



SUBJECT	UBC Five-Year Capital Plan 2023-2024 to 2027-2028
SUBMITTED TO	Property Committee
MEETING DATE	June 16, 2022
SESSION CLASSIFICATION	Recommended session criteria from Board Meetings Policy: OPEN
REQUEST	APPROVAL REQUESTED IT IS HEREBY RESOLVED that the Property Committee recommends to the Board of Governors approval of the UBC Five-Year Capital Plan (2023-2024 to 2027-2028) for submission to the Ministry of Advanced Education and Skills Training.
LEAD EXECUTIVE	John Metras, Interim Vice-President Operations
SUPPORTED BY	Lesley Cormack, Deputy Vice-Chancellor and Principal, UBC Okanagan Gage Averill, Provost and Vice-President Academic pro tem, UBC Vancouver Karamjeet Heer, Interim Vice-President Finance Robin Ciceri, Vice-President External Relations Gail Murphy, Vice-President Research & Innovation Rehan Sadiq, Provost and Vice-President Academic pro tem, UBC Okanagan Bhushan Gopaluni, Vice-Provost and Associate Vice-President Faculty Planning pro tem Jennifer Sanguinetti, Managing Director, Infrastructure Development Rob Einarson, Associate Vice-President Finance & Operations, VPFO Michael White, Associate Vice-President Campus & Community Planning

PRIOR SUBMISSIONS

The subject matter of this submission is received annually by the Board of Governors, and was considered most recently in [June 2021](#) (OPEN SESSION).

The following Executive Summary provides a status update from the date of the most recent submission.

EXECUTIVE SUMMARY

To develop capital priorities for future consideration, the Ministry of Advanced Education & Skills Training (AEST) requests five-year capital plan submissions from all public post-secondary institutions in June of each year. Board of Governors' approval is required for the submission. The Five-Year Capital Plan provides AEST with a high-level understanding of UBC's capital requirements for new priority expansion projects, replacement/renewal projects and capital innovation projects.

The Five-Year Capital Plan submission provides an opportunity to highlight UBC's capital priorities to government for potential funding. Board approval of the Plan does not commit the University to undertake any specific project(s) nor does it commit any UBC resources. Any project that the government may choose to support would be subject to the standard UBC capital approval process.

The Board is asked to consider the proposed Five-Year Capital Plan projects within the context of the University's long-range priorities and current goals and to approve the Five-Year Capital Plan for submission to AEST.

Five-Year Capital Plan

UBC has developed a jointly funded Capital Plan which addresses core academic needs, aligns with Provincial priorities and was developed in accordance with the University's established Capital Planning Principles. The proposed projects were selected by the UBC Executive based on their potential to contribute to the University's strategic priorities, operational performance and risk mitigation priorities. These projects were prioritized from a longer list of Academic Facilities projects identified through on-going consultation with Faculties and Departments.

The full list of projects was evaluated and prioritized using an assessment model that considers how each project contributes to the University's strategic objectives and operational performance & risk mitigation objectives. The prioritization criteria are as follows:

1) University Strategic Priorities

- Support for President's Academic Excellence Initiative (PAEI) – 10% weighting
- People & Places – 15%
- Research Excellence – 30%
- Transformative Learning – 30%
- Local & Global Engagement – 15%

2) Operational Performance and Risk Mitigation

- Health & Safety (e.g. seismic risk) – 25%
- Performance & Reliability (e.g. deferred maintenance) – 25%
- Legal / Regulatory / Reputation – 25%
- Business Case – 25%

In 2019, the criteria weighting for the Strategic Priorities areas were modified, reflecting feedback from the UBC community through the course of consultation. Greater weighting was assigned to research excellence and transformative learning, and support for the President's Academic Excellence Initiative (PAEI) was added in 2020. Final selection of recommended projects for the Five-Year Capital Plan included consideration of additional factors such as alignment with government priorities, funding potential, inter-generational and inter-campus equity, current state of project development, and other strategic considerations.

Input on the capital planning process and capital priorities was received from the following groups:

- Indigenous Partners – Musqueam (UBCO has engaged in recent and extensive consultation with Okanagan Nation Alliance regarding proposed capital projects)
- UBCV Committee of Deans
- Okanagan Leadership Council (AVPs and Deans)
- UBCV Property & Planning Advisory Committee
- UBCV Senate Academic Building Needs Committee
- UBCO Senate Academic Building & Resources Committee
- Vancouver Subcommittee of the Council of Senates Budget Committee
- Alma Mater Society and UBC Students' Union Okanagan
- Graduate Student Society
- Building Operations and Energy & Water Services, UBC Okanagan Campus Operations
- UBC Properties Trust (for information)

The proposed UBC Five-Year Capital Plan includes priority academic projects totalling \$1,374 million with a request to the Provincial Government for \$1,030 million in funding. Demolitions or renovations associated with the new construction would reduce UBC’s deferred maintenance by \$174 million and improve seismic ratings on specific buildings. In addition, the progressive construction standards that UBC uses will reduce the greenhouse gas emissions as well as the energy and water use on the campuses. The approved Five-Year Capital Plan will be submitted to the Ministry of Advanced Education and Skills Training when requested, likely in July 2022.

UBC Five-Year Capital Plan: Priority Academic Projects

The UBC Five-Year Capital Plan is a short-list of strategic academic projects that support UBC’s priorities and focus on transformative learning and research excellence on both campuses. The list of projects is intended to align with Provincial government priorities such as undergraduate teaching, facility asset renewal, technology, health, and economic development. These projects are shown in the context of UBC’s current list of Facilities Priorities (Academic, Student Experience, Campus Operations Sustainability & Resilience), which is presented at the April and September Board meetings in the Capital Projects Update reports.

