

<b>Institution</b>
Western Washington University
<b>Project Title</b>
Sciences Building Addition (STEM I)
<b>Project Location (City)</b>
Bellingham

**Postscript:**

**The Sciences Building Addition (STEM I) project was included in the Sciences Building Addition and Renovation project. The project as a whole was previously scored in the last biennium and funding for the design of the Addition was provided in the 2017-19 biennium. For the 2019-21 biennium, Western Washington University (Western) is requesting construction funding for the Addition and design funding for the Renovation. After consultation with the Office of Financial Management, we are bifurcating the original proposal into two – one for the Addition (Sciences Building Addition) and the other for the Renovation (Environmental Studies Renovation).**

**1. Problem Statement:**

Western Washington University (Western) is the state's third largest public university, producing nearly 3,800 degrees each year, over 35 percent of which are in STEM and other high-demand fields. Western has a growing national reputation for excellence and the success of our graduates. Out of more than 600 institutions, Western ranks in the top ten nationally for graduates who go on to earn research doctorates. Western is also consistently recognized as the top master's granting institution in the Pacific Northwest by U. S. News and World Report. Specific to STEM fields, Western's College of Science and Engineering is recognized as having one of the strongest undergraduate-based research programs in the nation, supported by over \$11 million in annual external grant funding. Western's STEM degree programs provide students a strong interdisciplinary scientific preparation with ample opportunities for hands-on experiences with award-winning faculty across the STEM fields.

By 2024-25, Western aims to increase the number of degrees produced annually from 3,783 to 4,500, including a 17.5 percent increase in degrees that meet the State's highest needs. In order to accommodate such enrollment growth and to meet existing student demand and space constraints, Western needs to increase classroom and lab space on campus, particularly in the STEM fields. The proposed Sciences Building (STEM I) is the critical first step in addressing the University's most urgent space limitations.

Over the past decade, Western has experienced unprecedented growth in enrollment for almost every STEM major, and the University continues to develop new degree programs in STEM in order to support student demand and the needs of the workforce. However, Western's existing science instructional and research space is limited, and is unable to meet current demand. This situation is compounded by a significant increase in demand for introductory science and mathematics courses from non-STEM majors, and the hiring of new STEM faculty with resulting pressure for faculty support space. Without new space to accommodate prior and future STEM growth, Western is at risk of failing to meet student and job-market demands. Furthermore, Western students majoring in STEM fields will continue to experience waitlists in required courses, which will continue to prolong their time to graduation.

Additionally, Western is limited in flexible and collaborative teaching and research space that encourages student-faculty participation and student-student interaction. With new and evolving pedagogies that focus more on multi-disciplinary and interactive learning modes, Western needs to accommodate these types of spaces in order to provide a modern and flexible learning environment that meets the needs of a rapidly changing job market.

## 2. Project Description

Western is proposing to construct an approximately 50,000 gross square foot stand-alone science facility to address urgent classroom and lab space limitations in several STEM degree programs. The new facility will consist of teaching labs, wet research labs, and active learning spaces in Biology, Chemistry and several other STEM degree programs. The new sciences facility is estimated to alleviate existing bottlenecks in STEM courses and accommodate approximately 70 new STEM and high-demand degrees within four years after completion. The new facility will also provide a small amount of building support and office space and require utilities to be extended to the site. The building will be located on the main campus adjacent to Haskell Plaza, the main sciences center on campus.

## 3. History of the project or facility:

The project proposal was initially proposed to the State in 2015-17 as the first component of the Sciences Building Addition & Renovation. Within that project, the first-phase addition facilitated the second-phase renovation of the Environmental Sciences Center (ESC), a large but aging and marginally defunct science building built in 1973. The State was unable to fund the project pre-design in 2015-17 and, faced with mounting enrollment bottlenecks in its STEM programs, Western proceeded to self-fund the pre-design component of the project.

Unprecedented growth in STEM majors necessitated an urgent rethinking of the University's plans for STEM degree growth and how that will be supported over time. Therefore, after the completion of the pre-design study in the spring of 2016, Western proposed State funding in the 2017-19 Capital Budget for the design stage of the Sciences Building and proposed making renovation of the Environmental Sciences Center a stand-alone project. The final 2017-19 Capital Budget included \$6 million for the design of the Sciences Building. The decoupling of the Addition from the Renovation and the subsequent strategic realignment of capital investment in support of program growth frames our 2019-21 Capital Project Proposals and the priorities of the Institution:

**STEM 1:** A stand-alone, approximately 50,000 GSF science instruction building formerly known as the Addition Component of the Sciences Building Addition and Renovation project.

**STEM 2:** The Renovation of the 115,000 GSF ESC to accommodate Environmental Sciences, Toxicology, Marine Sciences and Geology and components of the Energy Studies program.

**STEM 3:** A 50,000 GSF facility to accommodate student demand and growth within Western's Computer Sciences & Electrical Engineering programs

**Classroom & Lab Upgrades:** A campus-wide program to upgrade general instructional space and specialized class-labs

**Consolidated Academic Support Services Facility:** A freestanding building on the periphery of the campus that will accommodate non-student/academic operations. The project will free up space on campus and ensure that academic & student services remain in the campus core.

