OLYMPIC COLLEGE

STATE BOARD FOR COMMUNITY AND TECHNICAL COLLEGES
FEB 2024 (TBD)
STATEMENT OF NEED
BACHELOR OF SCIENCE
COMPUTER SCIENCE

OLYMPIC COLLEGE

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Program Information

Institution Name: Olympic College

Degree Name: BS Computer Science

CIP Code: 11.0701

Name(s) of existing technical associate degree(s) that will serve as the foundation for this program:

Degree: Associate in Science (Track 2) - Transfer to Engineering, Computer Science, Physics, and Atmospheric Sciences

CIP Code: 40.0101

Year Began: 2000

Degree: Information Technology: Software Development AAS-T

CIP Code: 11.0201

Year Began: 2019

Degree: Associate of Arts-Direct Transfer Agreement (Computer Science)

CIP Code: 24.0101

Year Began: 2016

Degree: Information Technology: Security AAS-T

CIP Code: 11.1003

Year Began: 2019

Proposed Start Implementation Date (i.e., Fall 2014): Fall 2025

Projected Enrollment (FTE (Full Time Equivalent)) in Year One: 20

Projected Enrollment (FTE) by Year: 130 by 2028

Funding Source: State FTE

Mode of Delivery

Single Campus Delivery: Bremerton, WA

Off-site: None

Distance Learning: Some lectures may be hybrid, online, or both.

Statement of Need

Please see criteria and standard sheet. ***Page Limit: 20 pages***

Contact Information (Academic Department Representative)

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Chief Academic Officer signature

The Statement of Need must be signed. To sign, double click on the signature line below.

X 

Chief Academic Officer

Click or tap to enter a date. 10/31/2023

Criteria 1

Relationship to institutional role, mission, and program priorities.

The mission of Olympic College (OC) is "to enrich our diverse communities through quality education and support so that students can achieve their educational goals." Olympic College's role has always been multifaceted: As a workforce institution offering high demand educational programs critical to students preparing to enter or advance in an occupation, as a transfer-preparing institution, preparing students to transfer to Bachelor of Arts (BA) programs at four-year colleges, and since 2007, offering rigorous baccalaureate Bachelor of Applied Science (BAS) degrees. Four Core Themes are critical to accomplishing the college mission.

Pathways	Olympic College is accessible to the community by providing multiple entrance points and educational pathways. College is a conduit for students to upgrade their skills, transition into new careers, or further their education and training.
Student Achievement	At Olympic College, students gain the skills and knowledge needed to achieve their educational goals and to participate in the workforce.
External Engagement	Olympic College forms partnerships with governmental and community organizations, educational institutions, business, and labor to effectively support the Institution's mission.
College Community	Olympic College provides a safe, supported, and engaging learning environment for students and work environment for faculty and staff.

Also, Olympic Strategic Plans have included the development of baccalaureate degrees.

- Although OC offers several pathways to bachelor's degrees, including direct transfer and university partnerships, the college has also endorsed the development of additional OC baccalaureate programs: Initiative #6 in the 2007/2010 Strategic Plan called for OC to ***increase the educational options available to our communities [by] actively pursuing opportunities to bring baccalaureate programs to our district***.
- In its May 2014 Goals Conference Action Plan, part of current, ongoing strategic planning, OC set a goal to ***provide and support quality comprehensive instructional programs that meet student/community needs and respond to changing conditions***. This goal reaffirmed the continuing need for "increased access to baccalaureate opportunities."

In prioritizing which bachelor's degrees to pursue, OC takes into consideration several factors, including human, physical, and financial resources, the potential for economic development and job growth, long-term sustainability, accreditation requirements, and other factors identified through local, regional, state, and national analysis.

The development and implementation of the Bachelor of Science in Computer Science (BSCS) program also supports the following priorities identified in OC value statements and initiatives:
Value Statements:

- This degree illustrates a ***dedication to public service and higher education*** by responding to identified student and workplace demand.
- This degree demonstrates a ***commitment to lifelong learning*** by encouraging current and returning students to expand and enhance their educational capabilities.

Strategic Initiatives:

- This degree supports the ***implementation of enrollment management and student achievement plans focusing on accessibility and student learning*** by developing a program that encourages economic stability through high-wage, high-demand employment and delivers program components in a format that accommodates busy schedules and varied learning styles.
- This degree ***strengthens relationships with our communities to understand educational needs and provide learning opportunities relevant to those needs*** by identifying local, regional, and national workplace and educational trends and by developing sustainable programs that respond to a changing environment.

Additionally, new programs and pathways are a priority in academic planning. Olympic College's program development priorities are to:

- develop and expand from the institution's areas of strength;
- respond to changing labor market needs;
- facilitate student completion;
- share courses, facilities, and equipment amongst programs;
- control costs for the student and the college.

Criteria 2

Support of the statewide strategic plans.

The State Board for Community and Technical Colleges' (SBCTC) 2010 Mission Study includes long-term needs analyses for priority areas: economic demand, student success, and innovation. The proposed Bachelor of Science in Computer Science will support each of the priority areas in the following ways:

Economic Demand

The proposed Bachelor of Science in Computer Science program will support state and local economies by narrowing the increasing supply/demand gap in the computer science field with a well-educated and skilled workforce.

Student Success

The proposed Bachelor of Science in Computer Science will increase educational attainment across the state. The program will improve student success as it offers new opportunities for current and prospective students and incumbent workers in high-demand, high-wage computer science occupations. The program will provide wrap-around services and work collaboratively to implement best practices that promote student completion.

