurity Business Manager to help manage both the Bachelor and Master program.

Outreach Efforts

Outreach efforts and communication strategies to market the new program include television commercials; emails, letters, texts sent to juniors and seniors in WA, OR, CA, AK; partnerships with local high schools and middle schools; cybersecurity competitions for regional students of all ages; and free summer cybersecurity camps for students and teachers.

Efforts aimed at improving equitable opportunities in the field include recruiting centered on underrepresented populations, free summer camps for female and American Indian and other underrepresented populations, and scholarships for DEI in cybersecurity. Planned future outreach and equitable access efforts include recruiting and information commercials in languages other than English, continuous outreach to local schools, high school visits local and statewide, and continued outreach with cybersecurity competitions virtually.

BSCS and BS Cyber Operations Degrees: Funding & FY23 Anticipated Expenses

The following table outlines how the funding is to be distributed among salaries and other expense categories:

Table 7. EWU Funding and Expenditures

Description	Budget	Expenses
Salaries	857,000	857,000
Benefits	283,000	283,000
Direct Expenses	1,670,000	1,670,000
Total	2,810,000	2,810,000

Salaries. The budget includes 4 professor positions, 2 senior lecturers, a business manager, a cybersecurity technician, and graduate assistants.

Lab Retrofitting. Funds will be used to design the lab as well as purchase tables, podiums, 40 computers for the lab, office supplies and computer software, video conferencing, cybersecurity marketing, research equipment and configuring the office spaces. The aim is to have specialized equipment with specialized computer security features for the students to get the necessary experience for career success. The labs that are being retrofitted will be used by both students in the bachelor's and master's programs. Eastern is also purchasing laptops, equipment, and software for use in these programs.

Estimated future enrollments in the program

Once full capacity is reached, the number of students will exceed 150. The enrollments have increased over 20 percent from 2022 to 2023 and EWU anticipates that they will continue to increase.

Washington State University (WSU)

Background and history of the cybersecurity program

The new Bachelor of Science in Cybersecurity (BSCyber) degree program at Washington State University (WSU) aims to meet burgeoning demand for computer scientists with expertise in cybersecurity. In addition to learning in traditional computer science courses, students will take classes and learn crosscutting concepts and skills in confidentiality, integrity, privacy, risk, adversarial thinking, and security analysis. The curriculum will include topics on security related to data, software, hardware, connection, cyber systems, and cybersecurity threats impacting organizations and society.

The BSCyber program will be complementary to the existing BS in Computer Science (BSCS) and BS in Software Engineering (BSSE) programs at WSU. As sister disciplines, computer science (CS), software

engineering (SE), and cybersecurity share the fundamentals of a computer science curriculum. Where they differ is in advanced courses—CS focuses on topics in artificial intelligence and machine learning, data science, algorithm design, distributed and networked systems, operating systems, parallel computing, bioinformatics, and other topics of interest to the students. SE focuses on advanced courses in software design and development, software testing and validation, software maintenance, and software management and integration. Cybersecurity focuses on security related to data, software, hardware, connection, and cyber systems, and specialized topics around forensics, reverse engineering, virtualization, and cybersecurity threats impacting organizations and society.

The BSCyber degree program will be offered on the Pullman, Everett, and Tri-Cities campuses. All the courses required for the BSCyber program will be offered at the Pullman and Tri-Cities campuses. At the Everett campus, BSCyber program will be a degree completion program, similar to the existing BS Mechanical Engineering (ME), BS Electrical Engineering (EE), and BS Software Engineering programs offered at Everett. The lower division portion of the curriculum will be offered by the regional community colleges through the Associate of Science for Transfer (AS-T) degree.

The BSCyber degree program will train students to design and build secure information networks, secure applications, secure systems, secure critical infrastructures, security tools such as firewalls, and secure methods of transporting data. The program will prepare graduates for careers in cyber defense as well as cyber operations, with emphasis on cyber operations where the demand for professionals is greater. Examples of job titles graduates can pursue include cyber security analyst/engineer, security architect/engineer, malware analyst, cloud security analyst, digital forensics analyst, intrusion detection analyst, Red/Blue/Purple Teamer, DevSecOps Engineer, and vulnerability researcher.

Establishment of the program

WSU initiated the internal process for establishing the BSCyber degree program in Summer 2022.⁷ The degree proposal was reviewed and approved by the WSU Provost's office and WSU Faculty Senate in January 2023. WSU Board of Regents discussed and approved this program at their March 9-10 meeting. The BSCyber program offering was then submitted to the Northwest Commission on Colleges and Universities (NWCCU). NWCCU is recognized by the United States Department of Education (USDE) and the Council on Higher Education (CHEA) to accredit postsecondary institutions and is the accrediting body for WSU. They have received approval from NWCCU for the BSCyber degree program, which allows them to advertise the program. The first batch of students will be joining the program in the Fall 2023 semester.

The Voiland College of Engineering and Architecture (VCEA) at WSU is in the process of hiring up to nine faculty in cybersecurity across the Pullman, Everett, and Tri-Cities campuses. It is a combined search process with the search committee comprising faculty from all three locations and candidates having the option of choosing the campus(es) that best suit their background and career plan. In addition, WSU plans to add three staff positions (e.g., academic coordinator) to support the BSCyber program. Two tenure track faculty and one academic advisor have been hired at Pullman. One career track faculty and 0.5 FTE (full time equivalent) academic advisor have been hired at Everett, and a second career track faculty member is currently in background check. WSU Tri-Cities has hired a tenure track associate professor.

WSU has engaged with industrial partners and advisors to ensure degree programs are meeting industry needs. This network includes the presence of many of the region's high-tech companies serving on one or more advisory boards (including Microsoft, Boeing, SEL, PNNL, Paccar, Google, Amazon, Nordstrom, Proof Point, and others). The BSCyber program is working with the WSU admissions office and recruiters and the office of international programs to ensure they are reaching out to the largest set of potential students within the state as well as outside the state. They intend to leverage the synergy between course requirements for the existing BSCS, BSSE degree programs and the proposed

BSCyber degree programs to ensure faculty and students have flexibility in terms of course offerings and electives.

Efforts aimed at improving equitable access

WSU has a number of offices and programs to support underrepresented minority and first-generation students.

- The Louis Stokes Alliance for Minority Participation (LSAMP) Program is aimed at increasing the quality and quantity of students successfully completing science, technology, engineering, and mathematics (STEM) baccalaureate degree programs and increasing the number of students who are interested in and are academically qualified for matriculating into programs of graduate study.
- The Team Mentoring Program (TMP) is designed to maximize the experience of students pursuing STEM and Pre-Health disciplines in order to increase retention, achievement, and graduation rates. The Program helps mentees connect with their college, participate in academic and career building experiences, and prepare for the next steps.
- WSU is a First-Gen Forward Institution, recognized for its dedication to serving first-generation college students. WSU joined the inaugural cohort of 80 universities and colleges across the nation selected by the Center for First-Generation Student Success, an initiative of the Student Affairs Administrators in Higher Education (NASPA) and The Suder Foundation.⁸
- The WSU Office of Multicultural Student Services (MSS) seeks to facilitate the best undergraduate experience for multicultural, first generation, and other underrepresented students through the provision of culturally relevant services to enhance their learning and development and foster their successful transition, adjustment, persistence, achievement, and graduation.

Funding and expenditures

The total funds received in FY23 is \$2,056,000 annually, with \$923,000 going to Pullman, \$570,000 to Tri-Cities, and \$563,000 to Everett. Once the BSCyber program is established with enrolled students on all campuses, the funds budgeted will go toward 9 faculty (3 on each campus), 3 exempt academic coordinators, and 2 graduate assistants to support the degree program, as shown in Table 8.

Table 8. WSU: Cybersecurity – Anticipated Full Program Funding and Expenditures

<i>Funding Received</i>	<i>FTE</i>	<i>Salaries</i>	<i>Benefits</i>	<i>Operations</i>	<i>Total</i>
<i>Faculty</i>	9.00	1,251,000	384,000	-	1,635,000
<i>Exempt</i>	3.00	189,000	59,000	-	248,000
<i>Graduate Assistant</i>	2.00	75,000	57,000	-	132,000
<i>Computer Loan Program (All campuses)</i>				14,000	14,000
<i>Operations)</i>				27,000	27,000
<i>Total</i>		1,515,000	500,000	41,000	2,056,000

During this initial year faculty salaries have been expensed to support curriculum development (see Table 9). In addition, on each campus faculty searches have been conducted for full-time faculty, with most of the funds used to equip student computer labs and build the IT infrastructure needed for the program.