#### **4. University programs addressed or encompassed by the project:**

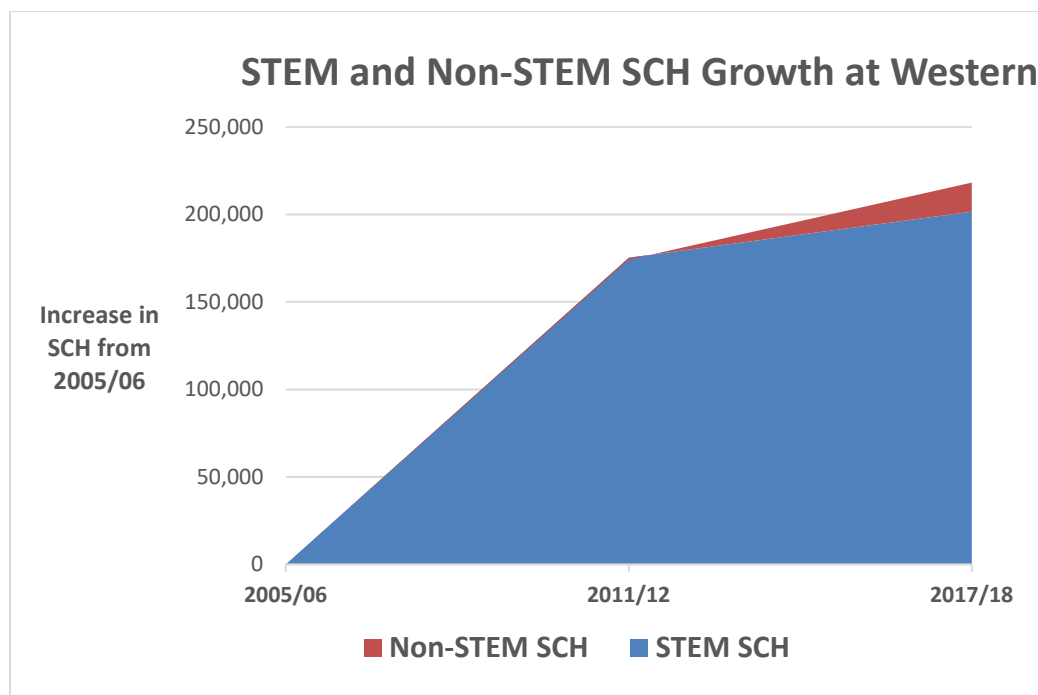
The increased availability of specialized teaching lab space within the STEM I building is targeted to increase instructional capacity in Biology and Chemistry, both of which are currently facing intense enrollment pressures on space-limited courses that serve majors in these and several other programs on campus. The project will also create space for a new six-year initiative that addresses the large increase in students that wish to pursue careers in allied health and the critical State-wide need for qualified health professionals and graduates prepared to enter biotechnology and biomedical research labs. The six-year initiative would create a new B.A. Biochemistry degree at Western. Its creation will provide a viable 2-year path to graduation for transfer students coming to Western to complete focused degrees to prepare them for success in allied healthcare careers. The initiative will also provide twelve new tenure-track positions, with six new faculty in the department of Biology and in the department of Chemistry, as well as new technical staff lines in both departments. The initiative enables Western to increase instructional capacity in high demand courses for students interested in careers in allied health, biotechnology, and biomedical research. The scope of the proposed six-year initiative is far-reaching in its benefits to departments across the campus as both the Chemistry and Biology departments are feeder routes into several other STEM majors, including, but not limited to, Health & Human Development, Neuroscience, and Environmental Sciences. Additionally, the six-year initiative will allow Western to increase its student advising capacity via new administrative staff lines.

#### **5. Integral to Achieving Statewide Policy Goals:**

**Provide degree targets, and describe how the project promotes improvement on 2015-16 degree production totals in the OFM four-year public dashboard.**

- a. **Indicate the number of bachelor's degrees awarded at the close of the 2015-16 academic year.**
  - **3,317** bachelor degrees were awarded at the close of the 2015-16 academic year.
- b. **Indicate the number of bachelor's degrees awarded in high-demand fields at the close of the 2015-16 academic year.**
  - **1,137** bachelor degrees were awarded in high-demand fields at the close of the 2015-16 academic year
- c. **Indicate the number of advanced degrees awarded at the close of the 2015-16 academic year.**
  - **328** advanced degrees were awarded at the close of the 2015-16 academic year

Non-STEM Student Credit Hours (SCH) continue to comprise the largest component of Western's academic programming; however, it is not where Western is growing. The diagram below employs a zero-base to best illustrate the dramatic shift in student demand in STEM disciplines since 2005-06. In 2017-18, STEM credit hours comprised 26% of all SCH at Western, yet it also accounted for almost all of Western's SCH growth.



**6. Describe how the project promotes access for underserved regions and place-bound adults through distance learning and/or university centers:**

Western reaches place-bound residents in underserved regions through the “Western on the Peninsulas”. The Peninsulas program is administered at Western’s Center at Olympic College in Poulsbo, and through satellite locations at Peninsula College and Everett Community College. Additionally, Western has academic programs serving students on the Olympic and Kitsap Peninsulas. We offer a BA program in Environmental Policy, a BS in Environmental Science and a BA in Business Administration. The WWU cybersecurity program at Poulsbo expands access by enabling graduates of the Kitsap-Olympic region’s community colleges, Olympic College and Peninsula College, to complete Western’s BS in Computer and Information Systems Security (CISS) without relocating to Bellingham.

To facilitate these programs, distance-learning technology is integrated into our active learning spaces and will be incorporated into this STEM I project. This technology allows all on-campus courses to be available in real-time to off-site place-bound students in these satellite locations. Conversely, courses taught in those locations will be made available to students on the Bellingham Campus creating a rich, diverse, and interactive learning environment that brings together our traditional on-campus students with our more non-traditional students in these satellite locations. It will also facilitate communications between our faculty and staff across these different locations.

**7. Integral to Campus/Facilities Master Plan:**

- a. Western’s *Institutional Master Plan* (IMP) approved by the Board of Trustees in October 2001 and adopted as an amendment to the *Western Washington University Neighborhood Plan* by the Bellingham City Council in September 2001, will guide development of the University’s main campus until it reaches a capacity of 4,000,000 overall gross square feet of total building space. The University is currently below 3,300,000 gross square feet of total building space.

- b. The *Institutional Master Plan* begins with the Institution's heart and mission to develop and utilize the academic core as Western's highest intensity use. The core area is a conceptual 10-minute walk-zone situated deep within the campus. It is strongly pedestrian focused, imbued with a sense of sanctuary, and protected from off-campus influences. While the IMP will increase the overall existing built density, the academic core absorbs much of that planned growth by in-fill and modernization to accommodate all of the University's main campus academic and student service needs. It does this while retaining the desirable characteristics that define Western as it is today, including the continuity of pedestrian flow, the strong connections of the built and natural environment, the sense of a "community of learners," the visual portals to the mountains, water, and adjacent neighborhoods, and the breakdown of scale. As described above, the Sciences Building Addition will be located within the academic core. The additional square footage from this facility will not exceed the 4 million gross square foot capacity. The facility is located in IMP District 11 with land use classifications of Academic, Administrative/Support, and Open Space. (See Appendix C)

## **8. Integral to institution's Academic Programs Plan:**

By 2024-25, Western aims to increase the number of degrees produced annually from 3,783 to 4,500, including a 17.5 percent increase in degrees that meet the State's highest needs. In order to accommodate such enrollment growth and to meet existing student demand and space constraints, Western needs to increase classroom and lab space on campus, particularly in the STEM fields. The proposed Sciences Building (STEM I) is the critical first step in addressing the University's most urgent space limitations.

### **a. Meet academic certification requirements?**

This new facility will provide the appropriate research and teaching space needed for programs in biology and chemistry. Additionally, the project will provide interdisciplinary space for other programs to use in order to meet the academic needs of each department. With constantly changing accreditation requirements to meet employers' demands in the workforce, these departments will heavily rely on the new, modern space offered from this project to maintain their certification.