Innovation

The new Bachelor of Science in Computer Science program will use technology and collaboration in new ways to meet the demands of the economy by working closely with regional employers, professional organizations, and technology partners to develop innovative curriculum and relevant

program outcomes.

Two of the focus areas identified in the Mission Study are the need to increase the education level of more people and to serve place-bound working adults. The Mission Study states that, "Washington also needs more people with baccalaureate and graduate degrees. Community and technical colleges must expand their contribution to help meet this need" (pg. 4). Recognizing that many community college students are place-bound and balancing school, jobs, and families, SBCTC plans to address this through producing more baccalaureate degrees. Offering the Computer Science degree at multiple community and technical colleges, including Olympic College, will open opportunities for place-bound students and will help increase degree attainment for many of the residents in Western Washington.

The Action Plan of the Mission Study also identifies a goal to close the skills gap for high need industries including information technology. The proposed Bachelor of Science in Computer Science degree will contribute toward meeting these SBCTC goals. The Washington Governor's Office identifies Information and Communication Technology (ICT) as one of Washington's key industry sectors. In the state, there are more than 14,000 companies and over 313,000 technology workers and over 50,000 software engineers. According to Washington State Governor's Office, "ICT companies are engaged in nearly every product in the nation for total state-level payroll coming from the tech industry at 18.4 percent, and product and service line, from microcomputer business productivity tools and telecommunications to the mobile apps, big data and digital gaming." (WA Governor's Office, 2020).

The Washington State Achievement Council Strategic Action Plan 2019-21, states that two thirds of jobs in Washington will require an associate degree or higher, and the biggest gaps are in the Science, Technology, Engineering, and Mathematics (STEM) pipeline in computer science and information technology. The proposed program will also support the Washington State Achievement Council (WSAC) policies and goals for higher education. Specifically, the proposed Bachelor of Science in Computer Science will address the following points from the WSAC Action Plan:

Close Opportunity Gaps

State data has shown gaps in access and completion between students of color and white students. Washington Senate Bill 5401 states "The legislature finds it essential that Washington students, especially low-income students and students of color, have the necessary credentials to secure the high-demand jobs of the future." Olympic College can fill the need for more variety of college degree levels for first generation college students that are unable to geographically attend other institutions.

As we will show later, we have a strong demand for computer science classes in our local high schools. Classes offered for credit to high school students and a professional-technical 2-year degree pathway that is eligible for workforce development funding programs can serve as a pathway for under-represented and low-income student populations to degrees leading to higher wage occupations. As more local baccalaureate-level programs are available to students, it is more likely they will continue their education to the baccalaureate level. Olympic College is committed to closing the gap in educational outcomes for historically underrepresented populations, and the proposed Bachelor of Science in Computer Science program is another key component of that commitment.

Create Affordable, High-Quality Pathways

The BS in Computer Science will be affordable to local students. Leveraging current facilities and technology, the students will not be burdened with extra fees or extra charges for this program. The total cost of the program to the student will be over 50% lower than four-year universities in the

region, and significantly lower than at private institutions. Affordability of this Bachelor of Science in Computer Science degree is enhanced for students who may currently be living with family and will save the cost of relocating and paying higher living expenses to attend school.

Engaging Adult-Learners

The program will use a cohort model with a limited requirement for students to be on campus in order to support working adults. Courses will be HyFlex, allowing students to attend in person, or online synchronous, or online asynchronous. This course format will be supported with the most current technology, including mobile platforms for the Learning Management System, low-bandwidth multi-media streaming, Americans with Disabilities Act technology accommodations, multiple online resources, and a student friendly Learning Management System. Support will be available through faculty advisors and through peer-to-peer support networking within their cohort.

Criteria 3

Employer/community demand for graduates with baccalaureate level of education proposed in the program.

Olympic College's proposed Bachelor of Science in Computer Science degree will contribute to addressing the Software Developer employment and education gap in Washington State. The Bachelor of Science in Computer Science program will produce highly trained developers ready to assume application development responsibilities in their employment context. Data supplied by EMSI documented the top regional employers included Amazon, Microsoft, The Boeing Company, Google, T-Mobile, and Facebook. Demand for software developers annually is forecasted in the tens of thousands for the region, whereas the statewide supply measured by recent bachelor's program graduates barely breaks a thousand in the Computer Science major and is below 3,000 combined for all Information Technology baccalaureate programs.

Using the required rubric supplied by SBCTC for this criterion, Olympic College offers the following evidence of employer demand using calculation method #1 for existing occupations.

Demand in occupations for graduates of 4-year computer science programs statewide is predicted to grow 20% from 2023 to 2033 with average annual openings of 17,804. *(Table 1, Lightcast, Occupations by Location, 9/26/23.)* This table includes all 13 occupations associated with the CIP Code 11.0701 *(Table 1a, https://nces.ed.gov, CIP SOC crosswalk).* In Kitsap and Mason counties alone, Lightcast data predicts 2,202 openings in these 13 occupations over the next 10 years.