As careful prioritization of proposed capital projects is critical to ensure that limited capital is directed to help UBC achieve its goals, these projects have been ranked to align with UBC’s strategic and operational objectives. The top UBC Okanagan project – Interdisciplinary Collaboration & Innovation Building -- addresses the UBCO campus’ critical space shortage with a project that will bring much-needed research, teaching and informal learning space to that campus. The top two UBCV projects – Chemistry Laboratory Complex and Mathematics Building -- highlight the critical need for improved and expanded space to support foundational undergraduate teaching and to address deteriorating and vulnerable facilities. The Chemistry Laboratory Complex project is also key to advancing UBC’s climate action goals and mitigation of seismic risk. The projects proposed are shown in Table 1: UBC Five-Year Capital Plan: Academic Facilities Priorities and are described in more detail in Supplemental Materials 3: UBC Five-Year Capital Plan Academic Facilities Priorities Project Descriptions.

Table 1: UBC Five-Year Capital Plan: Academic Facilities Priorities

UBC Campus	Project	Delivery ¹	Cost in \$ millions	Proposed Funding \$ millions	Request to AEST in \$ millions	Reduced Deferred Maintenance in \$ millions
Vancouver	Chemistry Laboratory Complex ²	Sept-26	\$286	Government \$214 UBC \$ 72	\$214	\$96.5
Okanagan	Interdisciplinary Collaboration & Innovation Building (ICI)	Jan-25	\$109	Government \$ 82 Fundraising \$ 10 UBC \$ 17	\$82	NA
Vancouver	Mathematics Building ²	Sep-28	\$126	Government \$ 95 UBC \$ 31	\$95	\$51.9
Vancouver	Medicine One	Sep-28	\$567	Government \$425 UBC \$ 62	\$425	NA
Vancouver	Applied One ²	Sep-29	\$285	Government \$214 UBC \$ 71	\$214	\$25.3
	Total		\$1,374		\$1,030	\$173.7

1 - These target completion dates assume project funding approval by March 31, 2023.

2 - The construction of each of these buildings allows UBC to address one or more of its higher risk seismic buildings on the Vancouver campus.

PRESENTATIONS

1. UBC Five Year Capital Plan 2023-2024 to 2027-2028

SUPPLEMENTAL MATERIALS (optional reading for Governors)

1. Academic Facilities Priorities
2. Student Experience Projects and Campus Operations, Sustainability & Resilience Projects
3. UBC Five-Year Capital Plan Academic Facilities Priorities Project Descriptions



UBC Five-Year Capital Plan 2023-2024 to 2027-2028

June 16, 2022

Jennifer Sanguinetti

Managing Director, Infrastructure Development



Introduction and summary



Comprehensive annual capital planning process:

- In accordance with Capital Planning Principles
- In alignment with Provincial priorities
- Opportunity to highlight UBC's capital priorities to government for potential funding
- Will be submitted to AEST in July

Campus Planning and Capital Planning



- **Campus Vision 2050** is a comprehensive, 2.5-year public planning process that Campus & Community Planning is undertaking to update two key land use policy documents for the Vancouver campus which will guide campus planning.
- The **Facilities Capital Planning & Prioritization** process is an annual process that prioritizes proposed major capital academic building projects being actively pursued by various faculties and units.

Capital Project Prioritization Process



Evaluation criteria & weighting:

1. University Strategic Priorities (100%)

- Support for Academic Renewal – 10% weighting
- People & Places – 15% weighting
- Research Excellence – 30%
- Transformative Learning – 30%
- Local & Global Engagement – 15%

2. Operational Performance & Risk Mitigation (100%)

- Health & Safety (e.g. seismic risk) – 25%
- Performance & Reliability (e.g. deferred maintenance) – 25%
- Legal / Regulatory / Reputation – 25%
- Business Case – 25%