### **b. Permit enrollment growth and/or specific quality improvements in current programs?**

Many courses offered by the Biology and Chemistry Departments have long waitlists due to space constraints and personnel shortages (see Table 1 below). Limited access to these courses both restricts programmatic capacities and lengthens times-to-degree. Because these courses are required for our degree programs, programs in other departments, and for students in pre-health paths (regardless of their major), our capacity limitations impede students across campus. Not only do we lack the space to offer needed lab sections, we also lack the offices and research labs required by the 12 new faculty members who would teach these courses. Because of the high demand of our courses and the lack of space to increase our instructional capacity, a recent analysis by the College of Sciences and Engineering leadership concluded that the space challenges of Biology and Chemistry are the most acute in the College.

<b>Table 1. Bottleneck lecture and lab* courses in Biology and Chemistry and the student populations they primarily serve. Enrollment and waitlist numbers are for Summer 2015 through Spring 2016 (source: WWU Factbook).</b>			
<b>Course</b>	<b>2015-16 enrollment</b>	<b>2015-16 waitlist</b>	<b>Majors served</b>
BIOL 101*	1,138	196	Numerous (as GUR)
BIOL 204*	693	74	Biol, Biochem, BNS, Anth/Bio, ESCI, Pre-Health, GUR
BIOL 205*	572	78	Biol, Biochem, BNS, Anth/Bio ESCI, Pre-Health
BIOL 206*	390	65	Biol, BNS, Anth/Bio, ESCI Pre-Health
BIOL 321	236	41	Biol, Biochem, BNS, Anth/Bio
BIOL 322*	48	16	Biol
BIOL 323	177	13	Biol, Biochem, BNS
BIOL 324*	89	44	Biol, Biochem
BIOL 348*	268	118	Bio/Anth, Biocult Anth, Community Health, Kinesiology, Pre-Health
BIOL 432	132	20	Biol
CHEM 121*	1318	130	Chem, Biol, Biochem, BNS, Anth/Bio, ESCI, Pre-Health
CHEM 122*	738	21	Chem, Biol, Biochem, BNS, Anth/Bio, ESCI, Pre-Health
CHEM 123*	692	55	Chem, Biol, Biochem, BNS, Anth/Bio, ESCI, Pre-Health
CHEM 251*	171	20	Kinesiology, Pre-Health, ESCI
CHEM 351	416	223	Chem, Biol, Biochem, BNS, Anth/Bio, Pre-Health
CHEM 352	345	32	Chem, Biol, Biochem, BNS, Anth/Bio, Pre-Health
CHEM 471	123	31	Chem, Biol, Biochem, BNS, Anth/Bio, Pre-Health

c. **Permit initiation of new programs?**

The project may potentially allow Western to build out newly commissioned programs and new programs. The building will provide active learning spaces that could allow for the initiation of new STEM programs.

**9. Enrollment Growth:**

- a. Identify the number of additional full-time equivalent (FTE) state-supported students the project is expected to enable the institution to serve when the space is fully occupied. Describe the method by which the number of additional FTEs who can be accommodated by the proposed space has been calculated, and provide and explain the enrollment analysis indicating probable student demand and enrollment from project completion to full occupancy.

Western already well exceeds State target utilization for its class-laboratories; this is especially true within the departments of Chemistry and Biology where some of the highest room utilizations on campus occur. To illustrate this, over the last four years, two class labs in Chemistry have recorded weekly contact hours per seat in excess of 30 hours! These two rooms exceed the utilization of our

most heavily used general-use classrooms. The situation presents several operational and safety issues such as:

- Room preparation time is compressed and the rooms cannot be used for more complex or involved labs
- Depreciation and wear is increased but maintenance time and access is diminished
- Lab closures are difficult to manage because there are few alternative spaces available

In completing the STEM I facility our utilization objectives are twofold – 1) we wish to moderate the intensity of use in our most over-utilized labs and 2) we wish to grow our FTE student count within STEM disciplines. For STEM I we expect to operate these ten new labs at just over 18 contact hours per week per seat. This operating plan would support a net increase of 220 FTE students as well as allowing a modest reduction of use within the two aforementioned Chemistry labs.

- b. Identify how many of the additional FTE enrollments are expected to be in high-demand fields (identified in the OFM statewide public four-year dashboard) and the particular fields in which such growth is expected to occur.

Per the OFM State-wide public four-year dashboard, all of the new FTE enrollments are in high demand fields.

## 10. Availability of Space/Utilization on Campus:

Describe the institution's plan for improving space utilization and how the project will impact the following:

- a. The utilization of classroom space
- b. The utilization of class laboratory space

Utilization of classrooms and class-labs remains high at Western (see Appendix D). Of concern is the extent to which class lab utilization, particularly in STEM disciplines, are very high. To better illustrate the situation, of the 126 class labs at Western in the Fall of 2017, twenty-seven class labs operated at greater than 16 Student Credit Hours (SCH) per week per seat; fifteen class labs operated at greater than 20 SCH per week per seat; six class-labs operated at greater than 30 SCH per week per seat and two (Chemistry) labs operated in excess of 40 SCH per week per seat with the highest utilization for a class-lab being 47 SCH. The situation presents access and safety issues and drives our request to expand the availability of STEM instructional space by adding much needed teaching and research labs.

## Efficiency of Space Allocation:

- a. For each major function in the proposed facility (classroom, instructional labs, offices), identify whether space allocations will be consistent with Facility Evaluation and Planning Guide (FEPG) assignable square feet standards. To the extent any proposed allocations exceed FEPG standards, explain the alternative standard that has been used, and why. See Chapter 4.0 of the Project Evaluation Guidelines for an example. Supporting tables may be included in an appendix E.

Classroom/Lab Type	# of Room	# of Station	Proposed ASF/Static	FEPG Standard	Meets Standard
Class Lab - Biology	2	48	65	65	YES
Class Lab - Chemistry	2	48	65	65	YES
Class Lab - Molecular & Cell Biology	2	48	65	65	YES
Class Lab - Genetics	2	48	65	65	YES
Active Learning Classrooms	2	60	25	16-26	YES
Office - Faculty & Equivalents	16	16	1/100	1/140	YES
Office - Student Assistants	2	20	4/200	2/140	YES

b. Identify the following on form CBS002:

1. Usable square feet (USF) in the proposed facility **(30,000)**
2. *Gross square feet (GSF), and (50,000)*
3. Building efficiency (USF divided GSF). **(60%)**

## 11. Reasonableness of Cost:

2008 Expected Project Cost Range (55% Science Labs –Teaching and 45% Research Facility),  
with escalation to 2020:

Construction Cost

$$(\$309 \times .55 + \$440 \times .45) = \$368 \times 1.358 \text{ (escalation to 2021)} = \mathbf{\$500/GSF}$$

Project Cost

$$(\$437 \times .55 + \$623 \times .45) = 521 \times 1.358 \text{ (escalation to 2021)} = \mathbf{\$707/GSF}$$

Sciences Building Addition Estimated Costs

$$\$38,552,100/50,000 \text{ SF} = \$771/\text{SF} \text{ estimated construction cost}$$

$$\$66,500,000/50,000 \text{ SF} = \$1330/\text{SF} \text{ total project cost}$$

The estimated costs of the project are based upon similar projects currently under construction, an evaluation of local general and sub-tier contractor availability and capability and current costs for similar scope. The estimate also includes life cycle analysis recommendations for high efficiency mechanical systems and high performance envelope additions which will lower energy costs and the building's carbon generation over the life of the building.