Table 9. WSU: Cybersecurity Funding and Expenditures FY 2023

<i>FY23 Expenditures</i>	<i>FTE</i>	<i>Salaries</i>	<i>Benefits</i>	<i>Operations</i>	<i>Total</i>
<i>Faculty</i>	4.20	552,806	130,079	-	682,885
<i>Exempt</i>	.50	18,214	9,759	-	27,973
<i>Civil Service</i>	.50	29,566	14,784	-	44,351
<i>Graduate Assistant</i>	.25	-	-	-	-
<i>IT Infrastructure and Equipment</i>				875,804	875,804
<i>Operations</i>				33,120	33,120
<i>Pending Quotes and Curriculum Dev</i>				391,868	391,868
Total		600,586	154,622	1,300,792	2,056,000

Planned additional recruitment and retention strategies

WSU will engage with colleagues at Pacific Northwest National Laboratory (PNNL) to review recruitment and retention strategies. They plan to be diligent to ensure that they have scholarships and internship opportunities for all students in the program. WSU Everett is working closely with Everett Community College and other feeder community colleges where a cybersecurity certificate and/or Associates degree are offered to assure alignment and smooth pathways to upper-division coursework. This includes Dual Enrollment and financial aid consortium agreements.

Enrollment

WSU has started formal advertisement and recruitment of students into the program. The first batch of students will start in the Fall 2023 semester. Currently, we have 11 students admitted into the program and have received inquiries expressing interest about this program from over 50 prospective students. We anticipate more students being admitted into the program by the start of the Fall 2023 semester. Once the program is fully implemented, in about six years, WSU anticipates serving 150 students on the Pullman campus, 45 students on the Tri-Cities campus, and 30 on the Everett campus.

Western Washington University (WWU)

Background on the Cybersecurity Program

Western's BS in Cybersecurity degree is a unique joint academic program between Western Washington University and Washington's community and technical colleges, culminating in a baccalaureate degree in cybersecurity. It is a "2+2" program. During the first 2 years, students earn a specific cybersecurity transfer degree from one of our ten partner colleges. In the last 2 years, students earn a Bachelor of Science in Cybersecurity from WWU from one of our 3 locations in Bellingham, Poulsbo, or Kirkland.

The cybersecurity transfer pathway is designed for our current partner colleges:

- Bellingham Technical College
- Edmonds College
- Green River College
- Olympic College
- Peninsula College
- Renton Technical College

- Highline College
- Lake Washington Institute of Technology
- South Puget Sound Community College
- Whatcom Community College

WWU also offers a Cybersecurity Minor and Certificate for students pursuing other majors.

Western Washington University has been designated as a National Center of Academic Excellence in Cyber Defense (CAE -CD). This CAE designation indicates that Western has met the rigorous requirements set forth by the National Security Agency (NSA) and is committed to producing cybersecurity professionals that will reduce vulnerabilities in our national infrastructure. Western is proud to become the 11th CAE institution of higher education in Washington State. Students can choose to pursue Western’s Bachelor of Science in Cybersecurity at one of our three locations: Bellingham, Poulsbo, or Kirkland.

As shown in Table 10, enrollments in the Cybersecurity major have remained relatively steady for the last three years, while interest in the certificate, while still relatively small, has grown.

Table 10. Average WWU Cybersecurity Enrollments

Academic Year	Students enrolled in Major	Students enrolled in certificate program
2020-2021	49.0	2.3
2021-2022	45.3	5.7
2022-2023	44.0	10.3

Cyber Range Poulsbo: The Washington State Educational Cyber Range

WWU built Cyber Range Poulsbo to serve as an educational resource for the state of Washington. The Range allows instructors and schools across the state to develop and share realistic educational and training exercises without the need for each program to independently develop the same materials. The Range is designed to allow secure access to cyber security training scenarios by leveraging our private cloud architecture and state of the art networking capabilities. Cyber Range Poulsbo provides free access for all Washington State schools, including K-12, as well as colleges and universities.

Funding and expenditures

WWU received \$769,000 in funds for FY 23 from the workforce education investment account for upgrading Cyber Range equipment and software; the funding also enables us to hire additional personnel to support the range. With this support from the state, Cyber Range Poulsbo has purchased, and is in the process of turning up sufficient servers and other equipment to significantly increase its ability to support other schools. In addition, Cyber Range Poulsbo has hired a Research Assistant, and is in the process of hiring a Software Developer. With these two positions, the Range will be able to increase the projects available for inclusion in curriculum, as well as provide research support to additional faculty across the state.

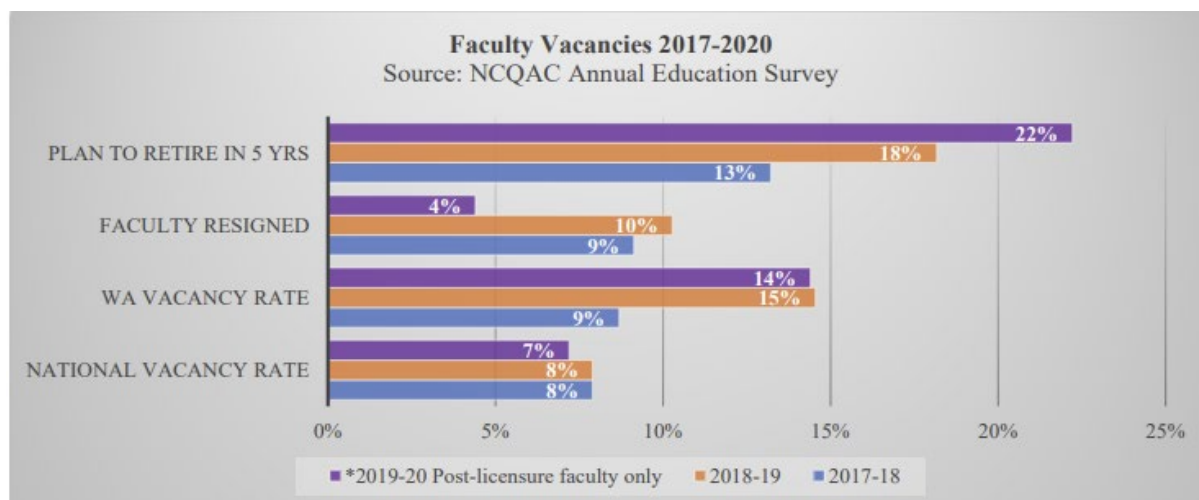
Prior to receiving the funding, Cyber Range Poulsbo supported approximately 3-400 students per year. This year, the range has supported 1103 students, including 350 in K-12 schools for 8 districts across the state. Cyber Range Poulsbo has provided support through labs, exercises, and other systems to 12 community colleges and 4 universities within the state. With the new capacity in place, the range will have the ability to support up to 10,000 students annually.

NURSING PROGRAMS

Nursing staff shortages in Washington are well-documented. According to the WA Center for Nursing, there are currently over 6,000 nursing job openings in WA state, with the majority of open positions for RNs. The need for more RNs is immediate and critical. Only 1.1 percent of licensed RNs in Washington are unemployed and seeking employment as a nurse and only 2.3 percent have jobs outside nursing. There are not enough licensed nurses in Washington to fill the thousands of RN vacancies in Washington hospitals.⁹

Another factor driving the rising demand for qualified RNs is an increase in the number of nurses retiring or leaving the profession.¹⁰ According to a recent report from the Washington Center for Nursing (WCN), 54 percent of nurses have considered or have made plans to leave the profession due to the impact of COVID-19. WCN projects that there will be 17,271 annual RN job openings between 2024-2029, with an average turnover rate of 26.5 percent. This trend is illustrated in Figure 4, which shows nursing faculty vacancy rate data taken from a 2020 survey conducted by the Nursing Care Quality Assurance Commission (NCQAC).

Figure 4. National Faculty Vacancy rates 2017-2020



With the U.S. population becoming more diverse,¹¹ diversifying the nursing workforce is a national priority. Educating students from diverse minority and underrepresented communities is a key strategy in this effort.¹² In Washington State, only 24.6 percent of RNs and 39 percent of pre-licensure BSN students report as other than White/Caucasian¹³

WCN reports that in Washington State, an average of 3,200 qualified RN applicants are turned away each year from pre-licensure RN programs. This is related to several factors including the availability of qualified faculty and subsequently the capacity for increasing enrollment in nursing schools and colleges. Compared to national data, WCN reports that over the last 3 years Washington State has a higher average faculty vacancy rate (13 percent) compared with faculty vacancy rates (8 percent) across the nation.

The programs discussed in this section, focused on either expanding enrollments or on the development of a new program, are all designed to address the demand for skilled LPNs and RNs.

State Board for Community and Technical Colleges (SBCTC)

Background

The Community and Technical College system educates nurses in Associate and Baccalaureate programs at Registered and Licensed Practical Nurse levels. Overall, the system graduates between 1800 and 2000 new nurses per year across 29 colleges located east and west of the mountains. However, Washington State Hospital Association estimates that in order to meet staffing needs, hospitals alone need to hire additional 6,100 nurses. The Washington Center for Nursing estimates there are over 100 specialties in nursing and only 50 percent of RNs work in hospitals. The other half work in ambulatory care, long-term care, home health, community health clinics, schools, the military, research labs, and other settings.

Over 80 percent of nursing program graduates are female. The average age of students at all levels of nursing programs is between 30 and 36. Completers of the Associate Degree Nursing (ADN) program are 62 percent white, 10 percent Asian, 10 percent 2+ races, 6 percent Hispanic/Latino, 4 percent Black/African American, 1 percent American Indian/Alaska Native, and 7 percent with race unreported.

Funding and Expenditures

With funds allocated to the community and technical colleges in the FY 2023 Supplemental Budget, the CTCs committed to expanding enrollments by 210 FTEs by Spring of 2025 (see Table 11).