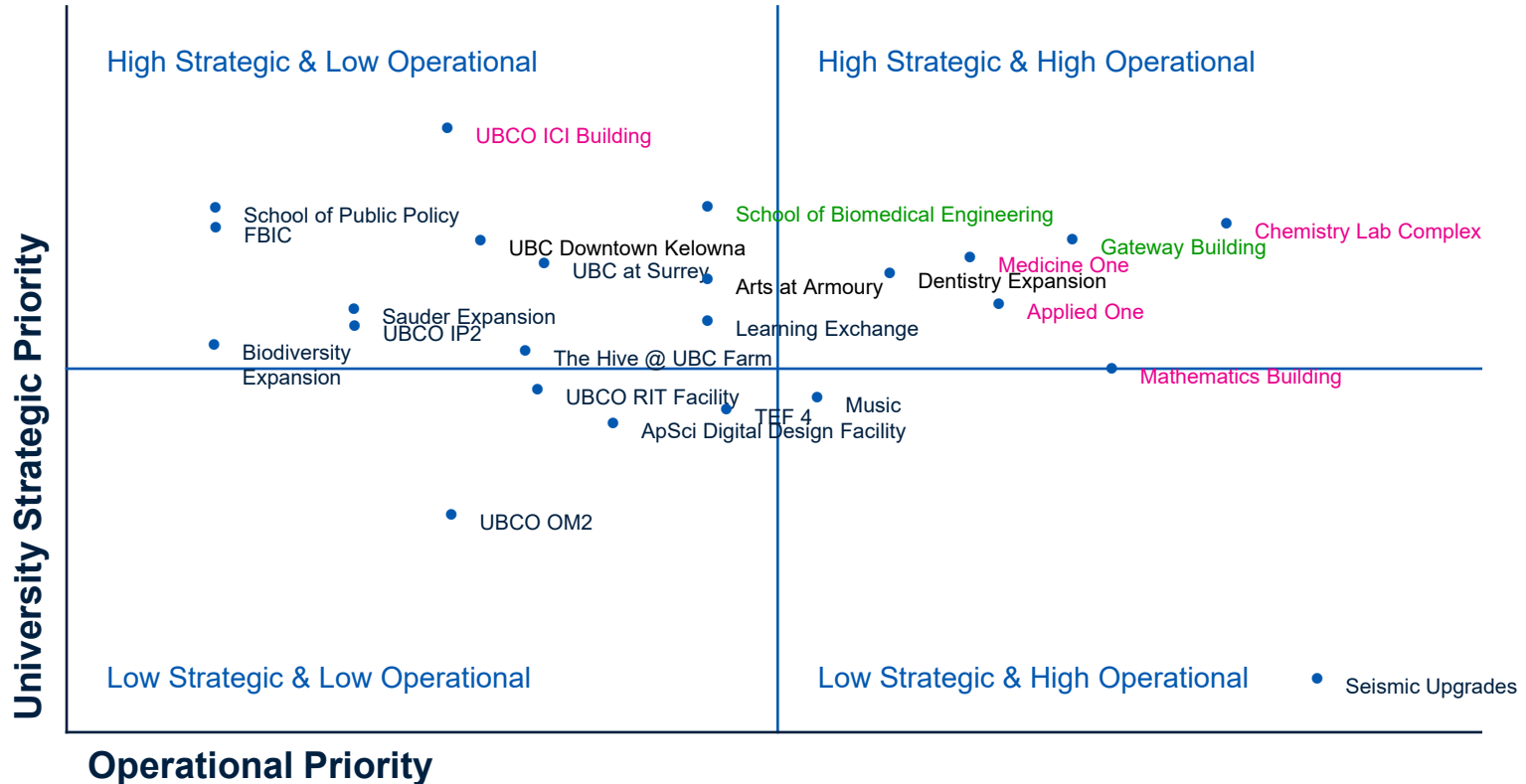
Project prioritization criteria



Embedded in the evaluation criteria are the key themes and strategies from UBC's strategic plan *Shaping the Next Century 2018-2028*, which are supported by UBC's policies and plans, for example:

- Climate Action Plan 2030
- Indigenous Strategic Plan
- Inclusion Action Plan

Active academic project prioritization matrix



Projects highlighted in pink included in proposed UBC Five-Year Capital Plan.

Capital Plan Consultation



Input on capital priorities & planning process from:

- Committee of Deans/Deans' Council (Vancouver and Okanagan)
- Indigenous Partners – Musqueam (Okanagan Nation Alliance, planned for 2023)
- Property & Planning Advisory Committee
- UBCV Senate Academic Building Needs Committee
- UBCO Senate Academic Building & Resources Committee
- Vancouver Subcommittee of the Council of Senates Budget Committee
- Alma Mater Society / UBC Student's Union Okanagan
- Graduate Student Society
- UBC Facilities / UBCO Campus Operations
- UBC Properties Trust (for information)

Executive review for Five-Year Capital Plan

- Project scoring is undertaken by the **Capital Planning Working Group** which is composed of academic and operational leaders.
- The prioritization scoring model is “needs-based”. Funding potential is therefore not a criterion.
- The prioritization model is used as a tool by the **UBC Executive**, who make the final selection of projects for the Five-Year Capital Plan.
- **Other Factors Considered in Addition to Prioritization Scoring:**
 - Alignment with government priorities (health, indigenous relations)
 - Other funding potential (donors, research grants)
 - Impact on University rankings (what will move the bar farthest)
 - Impact per dollar invested (biggest bang for the buck)

Proposed Five-Year Capital Plan Projects



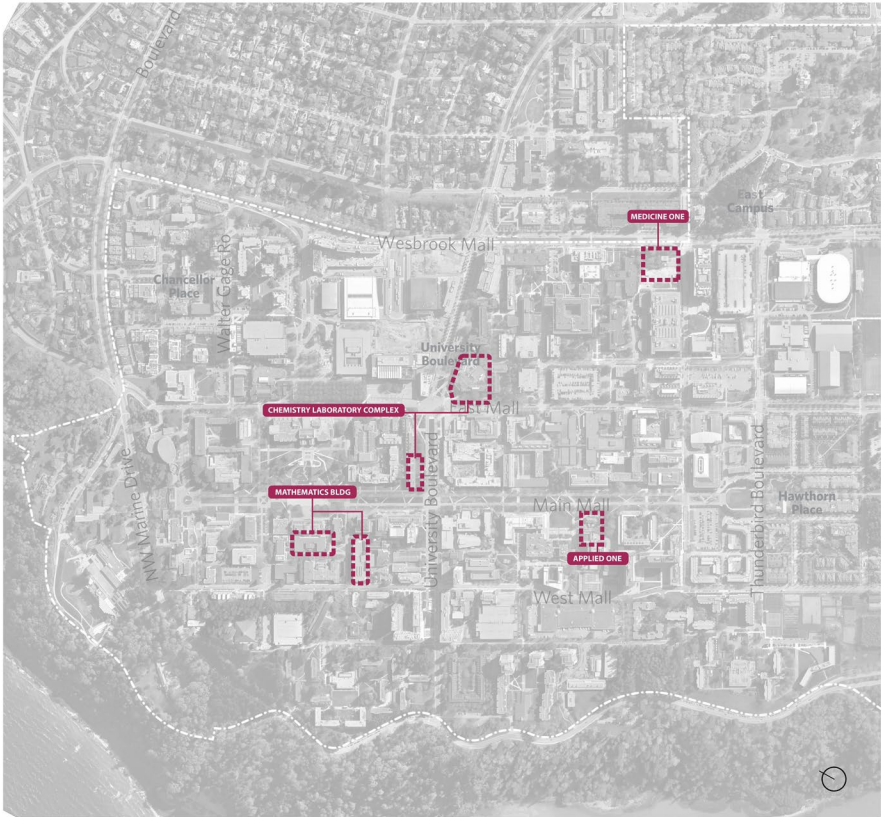
UBC Campus	Project	Delivery ¹	Cost in \$Ms ²	Request to AEST in \$Ms ³
Vancouver	Chemistry Laboratory Complex	Sep-26	\$286	\$214
Okanagan	Interdisciplinary Collaboration & Innovation Building (ICI)	Jan-25	\$109	\$82
Vancouver	Mathematics	Sept-28	\$126	\$95
Vancouver	Medicine One	Sep-28	\$567	\$425
Vancouver	Applied One	Sep-29	\$285	\$214
	Total		\$1,374	\$1,030

1 – Target completion dates assume project funding approval by March 31, 2023.