# Sciences Building Addition

## Appendix Contents

- A. Office of Financial Management Reports (CBS002)  
Project Cost Summary/C100
- B. Environmental Studies Facility *Space Needs Assessment Summary*  
Prepared by Ira Fink and Associates, Inc.
- C. WWU Institutional Master Plan
- D. Availability of Space Table
- E. Program-related Space Allocation Assignable Square Feet Template

## Capital Project Request

2019-21 Biennium

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Version: SV 2019-21 Capital Budget Request

Report Number: CBS002

Date Run: 8/2/2018 3:10PM

Project Number: 30000768

Project Title: Sciences Building Addition &amp; Renovation

**Description**

Starting Fiscal Year: 2018

Project Class: Program

Agency Priority: 1

**Project Summary**

We are proposing to change the project title to "Sciences Building Addition (STEM I)". The Sciences Building Addition (STEM I) project was included in the Sciences Building Addition and Renovation project. Funding for the design of the Addition was provided in the 2017-19 biennium. This project will construct an approximately 50,000 gross square foot stand-alone science facility to address urgent classroom and lab space limitations in several STEM degree programs. The new facility will consist of teaching labs, wet research labs, and active learning spaces in Biology, Chemistry and several other STEM degree programs. The new sciences facility is estimated to alleviate existing bottlenecks in STEM courses and accommodate approximately 70 new STEM and high-demand degrees within four years after completion.

**Project Description**

Over the past decade, Western has experienced unprecedented growth in enrollment for almost every STEM major, and the University continues to develop new degree programs in STEM in order to support student demand and the needs of the workforce. However, Western's existing science instructional and research space is limited, and is unable to meet current demand. This situation is compounded by a significant increase in demand for introductory science and mathematics courses from non-STEM majors, and the hiring of new STEM faculty with resulting pressure for faculty support space. Without new space to accommodate prior and future STEM growth, Western is at risk of failing to meet student and job-market demands. Furthermore, Western students majoring in STEM fields will continue to experience waitlists in required courses, which will continue to prolong their time to graduation.

Additionally, Western is limited in flexible and collaborative teaching and research space that encourages student-faculty participation and student-student interaction. With new and evolving pedagogies that focus more on multi-disciplinary and interactive learning modes, Western needs to accommodate these types of spaces in order to provide a modern and flexible learning environment that meets the needs of a rapidly changing job market.

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The project proposal was initially proposed to the State in 2015-17 as the first component of the Sciences Building Addition & Renovation. Within that project, the first-phase addition facilitated the second-phase renovation of the Environmental Sciences Center (ESC), a large but aging and marginally defunct science building built in 1973. The State was unable to fund the project pre-design in 2015-17 and, faced with mounting enrollment bottlenecks in its STEM programs, Western proceeded to self-fund the pre-design component of the project.

Unprecedented growth in STEM majors necessitated an urgent rethinking of the University's plans for STEM degree growth and how that will be supported over time. Therefore, after the completion of the pre-design study in the spring of 2016, Western proposed State funding in the 2017-19 Capital Budget for the design stage of the Sciences Building and proposed making renovation of the Environmental Sciences Center a stand-alone project. The final 2017-19 Capital Budget included \$6 million for the design of the Sciences Building. The decoupling of the Addition from the Renovation and the subsequent strategic realignment of capital investment in support of program growth frames our 2019-21 Capital Project Proposals and the priorities of the Institution:

**STEM 1:** A stand-alone, approximately 50,000 GSF science instruction building formerly known as the Addition component of the Sciences Building Addition and Renovation project.

## Capital Project Request

2019-21 Biennium

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Version: SV 2019-21 Capital Budget Request

Report Number: CBS002

Date Run: 8/2/2018 3:10PM

Project Number: 30000768

Project Title: Sciences Building Addition &amp; Renovation

## Description

**STEM 2:** The Renovation of the 115,000 GSF ESC to accommodate Environmental Sciences, Toxicology, Marine Sciences and Geology and components of the Energy Studies program.

**STEM 3:** A 50,000 GSF facility to accommodate student demand and growth within Western's Computer Sciences & Electrical Engineering programs

**Classroom & Lab Upgrades:** A campus-wide program to upgrade general instructional space and specialized class-labs

**Consolidated Academic Support Services Facility:** A freestanding building on the periphery of the campus that will accommodate non-student/academic operations. The project will free up space on campus and ensure that academic & student services remain in the campus core.

The increased availability of specialized teaching lab space within the STEM I building is targeted to increase instructional capacity in Biology and Chemistry, both of which are currently facing intense enrollment pressures on space-limited courses that serve majors in these and several other programs on campus. The project will also create space for a new six-year initiative that addresses the large increase in students that wish to pursue careers in allied health and the critical State-wide need for qualified health professionals and graduates prepared to enter biotechnology and biomedical research labs. The six-year initiative would create a new B.A. Biochemistry degree at Western. Its creation will provide a viable 2-year path to graduation for transfer students coming to Western to complete focused degrees to prepare them for success in allied healthcare careers. The initiative will also provide twelve new tenure-track positions, with six new faculty in the department of Biology and in the department of Chemistry, as well as new technical staff lines in both departments. The initiative enables Western to increase instructional capacity in high demand courses for students interested in careers in allied health, biotechnology, and biomedical research. The scope of the proposed six-year initiative is far-reaching in its benefits to departments across the campus as both the Chemistry and Biology departments are feeder routes into several other STEM majors, including, but not limited to, Health & Human Development, Neuroscience, and Environmental Sciences. Additionally, the six-year initiative will allow Western to increase its student advising capacity via new administrative staff lines.

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Funding for design was appropriated in the 2017-19 capital budget. The project is currently in design and has a consultant. The facility is anticipated to be completed in December 2021.