Graduates of bachelor programs in CIP code 11.0701 totaled 1,122 statewide in 2021. Four-year graduates from all other related Computer and Information Sciences, General Programs totaled 1,899 for 3,021 graduates in computer and information sciences. *(Table 2, Lightcast Program Table for Washington State, 9/26/23)*

Table 1: Jobs related to 11.0701 CIP code in Washington state, Kitsap & Mason counties

	2023 Jobs	2033 Jobs	2023 - 2033 Change	2023 - 2033 % Change	Avg. Annual Openings	Median Hourly Earnings	Avg. Hourly Earnings
Washington	183,605	220,109	36,504	20%	17,804	$68.14	$68.98
Kitsap County	2,019	2,467	448	22%	205	$51.62	$54.85
Mason County	133	179	46	35%	16	$48.03	$53.02

Table 1a: SOC codes for CIP 11.0701)

SOC Code	SOC Title
11-3021	Computer and Information Systems Managers
15-1212	Information Security Analysts
15-1221	Computer and Information Research Scientists
15-1231	Computer Network Support Specialists
15-1243	Database Architects
15-1251	Computer Programmers
15-1252	Software Developers
15-1253	Software Quality Assurance Analysts and Testers
15-1254	Web Developers
15-1255	Web and Digital Interface Designers
15-1299	Computer Occupations, All Other
15-2051	Data Scientists
25-1021	Computer Science Teachers, Postsecondary

Table 2: Bachelor's degree completions and jobs for 11.0000 CIP codes in Washington state, 2021

CIP Code	Description	Statewide Bachelor Completions 2021	Annual Openings	Avg. Hourly Earnings	2023 Jobs	2033 Jobs	% Chg
11.0701	Computer Science	1,122	22,321	$64.43	234,144	276,674	18%
11.0000	All other Computer and Information Sciences	1,899	406,986	$58.91	4,178,442	4,869,502	17%
Totals		**3,021**	**429,307**	**$62.41**	**4,412,586**	**5,146,176**	**17%**

Table 3: Occupations associated with CIP 11.0701 wages and openings for Kitsap & Mason counties

SOC	Description	Median Hourly Earnings	Avg. Hourly Earnings	Avg. Annual Openings	Typical Entry Level Education
11-3021	Computer and Information Systems Managers	$68.40	$72.12	24	Bachelor's degree
15-1212	Information Security Analysts	$45.60	$46.83	10	Bachelor's degree
15-1221	Computer and Information Research Scientists	$50.99	$53.78	9	Master's degree
15-1242	Database Administrators	$39.76	$41.72	5	Bachelor's degree
15-1243	Database Architects	$54.45	$53.96	3	Bachelor's degree
15-1251	Computer Programmers	$42.41	$52.05	5	Bachelor's degree
15-1252	Software Developers	$70.55	$63.79	83	Bachelor's degree
15-1253	Software Quality Assurance Analysts and Testers	$47.62	$48.58	8	Bachelor's degree
15-1254	Web Developers	$25.46	$35.08	6	Bachelor's degree
15-1255	Web and Digital Interface Designers	$35.07	$38.20	10	Bachelor's degree
15-1299	Computer Occupations, All Other	$47.47	$48.65	71	Bachelor's degree
15-2051	Data Scientists	$55.24	$59.33	9	Bachelor's degree
Totals			**$51.17**	**244**	

With 3,021 computer-related bachelor graduates and 17,804 average annual openings, Washington state has a supply gap of over 14,000. In the Olympic College service area of Kitsap and Mason

counties, there were 12 computer-related BAS graduates in 2023 to supply a demand of over 200 average annual openings for occupations typically looking for a 4-year or higher computer science degree. *(Table 3, Lightcast Occupation Table for Kitsap/Mason, 9/26/23)*

While the growth in computer-related occupations has been strong in Washington for years, there is an emerging need in our local area. In Kitsap and Mason counties, the four top growth occupations by percentage for 2023-2033 are in the computer and mathematical science group (SOC code 15-0000) (Table 4). *(Lightcast Occupation Table, 9/26/23)*

Table 4: Top growth occupations desiring a 4-year degree in Kitsap & Mason counties

SOC	Description	2023 Jobs	2033 Jobs	2023 - 2033 % Change	2023 - 2033 Openings	Avg. Annual Openings
15-2051	Data Scientists	51	72	42%	65	6
15-2031	Operations Research Analysts	34	45	34%	38	4
15-1252	Software Developers	661	882	33%	734	73
15-1253	Software Quality Assurance Analysts and Testers	67	88	31%	76	8

Even the estimates from Washington Employment Security Department (ESD) show that graduates for these occupations are in demand in the regions surrounding Olympic College, as evidenced by the data for software developers in table 5 *(Washington ESD Occupations In Demand List, 9/26.23).*

Table 5: Employment demand for software developers

WFD Area	Estimated Employment	Long Term Growth Rate	Avg Annual Openings 2020-30	Status	Avg Hourly Wage
Olympic Consortium WDA: Kitsap, Clallam, Jefferson Counties	462	2.73%	179	In Demand	$51.48
Pacific Mountain WDA	1,929	1.62%	677	In Demand	--
Seattle King WDA	92,727	3.35%	37,198	In Demand	$62.64
Snohomish WDA	3,974	-0.45%	1,099	Balanced	--
Tacoma-Pierce WDA	1,070	2.51%	403	In Demand	$53.59
Total	**100,162**		**39,556**		

In sum, the demand for software developers and other computer science-related occupations far outstrips supply, with Washington ESD estimates of regional job openings for only software developers to be 39,556 annually with 179 openings annually in Kitsap County alone.

To supplement these figures, the AppConnect consortium conducted an employer survey to which twenty employers responded in 2022. Respondents are employed by firms employing software developers including global organizations like Amazon and MoxielT, and local companies like AIS Software and Minisoft, Inc. Overall, the respondents confirm the need for baccalaureate prepared software developers.