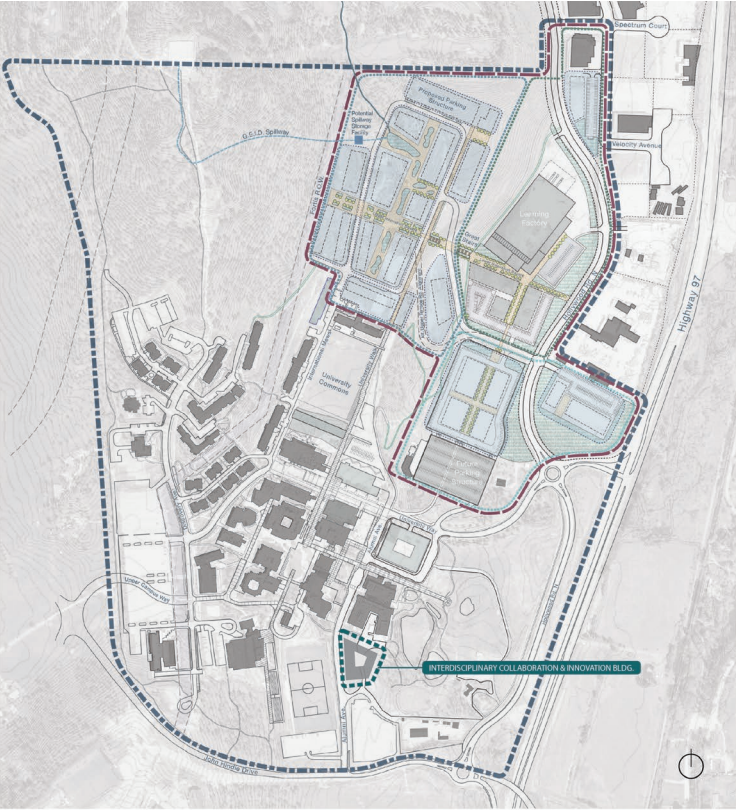
2 – Project capital costs reflect latest estimates as of November 2020 with escalation allowance to Apr 2022. All estimates are Class D with accuracy of +/- 30%.

3 – Proposed contributions from Ministry of Advanced Education, Skills & Training are notional.

Vancouver campus – proposed projects



Okanagan campus – proposed projects



- CAMPUS BOUNDARY
- PRECINCT BOUNDARY
- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- POTENTIAL BUILDING SITE

ACADEMIC PROJECTS

- PLANNED DEVELOPMENT BY 2024

Discussion and decision points



Approval of the UBC Five-Year Capital Plan
(2023-2024 to 2027-2028) for submission to the
Ministry of Advanced Education & Skills Training.

Supplemental Materials 1: Academic Facilities Priorities

Academic Projects	Faculty / Department	Cost (\$000s)
Chemistry Lab Complex	Science	\$286,000
Interdisciplinary Collaboration & Innovation Building – UBC Okanagan	UBCO Multi-Faculty	\$108,848
Mathematics Building	Science/ UBCIT	\$126,000
MED-1	Medicine	\$567,000
Applied One	Applied Science	\$285,000
Applied Science Digital Design Facility	Applied Science	\$12,500
Arts Armoury Commons North Building	Arts	\$80,000
Beaty Biodiversity Centre Addition	Science	\$40,000
Belkin Expansion	Arts	\$13,400
Computer Science Expansion	Science	\$154,000
Dentistry Expansion	Dentistry	\$80,600
Food and Beverage Innovation Centre	Land & Food Systems	\$8,150
Geography Building	Arts	\$72,500
Hotel & Academic Conference Centre	SHCS	TBD
Innovation UBC Hub	VP Research	\$48,400
Learning Exchange	VP External	\$18,800
Music Building Replacement & Expansion	Arts	\$176,600
Sauder Power House Expansion	Sauder	\$120,000
School of Public Policy & Global Affairs	Arts	\$41,800
Technology Enterprise Facility 4 (TEF 4) - UBCPT	Multiple	\$23,700
The Hive @ UBC Farm	Land and Food Systems	\$35,500
UBC at Surrey	Multiple	TBD
UBCO Downtown Kelowna Project	Multi-Faculty	\$93,600
UBCO Innovation Precinct 2	Multi-Faculty	TBD
UBCO Office Modular 2	Multi-Faculty	\$3,700
UBCO Resilient Infrastructure Testing Facility	School of Engineering	TBD
Total Academic		\$2,396,100

Academic facilities projects are potentially funded through government contributions, donors, Faculty operating budgets and/or Academic Capital Fund (Central operating budget). **Projects highlighted in red are proposed for the UBC Five-Year Capital Plan** submitted annually to the Ministry of Advanced Education and Skills Training for potential government funding. The Province was briefed directly on UBC's seismic plan and the need for seismic plan funding in July 2019.