## Location

City: Bellingham

County: Whatcom

Legislative District: 040

## Project Type

New Facilities/Additions (Major Projects)

Remodel/Renovate/Modernize (Major Projects)

New Facility: No

## Funding

Expenditures

2019-21 Fiscal Period

## Capital Project Request

2019-21 Biennium

\*

Version: SV 2019-21 Capital Budget Request

Report Number: CBS002

Date Run: 8/2/2018 3:10PM

Project Number: 30000768

Project Title: Sciences Building Addition &amp; Renovation

**Funding**

<u>Acct Code</u>	<u>Account Title</u>	<u>Estimated Total</u>	<u>Prior Biennium</u>	<u>Current Biennium</u>	<u>Reappropriations</u>	<u>New Appropriations</u>
057-1	State Bldg Constr-State	66,000,000		6,000,000		60,000,000
	<b>Total</b>	<b>66,000,000</b>	<b>0</b>	<b>6,000,000</b>	<b>0</b>	<b>60,000,000</b>

## Future Fiscal Periods

	<u>2021-23</u>	<u>2023-25</u>	<u>2025-27</u>	<u>2027-29</u>
057-1 State Bldg Constr-State				
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

**Operating Impacts**

No Operating Impact

**STATE OF WASHINGTON**  
**AGENCY / INSTITUTION PROJECT COST SUMMARY**

Agency	Western Washington University	
Project Name	Sciences Building Addition	
OFM Project Number	30000768	

**Contact Information**

Name	Rick Benner, FAIA	
Phone Number	(360) 650-3550	
Email	<a href="mailto:rick.benner@wwu.edu">rick.benner@wwu.edu</a>	

**Statistics**

Gross Square Feet	50,000	MACC per Square Foot	\$710
Usable Square Feet	30,000	Escalated MACC per Square Foot	\$771
Space Efficiency	60.0%	A/E Fee Class	A
Construction Type	Laboratories (Research)	A/E Fee Percentage	7.61%
Remodel	No	Projected Life of Asset (Years)	50

**Additional Project Details**

Alternative Public Works Project	Yes	Art Requirement Applies	Yes
Inflation Rate	3.12%	Higher Ed Institution	Yes
<a href="#">Sales Tax Rate %</a>	8.70%	Location Used for Tax Rate	Bellingham
Contingency Rate	5%		
Base Month	June-18		
Project Administered By	Agency		

**Schedule**

Predesign Start	August-15	Predesign End	June-16
Design Start	June-18	Design End	April-20
Construction Start	July-20	Construction End	December-21
Construction Duration	17 Months		

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**Project Cost Estimate**

Total Project	<b>\$61,397,927</b>	Total Project Escalated	<b>\$66,500,070</b>
		Rounded Escalated Total	<b>\$66,500,000</b>

**STATE OF WASHINGTON**  
**AGENCY / INSTITUTION PROJECT COST SUMMARY**

Agency	Western Washington University	
Project Name	Sciences Building Addition	
OFM Project Number	30000768	

**Cost Estimate Summary**

Acquisition			
Acquisition Subtotal	\$0	Acquisition Subtotal Escalated	\$0

Consultant Services			
Predesign Services	\$500,000		
A/E Basic Design Services	\$1,957,273		
Extra Services	\$1,196,000		
Other Services	\$1,805,355		
Design Services Contingency	\$272,931		
Consultant Services Subtotal	\$5,731,559	Consultant Services Subtotal Escalated	\$6,007,959

Construction			
GC/CM Risk Contingency	\$1,000,000		
GC/CM or D/B Costs	\$6,485,000		
Construction Contingencies	\$1,775,000	Construction Contingencies Escalated	\$1,934,040
Maximum Allowable Construction Cost (MACC)	\$35,500,000	Maximum Allowable Construction Cost (MACC) Escalated	\$38,552,100
Sales Tax	\$3,894,120	Sales Tax Escalated	\$4,231,837
Construction Subtotal	\$48,654,120	Construction Subtotal Escalated	\$52,873,633

Equipment			
Equipment	\$4,650,000		
Sales Tax	\$404,550		
Non-Taxable Items	\$0		
Equipment Subtotal	\$5,054,550	Equipment Subtotal Escalated	\$5,507,438

Artwork			
Artwork Subtotal	\$192,761	Artwork Subtotal Escalated	\$192,761

Agency Project Administration			
Agency Project Administration Subtotal	\$1,559,937		
DES Additional Services Subtotal	\$0		
Other Project Admin Costs	\$0		
Project Administration Subtotal	\$1,559,937	Project Administration Subtotal Escalated	\$1,699,708

Other Costs			
Other Costs Subtotal	\$205,000	Other Costs Subtotal Escalated	\$218,571

**Project Cost Estimate**

Total Project	<b>\$61,397,927</b>	Total Project Escalated	<b>\$66,500,070</b>
		Rounded Escalated Total	<b>\$66,500,000</b>

## Cost Estimate Details

Acquisition Costs					
Item	Base Amount		Escalation Factor	Escalated Cost	Notes
Purchase/Lease					
Appraisal and Closing					
Right of Way					
Demolition					
Pre-Site Development					
Other					
Insert Row Here					
ACQUISITION TOTAL	\$0		NA	\$0	

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## Cost Estimate Details

Consultant Services				
Item	Base Amount	Escalation Factor	Escalated Cost	Notes
<b>1) Pre-Schematic Design Services</b>				
Programming/Site Analysis				
Environmental Analysis				
Predesign Study	\$500,000			
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$500,000</b>	<b>1.0000</b>	<b>\$500,000</b>	Escalated to Design Start
<b>2) Construction Documents</b>				
A/E Basic Design Services	\$1,957,273			69% of A/E Basic Services
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$1,957,273</b>	<b>1.0286</b>	<b>\$2,013,251</b>	Escalated to Mid-Design
<b>3) Extra Services</b>				
Civil Design (Above Basic Svcs)	\$10,000			
Geotechnical Investigation	\$28,000			
Commissioning	\$28,000			
Site Survey	\$17,000			
Testing	\$40,000			
LEED Services	\$95,000			
Voice/Data Consultant	\$17,000			
Value Engineering	\$12,000			
Constructability Review	\$12,000			
Environmental Mitigation (EIS)	\$45,000			
Landscape Consultant	\$9,700			
LCCA	\$85,000			
Acoustical Consultant	\$45,500			
Travel & Per Diem	\$100,000			
Renderings & Models	\$40,000			
Document Reproduction	\$10,000			
Advertising	\$5,000			
AV Consultant	\$92,400			
Elevator Consultant	\$39,800			
Wind Tunnel Study	\$10,000			
Laboratory Consultant	\$0			
Interior Design Consultant	\$0			
Security Consultant	\$12,000			
Code Consultant	\$0			
Envelope Consultant	\$62,600			
Displaced Functions Consultant	\$380,000			
<b>Sub TOTAL</b>	<b>\$1,196,000</b>	<b>1.0286</b>	<b>\$1,230,206</b>	Escalated to Mid-Design
<b>4) Other Services</b>				
Bid/Construction/Closeout	\$879,355			31% of A/E Basic Services
HVAC Balancing	\$80,000			
Staffing				
On-Site Reps.	\$500,000			
Commissioning	\$100,000			