Strategies to support the expansion include adding evening/weekend/part-time cohorts, creating hybrid programs, developing additional points of access, implementing apprenticeships, expanding headcounts in existing cohorts, and dedicating resources to recruitment of students and faculty.

Proposed activities and expenditures include:

- Hiring full-time faculty, adjunct faculty, clinical placement coordinators, and new hires or increasing hours for simulation coordinator positions.
- Increasing outreach and recruitment activities to promote new and existing pathways, including targeted recruitment efforts for incumbent healthcare workers.
- Implementing a Certified Nursing Assistant (CNA) to Licensed Practical Nurse (LPN) Apprenticeship program.
- Expanding lab and classroom space and purchasing equipment and supplies to accommodate additional students.
- Investing in curriculum development and redesign to accommodate part-time students.

Table 11. SBCTC Nursing: Funding allocated to colleges and respective FTE targets

College	New FTE Target	Award Amount
Bates	10	\$92,352.30
Bellevue	25	\$300,000.00
Bellingham	15	\$138,528.44
Centralia	10	\$92,352.30
Edmonds	15	\$138,528.44
Everett	15	\$138,528.44
Green River	25	\$300,000.00
Highline	15	\$138,528.44
Lower Columbia	15	\$138,528.44
Olympic	25	\$300,000.00
Pierce	10	\$92,352.30
Spokane	15	\$138,528.44
SPSCC	15	\$138,528.44
	210	\$2,146,756

Simulation Vans

The Simulation Plan for Washington state, developed by nursing simulation experts from CTC and baccalaureate institutions, identified creation of a Mobile Simulation Program as one of the strategies to address shortages of clinical placements and enhance access to high quality nursing simulation centers, especially in rural locations and communities with low resources.

In its FY23 Supplemental Budget, the Legislature allocated \$1.6M to SBCTC for the college system to purchase two mobile simulation vans, outfitted with educational equipment, including manikins, video technology, and communication equipment. Funds were also allocated to two colleges serving rural areas (see Table 12).

Table 12. SBCTC Nursing: Funds allocated to rural colleges

College	Allocation	Summary of Proposal
Skagit Valley College	\$800,000	SVC will purchase new simulation equipment to enhance learning in mental health, pediatrics, and maternal infant nursing. SVC's service district includes three rural and island counties: Skagit County, Island County, and San Juan County. Having the ability to make simulation-based learning mobile will greatly improve college's ability to serve regional small to medium sized healthcare facilities. With these funds, SVC will purchase a van to transport simulation equipment to rural healthcare facilities as well as other colleges that need specialized equipment. SVC faculty and simulation technicians would travel to the facilities to provide simulation-based training in specialty content areas of nursing.
Wenatchee Valley College	\$800,000	The WVC-Omak campus buildings and simulation lab are inadequate in size to handle increased enrollment in the allied health programs. To increase enrollment, such as adding an LPN to BSN pathway in Omak, WVC will have to stagger utilization of the current lab, but their current lab is still not big enough for current and future enrollment. WVC would immediately utilize a mobile simulation lab at the Omak campus to help facilitate a patient environment that is not a pop-up in a classroom.
Total	\$1,600,000	

Peninsula College

Peninsula College serves rural Clallam and Jefferson counties as the only institution of higher education on the North Olympic Peninsula. The College service area includes 109,552 residents across two large economically distressed rural counties and encompasses an area of over 3,600 square miles of land that extends from the Pacific Ocean on the west to the Hood Canal on the east. Peninsula serves six American Indian nations (Jamestown S'Klallam, Lower Elwha Klallam, Quileute, Makah, Hoh, and Port Gamble S'Klallam). Clallam and Jefferson Counties are designated as medically underserved areas (MUAs). Residents of these counties face economic and cultural barriers to healthcare, including those who are low-income, homeless, Medicaid-eligible, Native American, or migrant farmworkers. MUA population designations are calculated based on the infant mortality rate, poverty rate, percentage of elderly, and the primary care physicians to population ratio. In addition to MUA designation, the region falls into the highest category for health professional shortage areas in Washington state.

In response to the demand for medical professionals in the region, Peninsula College has a goal of maintaining 32 students in their registered nursing program, 60 students in their nursing assistant program, and 40 students in their medical assistant program.

Peninsula College: Funding and Expenditures

Peninsula College has expended 100% of the \$350,000 allocated for FY 2022, including expenditures for salaries and benefits (89 percent), goods and services (7 percent), and travel (4 percent).

Salaries and benefits expenditures went toward two full-time nursing faculty, one full-time nursing instructional support technician (.5FTE S&B paid from other funds), one full-time nursing program specialist (.5FTE S&B paid from other funds), one full-time medical assisting instructional support technician (.5FTE S&B paid from other funds), and one full-time medical assisting/healthcare coordinator (.5FTE S&B paid from other funds).

Goods and services included equipment under \$5000 - a defibrillator, infusion pumps, microscopes, stethoscopes, vascular access chest manikin, and IV arms; equipment over \$5000 – a Pyxis medication automatic delivery device; classroom materials such as reference books, exam prep study guides, anatomy charts, consumables; and marketing and recruitment expenses (digital, print, and radio advertising and allied health recruitment fairs).

Travel expenses were for professional development and included simulation training, ambulatory care nursing training, assessment and evaluation in allied health education workshops, a rural healthcare conference, a women's health, obstetric and neonatal nursing conference, and allied health deans and directors' meetings.

Peninsula College: Enrollment

Registered Nursing Program. Peninsula College offers an Associate in Nursing, Direct Transfer Agreement/Major Related Program. They have been admitting 32 students in the program since 2018-20. The two-year and three-year graduation rates have varied slightly from year to year, with the completion rate for the 2020-22 cohort at 97 percent (see Table 13).

Table 13. Peninsula College RN Program: Enrollment & Completion Rates

Cohort	Admitted (New)	Graduating in 2 years	Graduating in 3 years	2-yr Program completion	3-yr Program Completion
2018-20	32	30	31	94%	97%
2019-21	31 (+1 returning)	28	29	90%	94%
2020-22	32	31	31	97%	97%

Nursing Assistant Program. Peninsula college also offers a nursing assistant certified (NAC) program, which prepares students for the role of nursing assistant in hospitals, clinics, skilled nursing facilities (long term care and rehabilitation) and assisted living facilities. While the funding thus far has helped Peninsula College increase capacity, enrollments did not meet the target (see Table 14). They had a small increase in 2019. But enrollments dropped in 2020 due to the pandemic. They are optimistic that outreach efforts, partnerships with employers, and offering the class at their satellite campus in Port Townsend will increase enrollments next year.

Table 14. Peninsula College NAC Program: Enrollment and Completions

Cohort	Students admitted to the program	Completions
2018-19	22	100%
2019-20	30	97%
2020-21	25	92%
2021-22	25	92%

Challenges. Covid-19 presented a number of challenges to clinical placement. Peninsula was forced to cancel the class for several quarters. This limited their ability to expand the program. Outreach efforts included regular information sessions for potentially interested applicants; participation in healthcare events with local area high schools and agencies such as Scrubs Camps, STEM Cafés, and job fairs; highlighting the NAC program in ongoing digital, print, and radio advertising; and partnerships with healthcare employers to recruit incumbent workers to enroll in the program.

Planned future strategies to expand enrollment. Efforts to expand enrollment going forward include partnering with Jefferson Healthcare, starting in fall 2023, to offer the NAC class twice a year in Port Townsend, expanding outreach and recruitment to high school seniors and presentations at WorkSource, and developing stronger healthcare pathways through their Guided Pathways initiatives and partnerships with high schools.

Efforts aimed at improving equitable opportunities. To help ease the burden of costs to start in the field for the PC Foundation provides funding for stethoscopes and blood pressure cuffs. Also, because their large service area is geographically isolated students often face transportation issues. In order to minimize the barrier of reliable transportation, Peninsula will offer a fall 2023 class in Port Townsend with our Jefferson Healthcare providing lab space.

Medical Assistant Program. Peninsula College offers a medical assistant program, which prepares graduates to work alongside physicians performing a range of assisting duties in outpatient or ambulatory care facilities such as medical offices and clinics. The funding has helped Peninsula increase capacity to 40 medical assisting students per year, but enrollments have not increased (see Table 15). The pandemic created additional barriers for students, but they are optimistic that outreach efforts and partnerships with employers will help increase enrollments for the fall 2023 cohort.

Table 15. Peninsula College Medical Assistant Program: Enrollment and Completions

Cohort	Student applications	Students admitted to the program	Students who completed
2018	15	15	13
2019	11	11	10
2020	14	14	11
2021	10	10	11
2022	5	5	8

Challenges. Peninsula College has encountered challenges in recruiting applicants due to competition with in-house training programs offered by employers, various apprenticeship training programs, the pandemic, and an overall decrease in interested applicants due to low wages for relatively high skills required by medical assistants.

Outreach efforts. Peninsula has hosted several information sessions, Scrubs Camps, allied health job fairs, and STEM Café events, and they have utilized their advisory board members to post flyers, banners, and recruitment information at their facilities and organizations. They have also increased K-12 outreach and recruitment efforts. In addition, they have expanded marketing efforts, including photo shoots and promotional videos that have been shared broadly via social media and website links. The medical assistant program is a priority focus of a comprehensive marketing and recruitment plan with ads and activities running from January through August.