Supplemental Materials 2: Student Experience and Campus Operations, Sustainability & Resilience Project Priorities

Student Experience Projects	Faculty / Department	Cost (\$000s)
Okanagan 1&2 Student Housing	SHCS	\$60,000
Armoury Commons (1,000 beds)	SHCS	\$170,000
Place Vanier Replacement	SHCS	TBD
Totem Field Student Residence	SHCS	TBD
Integrated Performance Centre (Strength & Conditioning)	Athletics & Recreation	\$9,000
New Recreation Centre	Athletics & Recreation	\$64,000
Thunderbird Stadium Redevelopment	Athletics & Recreation	\$50,000
War Memorial Gymnasium Renew	Athletics & Recreation	TBD
UBCO New Field House	UBCO Athletics	\$16,000
UBCO Students' Union	UBCO Students' Union	TBD
Total Student Experience Projects		\$369,000

Student Experience facilities projects are funded through a variety of sources including internal revenue generation (e.g. student housing rents), donors, student fees, and savings related to designation of SHCS as a government business enterprise (GBE).

Campus Operations, Sustainability & Resilience Projects	Faculty / Department	Cost (\$000s)
Administration Consolidation	Finance/HR/ External Relations	TBD
Campus Energy Centre – Campus Energy Resiliency Expansion	Energy & Water Services	\$56,000
Diesel Fuel Storage Facility	Building Operations	\$5,000
Seismic Upgrades not addressed by other capital projects	Various	\$775,000
Total Campus Operations, Sustainability & Resilience Projects		\$836,000

Campus Operations, Sustainability & Resilience projects are funded through a variety of sources including government contributions, Central operating budget, operational savings and Infrastructure Impact Charges (IICs).

Supplemental Materials 3: UBC Five-Year Capital Plan Academic Facilities Priorities Project Descriptions

Note that some minor edits may be made to these project descriptions prior to final submission to AEST.

CHEMISTRY LAB COMPLEX

Area: 25,540 GSM

Estimate: \$286 million

Faculty/Department: Science - Chemistry

Description/Rationale: Chemistry is critical to solving many of the most pressing global challenges, including climate change, pollution, diseases, and alternative clean energy. A foundational and essential science, chemistry underlies nearly every growth industry, and a basic grounding in chemistry is crucial to careers in science, health, engineering, technology and forestry.

The Department of Chemistry's teaching and research functions are housed in the Chemistry A, B and C buildings which are deteriorating, seismically vulnerable, and fundamentally lacking in the infrastructure, space and configuration required for functioning modern chemistry laboratories; the combined 260 inefficient fume hoods in these buildings also contribute to these buildings being the worst on campus for greenhouse gas (GHG) emissions. Demolition and replacement of the three buildings is becoming increasingly critical, and a 25,540 GSM expanded replacement facility is planned. Not proceeding with this project poses a substantial risk to UBC's ability to deliver undergraduate chemistry teaching, and to supporting UBC's position as a leading global research university.

This project has been envisioned as a Phase One teaching building and Phase Two research building in order to limit the considerable difficulties in moving chemistry functions to swing space. This plan is evolving, however, as chemistry teaching and research become increasingly integrated and interwoven as one contiguous operation. A single integrated teaching and research building – which may still be delivered in phases – would facilitate an exciting and innovative vision for a continuum from training through research development to industry engagement and start-ups. The Department of Chemistry is working with Infrastructure Development to evaluate whether there are implementation options that will best enable this vision.

Chemical Sciences Teaching:

As STEM education becomes more interdisciplinary, both undergraduate and graduate programs within the Faculty of Science and beyond have increased requirements for foundational chemistry skills. Every UBC Science student's education includes chemistry courses, and core courses are essential for students in Engineering, Medicine and other health-related professional programs, and for interdisciplinary work with Biomedical Engineering and Pharmaceutical Sciences. The Department of Chemistry currently teaches over 4,900 students per year, approximately 40% of whom are in other Faculties. Chemistry trains students for multiple career paths, ranging from quality control and environmental analysis to vaccine and therapeutic development, health professionals, pulp & paper, and mining.

At its core, chemistry is an experimental science. Only through lab experiences can students connect the importance of experimentation to scientific discovery and learn valuable practical training. Employers need graduates who have the opportunity to conduct practical research and develop skills to solve problems. For many years now, program growth and innovative curriculum development have been severely limited by the size, layout, age, condition, and inadequate infrastructure of the existing Chemistry B and C teaching laboratory facilities. Faculty have been exemplary in adapting lab experiences to suit existing conditions, but many lab experiments have been removed from the curriculum, and others have been designed to minimize use of chemicals due to the poor ventilation and inability to use many of the existing fume hoods.

The proposed new building will not only provide safe, modern labs to support modern pedagogy, but will enhance opportunities for teaching and research collaboration, and for enriched, team-based learning experiences through chemistry computational and robotics space, an undergraduate Capstone research maker space for interdisciplinary projects with a chemistry component, chemistry maker space, and a state-of-the-art shared instrument facility. The

building will include replacement of the existing, large, general use lecture theatres, which currently place large student populations at risk in a seismic event.

Research in Sustainable Chemistry:

Research focused on global challenges such as climate change mitigation, alternative energy and sustainability are core to the Department’s mission moving forward. Innovative, updated and expanded research space is critical to support Chemistry’s growth and vision, and to attracting and retaining the creative minds that will uphold UBC’s leadership in this critically important area of research. The existing Chemistry research space is insufficient to advance these initiatives, and the Chemistry A (Chemistry Physics) building’s failing infrastructure and poor configuration cannot support basic research needs, let alone the collaborative, inter-disciplinary and inter-generational imperatives for advancing innovation. The building is vulnerable in a seismic event, and a replacement building would reduce the natural gas consumption alone by approximately 50% -- a significant win in UBC’s efforts to reduce greenhouse gas emissions.

The new research space will be dedicated to research in four themes: climate/environmental science, sustainable and green chemistry, materials for clean energy, and chemistry for health and biotechnology. UBC Chemistry already has significant expertise in these areas, including world-class researchers. State-of-the-art laboratories that facilitate integration with the teaching and training programs, interdisciplinary research collaboration and partnerships with industry will be a catalyst to elevating UBC’s global research stature and reputation.