Scheduling Consultant	\$46,000			
Construction Additional A/E	\$200,000			
<b>Sub TOTAL</b>	<b>\$1,805,355</b>	<b>1.0896</b>	<b>\$1,967,115</b>	Escalated to Mid-Const.
<b>5) Design Services Contingency</b>				
Design Services Contingency	\$272,931			
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$272,931</b>	<b>1.0896</b>	<b>\$297,387</b>	Escalated to Mid-Const.
<b>CONSULTANT SERVICES TOTAL</b>	<b>\$5,731,559</b>		<b>\$6,007,959</b>	

Green cells must be filled in by user

## Cost Estimate Details

Construction Contracts				
Item	Base Amount	Escalation Factor	Escalated Cost	Notes
<b>1) Site Work</b>				
G10 - Site Preparation				
G20 - Site Improvements				
G30 - Site Mechanical Utilities				
G40 - Site Electrical Utilities				
G60 - Other Site Construction				
Overall	\$5,500,000			
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$5,500,000</b>	<b>1.0662</b>	<b>\$5,864,100</b>	
<b>2) Related Project Costs</b>				
Offsite Improvements				
City Utilities Relocation				
Parking Mitigation				
Stormwater Retention/Detention				
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$0</b>	<b>1.0662</b>	<b>\$0</b>	
<b>3) Facility Construction</b>				
A10 - Foundations				
A20 - Basement Construction				
B10 - Superstructure				
B20 - Exterior Closure				
B30 - Roofing				
C10 - Interior Construction				
C20 - Stairs				
C30 - Interior Finishes				
D10 - Conveying				
D20 - Plumbing Systems				
D30 - HVAC Systems				
D40 - Fire Protection Systems				
D50 - Electrical Systems				
F10 - Special Construction				
F20 - Selective Demolition				
General Conditions				
Overall	\$30,000,000			
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$30,000,000</b>	<b>1.0896</b>	<b>\$32,688,000</b>	
<b>4) Maximum Allowable Construction Cost</b>				
<b>MACC Sub TOTAL</b>	<b>\$35,500,000</b>		<b>\$38,552,100</b>	

<b>5) GCCM Risk Contingency</b>				
GCCM Risk Contingency	\$1,000,000			
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$1,000,000</b>	<b>1.0896</b>	<b>\$1,089,600</b>	
<b>6) GCCM or Design Build Costs</b>				
GCCM Fee	\$2,000,000			
Bid General Conditions	\$4,000,000			
GCCM Preconstruction Services	\$485,000			
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$6,485,000</b>	<b>1.0896</b>	<b>\$7,066,056</b>	
<b>7) Construction Contingency</b>				
Allowance for Change Orders	\$1,775,000			
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$1,775,000</b>	<b>1.0896</b>	<b>\$1,934,040</b>	
<b>8) Non-Taxable Items</b>				
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$0</b>	<b>1.0896</b>	<b>\$0</b>	
<b>Sales Tax</b>				
<b>Sub TOTAL</b>	<b>\$3,894,120</b>		<b>\$4,231,837</b>	
<b>CONSTRUCTION CONTRACTS TOTAL</b>				
	<b>\$48,654,120</b>		<b>\$52,873,633</b>	

Green cells must be filled in by user

## Cost Estimate Details

Equipment				
Item	Base Amount	Escalation Factor	Escalated Cost	Notes
E10 - Equipment	\$3,150,000			
E20 - Furnishings	\$1,500,000			
F10 - Special Construction				
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$4,650,000</b>	<b>1.0896</b>	<b>\$5,066,640</b>	
<b>1) Non Taxable Items</b>				
Other				
Insert Row Here				
<b>Sub TOTAL</b>	<b>\$0</b>	<b>1.0896</b>	<b>\$0</b>	
<b>Sales Tax</b>				
<b>Sub TOTAL</b>	<b>\$404,550</b>		<b>\$440,798</b>	
<b>EQUIPMENT TOTAL</b>	<b>\$5,054,550</b>		<b>\$5,507,438</b>	

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## Cost Estimate Details

Artwork					
Item	Base Amount		Escalation Factor	Escalated Cost	Notes
Project Artwork	\$0				0.5% of Escalated MACC for new construction
Higher Ed Artwork	\$192,761				0.5% of Escalated MACC for new and renewal construction
Other					
Insert Row Here					
ARTWORK TOTAL	\$192,761		NA	\$192,761	

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## Cost Estimate Details

Project Management					
Item	Base Amount		Escalation Factor	Escalated Cost	Notes
Agency Project Management	\$1,559,937				
Additional Services					
Other					
Insert Row Here					
PROJECT MANAGEMENT TOTAL	\$1,559,937		1.0896	\$1,699,708	

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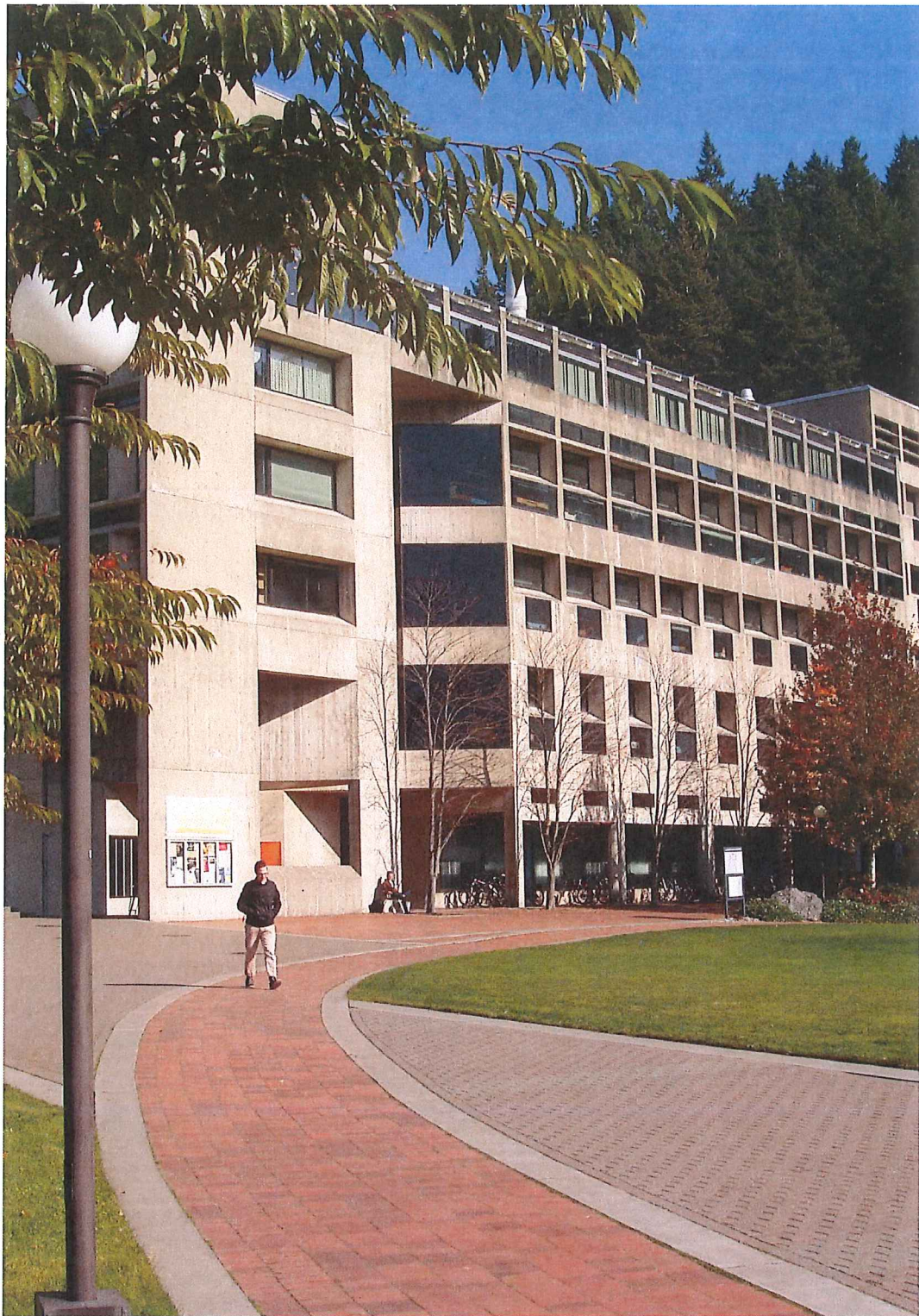
## Cost Estimate Details

