

MEMORANDUM

TO: Matt Hudelson, Executive Secretary
Faculty Senate

FROM: Becky Bitter, Registrar's Office

FOR: Academic Affairs Committee

DATE: December 7, 2022

SUBJECT: Proposal to Establish the BS in Cybersecurity

On December 6, 2022, the Academic Affairs reviewed and approved a proposal from the College of Engineering to establish a new degree – the Bachelor of Science in Cybersecurity.


The proposal is supported by the Provost and the curriculum has been reviewed and approved by the Catalog Subcommittee. The degree will be offered through the Pullman, Tri-Cities, and Everett campuses. The Vancouver VCAA and the VP for the Global campus have also reviewed and approved the proposal.

AAC recommends that the Faculty Senate approve the proposal, to be effective fall 2023.



MEMORANDUM

TO: Faculty Senate

FROM: Elizabeth S. Chilton, Provost and Executive Vice President 

SUBJECT: Create a Bachelor of Science in Cybersecurity

DATE: November 8, 2022

The attached proposal to create a Bachelor of Science in Cybersecurity (BSCyber) degree has been reviewed by the Provost's Office, and we support the proposal.

The proposed new BSCyber degree program aims to meet the growing 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, and adversarial thinking. The curriculum will include topics on security related to data, software, connection, cyber systems, and cybersecurity threats impacting organizations and society.

The proposed BSCyber program will be complementary to the existing BS in Computer Science and BS in Software Engineering programs at WSU. As sister disciplines, computer science (CS), software engineering, and cybersecurity share the fundamentals of a computer science curriculum. Where they differ is in advanced courses—CS focuses on topics in machine learning, data science, algorithm design, distributed and networked systems, human-computer interfacing, pervasive 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, software security, and software management and integration. Cybersecurity focuses on security related to data, software, connection, cyber systems, and cybersecurity threats impacting organizations and society. Graduates in all three disciplines are in high demand among Washington state's computing and information technology industries.

We judge the proposal ready for the Senate review process.

PROPOSAL TO OFFER A NEW DEGREE PROGRAM OR EXTEND AN EXISTING DEGREE TO GLOBAL CAMPUS

Degree Title:	Bachelor of Science, Cybersecurity
Academic Program:	Cybersecurity, BS
Academic Plan:	Cybersecurity BS
Number of Credits:	121
Department(s) or Program(s):	School of Electrical Engineering and Computer Science (Pullman, Everett) School of Engineering and Applied Sciences (Tri-Cities)
College(s):	Voiland College of Engineering and Architecture
Campus(es):	Pullman, Everett, Tri-Cities
Method of Instructional Delivery:	Face-to-face, Videoconference (VC)

Contact Name:	K. Sivakumar	Email Address:	siva@wsu.edu
Contact Phone:	509-335-4969	*Proposed start date:	Fall 2023

***Proposed Start Date:** Approval must be received from the Northwest Commission on Colleges and Universities before the program may be advertised or recruited for. Financial aid may not be available until the program has been approved by the Department of Education subsequent to NWCCU approval.

SIGNATURES: The names typed below certify that the relevant academic and campus officials have reviewed and approved this proposal:

Chair Signature:	Dr. Partha Pande Dr. Changki Mo	Date:	
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Dean Signature:	Dr. Mary Rezac	Date:	
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VP Global Campus	Dr. Dave Cillay	Date:	
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→ Submit to the Provost's Office at provost.deg.changes@wsu.edu

Everett Chancellor	Dr. Paul Pitre	Date:	
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Spokane Chancellor	Dr. Daryll DeWald	Date:	
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Tri-Cities VCAA	Dr. Kathleen McAteer	Date:	
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Vancouver VCAA	Dr. Renny Christopher	Date:	
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Provost Office:		Date:	
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Comments:	
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For Registrar's Office Use Only:					
Current CIP Code:		New CIP Code:		Date:	

Send completed form in Word format to: provost.deg.changes@wsu.edu

This template asks you to answer the array of questions about your proposed program that are important to your department, your college, the Faculty Senate, the State of Washington, accreditors and other external stakeholders.

By placing all proposals in a similar format, this template provides a common standard for comparison, ensuring that all potential programs can be evaluated in an equitable fashion. It can be used to determine whether or not a program is feasible within the university's academic and financial situation, and if it will have the resources to further the University's objective of providing high quality education and scholarship.