Type/Location: UBC Vancouver.

The proposed siting to date has been a split between the Phase One teaching building on the site of the current Wesbrook Building, which is end of life, seismically vulnerable, and slated for demolition, and a Phase Two research building on the current Chemistry B site. This proposed plan was approved at the New Building Site Selection Committee Nov. 16, 2020. Efforts are underway to determine if it is possible to develop the building in phases on the current sites of Chemistry A and B.

Facility Condition Index/Risks: Replacement facilities will eliminate the outdated buildings’ deferred maintenance issues which include significant envelope, electrical and mechanical systems and seismic upgrades, sprinklers and Code upgrades.

Chemistry A, B and C are rated seismic risk Tier IV, V and III respectively. Replacement of these three buildings will result in the mitigation of \$61.87 million in deferred maintenance and will greatly improve life safety on campus. If demolition of the seismic Tier IV Wesbrook Building/Wesbrook Annex also remains part of the project, replacement will result in the mitigation of an additional \$34.58 million in deferred maintenance.

Associated Deferred Maintenance (DM)	DM in \$ millions	FCI	Built	Seismic Tier
Chemistry A – Chemistry Physics (Bldg 447)	29.48	0.68	1989	IV
Chemistry B - South (Bldg 148)	19.60	0.63	1959	V
Chemistry C - East (Bldg 144)	12.57	0.68	1963	III
Chemistry Storage	.22	0.59	1956	IV
Subtotal	61.87			
Wesbrook (Bldg 864)	29.64	0.64	1949	V
Wesbrook Annex (Bldg 867)	4.94	0.86	1983	II
Subtotal	\$ 34.58			
Total	\$ 96.45			

Program: Master programs have been developed for both the teaching and research functions, which will be updated once a phasing strategy is confirmed. The teaching-related program components include large lecture theatres, undergraduate teaching laboratories, lab support and instructors’ offices, undergraduate resource centre,

shared instrument facility, interdisciplinary undergraduate capstone research space, Faculty of Science Co-op and Science Advising. Research components include research laboratories and lab support, faculty offices, collaboration spaces, maker space, incubator space, and core facilities including the Biological Services Lab, NMR facility, and Chemistry Stores.

Funding: The 2022 UBC 5-Year Capital Plan proposes to include the Chemistry Laboratory Complex as the number one priority project, with a request of \$214 million to the BC Ministry of Advanced Education and Skills Training (AEST). The Faculty of Science will work with the central administration to identify funding sources for the balance of the budget, which may include donors, Faculty resources, and central support of debt servicing.

Current Approval Level: Executive 1 approval for the full concept was received on November 27, 2018. Subsequent to this, a proposal for a two-phase project was developed, and Executive 2 approval for Phase One Chemical Science Undergraduate Teaching Building was received December 1, 2020. The project was on the UBC Five-Year Capital Plan submitted to AEST in June 2021 and is the top priority for the Faculty of Science.

UBCO INTERDISCIPLINARY COLLABORATION & INNOVATION (ICI) BUILDING

Area: 13,564 GSM (146,000 GSF)

Estimate: \$108.8 million

Faculty/Department: UBC Multi-Faculty

Description/Rationale: The UBC Okanagan Campus (UBCO) proposes a new building that will begin to address the critical space shortage on the Okanagan campus while facilitating world-leading, interdisciplinary/ transdisciplinary research and academic programming. The project is critical to advancing the mandate of UBCO as a partner in regional development and addressing Outlook 2040, and represents an important contribution towards reconciliation commitments made in 2019.

The ICI building will bring together the social sciences, applied sciences, natural sciences, humanities, creative fields and professional disciplines to facilitate collaboration and enable breakthroughs in human knowledge to solve real world challenges. The building will be designed with maximum flexibility to provide shared and common specialized facilities and infrastructure, enabling clusters of interdisciplinary research and teaching activity in areas such as high value agriculture (biotech), health, data, and social and economic regional development, with indigeneity as an overarching theme. The project will include 200-seat and 100-seat lecture theatres serving the campus need for general teaching spaces of this size. The 100-seat lecture theatre will be circular, level, and designed to reflect and support indigenous learning on campus, including the new Bachelor of Nsyilxcn Language Fluency.

The ICI building will house approximately 62 research professors and 342 research students and post-doctoral scholars. The acute shortage of academic space overall (currently a 38% deficit compared to referenced standards) is presenting significant challenges for current operations and is the largest constraint for the campus achieving objectives articulated in Outlook 2040 and the President’s Academic Excellence Initiative (PAEI). The proposed ICI building will improve this critical space shortage and will facilitate recruitment and retention of outstanding researchers at UBC Okanagan.

Type/Location: UBC Okanagan. The proposed project will be a gateway building located on Site 20. The site’s proximity to the campus core will facilitate interdisciplinary research and teaching activities. The siting will allow design of ICI to celebrate indigeneity and connect pedestrians from central campus and building users to valued natural areas to the east.

Facility Condition Index/Risks: New facility.

Program:

Interdisciplinary Collaboration and Innovation (ICI)	NSM	NSF
Program Component		
1. Main Entry & Community Engagement	694.0	7,470
2. Teaching and Learning:	1,518.2	16,342
3. Student & Programs Support:	651.5	7,013
4. Participants and Community Engagement	790.6	8,510
5. Data Science Research Labs & Offices	798.1	8,591
6. Biomedical Health & Technology, Physical and Life Science Research Labs & Offices	2,985.0	32,130
7. Example Research Cores & Lab Support	442.6	4,764
8. General Building Support	340.5	3,665
SUB-TOTAL COMPONENT NSM	8,220.5	88,485
Building Gross Up (~1.65)	5,343.5	57,515
TOTAL ICI BUILDING	13,564	146,000

Funding: The 2022 UBC 5-Year Capital Plan proposes to include ICI Building as the number two priority project, with a request of \$82 million to the BC Ministry of Advanced Education and Skills Training (AEST). Other funding sources will be UBC Okanagan Capital Reserves and TREK funding, anticipated donor funding, and an internal loan.