Highlights of the survey include –

- 89% anticipate a demand for Software Developers
- 89% expect their developers will work partially or fully remote
- 67% have trouble finding qualified candidates
- 100% believe the proposed Bachelor of Science in Computer Science program will improve applicant pools

Some of their comments include –

- *"We struggle to get good candidates with adequate programming skills."*
- *"...it's difficult finding qualified, well educated, knowledgeable software developers that have a solid understanding of...programming and that have a B.S. in either Computer Science or Electrical Engineering."*
- *"Too many of our potential applicants are taken by higher-paying jobs in the big-cities (Seattle, Portland, San Francisco, etc.). It's challenging to find workers who will accept less pay but live in Bellingham where the lifestyle is more relaxed (and cheaper) than Seattle."*

The last comment spotlights a strength of our community and technical college system where our students and graduates prefer to stay local. Obtaining a bachelor's degree in computer science at their local college, where they can then move on to a position at a local employer, highlights the match between our proposal and employer's needs.

In sum, there is a workforce need for more software developers in the region employing Olympic College graduates. Olympic College graduates will not be in competition with similar graduates from other institutions as the employment gap is overwhelming. Washington State is in dire need of more Software Developers and increasing educational capacity in Computer Science is warranted.

Criteria 4

Baccalaureate program builds from existing professional and technical degree program offered by the institution.

The proposed Bachelor of Science in Computer Science degree will be structured as a 4-year program, with the flexibility for students to transfer into the program by building on the already existing foundation of Computer Science and Software Development programs at this institution.

Table 6 below shows the associate degrees offered at Olympic College that will give students the educational foundation to meet the criteria and be successful in a Bachelor of Science in Computer Science degree.

Table 6: Enrollment history per degree at Olympic College.

Degree	Program Length	Head Count per Academic Year			
		22/23	21/22	20/21	19/20
Associate in Arts DTA*	2 years	2,339	2,649	2,730	3,673
Computer Science AS-T, Track 2	2 years	154	210	312	456
Information Technology: Software Development AAS-T	2 years	53	32	23	6
Information Technology: Security AAS-T	2 years	64	49	44	5

** This is aggregated data for transfers for all majors. In the past 5 years, we have had 158 enrollments in CS143: Computer Science II Java, which we feel is a good estimate of the number of students transferring to a Computer Science program in the past 5 years.*

Criteria 5

Student demand for program within the region.

To assess student demand for the proposed Bachelor of Science in Computer Science degree program, Olympic College surveyed students enrolled in beginning Computer Science and Computer Information Systems coursework.

Olympic College Student Survey

There are 51 current Olympic College students on a computer science-related educational track who responded to the Bachelor of Science in Computer Science student survey. 90% of respondents indicated that they were very or somewhat interested in pursuing the kinds of careers that require a Computer Science Bachelors. Most respondents (82%) indicated they are highly likely or likely to enroll in the Bachelor of Science in Computer Science program at Olympic College when offered.

Students were also asked to comment on the one or two most important factors that will influence enrollment in Olympic College's Bachelor of Science in Computer Science program versus other options. Representative student responses include:

"Location and cost"

"OC is close to my home, much more affordable than big universities, and always provides quality education"

"I want to attend in person and other colleges are too far away."

"Better costs, class sizes, and potentially easier to get support from staff/faculty"

"Pursuing this degree at OC will work very well for my work schedule and allow me to keep my job in the Shipyard."

"My capability of attending the required class sessions is an obstacle since I work full time. I would prefer classes that are only online due to this, but I also would like to have the option to get help on campus during certain days and times that would fit my schedule."

"I am a mother who depends on childcare and needing to be in or relatively near the local area just in case of emergencies."

"Locality, ease of access, familiarity with the College, flexibility."

"Convenience is a huge factor for pursuing a bachelor's degree at Olympic College, because I'd be opting not to uproot myself to move to a university. Anything that makes the program more convenient is definitely important to me!"

Table 7: Projected enrollment numbers, based on survey results.

	2025/26	2026/27	2027/28	2028/29	2029/30
Freshmen	25	30	35	40	45
Sophomores	0	25	30	35	40
Juniors	12	25	25	30	35
Seniors	0	12	25	25	30
TOTAL	37	92	115	130	150

In addition to serving our own students, Olympic College will welcome transfer students from other institutions, including those within the AppConnect NW Consortium, which our program will be modeled similarly to. Articulation agreements will be developed to smooth the transition from other institutions to the Bachelor of Science in Computer Science program. Specifically, a pathway for graduates of the statewide CS DTA degree will be developed for students wishing to enter their junior year.

Criteria 6

Efforts to maximize state resources to serve place-bound students.

How the program will serve place-bound working adults

Community and technical college students generally face more barriers than traditional college students do. Financial constraints, work and family obligations can all work to restrict student mobility and prevent them from accessing the educational opportunities that currently exist. Traffic congestion into, out of, and within the Kitsap Peninsula can make traveling to educational opportunities outside of the Peninsula problematic. Olympic College would be making a Bachelor of Science in Computer Science available to place-bound working adults for whom this would otherwise be out of reach. Classes will be offered in a variety of modalities including online, on campus, and hybrid and will be supported with eLearning resources through Canvas (the current learning management system). The goal is to establish options for working adults and students so that they may be able to complete the program while still fulfilling their current responsibilities (ex. working, taking care of family, etc.).

Similar programs in the regions/options for collaboration

There are many regional Bachelor of Science in Computer Science options available through public and independent institutions. The UW (University of Washington) and WSU systems, The Evergreen State College, regional universities (CWU, EWU, WWU), private institutions including Seattle Pacific University, St. Martins University, and Seattle University as well as proprietary institutions like City U and Digipen all offer Computer Science degrees. Yet these institutions are not producing enough graduates to satisfy industry demand (WSAC 2020).