This template is also a framework to think about the viability of your ideas. It can thus be a tool for strengthening both your proposal and the resulting program itself, since a program that is starved for either students or resources from its inception is not likely to become a high quality program.

Here are some of the things to consider as you complete the template:

What are the aspirations for the reputation of this program – local, regional, national? What will it take to make that a reality?

Who are you trying to attract with this new program? Will it bring new students to the university, better meet the needs of current students in the department, or draw students away from other departments?

How strong is the demand for education of this kind, and in what specific careers will someone who receives such an education find meaningful employment?

How many students do you need to attract to break even, and can both the market and WSU's capacity support this number?

Providing good answers to hard questions maximizes the likelihood that a new program will not just win acceptance by the Faculty Senate and administration, but will ultimately be successful in attracting students and placing graduates. The analyses in the Demand, Financial and Library workbooks will assist you in creating a persuasive proposal. The findings in each area, and their basis or justification, should be summarized in the proposal itself.

Proposal

Mission and Core Themes (Strategic Goals):

Provide a clear statement of the nature and purposes of the new degree in the context of WSU's mission and core themes (strategic plan).

The proposed new Bachelor of Science in Cybersecurity (BSCyber) degree program 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. The curriculum will include topics on security related to data, software, connection, cyber systems, and cybersecurity threats impacting organizations and society.

The proposed 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 machine learning, data science, algorithm design, distributed and networked systems, human computer interfacing, pervasive 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, software security, and software management and integration. Cybersecurity focuses on security related to data, software, connection, cyber systems, and cybersecurity threats impacting organizations and society. Graduates in all three disciplines are in high demand among Washington state's computing and information technology (IT) industries.

It is aligned with and reflects WSU's mission and core themes:

- Produce highly qualified, much in demand, cybersecurity professionals.
- Provide access to high-quality baccalaureate degrees in science and engineering in Pullman, the North Puget Sound and Tri-Cities regions.
Produce work-ready graduates with experiential education and training.
- Meet the workforce needs of the state and region.
- Foster research in Cybersecurity at WSU.

Educational Offerings:

Describe the degree program, including the total number of credits required. Provide the four-year degree plan (undergraduate) or appropriate plan of study (graduate and professional).

Please note that all courses for the degree must be approved before the degree will be reviewed by the Catalog Subcommittee.

The proposed BSCyber degree program would train students to design and build secure information networks, security tools such as firewalls, and secure methods of transporting data. The four-year degree plan is attached as a separate file and requires 121 semester credit hours. We have also included as an attachment, an explanation of the Lab Science Requirement in the 4-year program as it relates to UCORE, professional accreditation requirement, and transfer students.

Provide descriptive information regarding (the) method(s) of instructional delivery (percent face-to-face, hybrid, distance, and/or competency-based).

The BSCyber degree program will be offered in Pullman, Everett, and Tri-Cities campuses. Courses will be delivered by a combination of campus-based face-to-face courses and courses delivered via Videoconference (VC) across campuses. All the courses required for the BSCyber program---UCORE, foundational Math, Science, courses in the major---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. In particular, 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 CS, SE and (newly hired) Cybersecurity faculty in Everett will jointly offer the upper division curriculum. Some upper-division courses will be offered via VC across campuses.

Offerings at all campuses are intended to be day-time programs designed for full-time students; part-time students will be accommodated as needed. No special faculty or student training is necessary for the planned delivery modes.

Assessment of Student Learning and Student Achievement

*** For graduate programs, please contact the Graduate School before completing this section.**

Please provide a list and description of expected student learning outcomes.

The current undergraduate programs offered by the School of EECS and SEAS are professionally accredited by the Engineering Accreditation Commission (EAC) or Computing Accreditation Commission (CAC) of ABET. We will be seeking similar professional accreditation for BSCyber once the program is approved and we meet the requirements for professional accreditation.

The student learning outcomes (SLOs) for BSCyber program are aligned with the requirements for professional accreditation through the Computing Accreditation Commission (CAC) of ABET. Below we list the SLOs and associated performance indicators for their assessment for the BSCyber degree program.