Other Costs					
Item	Base Amount		Escalation Factor	Escalated Cost	Notes
Mitigation Costs					
Hazardous Material					
Remediation/Removal					
Historic and Archeological Mitigation					
Plan Review	\$125,000				
M & O Assist	\$80,000				
OTHER COSTS TOTAL	\$205,000		1.0662	\$218,571	

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# **Appendix B**





Ira Fink and Associates, Inc.

Environmental Studies Center. The Environmental Studies Center has 111,145 gross square feet and 63,526 assignable square feet.

## EXECUTIVE SUMMARY

### Space Needs Assessment

- This study is a broad-based, conceptual space needs assessment of the College of Sciences and Technology and the Huxley College of the Environment academic units at Western Washington University.
  - One premise of the study is that enrollment growth at WWU will be slow and total campus enrollment will remain at approximately 15,000.

### Primary Findings

#### *Huxley College of the Environment*

- Of the two colleges, the primary finding of the study is that the space needs of Huxley College require the most immediate attention.
  - **Facilities:** Huxley College space needs have substantially changed since the College was founded and facilities were built 40 years ago.
  - **Space:** Both Huxley College departments are consistently positioned in the lowest range of amount of space per faculty, per student, and per research unit among the WWU science and technology departments.
  - **Class Laboratories:** Moreover, the instructional laboratory spaces of the Huxley College units are in the poorest condition of the two colleges and in the most need of attention.

#### *College of Sciences and Technology*

- Among the College of Sciences and Technology (CST) units, four of the seven departments and both research units have relatively new space. Biology, Chemistry, Computer Science, Physics and Astronomy, AMSEC, SMATE are in recently renovated or otherwise relatively new space. These units have both contemporary space and space largely adequate for their needs. Geology needs better space. Mathematics needs both better space and more space. Engineering Technology requires a total review of its space and a plan to provide appropriate space for its newly designated engineering programs.

### Space for Scientific Instrumentation

- There is a collaborative desire for additional or replacement instrumentation since the instruments and their centers serve both disciplinary and interdisciplinary objectives.
  - To help guide this activity, an overall WWU plan for new and replacement instrumentation is needed.



### **Space Projections**

- To test alternatives, a series of eight separate space projection estimates, identified as Scenarios 1 through 8, were tabulated.
  - For the purposes of this study, Scenario 3 was chosen as a plausible planning projection. In Scenario 3, the faculty growth is based upon the Provost's estimates of growth from 2013 to 2018 or one new faculty member per department, whichever is greater. Faculty growth counts add one faculty member per department from 2018 to 2023.
- In Scenario 3, space needs for Huxley College would grow by 32,014 ASF from its existing 36,788 ASF in 2013 to 68,802 ASF in 2018 and an additional 3,106 ASF to 71,908 ASF in 2023.
- Space needs for CST would grow by 37,229 ASF from 231,599 ASF in 2013 to 268,828 ASF in 2018 and an additional 15,680 ASF to 284,508 ASF in 2023.
- Space needs for Scientific Technical Services would grow by an estimated 1,800 ASF based upon instrument requirements, or a growth from 7,337 ASF to 9,137 ASF.

### **Summary Report**

- This summary report is accompanied by three separate, standalone appendices, which together constitute an omnibus indicators report.
  - Appendix A is an expanded narrative, which includes a listing of space needs as identified by each department or unit.
  - Appendix B provides supplemental data, including detailed space benchmark analysis.
  - Appendix C presents the WWU room-by-room space database, both by building and by department.

# Appendix C



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# Western Washington University Institutional Master Plan

An Addendum to the Western Washington University Neighborhood Plan

Adopted by the City of Bellingham, September 24, 2001  
Ordinance #2001-09-068

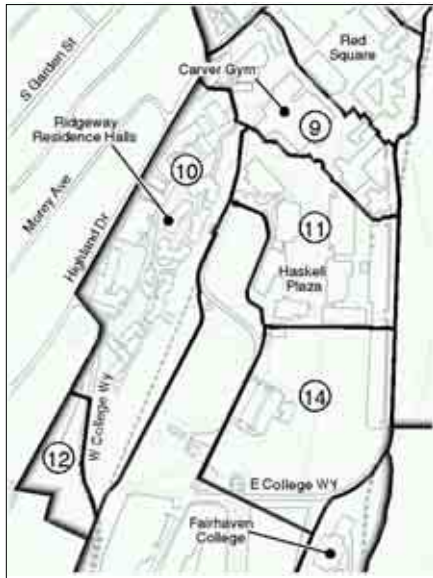


Approved by WWU Board of Trustees, October 5, 2001



## District 11

Location: Haskell Plaza (Science, Mathematics and Technology Education, Chemistry, Biology, Parks Hall, Ross Engineering Technology, Arntzen Hall, Environmental Studies)