Planned Future strategies to expand enrollment. Efforts to expand enrollment going forward include collaborating with partners to increase enrollment through updated dual-credit articulation agreements

with local high schools; creating bridge programs to award college credit to students transferring into our program from apprenticeships; continuing partnerships with the Washington Association for Community Health (WACH) Apprenticeship programs; hosting a STEM Café event for K-12 educators and administrators to learn about Peninsula’s healthcare programs; restarting information sessions that were canceled due to Covid.; and expanding pathways to medical assistant certification through a new medical assistant registered (MA-R) to medical assistant certified (MA-C) bridge program.

Eastern Washington University (EWU)

Background and History of the Program

EWU received phase I and II approval from the Nursing Care Quality Assurance Commission (NCQAC) in March 2019. The WA legislature provided start-up funding in July 2022. The nursing commission granted initial approval to launch in August of 2022, and the NWCCU approved the program in March 2023. EWU has been actively recruiting and hiring for faculty and administrative positions and purchasing equipment that will be needed for the program.

While that initial investment in the supplemental session allowed them to move rapidly forward it was never intended to fully fund the cohort to completion. The initial allocation of \$6.17 million included more than \$4 million for construction of needed space and \$1.9 million for ongoing base funding. This amount was sufficient to hire the first year of faculty, but more was needed for ongoing program operations. EWU requested an additional \$4.6 million for the next biennium to sustain the program moving forward and this amount was included in the 2023-25 State Operating Budget released on April 22, 2023.

Outreach Efforts and Communication Strategies to Market the New Program

EWU has a website and a social media presence. Marketing and communications have generated awareness via radio spots, newspaper articles, and an event called Eastern Edge that focuses on the current and future nursing pipeline in the region. They received 132 applications for the first 40 seats. In addition, program leaders collaborate with admission counselors and recruiters, participate in orientations for admitted freshmen, and engage in other community outreach events hosted by the Area Health Education Center (AHEC). Other efforts include participation in information sessions for CTC transfer students and for EWU pre-nursing students.

Efforts aimed at improving equitable opportunities in the field

EWU implemented a holistic admissions process. This includes eliminating standardized entrance exams or standardized test scores. A 3.0 GPA benchmark for eligibility has been set and applicants are not ranked on GPA; any applicant with a 3.0 cumulative GPA and a 3.0 GPA on the nursing pre-requisite courses is eligible for admission. Four brief essay questions were included, aimed at measuring eight non-cognitive variables that are predictive of success in college and scored each applicant using an evidence-based scoring rubric. All reviews were blinded.

Funding and Expenditures

The following table shows the funding and anticipated expenses by category for EWU’s bachelor of science in Nursing program in fiscal year 2023.

Table 16. EWU Bachelor of Science Nursing Program: Funding and FY 2023 Anticipated Expenses

Desc	Budget	Expenses
Salaries	431,000	431,000
Benefits	129,500	129,500
Direct Expense	1,080,000	1,080,000
Capital Equipment	4,250,000	4,250,000

Lease	279,500	279,500
Total	6,170,000	6,170,000

Personnel. As of April 2023, EWU has hired 1 Professor, 1 Assistant Professor, 2 Lecturers, 2 Clinical Assistants, 1 Operations Manager and 1 Program Specialist. Current positions in recruitment include nursing tenure track faculty (Open Rank Assistant or Associate), two Nursing Skills and Simulation Laboratory Special Faculty, and two Nursing Skills and Simulation Laboratory Assistants. The additional funding in the 2023-25 State Operating Budget will provide enough funding to fully staff the nursing program.

Facilities. Eastern is currently in contract for a design build on the Spokane Inland Empire Railroad (SIERR) building in Spokane for the Nursing Program. The anticipated cost is \$3,575,000 with occupancy granted in June 2023. Information Technology infrastructure is also being updated in this building for the Nursing Program, costing about \$400,000. Eastern anticipates they will have the occupancy permit on June 23, 2023. The lease contract began August 2022 with FY 2023 cash payments beginning March 2023.

Equipment. Eastern has purchase orders out for the following items:

- \$500,000 for simulation manikins, associated software, a turnkey AV media solution for the control room, and faculty training.
- \$210,000 for furniture and non-manikin related equipment needed for nursing skills lab and simulation suites.
- \$114,000 for Avkin wearable simulation technology.

EWU is currently recruiting for additional faculty positions and are updating bids to purchase simulation equipment, software, hospital beds, storage racks and everything else needed to get started for the first two years.

Enrollment

Eastern has invited 40 students and waitlisted 15 for fall 2023. An additional 40 students will be admitted in January 2024. The intention is to have cohorts of 40 students for the fall and spring terms over 2 years, for a total of 4 cohorts. In spring 2025 they anticipate having 160 students in the pipeline. The first graduating class will complete in June 2025.

UW Seattle School of Nursing

Background and History of the Program

Established in the wake of the 1918 flu pandemic, the University of Washington School of Nursing currently teaches almost 1,000 students annually in baccalaureate, postbaccalaureate, masters, and doctoral programs across three campuses. In 2010, to help alleviate the critical nursing shortage, the Accelerated Bachelor of Science in Nursing (ABSN) program at the Seattle campus became operational.

The ABSN program is the fastest program for preparing Registered Nurses (RN) – an undergraduate generalist nursing degree in high demand. The traditional two-year, six-quarter bachelor of science in nursing (BSN) program is for students who are completing years three and four of their bachelor's degree, typically their first university degree. Alternatively, the now-expanding one-year, four-quarter ABSN program provides the BSN curriculum for postbaccalaureate students who have already earned a bachelor's degree in a field other than nursing and who complete nursing prerequisite courses. UW Seattle was one of the first schools to offer an accelerated undergraduate program to provide this high-quality nursing training that condenses the competencies and essential courses, credits, and clinical hours for a BSN degree.

This program includes the foundational nursing skills and competencies directed by regulatory bodies, including adult gerontology, medical, surgical, pediatric, psychology and mental health, obstetrics, pharmacology, pathophysiology, research, and professionalism – essentially the whole scope of what an RN does – while centering on population health and social justice from day one. These elements are essential components required for accreditation and are very similar for all ABSN and BSN across the country. BSN and ABSN graduates are prepared for a wide range of careers from direct patient care, bedside nursing in hospitals, policy work, scientific research, population health work to provide services, nursing education, and leadership.

Thanks to Legislative support in FY 2023 and with the additional support provided in the 2023-2025 State Operating Budget released in April 2023, the ABSN program is being expanded from 64 to 128 new students starting each year, with 64 spots continuing to open each autumn and now an additional 64 spots opening each spring.

Efforts aimed at improving equitable opportunities in the field

Potential equity issues associated with the ABSN program include that it is not state-subsidized and is therefore more expensive to attend than the BSN program. It also requires intense focus and time, which limits students' ability to earn while attending. To address these issues for the first new cohort, thanks to legislative support, UW budgeted \$400,000 for a one-time increase in scholarship packages. Additionally, recruitment efforts include focused outreach to diverse potential applicants from historically marginalized communities.

The Washington Center for Nursing (WCN) published several [reports](#) on diversity in nursing, nursing workforce supply and demand, nursing education, including:

- COVID-19 Impact on the Nursing Workforce. (2021)
- Washington State Nursing Education Trend Report Academic Years 2014-2020. (2022)
- Washington 2021 Nursing Workforce Supply Data Report: Characteristics of LPNs, RNs, and ARNPs. (2022)
- Washington State Demand Trends for Nursing Professionals: An Environmental Scan of Data from 2011-2020. (2022)

In addition, the American Association of Colleges of Nursing published a report that outlines a number of strategies to enhance diversity in the nursing workforce.¹⁴ These reports have informed UW's approach to the issue.

Outreach Efforts and Communication Strategies to Market the New Program

UW has leveraged a robust blend of strategies to recruit students for the expanded ABSN program, including paid digital media advertising campaigns, market research interest pools that garnered input from over 200 interested students, promotion at in-person and online recruitment events and information sessions, promotional storytelling on the official School of Nursing website and social media channels, and focused outreach to diverse potential applicants from historically marginalized communities.

Challenges

The number one challenge over the fiscal year has been the severe labor shortage combined with extraordinarily rapid rollout of a complex expansion, specifically regarding instructor hiring and securing additional clinical placements, as well as administrative staffing shortages in general. UW is proud to report that because of the dedication of their team and the support of clinical partners they have been able to successfully overcome these challenges.

Funding and Expenditures.