1. *An ability to identify, formulate, analyze and solve complex computing and engineering problems by applying principles of engineering, computing, science, mathematics, and other relevant disciplines.*

Performance Indicators:

- a. Decomposes a real-world scenario or problem statement into set of subproblems that need to be addressed in order to solve the original problem.
- b. Identifies constraints and/or requirements of a problem.
- c. Formulates problems in such a way that they can be addressed through approaches appropriate to the discipline, including approaches from engineering, computing, science, and mathematics.
- d. Chooses an approach, method, or tool that is appropriate to addressing the problem at hand.
- e. Applies principles, methods, or tools from engineering, computing, science, mathematics, and/or other relevant disciplines to identify viable approaches and correctly solve problem.

2. *An ability to design, implement and evaluate engineering and computing solutions that meet specified requirements with consideration of public health, safety, and welfare concerns, as well as global, cultural, social, environmental, and economic factors.*

Performance Indicators:

- a. Formulates one or more viable designs to meet a given set of needs/requirements.
- b. Articulates tradeoffs among multiple solutions that meet given set of needs/requirements.
- c. Identifies considerations, constraints and factors within problem context that are relevant to meeting specified needs/requirements.
- d. Prioritizes considerations, constraints, and factors that are relevant to meeting specified needs/requirements based on sound rationale.
- e. Applies appropriate strategies to evaluate the ability of a solution to meet specified requirements.

- f. Demonstrates sensitivity to a range of considerations (e.g., public health, safety, welfare) and factors (e.g., global, cultural, social) when developing solutions.
- g. Implements one or more solutions to meet specified needs/requirements.

3. *An ability to communicate effectively with a range of audiences in a variety of professional contexts.*

Performance Indicators:

- a. Applies standard rules of grammar, syntax, and structure in written and oral work.
- b. Demonstrates use of conventions particular to the discipline (e.g., organization, language choice, document type, source citation guidelines, and stylistic choices) in writing and presentations.
- c. Considers context, audience, and purpose in writing and presentations.
- d. Uses sources, examples, analogies, illustrations, and statistics to support claims.
- e. Uses graphical materials (e.g., illustrations, tables, schematics, photos, etc.) to support and extend the verbal or written components of documents and presentations.
- f. Uses delivery techniques such as posture, gesture, eye contact, enunciation, voice projection, vocal expressiveness to engage the audience during oral presentations.

4. *An ability to recognize ethical and professional responsibilities in engineering and computing situations and make informed judgments based on legal and ethical principles, and with consideration of global, economic, environmental, and societal impacts.*

Performance Indicators:

- a. Identifies professional, ethical, legal, security, and societal dimensions of a decision or action and its potential impacts on individuals, companies/organizations, the public, and/or other relevant stakeholders.
- b. Articulates cost, schedule, and risk components of a computing or engineering project with consideration of ethical impacts.
- c. Recognizes and distinguishes between different or competing ethical theories, frameworks, and/or perspectives relevant to computing or engineering scenario.
- d. Applies the standards of a professional code of ethics to determine an appropriate course of action.
- e. Uses an ethical theory, framework, or perspective to analyze a computing or engineering scenario and identify acceptable courses of action.
- f. Explains professional, ethical, and social considerations in an engineering or computing context.

5. *An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.*

Performance Indicators:

- a. Performs actions that demonstrate leadership in interactions with team members.
- b. Performs actions that support team members in team interactions.
- c. Demonstrates effort to include all team members in efforts and decisions of team.
- d. Demonstrates ability to establish goals, plan tasks, and meet objectives in a team environment.
- e. Fulfills different roles on teams and in meetings.
- f. Fulfills individual responsibilities outside of team meetings.
- g. Provides feedback; seeks and is receives feedback; and is exposed to different approaches and/or perspectives of team members.

6. *An ability to apply appropriate security principles and practices, computing and engineering approaches, theories, and fundamentals to conduct appropriate experimentation, analyze and interpret data, use engineering judgment to maintain operations in the presence of risks and threats, draw conclusions, and produce solutions.*

Performance Indicators:

- a. Applies engineering or computing theory and/or security principles/approaches to develop solutions.
- b. Applies testing and experimentation approaches/methods to evaluate cybersecurity threats to system operation.
- c. Applies security principles and practices to maintain operations in the presence of risks and threats.

- d. Applies testing and experimentation approaches/methods to managing risks in system operation.
- e. Identifies tests, data, and/or analyses that are needed to draw conclusions and/or make decisions.