Furthermore, the competition for seats at public institution programs is extremely tight with many qualified students being denied entry every year. Private and proprietary institutions have higher acceptance rates, but the tuition cost is much higher. When one examines the number of existing programs available to students and then removes the higher cost private institutions or proprietary colleges, the list of options for students becomes dramatically smaller. Place bound working adults are looking for careers that earn a family wage and computer science is a high wage industry. This Bachelor of Science in Computer Science degree will provide an opportunity for the place bound, working adults in the Kitsap Peninsula to learn valuable skills that will result in high wage/family wage jobs.

The closest existing regional programs related to this degree are in Tacoma. Olympic College is open to partnerships or collaborations with these and other programs that will result in efficiency for the system and better opportunities for students. As we build this pathway, continuing education beyond the bachelor's degree, leading to graduate opportunities, will need to be explored.

Olympic College has had informal discussions with the AppConnect NW Consortium members about opportunities for future collaboration. By using similar program and course outcomes as the AppConnect NW Consortium, we hope for Olympic College students to be able to freely transfer to and from other consortium schools and to share faculty resources with these schools, particularly by allowing students to take elective coursework at any of consortium schools. This collaboration amongst so many community and technical colleges will remove barriers for students and increase completion rates.

Olympic College also intends to work closely with the Center of Excellence (COE) for Information & Computing Technology. The Center collaborates with community and technical colleges and industry on IT workforce trends, required skills, program alignment with industry demand, and building technical career pathways for students. The COE works to leverage tools, resources, and industry relationships throughout the state to create more efficiency in the community and technical college system. COE resources include: timely labor market data, professional development opportunities for IT and Computer Science faculty, partnership with the national IT Skill Standards project, and engagement with the Washington Technology Industry Association, Technology Alliance, Technology Alliance Group for Northwest Washington, and other regional technology industry associations. The COE can support Bachelor of Science in Computer Science program development by hosting shared curriculum resources, facilitating industry involvement in the classroom, and advocating for internship and career opportunities for Bachelor of Science in Computer Science students.

Unique Aspects of the Proposed Bachelor of Science in Computer Science Degree

The proposed Bachelor of Science in Computer Science degree will have many unique aspects that set it apart from existing Bachelor of Science in Computer Science degrees in the State:

- Passionate faculty – Olympic College has four computer science-competent faculty members with graduate degrees who are in the relatively early stages of their careers (one has recently received tenure and 3 are halfway through their tenure process). These faculty are eager to cultivate the next generation of computer scientists and share their industry & academic experience with students.
- Flexible program design – This Bachelor of Science in Computer Science will utilize multiple modalities to create learning opportunities that will be beneficial to a broad range of students.
- Extensive Student Support Services – Olympic College is experienced in serving non-traditional student populations. The College has programs and services that can offer financial, academic, and personal support services. Furthermore, Olympic College is considering implementing a robust mentorship program, Mentors in Tech, alongside other AppConnect NW consortium members. This program, established by Microsoft Teals founder Kevin Wang, serves to support students from non-traditional IT programs in successfully securing internships and jobs through guidance and interview preparation.
- Focus on Workforce Skills – As a community and technical college, preparing students for jobs in the workforce has always been a focus for Olympic College. While the proposed

Bachelor of Science in Computer Science degree will prepare students for a pathway towards graduate school, the program will particularly emphasize skills important in the workplace.

Criteria 7

Promoting equitable opportunities for students, including historically marginalized students.

Student recruitment and support implementation plan

Olympic College will actively recruit traditionally underrepresented students from local high schools, including students of color and low-income students, into this baccalaureate-level program. Having a local bachelor's degree program would provide greater access for many subgroups of high school students who, for a variety of reasons, find it difficult to move or commute for a degree. In our local districts 1328 high school students took computer science classes in 2021-22, representing 7.62% of all high school students. Many underrepresented groups take these classes near the average rate. (Table 8). A pathway, with outreach and dual credit classes, could help provide opportunities and equity for low-income residents and historically marginalized students.

Olympic College will leverage relationships with K-12 and STEM-focused education programs to recruit traditionally underrepresented students into the first year of the four-year pathway. The program design will be a key component in recruiting traditionally underrepresented students. Students will have access to a local, affordable, high quality baccalaureate program. The program cost will be significantly less than a four-year university in the region. The program will use recommended cohort models to support working adults. Wrap around support services, including academic planning, student success skills development, navigation and advising, tutoring, and financial aid will increase persistence through the program.

Olympic College has recently applied to the MentorConnect program which assists institutions in writing successful National Science Foundation (NSF) Advanced Technological Education (ATE) grants. Olympic College plans to seek an NSF ATE grant to support the recruitment and retention of traditionally underrepresented students in Computer Science.

Currently, Olympic College's student body includes 37.5% students of color and 25% economically disadvantaged students. In efforts to reach the underrepresented students that are already enrolled, Olympic College plans to offer an introductory CS course which combines exposure to basic computer science concepts with an exploration of the impacts of software in society including racism, sexism, accessibility, privacy, and western hegemony. This strategy is supported by a preponderance of research that shows that engaging underrepresented students in social justice and equity issues surrounding tech increases their interest and participation in computer science moving forward (Madkins 2020).