Current Approval Level: The project received Board 2 approval on June 24, 2021 and is the top priority project for the UBCO campus. The project was on the UBC Five-Year Capital Plan submitted to AEST in June 2021 and is the top priority for UBC Okanagan.

MATHEMATICS BUILDING

Area: 16,877 GSM (181,600 GSF)

Estimate \$126 million

Faculty/Department: Science – Mathematics, Provost’s Office – IT Services

Description/Rationale: The Department of Mathematics at UBC is ranked one of the strongest mathematics departments in the world and second in Canada. The Department has strong connections with other departments and institutes across UBC, and plays a major role in the cross-disciplinary Institute of Applied Mathematics (IAM), with members from across Science, Applied Science and other UBC Faculties. A foundational science required across all other STEM disciplines, Mathematics undergraduate courses accommodate approximately 22,000 seats annually. This is an increase of approximately 34% over the past decade, and nearly 60% of the teaching is to non-Faculty of Science majors.

The department’s activities are currently spread over four older buildings which have reached the end of their service life. The layout, age, condition, and inadequate infrastructure of these buildings restrict pedagogical development and growth in student numbers, and will not support program growth and cohesion. An 11,700 GSM facility is proposed to replace these deteriorating buildings which will provide innovative, collaborative undergraduate learning spaces, facilitate better integration of students, staff and faculty, and promote a focused atmosphere of intellectual engagement in which research thrives. The project includes replacement of several general-use lecture theatres and classrooms that serve the wider precinct. The new building will also be designed to house a portion of the UBCIT staff currently working in the Leonard S Klinck Building and Addition (LS Klinck). A complicated scenario of swing space and consequential moves must accompany this project.

This project proposes to replace the Mathematics Building and the Mathematics Annex, 2-storey wood frame structures with exterior stucco and interior plaster finishes constructed in 1924-5 which have now reached the end of their service life. The LS Klinck Building and Addition have limited accessibility, lack a sprinkler system, and have been identified as Tier IV seismic risk. Although building systems have been partially upgraded over time as needs have arisen or as renovations have occurred, these buildings have large amounts of deferred maintenance. A new building will eliminate the remaining required deferred maintenance and support the University’s seismic resilience planning.

Type/Location: UBC Vancouver. On or near the site of the existing Math and LS Klinck buildings on West Mall.

Facility Condition Index/Risks: Demolition of Math, Math Annex and LS Klinck will eliminate \$51.95 million in deferred maintenance.

Associated Deferred Maintenance	DM in \$ millions	FCI	Built	Seismic Tier
Mathematics (Bldg 518)	10.50	0.79	1924	III
Mathematics Annex (Bldg 519)	4.45	0.85	1925	III
LS Klinck & Addition (Bldg 308, 308-1)	37.00	0.80	1947	IV
Total	\$ 51.95			

Program: A 2017 Mathematics Master Program will be updated prior to this project moving forward.

Funding: The 2022 UBC 5-Year Capital Plan proposes to include the Mathematics Building as the number three priority project, with a request of \$95 million to the BC Ministry of Advanced Education and Skills Training (AEST). The Faculty of Science will work with the central administration to identify funding sources for the balance of the budget, which may include donors, Faculty resources, and central support of debt servicing.

Current Approval Level: Executive approval 1 for the Mathematics Building was received in May 2017. The project was on the UBC Five-Year Capital Plan submitted to AEST in June 2021.

MED-1**Area: 39,170 GSM (421,610 GSF)****Estimate \$567 million****Faculty/Department:** Faculty of Medicine (FoM)

Description/Rationale: The Faculty of Medicine (FoM) is experiencing space and facilities challenges at the Point Grey campus, which must be addressed to effectively support the Faculty's strategic pillars of education, research, organization and partnership. The FoM's research increasingly involves equipment requiring specialized laboratory space, high headroom, vibration and noise-free environments, electromagnetic shielding, and high-end infrastructure. Existing facilities lack this level of infrastructure, and renovations to accommodate the required space are cost-prohibitive. The Faculty is further faced with a pressing challenge by the President's Academic Excellence Initiative (PAEI) to supply teaching, research and office facilities for new tenure-track research faculty members over the next 10 years, and the administrative and research staff, and graduate students that will support them.

FoM proposes a new flagship Medicine 1 Building (MED-1) at the UBC Vancouver campus to provide much-needed flexible, state-of-the-art, high infrastructure, innovative research and teaching space and expand its translational research capacity. The building will provide centralized facilities and resources such as select core platforms; clinical, lab and incubator spaces for existing researchers and approximately 20 new hires; engagement space for faculty and staff coming from other FoM/Vancouver Coastal Health (VCH) facilities; interactive common areas and specialized communication and collision areas for interdisciplinary exchange of ideas and collaboration; super platform cores serving hundreds of users with high infrastructure and sensitive equipment; teaching laboratories; and a permanent home for the FoM Dean's Office (administrative staff). The new building is targeted to provide innovative, sustainable, flexible and interactive space for new types of research, teaching and synergy with partners in industry. It will consolidate existing infrastructure and equipment and will provide opportunities for collaboration amongst key stakeholders who are currently spatially segregated.

Type/Location: The proposed site is adjacent to the Life Sciences Center (LSC) at the northwest corner of Wesbrook Mall and Agronomy Road. The site is central to the health precinct and will help optimize collaboration and minimize redundancy. This site was approved by the New Building Site Selection Committee in May 2021, with the understanding that height and density parameters would be explored through an indicative design process, for further review with Campus & Community Planning.