The UW Seattle School of Nursing is on track to spend the \$969,000 proviso by 6/30/23 (see Table 17), including \$400,000 in scholarships, while also spending from reserves to support the rapid expansion as follows:

Table 17. UW Seattle ABSN Program Expansion - Projected Expenditures

Proviso Budget Category	Estimated Current Expenses	Projected Expenses	Total Projected Expenses Proviso
	7/1/22-5/31/23	6/1/23-6/30/23	FY 22-23
Learning Technology Support	58,372	4,448	62,820
Simulation Education/Training Support	115,675	10,371	126,046
IT Support for Faculty and Students	28,524	2,037	30,561
Course Tune Curriculum Planning Support Tool	30,000	-	30,000
Department Planning Support - Faculty Salary/Benefits	26,211	8,196	34,407
Department Planning Support - Administrative Salary/Benefits	8,584	1,643	10,227
Faculty Salary/Benefits Spring Quarter	31,858	-	31,858
Project & Administrative Support	93,413	7,101	100,514
Student Recruitment & Support/Student & Academic Services	128,991	10,803	139,794
Community Outreach	1,717		1,717
Student Recruitment & Marketing	3,377		3,377
Human Resources Support - Faculty & TA Hiring	33,609	5,931	39,540
Student Scholarships	358,139	-	358,139
	\$ 918,470	\$ 50,530	\$ 969,000

Additional Companion Reserve Budget Category	Estimated Current Expenses	Projected Expenses	Total Projected Expenses
	7/1/22-5/31/23	6/1/23-6/30/23	FY 22-23
Faculty Salary/Benefits Spring Quarter	5,722		5,722
Student Recruitment & Marketing	21,089		21,089
	\$ 26,811	-	\$ 26,811

Enrollment

The current expansion from 64 to 128 new ABSN students annually, now with two cohorts starting each academic year, is well on its way. The first spring-start ABSN cohort started on March 27, 2023. Further expansion of undergraduate BSN/ABSN programs to address the nursing workforce crisis will depend on resources to support the additional faculty, student services, and clinical education opportunities required. With the first spring-start ABSN cohort successfully rolled out and scheduled to graduate in March 2024, UW is continuing to build the staffing, instructional, and technology infrastructures necessary to sustainably provide high-quality equitable education into the future.

UW Tacoma School of Nursing

Background and History of the Program

The UW Tacoma School of Nursing & Healthcare Leadership (UWT SNHCL) is in the planning phase for developing a pre-licensure bachelor of science in nursing (BSN) program to meet the demands for qualified registered nurses as key members of the healthcare workforce. This program will prepare students to take the required national RN licensure examination and is distinct from SNHCL's existing RN-BSN degree program intended for RNs with an associate degree in nursing (ADN) to complete their baccalaureate education and attain a BSN degree.

In addition to increasing the number of qualified RNs for the healthcare workforce, SNHCL is developing innovative and collaborative instructional modalities to teach both undergraduate and graduate students to successfully meet the educational outcomes for their respective programs of study. Increased use of newer technologies, such as virtual simulation and other modalities engage students in live, interactive, visual online learning. These and other approaches can also eliminate barriers for RNs seeking to continue their education. Virtual simulation ensures that students can engage in complex learning scenarios that may not present frequently or conveniently in a fieldwork/clinical setting, thereby ensuring high quality learning that can result in efficiencies at all levels of professional development and education. The proportional use of simulation to meet state required clinical/fieldwork hours is permitted, which mitigates the limited availability of clinical/fieldwork sites within healthcare agencies.

Knowledge and skills required to teach, whether in nursing education programs or in healthcare organizations, are acquired through graduate degrees. SNHCL will be using the simulation products and applying the best practices from this modality in the school's current master of nursing degree program and in future graduate degree programs (e.g., doctor of nursing practice, master of healthcare leadership). These degrees prepare qualified RNs and other health workforce members not only as educators in post-secondary colleges and universities but also in roles in healthcare organizations responsible for staff development and educational leadership. Pre-licensure nursing education programs and healthcare organizations require qualified graduate-prepared nurses and health workforce members to teach and lead effective internship programs, and to manage the professional development and retention of novice and less experienced nurses and healthcare workers. Currently there are no public 4-year universities offering a pre-licensure BSN program in the South Puget Sound region and only UWT SNHCL offers a graduate nursing degree program. The goal of UW Tacoma's SNHCL's is to admit the first cohort of pre-licensure BSN students in fall of the 2026-2027 academic year.

Funding and Expenditures

During this current fiscal period, proviso funds have been used to support the planning phase for the pre-licensure BSN program including developing simulation modules, faculty simulation education, faculty salaries and stipends for students participating in the simulation module development (see Table 19). In addition, the funding has supported RN-BSN and MN program student recruitment. In the remainder of this fiscal year, in addition to year-to-date expenses, the proviso funds will be used to hire a faculty pre-licensure BSN program development coordinator and program support staff; complete a labor market

analysis survey, as required for a new program application to Washington State Department of Health Nursing Care Quality Assurance Commission (NCQAC); student engagement and recruitment activities; and student scholarships and additional simulation module development. With future proviso allocations, SNHCL will expand on the current activities to include initial operational costs associated with design and build out of the simulation environment/learning lab, pre-licensure curriculum development, hiring clinical faculty and commensurate administrative staff support. Increased financial investments will be required to fully build out the infrastructure and resources necessary to operationalize a pre-licensure BSN program.

Table 19. UW-Tacoma School of Nursing & Healthcare Leadership: Current and Projected Expenses

Budget Category	Current Expenses	Projected Expenses	Total Projected Expenses
	7/1/22-6/16/23	6/16/23-6/30/23	FY 22-23
Simulation Module Development	\$6,010	\$0	\$6,010
Curriculum & Simulation Education/Training	\$23,261	\$0	\$23,261
Pre-licensure BSN Program Market Analysis	\$26,000	\$751	\$26,751
Faculty Salaries/Benefits	\$87,368	\$13,801	\$101,169
Pre-licensure BSN Program Development Coordinator	\$4,070	\$6,318	\$10,388
Administrative/Student Fieldwork Support Staff	\$0	\$0	\$0
Community Engagement	\$26,208	\$0	\$26,208
Student Engagement	\$11,250	\$500	\$11,750
Student Recruitment	\$5,748	\$0	\$5,748
Student Scholarships	\$0	\$60,000	\$60,000
Supplies/Materials	\$1,714	\$0	\$1,714
	\$191,629	\$81,370	\$272,999

Currently, UW Tacoma is not yet recruiting for a pre-licensure BSN program. A primary source of students for the RN-BSN is transfer students from regional community and technical colleges. During the pandemic, higher education enrollment declined nationally and locally, with the impact of this challenge continuing in recruiting for RN-BSN and MN programs. SNHCL’s recruitment specialist is actively engaged in recruitment activities at CTCs, professional associations, community agencies, and healthcare organizations. In addition, curricular changes in the RN-BSN program have reduced the time to program completion to three academic quarters. Revisions and changes to the MN curriculum are pending approval by the state nursing commission (NCQAC).

Outreach Efforts and Communication Strategies to expand enrollment
Strategies for further expanding enrollment include:

- Providing scholarships and financial support to students in need and from underrepresented groups.
- Curriculum review and redesign to provide additional hybrid course options and remote site learning to eliminate obstacles to place bound and working students.
- Exploring dual admission pathways with CTC partners to facilitate transfer student enrollment in current RN-BSN and future pre-licensure BSN programs.
- UWT and SNHCL leadership currently participates on the Tacoma Anchor Network and Tacoma Public Schools' Healthcare Careers Academy advisory groups that have priorities for developing and recruiting students into the healthcare workforce.

Enrollment

The chart below shows annual enrollments for the UWT RN-BSN program over the last decade. Given rising demand for skilled RNs, the goal is to increase the number of students entering and completing this program.

Table 20. UWT RN-BSN Enrollment 2012-23

Academic Year	Students	Academic Year	Students
2012-2013	75	2018-2019	57
2013-2014	83	2019-2020	86
2014-2015	61	2020-2021	64
2015-2016	67	2021-2022	83
2016-2017	90	2022-2023	77
2017-2018	88		

Estimated future enrollment increases.

The short-term focus will be to increase the number of RN-BSN and MN student enrollments. Recruitment for and implementation of the pre-licensure BSN program is contingent upon final approval from the state nursing commission (NCQAC). Specific goals for student enrollment are:

- Increasing the number of RN to BSN enrollments by 40 students (by FY 2025).
- Increasing the number of MN enrollments by 20 students (by FY 2025).
- Admitting the first cohort (20 students) of pre-licensure BSN students for the 2026-2027 academic year.

Western Washington University (WWU)

RN-to-BSN Nursing Program

Offered through the Woodring College of Education, Western's RN-to-BSN Program prepares nurses for administrative, management, and clinical leadership roles. The program builds on patient care and advocacy skills learned in registered-nursing programs and work experience. Students must hold a Registered Nurse license or be in the last year of a pre-licensure associate degree or diploma nursing program. Students study topics such as social justice, nursing leadership, health policy and care coordination as they explore new healthcare system challenges and the importance of nursing leadership. Coursework focuses on enhancing their knowledge and skills in such areas as evidence-based practice, patient safety, organizational change, population health, effective communication, ethics, and palliative care.

Background and History

The first cohort entered the RN-to-BSN program in fall 2013 following in-depth exploration of the need for expanded access to BSN education by university administrators and the community. Prior to this development, nurses living in the north Puget Sound area seeking to enroll in a hybrid RN-to-BSN program needed to travel to Bothell for the University of Washington program, requiring frequent round trip travel of between 100-200 miles. The other option for pursuit of a BSN was to enroll in an online program, which does not suit the learning needs of many students. WWU's development of this program has served to increase RN-to-BSN capacity in the region, in line with the Master Plan for Nursing Education in Washington State.