7. *An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.*

Performance Indicators:

- a. Determines the extent and type of information needed for the problem at hand.
- b. Applies metacognitive skills during problem-solving, including the ability to assess process and progress, determine when stuck, and identify appropriate strategies to make progress.
- c. Employs search strategies to obtain information needed to solve the problem at hand.
- d. Accesses information from multiple information sources.
- e. Demonstrates ability to assess the credibility and applicability of information sources.
- f. Demonstrates ability to use information and apply knowledge to solve the problem at hand.
- g. Integrates new knowledge and discoveries into what is already known.

For undergraduate programs, provide the department's plan for assessing student learning outcomes. Describe briefly how information on student learning will be collected and incorporated into existing processes for evaluating student learning in the department. Please attach the plan and a curriculum matrix.

The School of EECS and SEAS have a robust program assessment and continuous improvement plan as part of professional accreditation of their existing undergraduate programs. Program assessment is based on a rich set of evaluation data:

- *Samples of student work* collected in strategically targeted lower- and upper-division courses.
- *Professional skills discussions* in which student teams in CptS/EE 302, our required ethics and professional skills course, consider a complex, real-world engineering scenario.
- *Senior Capstone Design Teamwork Surveys* that have members of senior design teams self-assess their and their teammates' attainment of learning Outcome 5.
- *Senior Exit Surveys* completed by graduating seniors in our degree programs (completion of these surveys is a requirement for graduation).
- *Junior Writing Portfolio* which is a diagnostic assessment of students' writing skills administered by the WSU Writing Center.
- *Executive Council Discussions* in which the Assessment Committee Chair (or School Director) presents our Program Educational Objectives and recent assessment results for feedback and discussion.
- *Faculty Retreat Discussions* in which the Assessment Committee Chair is responsible for presenting recent assessment results and program issues for feedback, discussion, and action.

Details of the assessment and continuous improvement plan are described in the attached Assessment Manuals for the School of EECS (Pullman, Everett), and SEAS (Tri-Cities). The BSCyber degree program assessment will follow the same plan. Specific courses and student work samples for BSCyber program assessment will be decided by the program faculty.

Please indicate as appropriate:

- Assessment of this program will be incorporated into the existing assessment plan for School of Electrical Engineering and Computer Science (Pullman and Everett) and School of Engineering and Applied Sciences (Tri-Cities). Please attach a copy of the existing plan.
- A draft assessment plan is attached.
- A curriculum matrix is attached.

Planning:

Describe plans and include descriptions which provide evidence of:

1. The need for the change

Demand for cybersecurity experts globally is at an all-time high. Washington state industries are making significant investments in the education and training of cybersecurity professionals. The demand for cybersecurity professionals is expected to continue to grow for the foreseeable future. Cybersecurity industry growth has been consistently outpacing increases in new information security professionals. This has resulted in an imbalance between the supply of qualified job applicants and the demand from new job openings. Even though Washington is home to the highest workforce concentration of STEM professionals in the country, it also has a deficit of cybersecurity professionals. According to the cybersecurity supply/demand heat map (<https://www.cyberseek.org/heatmap.html>) available cybersecurity workers in the state of Washington is low relative to employer demand. Employer demand in cybersecurity professionals is expected to continue to grow in near future. The BSCyber program has been fully funded by the state of Washington in FY 2023 after review by the legislature and Governor's office.

2. The student population to be served

Provide realistic justification for the projected FTE.

How can transfer students articulate smoothly into the program and complete it with approximately the same number of total credits as students who enter WSU as freshmen?

Please describe specific efforts planned to recruit and retain students who are persons of color, disabled, or whose gender is underrepresented in this discipline.

We anticipate serving the following number of students once the program is fully implemented---about six years from the anticipated program start date of Fall 2023:

Pullman 150

Tri-Cities: 45

Everett: 30

The projected enrollment numbers are consistent with our experience with the offering of the BS in Software Engineering (BSSE) program in Pullman and Everett (starting Fall 2016). It is also consistent with the enrollment estimates and funding provided by the state.

The proposed BSCyber degree program is suitable for students transferring in either an Associate of Science Transfer (AST) or Direct Transfer Associate (DTA) Associate's degree. The lab science requirement for BSCyber has been carefully designed to facilitate transfer students completing an Associate's degree which satisfies WSU's lower division UCORE requirements. The lower division course requirements for the existing BSSE and BSCS degree programs and the proposed BSCyber degree program are designed to be similar to facilitate transfer students who may not be sure of what degree program to pursue at the beginning of their program in a community college. The School of EECS already offers a BS in Software Engineering degree program at Everett in a 2+2 model, where the students earn an associate's degree from a community college and complete the last two years at WSU Everett to earn their BSSE degree from WSU. Transfer students interested in the proposed BSCyber degree program could follow a similar path.