Facility Condition Index/Risks: FoM units occupy approximately 63,500 net square metres over thirteen UBC academic and four Vancouver Coastal Health buildings at the Point Grey campus. Approximately 40% of this space is in aging, deteriorating buildings with outdated space configurations and inadequate infrastructure to support leading edge, innovative research and academic programs.

Program: A master program is being finalized. The project will include research laboratories and support, shared platform cores, offices for faculty, staff and graduate students, collaboration spaces, innovative classrooms, and the Faculty of Medicine Dean's office.

Funding: The 2022 UBC 5-Year Capital Plan proposes to include the MED-1 Building as the number four priority project, with a request of \$425 million to the BC Ministry of Advanced Education and Skills Training (AEST). A funding plan is pending.

Current Approval Level: Executive 1 approval was received December 10, 2019. The project was included in the UBC Five-Year Capital Plan submitted to AEST in June 2021.

APPLIED ONE**Area: 30,500 GSM (328,300 GSF)****Estimate \$285 million****Faculty/Department:** Applied Science

Description: Applied One is the embodiment of the Faculty of Applied Science’s (APSC) commitment to address 21st century global challenges. Applied One will deliver a facility that supports interdisciplinary research, experiential learning, and creative partnerships, accelerating the transformation of design thinking, design technologies and design education.

Applied One is the launch pad for a bold vision of what the University for the future can be. Far more than a building, the goal is to create a dynamic, inclusive living-laboratory in which students simultaneously apply perspectives of design, technology, and policy to enact the solutions our world urgently needs. Through its programming and its design, Applied One will put the people of BC at the centre, and consider how to develop complex solutions and approaches to global challenges such as climate change, equity, sustainable and affordable urbanization, emerging economy, and reconciliation, addressing historic systems of injustice. The project is designed around the need to work in collaboration with the people of BC to solve these complex challenges, and will be a model for how to create spaces that encourage the public to engage with academia.

Applied One will not only accommodate the planned growth in the undergraduate and graduate student populations but also meet the necessary and growing demands for engineering and design education and rapidly expanding and diversifying opportunities in the labour market. The facility will allow APSC to expand and develop new programming aligned with Faculty expertise in clean technology, and healthy, resilient cities and communities. Graduates from programs will be poised and ready to support development and adaptation of the rural and urban infrastructure needed for BC to continue to be a strong, sustainable, low-carbon economy. At present, the Faculty’s multiple aging, deteriorating, undersized, and scattered existing buildings cannot support this growth or the innovative pedagogy envisioned. More importantly, the Faculty can’t attract bold creative new faculty members to fulfil this vision because there is no place for them to carry out their work.

Foundational to the concept of Applied One is the Faculty of Applied Science’s commitment to positive impact through creative and collaborative research and teaching that ripples out-across multiple scales – from academic units, to UBC, and out to the world. Applied One will deliver on this and the need for spaces that support engaged interdisciplinary research, experiential learning, and creative partnerships, and will be designed in a way that compels new learning through new forms and types of spaces that foster creative exploration, intercultural competence, inclusion and technical innovation.

Applied One will enable the Faculty of Applied Science to implement its ambitious Strategic Plan with new models of education and research. Target project outcomes are:

- Consolidate shared resources and expertise from the entire Faculty, creating a necessary laboratory of collaboration where architects, engineers, planners and designers come together in an intentional space ripe for cooperation and problem solving.
- Provide new homes for the School of Architecture and Landscape Architecture (SALA), the School of Community and Regional Planning (SCARP), the Norman B. Keevil Institute of Mining Engineering, and Department of Materials Engineering and space for intentional collisions between unexpected neighbours.
- Providing new types of spaces to work in new ways—*not engineering nor architecture, but rather problem solving—transforming the way we think about people, place and planet.*
- Concentrate and catalyze growth of Faculty of Applied Science programs to both address the critical shortage of necessary disciplines and to expand into development of students who consider problems with a tech, policy and design lens.
- Provide dedicated spaces for engagement with public and private industry programs and communities in order to forge links from the Faculty out to the world.

- Establish advanced, conspicuous and accessible centres of innovation and community building and engagement that advance Campus as Living Lab goals and initiatives.

Type/Location: The proposed site is on Main Mall directly across (west) from the Fred Kaiser Building, and encompasses the current footprint of the Barn and Frank Forward, as well as some extension southward towards the MacMillan Building. Site parameters will be further explored with Campus and Community Planning in preparation for presentation to the New Building Site Selection Committee.

Facility Condition Index/Risks: Applied Science occupies over 25 buildings more than a kilometer apart. Many are aging and in deteriorating condition. Units of Applied One will vacate existing facilities in Frank Forward Building, Lasserre Building, West Mall Annex, Landscape Architecture Annex, MacMillan Building, Klinck Building, and Ponderosa Annex B. This presents a significant opportunity to free up facilities for renewal or potentially the land for redevelopment. Frank Forward Building (Mining & Materials Engineering) has an FCI of 0.75 (poor) and is rated as a Tier V seismic risk (very high risk). The Frederic Lasserre Building (existing home of majority of SALA and SCARP program) has an FCI of 0.65 (poor). The Landscape Architecture Annex has an FCI of 0.67 (poor).

Program: The Faculty has developed an in-depth Vision document, and a program based on providing space for Mining Engineering, Materials Engineering, SALA, SCARP, Manufacturing Engineering, Integrated Engineering, teaching facilities, integrated maker space and shop space, shared learning, public engagement, and student services is in development; the project will also include replacement space for the childcare currently located in the Barn.

Funding: The 2022 UBC 5-Year Capital Plan proposes to include the Applied One Building as the number five priority project, with a request of \$214 million to the BC Ministry of Advanced Education and Skills Training (AEST). Other funding sources may include Faculty, Central and donor funding

Current Approval Level: Executive 1 approval was received in March 2019. The project was included in the UBC Five-Year Capital Plan submitted to AEST in June 2021