Adjacent City Zoning: None

### 2001 Primary Land Uses:

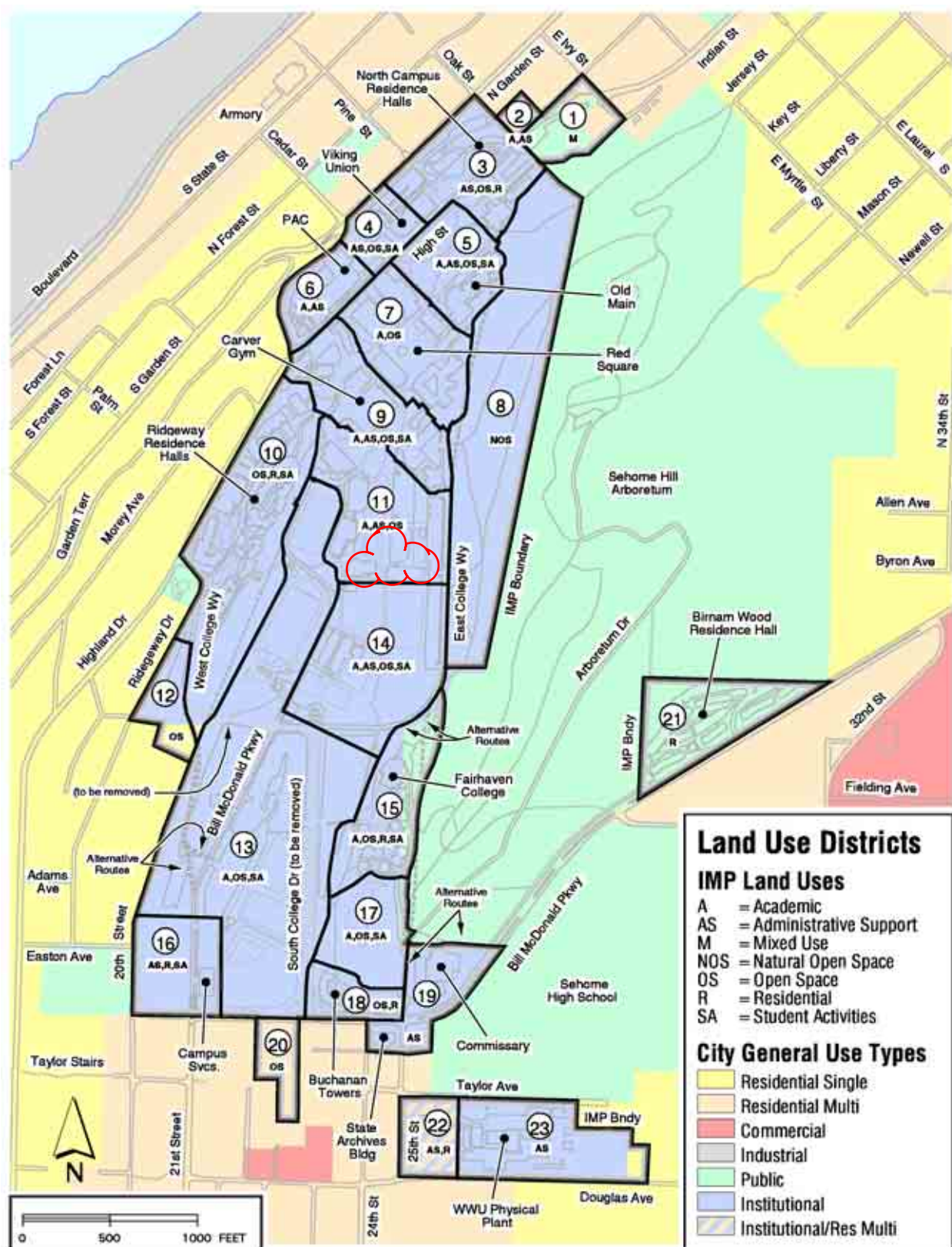
- Academic (Arntzen Hall and Greenhouse; Biology; Chemistry; Environmental Studies; Parks Hall; Science, Mathematics and Technology Education; and Ross Engineering Technology)
- Open space, sculpture sites, circulation (Haskell Plaza and Science, Mathematics and Technology Education lawn area)
- Parking

### City Land Use Designation:

- Institutional (Area 1, WWU Neighborhood Plan)

### *Institutional Master Plan* Land Use Classifications:

- Academic
- Administrative/support
- Open space



# **Appendix D**



## AVAILABILITY OF SPACE

Project Name: **Sciences Building Addition & Renovation**

Campus Location: **516 High Street, Bellingham, WA**

REQUIRED FOR ALL CATEGORIES EXCEPT ACQUISITION AND INFRASTRUCTURE.

Identify the average number of hours per week each (a) classroom seat and (b) classroom lab is expected to be utilized in Fall 2014 on the proposed project's campus. Please fill in the blue shaded cells for the campus where the project is located.

### (a) General University Classroom Utilization

Fall 2015 Weekly Contact Hours	168,519
Multiply by % FTE Increase Budgeted	0.03%
Expected Fall 2016 Contact Hours	168,570
Expected Fall 2016 Classroom Seats	7,643
<b>Expected Hours per Week Utilization</b>	<b>22.05</b>
HECB GUC Utilization Standard	22
Difference in Utilization Standard	0.22%

### (b) General University Lab Utilization

Fall 2015 Weekly Contact Hours	35,786
Multiply by % FTE Increase Budgeted	0.03%
Expected Fall 2016 Contact Hours	35,797
Expected Fall 2016 Class Lab Seats	1,946
<b>Expected Hours per Week Utilization</b>	<b>18.39</b>
HECB GUL Utilization Standard	16
Difference in Utilization Standard	14.93%

If the campus does not meet the 22 hours per classroom seat and/or the 16 hours per class lab HECB utilization standards, describe any institutional plans for achieving that level of utilization.

Utilization of classrooms and class-labs remains high at Western. Of concern is the extent to which class lab utilization, particularly in STEM disciplines, are very high. To better illustrate the situation, of the 126 class labs at Western in the Fall of 2015, twenty-seven class labs operated at greater than 16 SCH per week per seat; fifteen class labs operated at greater than 20 SCH per week per seat; six class-labs operated at greater than 30 SCH per week per seat and two (Chemistry) labs operated in excess of 40 SCH per week per seat with the highest utilization for a class-lab being 47 SCH. The situation presents access and safety issues and drives our request to expand the availability of STEM instructional space both through capital renovation & expansion (this request) but also repurposing low performing instructional space (a separate request for classroom & lab upgrades).

# **Appendix E**

**Program-related Space Allocation**  
**Assignable Square Feet Template**

Input the assignable square feet for the proposed project under the appropriate space type below:

Type of Space	Points	Assignable Square Feet	Percentage of total	Score [Points x Percentage]
Instructional Space (Classroom, Lab, Library)	6	30,000	100.0	6.0
Student Advising/Counseling	4		0.0	0.0
Childcare	1		0.0	0.0
Faculty Offices	4		0.0	0.0
Administrative	3		0.0	0.0
Maintenance/Central Stores/Student Center	4		0.0	0.0
<b>Total</b>		<b>30,000</b>	<b>100.0</b>	<b>6.0</b>