The BS in Computer Science (BSCS) and BS in Software Engineering programs have enjoyed consistent increase in enrollment over the last five years. The growth was observed even during the period 2020—2022, where university-wide enrollment numbers dropped due to the pandemic. The BSCS program has currently become the largest program in the Voiland College of Engineering and Architecture. Multiple factors have contributed to the high enrollment numbers in these programs, but one of the factors is the dedicated effort placed on recruitment and retention. The school of EECS has a committee of faculty representing the various degree programs that works closely with the VCEA undergraduate recruiting team to engage in various recruitment events on campus (including Experience WSU, Future Cougars of Distinction, National Merit Scholars, Future Cougars Friday). EECS academic showcase presentations at these events are typically well attended. We will leverage these positive experiences and platforms to promote the BSCyber program and recruit students.

The BS in Computer Science at Tri-Cities is consistently one of the top 5 programs in terms of academic interest for incoming freshmen. There have been approximately 10 full-time transfer students admitted to the program annually since 2016. Adding a BS in Cybersecurity will be attractive to other community college students who currently only have the BAS option for a career in Cybersecurity.

WSU Everett has offered EECS coursework since 2016 in a 2+2 configuration featuring upper-division coursework, many of which would also be crucial part of the newly proposed BS in Cybersecurity curriculum. Maintaining steady growth over the years, Everett has averaged 88 students per semester. Everett CC offers a certificate and 2-year program in Cybersecurity with the first graduates coming in Spring 23. We have been working closely to align the WSU coursework with the community college pathway for transfer students. With a smooth transfer pathway, we would leverage VCEA/EECS' presence in WSU Everett, utilizing the programs at Everett that aims at recruit and retain students from traditionally underrepresented groups, such as High School Girls STEM Field Trip, First Generation University Students Orientation Panel.

3. Procedures used in arriving at the decision to change (e.g., consultation with advisory boards, input from industry or employers, commissioned studies, faculty task force, etc.).

The BSCyber program has been funded by the state of Washington after review by the legislature and Governor's office.

The School of EECS, VCEA along with the WSU office of corporate engagement have established a strong network of 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). Currently over 95% of the computer science capstone design projects completed in the School are designed and sponsored by industrial partners. We will extend this culture to this new Cybersecurity degree program.

4. Organizational arrangements required within the institution to accommodate the change.

The BSCyber degree program offering will be supported by the existing administrative structure of the School of EECS and SEAS in the VCEA. We do not anticipate additional organizational arrangements or changes for this program. Additional faculty and staff will be recruited as described elsewhere in this proposal.

5. Lay out a three-year timetable for implementation, including hiring plans, partnership contracts if needed, facilities modification, recruiting, and other elements of implementation. Provide dates for each step.

The Voiland College of Engineering and Architecture (VCEA) has started the search process for hiring up to nine faculty in Cybersecurity across Pullman, Everett, and Tri-Cities. Link for faculty hire:

Pullman: [https://wd5.myworkday.com/wsu/d/inst/15\\$158872/9925\\$10281.html](https://wd5.myworkday.com/wsu/d/inst/15$158872/9925$10281.html)

Tri-Cities: [https://wd5.myworkday.com/wsu/d/inst/15\\$158872/9925\\$10297.html](https://wd5.myworkday.com/wsu/d/inst/15$158872/9925$10297.html)

Everett: [https://wd5.myworkday.com/wsu/d/inst/15\\$158872/9925\\$10283.html](https://wd5.myworkday.com/wsu/d/inst/15$158872/9925$10283.html)

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, we plan to

add three staff positions (e.g., academic coordinator) to support the BSCyber program. We anticipate completing most of the hiring in FY 2023.

The faculty curriculum committee for the proposed BSCyber degree program has developed the four-year degree plan. In addition to existing courses, it will include six new courses---two required courses and four elective courses. Syllabi for all courses have been developed and are under review by the Faculty Senate committees. Development of detailed course material will be done over the next two academic years (2022-23 and 2023-24). First the required courses will be developed followed by elective courses.

