

2016 Foundational Methods in Computer Science



Pacific Institute for the Mathematical Sciences Earth Sciences Building 2207 Mail Mall- UBC

Getting Started

Get connected: Select the "ubcvisitor" wireless network on your wireless device. Open up a web browser, and you will be directed to the login page.

Frequently Asked Questions

Q: Where do I check in on the first day?

Check- in and Package pick up can be done in the Atrium

Q: Where are the sessions?

All workshop sessions in the Earth Sciences Building Room 2012

Q: Will the program change?

Program changes and updates will be announced at each session.

Q: When should I wear my badge?

Please wear your name badges at all times on site so that PIMS Staff recognize you as a guest.

Q: Where can I go for help on site?

If you need assistance or have a question during the conference, please feel free to talk to one of the organizers

Q: Where can I get refreshments and meals?

For snack or quick meals, please view the list of UBC eateries attached at the end of the program; otherwise the workshop will

provide morning coffee and pastries and afternoon coffee breaks

Q: Where can I get directions for campus and the building?

You will find a copy of the building floor on page 3 and a campus map at the end of the program

Conference Room Guide: Earth Science Bldg 2207 Main Mall



General Travel Directions:

UBC Map link: http://www.maps.ubc.ca/PROD/images/pdf/ubcmap.pdf

Airport to UBC: Easiest by taxi (25min, around \$30). If your accommodation is at Walter H Gage Towers, please give them the address: *5959 Student Union Boulevard, UBC*. By public transport, take the Canada Line (rail) to Broadway-City Hall station. From Broadway-City Hall station, cross Broadway and Cambie streets to get to the #99 UBC bus stop in front of London Drugs. Tickets (valid for the whole journey to UBC) can be purchased from the machine in the airport station. Cost: approximately \$6. Journey time: Circa more than 1 hour

UBC Bus Loop/ Gage to Earth Science Building (ESB) 2207 Main Mall: A quick 10min walk. See UBC map. Head west past the student union building, cross East Mall and get onto Main Mall. Turn left (South) on Main Mall and Earth Science Building will be on your right after a few minutes. It is a large new building, and is on Main Mall directly across from the Beatty Biodiversity Centre and prominent blue whale skeleton.

<u>*Public Transit:*</u> Feel free to search and plan your public transport rides by visiting <u>http://www.translink.ca/</u>, where directions, ticket costs and bus schedules are indicated.

Parking at UBC: http://www.parking.ubc.ca/visitor.html

Thursday June 2, 2016

Noon Onwards	Check into accommodation on campus.
4: 00pm — 6:30pm	Networking Reception and Welcome at PIMS Office
	2207 Main Mall, 4th floor. Please take the elevator; ring the bell.

Friday June 3, 2016

9:00am - 10:30 am	Ernie Manes, University of Massachusetts	
	Pre-monads and their algebras	
10:30am - 11:00am	Coffee break (ESB 2012 Lobby)	
11:00am - 12:30pm	Jamie Vicary, University of Oxford	
	<i>Course #1: An introduction to Globular</i>	
12:30pm - 2:00pm	Lunch (See List of UBC Eateries attached at the end of the program)	
2:00pm - 2:30pm	Phil Mulry, Colgate University	
	Results on distributive and near-distributive laws	
2:30pm - 3:30pm	Geoff Cruttwell, Mount Allison University	
	The usefulness of double categories	
3:30pm - 4:00pm	Coffee break (ESB 2012 Lobby)	
4:00pm - 5:30pm	Dorette Pronk, Dalhousie University	
	Orbifold mapping spaces	
5:30рт - 6:00рт	Alanod Sibih, Dalhousie University	
	A new notion of equivalences for Orbifold atlases	