Efforts aimed at improving equitable opportunities in the field

In the past, WWU had concerns that the high tuition rate of this self-supporting program, which was nearly \$17,000, was keeping some students from applying and attending. Some of this concern was based on self-reported reasons for withdrawing from applicants who chose not to attend. A good number of them noted the high tuition rate. Many program applicants are either first-generation or from underrepresented racial and ethnic groups, and the vast majority are new associate degree graduates who had already incurred debt and were just beginning to work as nurses. With the state funding WWU has received, their students now pay about \$12,500 for the total program, about the same tuition rate as other undergraduates at Western. They are confident that this has removed a large barrier to achieving greater equity in student admissions.

WWU is also developing enhanced student tracking with the goal to include BIPOC and first-generation data which will allow the program to have more precise data about completion and retention of underserved groups. They are combining this data with qualitative notes and/or surveys to gain a better understanding of the needs of students who successfully complete the program and those who do not. The Program Advisor position has been increased from 0.1 to 0.25 FTE to expand availability on campus when students are in class and be more available for virtual advising sessions. In addition, WWU is revising their Systematic Evaluation Plan to improve program review and quality improvement plans with a focus on student success.

Challenges

Western's main challenges over the past few years have been related to staffing and the pandemic. Their Academic Program Director (APD) resigned suddenly in late summer of 2019 just before the school year began, and a new Interim APD stepped into the role, carrying a regular load of teaching and with no experience as a program director. At the same time, their long-standing Program Coordinator also resigned. Fortunately, they found a veteran university staff member to fill the position, but she was only able to work part-time, and she had no prior experience with a nursing program. Then, just a few months later, the COVID pandemic hit. All of these factors resulted in lower enrollments over the next few years.

Outreach Efforts and Communication Strategies to expand enrollment

With the funding WWU received in the summer of 2022, they hired an experienced, full-time program coordinator who is responsible for outreach and engagement of prospective and admitted students. Consequently, their recruitment efforts have increased. They have updated their website with online forms for prospective students to contact the program, find info session dates and times, and link to the application form with detailed directions on how to apply. Monthly virtual information sessions and increased tabling at local hospitals and career fairs have been instituted. Marketing materials have been expanded and improved, including an updated brochure, study plans, and detailed handouts with program overviews and information on admissions. In addition, coordination with university offices has been improved, including Admissions, Academic Advising and Career Services to provide accurate program information to every interested student. The online application form has been revised, streamlining the application process for nursing transfer students. They have instituted closer collaboration between their program and university admissions staff with the goal of focused advising,

communication, and detailed transcript review. The Program Coordinator maintains regular email contact with every applicant and offers virtual advising sessions to every applicant, with accessible scheduling to meet prospective student needs. In addition, new networking has been developed with employers and community practice partners.

WWU plans to continue implementation of outreach and communication strategies, initiated by the Program Coordinator, and add strategies to retain and support admitted students. Other efforts will include implementation of:

- Virtual and in-person orientations for new students and improved online support.
- Ongoing outreach to admitted students to keep them engaged between the time they accept admission and the start of the fall quarter.
- Improvement of program policies and procedures to meet current student needs and provide a strong framework to guide students.
- Expanded follow up and engagement with students who withdraw from the program, developing strategies to support returning students and maintaining connection with them to support reentry and graduation.

Funding and Expenditures

Table 21 below shows the state appropriation, expense categories, and expenditures for WWU’s RN-to-BSN Program through April 2023. In Table 22, categories and estimated amounts are outlined for planned expenditures of the remaining funds.

Table 21. WWU RN-to-BSN Program: Expenses through April 2023

RN-to-BSN Program (through April 2023)	Expenses	Running balance
General Fund, State Appropriation \$433,000		\$ 433,000.00
Overhead -WWU (Libraries, Academic Support, Etc)	\$ 102,830.00	\$ 330,170.00
Labor		
Academic Program Director, 50% Salary + benefits	\$ 44,835.61	\$ 285,334.39
Staff Salary and benefits (Winqvist)	\$ 50,971.59	\$ 234,362.80
Faculty/APD, 50% to BSN, Director Stipend and benefits	\$ 2,467.28	\$ 231,895.52
Permanent Faculty (Espina) Salary and Benefits	\$ 76,280.17	\$ 155,615.35
Staff, temporary (Stratton), salary + benefits	\$ 15,439.45	\$ 140,175.90
Student Advisor (Nixon), NTT	\$ 5,181.88	\$ 134,994.02
Goods and Services:		
Dues and Membership	\$ 3,277.00	\$ 131,717.02
Supplies & Materials Exp	\$ 77.25	\$ 131,639.77
Books & Pamphlets Exp	\$ 154.99	\$ 131,484.78
Telephone Exp	\$ 7.52	\$ 131,477.26
Software Leases/License Agreements	\$ 25.00	\$ 131,452.26
Building Repairs/Alt/Maint Exp	\$ 90.00	\$ 131,362.26
Print & Copy Center Expense	\$ 181.99	\$ 131,180.27
Self-serve Copier Expense	\$ 63.39	\$ 131,116.88
Dues & Memberships Exp	\$ 3,277.00	\$ 127,839.88
Convention Fees & Registration Exp	\$ 280.00	\$ 127,559.88
Misc Purchased Services Exp	\$ 2,954.08	\$ 124,605.80
Parking Expense	\$ 48.00	\$ 124,557.80
Recruitment Advertising Expense	\$ 600.00	\$ 123,957.80
Travel	\$ 2,892.49	\$ 121,065.31
Food (Not covered by attendee fee)	\$ 556.34	\$ 120,508.97

Table 22. WWU RN-to-BSN Program: Expenditure Estimates for Remaining Funds

RN-to-BSN, plans for remaining funds	Plans for remaining funds	
<i>Remaining fund balance</i>		\$ 120,508.97
Permanent Faculty (Lonneman), 50% towards RN-to-BSN	\$ 22,082.39	\$ 98,426.58
Permanent Faculty (Espina) Salary and Benefits	\$ 37,570.83	\$ 60,855.75
Staff Salary and benefits (Winquist)	\$ 25,105.41	\$ 35,750.34
Academic Program Director Stipend and benefits	\$ 1,215.22	\$ 34,535.12
Advisor (Nixon), NTT	\$ 2,552.27	\$ 31,982.85
Goods and Services	\$ 10,000.00	\$ 21,982.85
Travel	\$ 1,000.00	\$ 20,982.85
Reserves		\$ 20,982.85

Enrollment

In tables 23 and 24 below, trends in enrollment, student demographics, and completion from 2017 to 2022 are shown.

Table 23. WWU Past Program Enrollment and Student Demographics (2017-18 AY to 2021-22 AY)

Overall Enrollment		First Generation		Gender		Race / Ethnicity						
Academic Year	Head-count	First Gen.	Non-First Gen.	Female	Male	Am. Indian/ AK. Native	Asian / Native Hawaiian	Black	Hispanic / Latinx	Multi-racial	Other / Unknown	White
2017-18	41	28	13	32	9	0	2	1	3	1	1	33
2018-19	34	16	18	28	6	1	0	1	0	2	1	29
2019-20	33	18	15	31	2	0	0	1	4	1	2	25
2020-21	22	15	7	18	4	1	0	2	1	0	0	18
2021-22	28	17	11	24	4	0	1	1	3	2	2	19

Table 24. WWU Program Completions (2017-18 AY to 2021-22 AY)

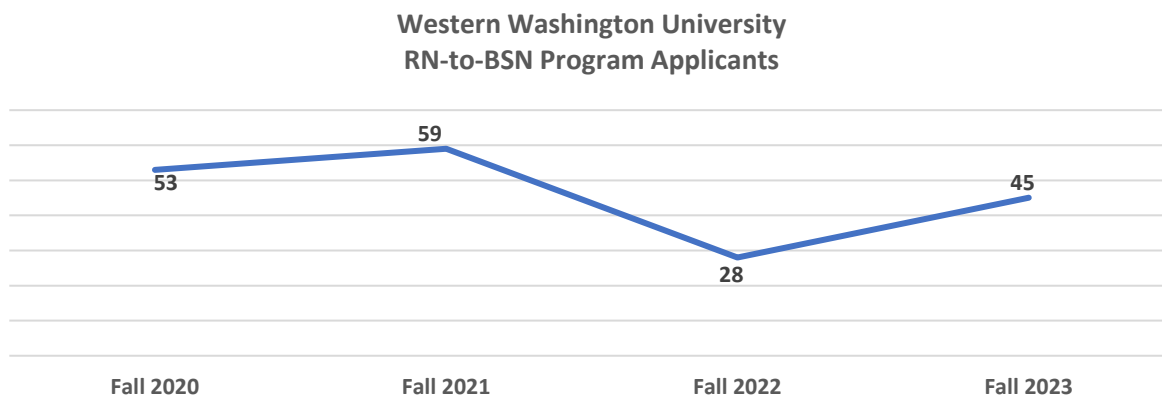
	2017-18	2018-19	2019-20	2020-21	2021-22
Enrolled in Fall Quarter	40	33	31	22	28
Reentered & Graduated	1	1	2	0	0
Graduated	37	30	32	15	22
Retention Rate	93%	94%	97%	71%	79%

*Note part-time students are counted as enrolled in fall but take 2yrs to complete.