The faculty curriculum committee for the proposed BSCyber degree program has identified courses that will have hands-on exercises. They have also short-listed possible options for these exercises: self-built kits vs contracting with a third-party company. Once they study the options and their pros and cons, a recommendation will be made to the program administrators. We plan to procure necessary equipment and modification of existing computer lab space(s) in FY 2023.

Refinement of course material and hands-on exercises will be done in Year 3, following the first offering of a course. Data from course assessment will inform this process. Feedback from industry partners and advisors will also be sought as part of this process. Any leftover course development will also be completed in Year 3.

We will work with WSU admissions office, recruiters, Office of International Programs, as well as our community college partners to recruit students.

Everett will follow the same curricular plans for the BSCyber with a special focus on the 2+2 transfer model for our campus. Once the curriculum is approved, we will meet with each community college in the area to develop pathways for prospective students. Working with the community colleges for recruitment of transfer students along with our dual enrollment opportunities will bolster the recruitment efforts. Likewise, we will add emphasis toward recruiting Veteran's due to our proximity for several military installations in the Puget Sound area.

Budget:

Attach the Financial Worksheet with five-year FTE, revenue and expenditure projections. Fully account for costs such as staff support, training, library, facilities and so on.

Please describe the funding picture narratively, including funding sources, department, college and/or campus commitments, investments already made, one-time costs, facilities costs (labs, classrooms, offices, telecom etc.) and library costs.

The state of Washington is fully funding the BSCyber degree program. The total dollars requested was \$2,055,000 annually, with \$922,000 to Pullman, \$570,000 to Tri-Cities, and \$563,000 to Everett. Budgetary details are included in the attached spreadsheet.

Student Services:

Describe the capacity of student support services to accommodate the change at this location. Include a description of admissions, financial aid, advising, library, tutoring and other services specific to this request.

With the new budgetary model to be implemented starting FY 2024, financial support from central administration for support units and services will be based on student enrollment. We anticipate this will provide adequate financial resources to student support services; the financial resources would increase in step with increased student enrollment in the BSCyber program.

WSU Tri-Cities has a learning commons where student support services are centralized and the cross-training and collaborative nature of these services enables capacity to add the projected number of new students in cybersecurity. The campus recently hired a full-time transfer advisor who is focused on increasing the number of low-income students in STEM transferring from the 6 community colleges in our region. We have a Bridges program with Columbia Basin College and Blue Mountain Community College where students receive support from both institutions to ease the transfer process.

The Everett campus provides comprehensive student services, often in collaboration with centralized units to ensure student success. Included as dedicated recruiters and advisors, career counseling, financial aid, tutoring, student involvement and tech support for all students. The Everett campus is also skilled in working with students to match their goals with the programs and services offered at WSU. Additionally, WSU Everett personnel are experts in adult and contemporary learning and provide specialized services to meet unique student needs. Everett creates meaningful student engagement through student involvement activities offered virtually and face-to-face. Our students will have access to the new Cascade Learning Commons built by EvCC and adjacent to our building. Everett students also receive a free city library card and have access to all WSU Library Services.

Describe the implications of the change for services to the rest of the student body.

We do not anticipate any change for services to the rest of the student body as a result of the proposed BSCyber program.

Physical Facilities and Equipment:

Outline the provision/s made for physical facilities and equipment at the proposed location that will support the program and its projected growth. Include videoconferencing and other technologies that support course delivery as well as classrooms, labs, and office space.

The faculty curriculum committee for the proposed BSCyber degree program has identified courses that will have hands-on exercises. They have also short-listed possible options for these exercises: self-built kits vs contracting with a third-party company. Once they study the options and their pros and cons, a recommendation will be made to the program administrators. The state of Washington has fully funded the BSCyber degree program starting FY 2023. We will be using part of the FY 2023 funds to procure necessary equipment and modification of existing computer lab space(s).

WSU Everett will build a secure server framework for use in teaching demonstration and lab work by students. We are repurposing one of our existing small computer labs to a lab space that will include all the recommended lab and software components noted by the curriculum committee. Everett Community College has an Industrial Cybersecurity lab that we can reserve as needed for special projects with students and collaborations between campuses.

WSU Tri-Cities and Everett have a robust and extensive videoconferencing system that is supported by three full-time staff. Office space for the three new faculty has been identified and will be adjacent to the cyber lab.

Library and Information Resources:

Using the Library Analysis form, describe the availability and adequacy of library and information resources for this degree, degree level, and location. Note plans to address gaps.