Saturday June 4, 2016

9:00am - 10:00am	Vaughan Pratt, Stanford University
	Model complexity of natural phenomena, by analogy with computational complexity
10:00am - 10:30am	Ben MacAdam, University of Calgary
	Fermat theories, p-adics and Cartesian differential categories
10:30am - 11:00am	Coffee break (ESB 2012 Lobby)
11:00 am - 11:30 pm	JS Lemay, University of Calgary
	Integral categories
11:30 pm - 12:00pm	Lucius Schoenbaum, Louisiana State University
	A generalization of Topos theory
12:00рт - 12:30рт	Darien DeWolf, Dalhousie University
	Restriction modules and category objects
12:30pm - 2:00pm	Lunch (See List of UBC Eateries attached at the end of the program)
2:00pm - 2:25pm	Jonathan Gallagher, University of Calgary
	Computable structures in Operads
2:25pm - 2:50 pm	Prashant Kumar, University of Calgary
	Concurrent abstract machines
2:50pm - 3:30pm	Rory Lucyshyn-Wright, Mount Allison University
	Enriched algebraic theories, monads and commutants
3:30pm - 4:00pm	Coffee break (ESB 2012 Lobby)
4:00pm - 4:25pm	Chad Nester, University of Calgary
	Realizability and Turing categories
4:25pm - 4:50pm	Priyaa V. Srinivasan, University of Calgary
	Structure of quantum information resource theories
5:45pm	Meet up at 5:45pm in front of Walter H Gage Towers for group dinner
	Dinner Venue: 455 East 17th Ave

Sunday June 5, 2016

9:00am - 9:45am	Bob Rosebrugh, Mount Allison University
	Spans of edit lenses
9:45am - 10:30 am	Laura Scull, Fort Lewis College
	The Orbifold Construction
10:30am - 11:00am	Coffee break (ESB 2012 Lobby)
11:00am - 11:45am	Jamie Vicary: University of Oxford
	<i>Course #2: Coherence for Frobenius pseudomonoids and 3d proof nets</i>
11:45pm - 1:00pm	Robin Cockett, University of Calgary
	Discrete inverse categories
1:00pm - 1:30pm	Chris Dutchyn, University of Saskatchewan
	Symmetric Lambda Calculus
1:30pm — 1:35pm	Concluding remarks and departures
	Evaluation Survey : Please fill in the online participant survey for this event at
	http://www.pims.math.ca/scientific-event/160602-fmcs

Participant List

- Robin Cockett, University of Calgary Calgary, Alberta
- 2. Geoff Cruttwell, Mount Allison University Sackville, New Brunswick
- Robert Dawson, St. Mary's University Halifax, Nova Scotia
- Darien DeWolf, Dalhousie University, Halifax, Nova Scotia
- 5. Chris Dutchyn, University of Saskatchewan Saskatoon, Saskatchewan,
- 6. Jonathan Gallagher, University of Calgary Calgary, Alberta
- 7. Prashant Kumar, University of Calgary Calgary, Alberta
- 8. JS Lemay, University of Calgary Calgary, Alberta
- 9. Rory Lucyshyn-Wright, Mount Allison University Sackville, New Brunswick
- 10. Ben MacAdam, University of Calgary Calgary, Alberta
- 11. Lauchie MacDonald, University of British Columbia Vancouver, British Columbia
- 12. Ernie Manes, University of Massachusetts Amherst, Massachusetts

- 13. Phil Mulry, Colgate University Hamilton, New York
- 14. Chad Nester, University of Calgary Calgary, Alberta
- 15. Vaughan Pratt, Stanford University Palo Alto, California
- Dorette Pronk, Dalhousie University Halifax, Nova Scotia
- Bob Rosebrugh, Mount Allison University Sackville, New Brunswick
- Daniel Satanove, University of British Columbia Vancouver, British Columbia
- Lucius Schoenbaum, Louisiana State University Baton Rouge, Louisiana
- 20. Laura Scull, Fort Lewis College Durango, Colorado
- 21. Robert Seely, John Abbott College Ste Anne de Bellevue, Quebec
- 22. Alanod Sibih, Dalhousie University Halifax, Nova Scotia
- 23. Priyaa Varshinee Srinivasan , University of Calgary Calgary, Alberta
- 24. James Vicary, Oxford University Oxford, U.K.

Titles and Abstracts:

Robi Cockett, University of Calgary: Discrete inverse categories

Inverse categories play a key role in the semantics of reversible computation which in turn is a key component of quantum computation. This talk discusses some key aspects of the theory of inverse categories as they are applied to the semantics of these sorts of computation. An inverse category cannot have products or coproducts, however, it can have the "residual structure" of products and coproducts. An inverse category with "residual products", called an inverse product, is a discrete inverse category. The main structural theorem governing discrete inverse categories says that there is an equivalence between the category of discrete inverse categories and the category of Cartesian restriction categories with meets. This was one of the main result of Brett Giles's thesis (2014).