Table 8, K12 2021-2022 High School CS enrollment demographic data for Kitsap Peninsula

Student Group	Total 9 to 12 Students	CS Enrollments using CIP or State Course Code	% Group Enrolled CS
ELL	**17437**	**1328**	**7.62%**
English Language Learners	586	34	5.80%
Non-English Language Learners	16851	1294	7.68%
Federal Eth Race	**17437**	**1328**	**7.62%**
American Indian/ Alaskan Native	184	12	6.52%
Asian	636	55	8.65%
Black/ African American	413	27	6.54%
Hispanic/ Latino of any race(s)	2376	166	6.99%
N/A	264	21	7.95%
Native Hawaiian/ Other Pacific Islander	202	11	5.45%
Two or More Races	2096	160	7.63%
White	11266	876	7.78%
FRL	**17437**	**1328**	**7.62%**
Low-Income	5591	372	6.65%
Non-Low Income	11846	956	8.07%
Gender	**17437**	**1328**	**7.62%**
Female	8468	286	3.38%
Gender X	95	10	10.53%
Male	8874	1032	11.63%
Grade Level	**17437**	**1328**	**7.62%**
9	4168	385	9.24%
10	4241	371	8.75%
11	4515	281	6.22%
12	4513	291	6.45%
SWD	**17437**	**1328**	**7.62%**
Students with Disabilities	2291	128	5.59%
Students without Disabilities	15146	1200	7.92%

(From 2021-22_K–12 Computer Science Education Data Summary Report.xlsx. Includes districts 18100, 18303, 18400, 18401,18402, 23403, 27401)

Barriers and challenges for students of color and low-income students

Traditionally underrepresented students face many barriers to accessing a baccalaureate-level program. Many students are place-bound, have childcare, and work obligations, may lack basic skills and an academic plan, and lack financial resources for a baccalaureate program. Financial concerns negatively influence retention of students, especially low-income students and financial constraints are often the biggest barriers to full-time enrollment. Moreover, students who attend college full-time and take higher credit loads are more likely to complete a degree. In contrast, part-time enrollment in college has a negative impact on degree completion. Balancing school with family responsibilities, childcare costs, and work schedules are cited as reasons for part-time enrollment, extended completion timeline, and/or not completing a degree.

Students of color and low-income students have experienced significant and inequitable impacts of the COVID-19 pandemic. Many have been forced to choose between family responsibilities, work obligations, and school. This program meets the unique needs of this population by providing an affordable education that recognizes their commitments outside of school and will prepare them for meaningful, flexible, and rewarding careers in the knowledge economy. We also plan to work with local employers to offer internship opportunities which could provide additional financial support for low-income students and help these students enter the workforce sooner after graduation.

Resources and supports for students of color and low-income students

The proposed Bachelor of Science in Computer Science will be affordable and accessible to local students. Wrap around support services include new student orientation, new student advising, ongoing advising sessions (group and individual), faculty and staff referrals to campus resources, career planning resources, community referrals, mentoring and academic tutoring. Financial aid resources will be available. The total cost of the program to the student will be approximately 50% lower than four-year universities in the region, and significantly lower than at private institutions. Factoring in the additional cost of housing, compared to a student who might live at home while attending Olympic College, the total cost of attending will be over 75% lower than four-year universities in the region.

Applied Baccalaureate Degree Supply/Demand Gap Rubric for Colleges

The goal of this rubric is to help you build a program that will meet the needs of your community. We have given you options about the information you can use to support the need for your new program. Also, the guidelines for estimating the supply/demand gap are similar to the ones we use for other program applications. We hope this makes the rubric more familiar to you. If not, contact the Director of Transfer Education at SBCTC for further information.

The application needs to show the information below for program approval:

- employers demand* the level of technical training proposed within the program, making it cost-effective for students to seek the degree;
- lead to high wage-earning jobs; and
- the proposed program fills a gap in options available for students because it is not offered by a public four-year institution of higher education in the college's geographic area.

<table>
<tr><td colspan="2">College Name: Olympic College</td></tr>
<tr><td colspan="2">Program Name: Bachelor of Science in Computer Science</td></tr>
<tr><td colspan="2">Select one: Existing Occupation X☐ or Emerging Occupation ☐</td></tr>
<tr><td colspan="2">If local demand/supply information is available for the specified degree program and target occupation(s),**</td></tr>
<tr><td>For demand: Provide local/regional demand data for the targeted occupation job title(s) from traditional labor market data, industry data, trade association data, or other transactional data. (Provide absolute numbers, not just percentages)</td><td>Job Titles:
Computer & Information Systems Managers
Information Security Analysts
Computer & Information Research Scientists
Computer Network Support Specialists
Database Architects
Computer Programmers
Software Developers
Software Quality Assurance Analysts and Testers
Web and Digital Interface Designers
Computer Occupations, All Others
Data Scientists
Computer Science Teachers, Postsecondary
State and Regional Data:
Demand in occupations for graduates of 4-year computer science programs statewide is predicted to grow 20% from 2023 to 2033 with average annual openings of 17,804. (Table 1, Lightcast, Occupations by Location, 9/26/23.) This table includes all 13 occupations associated with the CIP Code 11.0701 (Table 1a, https://nces.ed.gov, CIP SOC crosswalk). In Kitsap and Mason counties alone, Lightcast data predicts 2,202 openings in these 13 occupations over the next 10 years.</td></tr>
</table>