Demand for the program is rebounding after declining during the pandemic

As can be seen from the chart below, demand for the program as reflected in the number of applicants has historically been good. This was the case even during the pandemic, although it did wane in 2022. Fall quarter is when they normally admit new students; spring and winter numbers show those returning after taking leaves. Applicants for the coming year are beginning to rebound to previous levels (see Figure 5).

Figure 5. Applicant trends as of April 3, 2023



Source: WWU admissions and program records.

Western anticipates that enrollment in the RN-to-BSN program will expand to around 50 students per year, close to capacity, as enrollment in their ADN partner programs at Bellingham Technical, Whatcom Community College, and Skagit Valley College expands. Their partnership with PeaceHealth St. Joseph Medical Center continues to deepen as they have recently hired a new clinical education coordinator and are on a path toward Magnet status, a recognition of nursing excellence that requires a higher percentage of BSN nurses.

New WWU MSN Nursing Program

Background and History

Ever since their RN-to-BSN program was founded in 2013, WWU has engaged in discussions of expansion to a graduate program. In 2019-2020, they completed an initial high-level market survey and needs assessment and received support from the university. After doing more specific needs assessment and receiving funding from the state legislature in winter 2022, they began preliminary planning in fall 2022 for a new Master of Science in Nursing (MSN) degree at Western. In January 2023, they received permission from the Washington State Nursing Care Quality Assurance Commission (NCQAC) to continue the process.

The MSN will offer two specialty tracks, one in nursing leadership and administration and the other in nursing education. There will be an RN-to-MSN pathway for nurses who have an Associate degree but not a BSN. Western aims to make the program accessible to all nurses, especially those in rural and underserved areas, so it will utilize online learning; but they also want to provide in-person learning opportunities and the support that a cohort model provides. Thus, they are exploring ways to bring their professors to the students. For example, one potential option is to offer classes physically on the Olympic and Kitsap peninsulas.

Key concepts from three areas will be incorporated into the degree: palliative care, rural and underserved concerns, and population health. Content experts in these three areas on the planning group have been meeting with others across the state to gather ideas on essential knowledge and skills that should be included in the curriculum. Students will also gain the skills and knowledge needed for their chosen track specialization: leadership and administration or education.

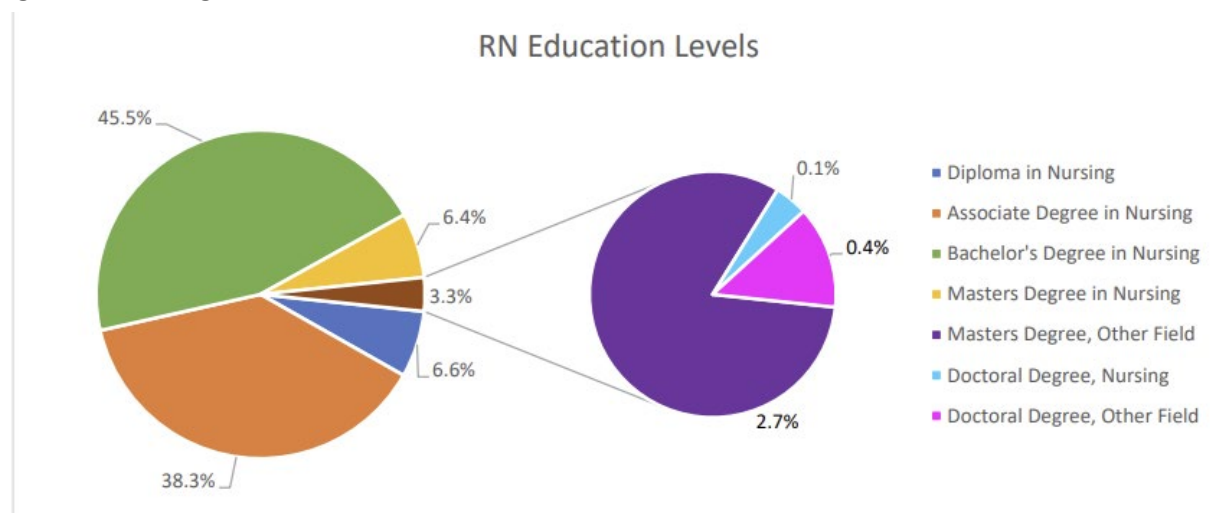
Graduates in the nursing leadership and administration track will be prepared for roles in a variety of settings including hospitals, critical access facilities, palliative care programs, and public health. Graduates in the education specialization will be ready to begin careers as members of nursing faculties. The

program hopes to empower nurses in rural, underserved, and tribal communities to stay in their communities and serve their people more effectively.

Rationale for Creation of the Program

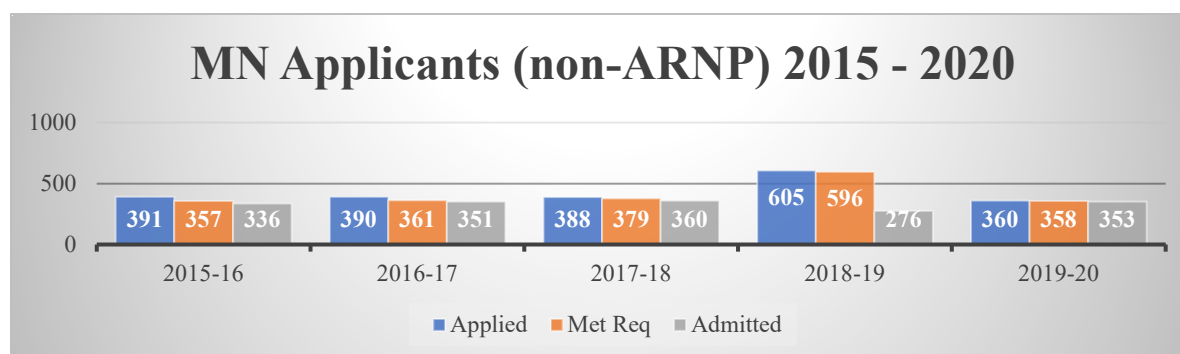
WWU completed multilevel market analyses as well as surveys of their alumni and over 9,000 nurses in the region to understand the needs for expanded nursing education at Western. From these investigations, several key considerations emerged. There is a critical workforce need for more nurses with advanced degrees in the state. With the ongoing professionalization of the nursing workforce, the MSN degree is becoming more desirable and necessary for a wide variety of positions. Statewide data for job postings show 2,178 unique job postings from September 2016 to December 2020 requiring the MSN. Monthly job postings from July 2020 and June 2021 show a 47 percent increase in unique monthly job postings for registered nurses and nurse practitioners who require the MSN (128 to 188 positions).¹⁵ Data from the Washington Center for Nursing (WCN) shows that only 6.4 percent of RNs in Washington hold a master’s degree in nursing, a number that lags well behind the nation’s rate of 17.5 percent (see figure 6 below).¹⁶

Figure 6. Washington Active Licensed RN Education



The state’s current MSN degree programs are unable to keep up with the need. Data from the Washington Center for Nursing shows that more than 300 Washington nurses in the last five years met requirements for non-Advanced Registered Nurse Practitioner (ARNP) master’s programs yet were not admitted into a program (see Figure 7 below). These nurses are needed to fill faculty, leadership, and other advanced practice roles.

Figure 7. Master of Nursing Program Applicants 2015-20



The nursing faculty shortage is particularly acute and will only grow in years to come as current faculty members retire. Nursing Program Administrators at Bellingham Technical College, Whatcom Community College, and Skagit Valley Community College have all expressed an ongoing need for more MSN-prepared faculty. The WCN data shows that Washington has a much higher average faculty vacancy rate (15 percent) compared with the national rate (8 percent) over the last 3 years.

In the Northwest region, Western identified three areas in which there are both critical healthcare and workforce needs as well as strong local interest: nursing education, nursing administration/leadership, and population health. In a survey sent to 9,000 nurses living in the northwest corner of the state in May 2021, respondents shared their plans and preferences for graduate nursing education. Over 840 individuals completed the survey, with half indicating that they intend to pursue graduate nursing education in the next five years. Of those considering an MSN, 24 percent noted the population health track as their first choice for a focus area, followed by nursing administration (21%) and nursing education (17%).

Over the past 10 years, WWU's RN-to-BSN students and alums have consistently requested the opportunity to pursue their graduate studies in nursing at Western. However, in annual surveys sent to those who have been graduated for one, three, and five years, they have found only a few graduates either currently in graduate programs or having recently received their degrees. This contrasts sharply with the many who expressed that desire when they began the RN-to-BSN program. They suspected that the lack of a program at Western is a barrier for these individuals in fulfilling their desire for advanced nursing education. They then surveyed alums about both their intention for graduate study and their interest in pursuing their education at Western. The results showed a very strong interest in attending a graduate nursing program at Western. Of the 238 graduates sampled, they received 48 responses. Forty-three indicated that they plan to pursue graduate education in nursing in the next five years and 35 responded that if WWU offered an MSN, they would likely attend. In that survey, nursing education and administration led their preferences.