We do not anticipate the proposed BSCyber degree program to require additional library resources. Given the nature of Cybersecurity field, the majority, if not all, required library resources can be provided online from Pullman. We forecast that our students will not heavily utilize the services of the WSU System Libraries. As such, existing library collections, equipment, personnel, and services will be adequate for serving the proposed program’s needs.

Faculty:

List the educational and professional qualifications of the faculty relative to their individual teaching assignments.

List the anticipated sources or plans to secure qualified faculty and staff.

With existing faculty expertise in computer science, computer engineering, electrical engineering, and software engineering and adding new expertise in cybersecurity, the School of EECS and SEAS is well positioned to establish the BSCyber program and address one of the state’s highest workforce needs. The Voiland College of Engineering and Architecture (VCEA) at Washington State University has already made a significant effort towards cyber security education by establishing the Northwest regional VICEROY Virtual Cyber Institute consortium – Cyber Security Education & Research (CySER) – to train a cybersecurity ROTC and DoD-skilled civilian workforce. CySER primarily focuses on bachelor’s certifications. However, it can be used as a launch pad to offer the BSCyber degree program.

New faculty expertise in cybersecurity and existing faculty expertise in complementary areas of Computer Science and Computer Engineering create a unique and advantageous opportunity for the School of EECS and SEAS to offer the new BSCyber program. The state of Washington has provided \$2 million in funding for offering the BSCyber program. Searches for multiple faculty positions are currently underway at Pullman, Everett and Tri-Cities. We are conducting a joint search for all three locations to identify candidates based on applicant’s interest in geographic location and academic needs of the particular campus.

Impact on Other Locations/Programs:

Briefly describe any impacts on other WSU programs and locations, and how you came to these conclusions (who was consulted?). If there are potential adverse impacts, describe how these will be addressed. Consider such things as: reallocation of faculty time, reallocation of AMS courses, impact of blended courses, internal competition, “cannibalization” of other programs, curricular effects for other degrees, effects on recruitment markets for other campuses. Indicate how such problems will be addressed for each campus or department affected.

We do not anticipate any adverse impact of the BSCyber program on other WSU programs. This program complements the existing programs in BSCS and BSSE. As sister disciplines, CS, SE and cybersecurity share the fundamentals of a computer science curriculum. Since the programs are/will be housed with the same administrative unit (School of EECS and SEAS) within VCEA, this would allow for streamlined course offerings for the three programs. Some courses (mainly at the lower-division) will be shared across the programs with specialized courses (mainly at the upper-division) that are either unique to the three programs (and may serve as optional elective for the

other program(s)). Enrollments in BSCS has continued to grow even after the introduction of the BSSE program in 2016. With the burgeoning demand for computer scientists (in a broad sense), we anticipate the three programs--- BSCS, BSSE, BSCyber---to synergistically grow and offer more elective options to students in the three programs.

Sustainability

What are the plans for continuing the program past 5 years if the goals for enrollment are not met, or other circumstances prevent the execution of the plan described here?

We will engage with our 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). We will work with the WSU admissions office and recruiters and the office of international programs to ensure we are reaching out to the largest set of potential students within the state as well as outside the state. We will 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.

Should the goals for enrollment not be met at WSU Tri-Cities, we will engage our colleagues at Pacific Northwest National Laboratory to review recruitment and retention strategies and make recommendations for change. We will be diligent in our efforts to ensure we have scholarships and internship opportunities for all students in the program. If necessary, we will assign cyber faculty to teach courses required for the BS in computer science until we can bring enrollment levels up to our goals for cybersecurity.

WSU Everett is working closely with Everett CC and other feeder community colleges where a cybersecurity certificate and/or Associates degree are offered to assure alignment and smooth pathway to upper-division coursework. This includes Dual Enrollment and financial aid consortium agreements. While we do not anticipate enrollment challenges for this degree we do have academic alternatives in Software Engineering and Data Analytics.

External Reviews

If this program is new to the Washington State University system, please provide the names and addresses of 2-3 external experts from similar institutions who could be contacted to provide reviews of this program.

Name	Contact Information (email, phone, address)

Attachments:

- Financial Worksheet
- Four-Year Degree Plan (undergraduate); curriculum overview (graduate and professional)
- Curriculum Map (undergraduate)
- Assessment Plan
- Letters of financial commitment
- Contracts or MOUs if applicable

Send in Word format to: provost.deg.changes@wsu.edu