Applied Baccalaureate Degree Supply/Demand Gap Rubric for Colleges

	Graduates of bachelor programs in CIP code 11.0701 totaled 1,122 statewide in 2021. Four-year graduates from all other related Computer and Information Sciences, General Programs totaled 1,899 for 3,021 graduates in computer and information sciences. ***(Table 2**, Lightcast Program Table for Washington State, 9/26/23)*
For supply gap: Provide data on the number of programs and the number of annual program graduates for all four-year colleges that supply your region. Is the number of current annual graduates insufficient to meet current and projected demand? (The result of demand minus supply).	With 3,021 computer-related bachelor graduates and 17,804 average annual openings, Washington state has a supply gap of over 14,000. In the Olympic College service area of Kitsap and Mason counties, there were 12 computer-related BAS graduates in 2023 to supply a demand of over 200 average annual openings for occupations typically looking for a 4-year or higher computer science degree. *(**Table 3**, Lightcast Occupation Table for Kitsap/Mason, 9/26/23)* While the growth in computer-related occupations has been strong in Washington for years, there is an emerging need in our local area. In Kitsap and Mason counties, the four top growth occupations by percentage for 2023-2033 are in the computer and mathematical science group (SOC code 15-0000) (**Table 4**). *(Lightcast Occupation Table, 9/26/23)* Even the estimates from Washington Employment Security Department (ESD) show that graduates for these occupations are in demand in the regions surrounding Olympic College, as evidenced by the data for software developers in **Table 5** *(Washington ESD Occupations In Demand List, 9/26.23)*. In sum, the demand for software developers and other computer science-related occupations far outstrips supply, with Washington ESD estimates of regional job openings for only software developers to be 39,556 annually with 179 openings annually in Kitsap County alone. To supplement these figures, the AppConnect consortium conducted an employer survey to which twenty employers responded in 2022. Respondents are employed by firms employing software developers including global organizations like Amazon and MoxieIT, and local companies like AIS Software and Minisoft, Inc. Overall, the respondents confirm the need for baccalaureate prepared software developers. Highlights of the survey include – ● 89% anticipate a demand for Software Developers ● 89% expect their developers will work partially or fully remote ● 67% have trouble finding qualified candidates ● 100% believe the proposed Bachelor of Science in Computer Science program will improve applicant pools

	Some of their comments include – ● *"We struggle to get good candidates with adequate programming skills."* ● *"...it's difficult finding qualified, well educated, knowledgeable software developers that have a solid understanding of...programming and that have a B.S. in either Computer Science or Electrical Engineering."* ● *"Too many of our potential applicants are taken by higher-paying jobs in the big-cities (Seattle, Portland, San Francisco, etc.). It's challenging to find workers who will accept less pay but live in Bellingham where the lifestyle is more relaxed (and cheaper) than Seattle."* The last comment spotlights a strength of our community and technical college system where our students and graduates prefer to stay local. Obtaining a bachelor's degree in computer science at their local college, where they can then move on to a position at a local employer, highlights the match between our proposal and employer's needs. In sum, there is a workforce need for more software developers in the region employing Olympic College graduates. Olympic College graduates will not be in competition with similar graduates from other institutions as the employment gap is overwhelming. Washington State is in dire need of more Software Developers and increasing educational capacity in Computer Science is warranted.
OR, if demand information is not available or it is a new/emerging/changing occupation, **	
For demand: Provide employer survey results for local demand for the targeted occupation job title(s) to support the demand and education level for the program. Survey requirements are listed below.	

Applied Baccalaureate Degree Supply/Demand Gap Rubric for Colleges

For supply gap: Provide employer survey results for local supply for the targeted occupation job title(s) to support that there is a gap in the number of qualified applicants available to fill jobs. Survey requirements are listed below.	
OR, if based on a statutory or accreditation requirement, **	
Select one: Statutory Requirement ☐ **or** Accreditation Requirement ☐	
For demand: Provide labor market information on the current education requirements for the job, including evidence of recent openings for requiring or preferring bachelor's degrees or above. Cite the statute or certifying body, your proposed program is based upon that has specified a bachelor's or above in the field is needed.	
For supply gap: Provide employer survey results for local supply for the targeted occupation job title(s) to support that there is a gap or that employers anticipate a gap in the number of qualified applicants that will be available to fill jobs with the new requirements. Survey requirements are listed below.	
* Demand is defined by state law as "***an occupation with a substantial number of current or projected employment opportunities.***" **Applications may include information related to more than one option (i.e., labor market data to support the local demand for the occupation and a local employer survey to support that there is a gap in the number of qualified applicants available to fill jobs).	

Survey Requirements:

To verify/support supply demand your survey should include at least 25 individual employer responses. If there are not 25 employers in the area, you should cover the employers who comprise at least 75% of the identified employment base. Provide a copy of the survey with the aggregated results as an appendix. The **survey must address** the following general questions (you may edit the wording to suit your survey):

1. **Do you have anticipated demand for application job title(s)? (If this is a new or emerging job title, include a brief description of specific job duties.)**
2. **If there is demand, how many positions do you currently have open? How many do you anticipate having open in the next 3 years?**
3. **Is a bachelor's degree a requirement or preference for this position? Requirement: Y or N Preference: Y or N**
4. **Do you have difficulty finding Bachelor's degree level applicants for this position? (If yes- explain)**
5. **Will the proposed program assist you in finding qualified applicants to fill the position(s)?**

Applied Baccalaureate Degree Supply/Demand Gap Rubric for Colleges

Table 1: Jobs related to 11.0701 CIP code in Washington state, Kitsap & Mason counties