According to the U.S. Bureau of Labor Statistics, employment for medical and health services managers, which includes nursing administrators and nurse educators, is expected to grow 32 percent over the 2019-2029 period. The average growth of all other occupations in this timeframe is 4 percent.¹⁷ Leaders at Skagit Regional Health and PeaceHealth (whose St. Joseph Medical Center is seeking ANCC Magnet Recognition) have expressed the need for more MSN-prepared staff, both in the hospitals as well as in community-based palliative care and chronic disease management. Data from nursing leaders at PeaceHealth St. Joseph, one of the region's largest hospitals, indicates that only 18 persons out of their 63 nurse leaders (unit managers and administration) currently have an MSN degree or higher. Their aim, as they seek Magnet status, is to have 50 percent with an MSN degree.¹⁸

Challenges

WWU has received excellent support from the NCQAC and is making good progress thanks to the efforts of the members of their MSN planning group. Their biggest challenge will be aligning the curriculum with new requirements outlined by the American Association of Colleges of Nursing (AACN). The AACN is calling for a new model of nursing education, centering on competency-based learning. Faculty are working to fully understand the guidelines and their implications. Since all will need to be accredited under these new expectations, the alignment of the program with the new AACN guidelines is critical.

Outreach efforts and communication strategies to market the new program

WWU does not plan to begin advertising the new program until it receives Phase2 approval by the NCQAC. In the meantime, they are building relationships across the state and have been conducting focus groups to listen to key stakeholders on the peninsulas and in Whatcom, Skagit, Island, and San Juan counties, including tribal communities.

They have increased the role of the program coordinator to full-time as of fall 2023. She brings years of experience at a local technical college nursing program and is an enthusiastic ambassador for the program. Together with the program advisor and the program director, an excellent team is already in place that is well connected in the community and ready to promote the new program.

Efforts aimed at improving equitable opportunities in the field

WWU is purposefully planning, both in degree content and in program processes, to include and support nurses who are living and working in rural and underserved areas of the state. They will have specific content and skills on how best to serve rural and underserved populations. Strong relationships have been established with the state’s Rural Health Initiative in the DOH as well as with the regional Area Health Education Center (AHEC) and relationships with the Nooksack Tribal Health Center are being developed.

They plan to offer a variety of clinical field experiences in rural and critical access facilities. Program processes will use modalities for learning that are both flexible (online live and asynchronous) as well as personally supportive, including access to faculty and face-to-face classes in local communities. An RN-to-MSN pathway will also be offered enabling those with an associate degree to enter the MSN after completing one year of pre-requisite classes part-time. Hours for the program advisor have been increased from 0.1 to 0.25 FTE beginning fall of 2023. She is an experienced cardiac nurse practitioner at a local hospital and has already been a tremendous help in recruiting and retaining students for the RN-to-BSN program, and the expectation is that she will be equally effective in the MSN program.

Funding and expenditures

In table 25 below, the various expense categories and development expenditures associated with the master of science in nursing program are outlined.

Table 25. WWU MSN Development Expenses (through April 2023)

	Expenses	Running balance
General Fund-State Appropriation = \$461,000		\$ 461,000.00
MSN Development, Consultant Stipends	\$ 42,933.00	\$ 418,067.00
MSN Development 50% Release, Lonneman, Salary + benefits	\$ 44,835.61	\$ 373,231.39
Academic Program Director Stipend and benefits (50/50 MSN/BSN)	\$ 2,467.28	\$ 370,764.11
Temporary faculty NTT	\$ 15,046.00	\$ 355,718.11
Dues and Membership	\$ 5,839.00	\$ 349,879.11
Travel related to MSN Development	\$ 735.00	\$ 349,144.11
Office furnishings	\$ 669.24	\$ 348,474.87
New faculty/program director search	\$ 4,225.00	\$ 344,249.87

As detailed on the spreadsheet, the expenses for this planning year were mainly in two areas: consultant stipends and salary for the Academic Program Coordinator. Four content experts were hired to help in the planning of the new MSN. Each has devoted considerable time and energy this year to leading various aspects of the process. In addition, the Nursing Program Director will arrange to have his time freed up to direct the planning process by hiring adjunct instructors to teach his classes in the fall and winter quarters. In table 26, WWU’s planned expenditures of the remaining funds are outlined for development of the master of science in nursing program.

Table 26. WWU MSN Development (Plans for Remaining Funds)

<i>Remaining fund balance</i>		\$ 344,249.87
MSN consultant stipends	\$ 21,467.00	\$ 322,782.87
MSN development, 50% course release, Bill Lonneman, salary plus benefits.	\$ 22,082.39	\$ 300,700.48
Academic Program Director stipend and benefits (50/50 MSN/BSN)	\$ 1,215.22	\$ 299,485.26
Temporary Faculty (NTT)	\$ 7,412.00	\$ 292,073.26
Reserves		\$ 292,073.26

Consultants will continue to work with the Nursing Program into the summer. Bill will be released from teaching the spring quarter and will receive a stipend to continue working in the summer. An adjunct instructor has been hired to teach his courses in spring. They will be starting on curriculum development this spring and will continue to work on that through the summer. They plan to submit the full curriculum and all other requirements to the NCQAC and appropriate university committees by the end of fall 2023.

Enrollment

Western hopes to have students beginning the program in fall 2024 and anticipate they will have 10 students enrolled each year.

Conclusion

Overall, the State Board for Community and Technical Colleges and the state's four-year higher education institutions that received funding in ESSB 5693 have made significant progress in advancing their goals for cybersecurity and nursing programs. Demand for cybersecurity professionals is growing rapidly in Washington, and the programs that have been selected for expanded enrollments or new development are well-positioned to play a critical role in meeting regional and statewide needs. The nursing programs highlighted in this report are also making good progress and are on target to meet their goals, making significant strides toward addressing the state's persistent workforce shortages in this field.

References

- ¹ Bureau of Labor Statistics. (2022). Retrieved Sep 14, 2022 from <https://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.htm#tab-6>.
- ² Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Information Security Analysts, retrieved Sep 08, 2022 from <https://www.bls.gov/ooh/computer-and-information-technology/information-security-analysts.htm>.
- ³ CyberSeek. (2023) Cybersecurity Supply/Demand Heat Map. <https://www.cyberseek.org/index.html#aboutit>.
- ⁴ https://www.cyberstates.org/pdf/CompTIA_Cyberstates_2021.pdf
- ⁵ National Initiative for Cybersecurity Education (NICE). (2023). NICE Framework Resource Center. <https://www.nist.gov/itl/applied-cybersecurity/nice/nice-framework-resource-center>
- ⁶ Source for all projected job openings in this table is: CyberSeek. (2023) Cybersecurity Supply/Demand Heat Map. <https://www.cyberseek.org/index.html#aboutit>. Note that these categories are not mutually exclusive. One job could perform more than one role, so the numbers are not meant to be aggregated
- ⁷ Washington State University has a formal approval process for establishing new degree programs. <https://provost.wsu.edu/procedures/degree-approval/>
- ⁸ First-gen Forward is the nation's first recognition program acknowledging higher education institutions for their commitment to first-generation students success. https://firstgen.naspa.org/files/dmfile/2022_23_Announcement_Institutions.pdf.
- ⁹ <https://www.wcnursing.org/nursing-workforce/>
- ¹⁰ Smiley, R. et al., (2021). The 2020 National Nursing Workforce Survey. *Journal of Nursing Regulation*, 12(1), S1-S96
- ¹¹ National Academies of Sciences, Engineering, and Medicine. 2021. *The Future of Nursing 2020-2030: Charting a Path to Achieve Health Equity*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25982>.
- ¹² American Association of Colleges of Nursing. (2023). Fact Sheet: Enhancing Diversity in the Nursing Workforce. <https://www.aacnnursing.org/Portals/0/PDFs/Fact-Sheets/Enhancing-Diversity-Factsheet.pdf>
- ¹³ Flores-Montoya, A. & Moulton Burwell, P. (2022). Washington State Nursing Education Trend Report Academic Years 2014-2020. Published at Washington Center for Nursing.
- ¹⁴ American Association of Colleges of Nursing. (2023). Fact Sheet: Enhancing Diversity in the Nursing Workforce. <https://www.aacnnursing.org/Portals/42/News/Factsheets/Enhancing-Diversity-Factsheet.pdf>
- ¹⁵ Emsi Labor Market Analytics: Q2 2021 Data Set. Washington, Registered Nurse and Nurse Practitioner MSN job postings, September 2016 - December 2020.
- ¹⁶ Moulton Burwell, P. and Flores- Montoya, A. (2022). *Washington 2021 Nursing Workforce Supply Data Report: Characteristics of LPNs, RNs, and ARNPs*. Published at Washington Center for Nursing.
- ¹⁷ Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Medical and Health Services Managers, at <https://www.bls.gov/ooh/management/medicalandhealthservicesmanagers.htm> (visited July 16, 2021).
- ¹⁸ Source: Personal correspondence with Catherine Jennifer Moyes, 10/27/2022 and Jeffrey Coto, 10/26/2022.