	2023 Jobs	2033 Jobs	2023 - 2033 Change	2023 - 2033 % Change	Avg. Annual Openings	Median Hourly Earnings	Avg. Hourly Earnings
Washington	183,605	220,109	36,504	20%	17,804	$68.14	$68.98
Kitsap County	2,019	2,467	448	22%	205	$51.62	$54.85
Mason County	133	179	46	35%	16	$48.03	$53.02

Table 1a: SOC codes for CIP 11.0701)

SOC Code	SOC Title
11-3021	Computer and Information Systems Managers
15-1212	Information Security Analysts
15-1221	Computer and Information Research Scientists
15-1231	Computer Network Support Specialists
15-1243	Database Architects
15-1251	Computer Programmers
15-1252	Software Developers
15-1253	Software Quality Assurance Analysts and Testers
15-1254	Web Developers
15-1255	Web and Digital Interface Designers
15-1299	Computer Occupations, All Other
15-2051	Data Scientists
25-1021	Computer Science Teachers, Postsecondary

Applied Baccalaureate Degree Supply/Demand Gap Rubric for Colleges

Table 2: Bachelor's degree completions and jobs for 11.0000 CIP codes in Washington state, 2021

CIP Code	Description	Statewide Bachelor Completions 2021	Annual Openings	Avg. Hourly Earnings	2023 Jobs	2033 Jobs	% Chg
11.0701	Computer Science	1,122	22,321	$64.43	234,144	276,674	18%
11.0000	All other Computer and Information Sciences	1,899	406,986	$58.91	4,178,442	4,869,502	17%
Totals		**3,021**	**429,307**	**$62.41**	**4,412,586**	**5,146,176**	**17%**

Applied Baccalaureate Degree Supply/Demand Gap Rubric for Colleges

Table 3: Occupations associated with CIP 11.0701 wages and openings for Kitsap & Mason counties

SOC	Description	Median Hourly Earnings	Avg. Hourly Earnings	Avg. Annual Openings	Typical Entry Level Education
11-3021	Computer and Information Systems Managers	$68.40	$72.12	24	Bachelor's degree
15-1212	Information Security Analysts	$45.60	$46.83	10	Bachelor's degree
15-1221	Computer and Information Research Scientists	$50.99	$53.78	9	Master's degree
15-1242	Database Administrators	$39.76	$41.72	5	Bachelor's degree
15-1243	Database Architects	$54.45	$53.96	3	Bachelor's degree
15-1251	Computer Programmers	$42.41	$52.05	5	Bachelor's degree
15-1252	Software Developers	$70.55	$63.79	83	Bachelor's degree
15-1253	Software Quality Assurance Analysts and Testers	$47.62	$48.58	8	Bachelor's degree
15-1254	Web Developers	$25.46	$35.08	6	Bachelor's degree
15-1255	Web and Digital Interface Designers	$35.07	$38.20	10	Bachelor's degree
15-1299	Computer Occupations, All Other	$47.47	$48.65	71	Bachelor's degree
15-2051	Data Scientists	$55.24	$59.33	9	Bachelor's degree
Totals			**$51.17**	**244**	

Applied Baccalaureate Degree Supply/Demand Gap Rubric for Colleges

Table 4: Top growth occupations desiring a 4-year degree in Kitsap & Mason counties

SOC	Description	2023 Jobs	2033 Jobs	2023 - 2033 % Change	2023 - 2033 Openings	Avg. Annual Openings
15-2051	Data Scientists	51	72	42%	65	6
15-2031	Operations Research Analysts	34	45	34%	38	4
15-1252	Software Developers	661	882	33%	734	73
15-1253	Software Quality Assurance Analysts and Testers	67	88	31%	76	8

Table 5: Employment demand for software developers

WFD Area	Estimated Employment	Long Term Growth Rate	Avg Annual Openings 2020-30	Status	Avg Hourly Wage
Olympic Consortium WDA: Kitsap, Clallam, Jefferson Counties	462	2.73%	179	In Demand	$51.48
Pacific Mountain WDA	1,929	1.62%	677	In Demand	--
Seattle King WDA	92,727	3.35%	37,198	In Demand	$62.64
Snohomish WDA	3,974	-0.45%	1,099	Balanced	--
Tacoma-Pierce WDA	1,070	2.51%	403	In Demand	$53.59
Total	**100,162**		**39,556**		

Audit Trail

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Signer

Email: mcockroft@olympic.edu
IP Address: 134.39.28.236

Signature

Event	User	Time	IP Address
Upload document	wfox@olympic.edu	10/30/23 7:06:39 PM EDT	134.39.31.42
Open document	wfox@olympic.edu	10/30/23 7:06:46 PM EDT	134.39.31.42
Close document	wfox@olympic.edu	10/30/23 7:07:31 PM EDT	134.39.31.42
Send for signing	wfox@olympic.edu	10/30/23 7:09:25 PM EDT	134.39.31.42
Resend for signing	wfox@olympic.edu	10/31/23 11:23:04 AM EDT	134.39.31.42
Resend for signing	wfox@olympic.edu	10/31/23 6:17:47 PM EDT	134.39.31.42
Open document	wfox@olympic.edu	10/31/23 6:17:59 PM EDT	134.39.31.42
Close document	wfox@olympic.edu	10/31/23 6:18:09 PM EDT	134.39.31.42
Open document	mcockroft@olympic.edu	10/31/23 6:19:27 PM EDT	134.39.28.236
Sign document	mcockroft@olympic.edu	10/31/23 6:22:34 PM EDT	134.39.28.236
Close document	mcockroft@olympic.edu	10/31/23 6:22:34 PM EDT	134.39.28.236