Inverse products on an inverse category are given by a symmetric tensor together with a natu=al diagonal map which turns each object coherently into a separable Frobenius semialgebra (i.e. separable Frobenius algebra with no units). An inverse product is structure rather than a property of an inverse category, thus, a given inverse category could carry more than one inverse product structure. The talk will describe the theory of discrete inverse categories and explore some well-known -- but perhaps not so well understood examples -- of discrete inverse categories.

Geoff Cruttwell, Mount Allison University: *The usefulness of double categories* TBC

Darien DeWolf, Dalhousie University: *Restriction modules and category objects* TBC

Chris Dutchyn, University of Saskatchewan: *Symmetric Lambda Calculus* TBC

Jonathan Gallagher, University of Calgary: Computable structures in Operads

The goal of this talk is to characterize categories of computable maps that arise from various extensions of BCI algebras. The most important aspect of these categories is latent structure; this is structure that arises when we split the idempotents of a category of computable maps. We will show how to add elements to a BCI algebra to obtain monoidal or classical (cartesian) structure. We will also see how to obtain, more generally, an endofunctor on the category of computable maps. Ultimately our goal is to obtain a combinatory algebra that provides the internal logic of a linear Turing category.

Prashant Kumar, University of Calgary: Concurrent abstract machines

MPL is a concurrent programming language with message passing as the concurrency primtive. In this talk we will look at the steps in the implementation of MPL with the main focus being on the abstract machine forMPL. Abstract machines are useful

tools in developing programming languages. The abstract machine for MPL acts as the target to which MPL programs compile to. This abstract machine can be thought to be composed of two modular abstract machines, sequential and concurrent. As the names suggest, they respectively act as targets for the sequential and concurrent code of MPL. We will mainly focus on the novel aspects of this abstract machine, namely support for codata in the sequential abstract machine and a description of the concurrent abstract machine. The concurrent abstract machine is conceptually an elegant machine as it elucidates how concurrency can be achieved using very few primitives and also provides the basis for the development of intuitive concurrent programs. We will show these features of the abstract machine with programs of varying degrees of complexity. We will briefly touch on the other steps in the implementation of MPL. We will look at the core language which acts as an intermediate stage in compilation of MPL programs to abstract machine programs. We will briefly look at the issues of type inferencing, compiling pattern matching and lambda lifting.

JS Lemay, University of Calgary: Integral categories

The two fundamental theorems of calculus tie together key concepts of calculus and analysis: differentiation and integration. One would hope that category theory would be able formalize differentiation, integration so that the fundamental theorems hold. Blute, Cockett and Seely introduced the notions of both monoidal differential categories and Cartesian differential categories, which formalize the concept of differentiation by axiomatizing a structure on a category using the rules of differentiation. Differentiation in category theory has now been extensively studied, the other side of the story, integration, has not received so much attention.

In this talk, we will introduce both monoidal integral categories and Cartesian integral categories, whose axioms include the substitution rule, the integration by parts rule and the integral formulas for polynomials. When either of these integral structures is compatibly mixed with the appropriate differential structure, we obtain an integral-differential category, in which both of the fundamental theorems of calculus hold.

This research work is done with Professors Kristine Bauer and Robin Cockett from the University of Calgary and Professor Richard Blute from the University of Ottawa.

Rory Lucyshyn-Wright, Mount Allison University: *Enriched algebraic theories, monads and commutants* TBC

Ernie Manes, University of Massachusetts: Pre-monads and their algebra

This tutorial is in the spirit of Richard Bird's 1987 paper. "Introduction to the theory of lists" with continued emphasis on programming issues but with more emphasis on the idea that lists form a monad for which the theory of its algebras (which are all semigroups) plays a role in understanding related constructions. Those wishing to review the relevant semigroup theory should look at Green's relations and Clifford's characterization of unions of groups. The list monad has many useful modifications which are only pre-monads (that is, they do not satisfy the monad laws). Most pre-monads have a monad approximation. Work with Phil Mulry on monad composition generalizes to near distributive laws. Certain near distributive laws relate to issues studied in topological semigroup theory.

Ben MacAdam, University of Calgary: Fermat theories, p-adics and Cartesian differential categories

Cartesian differential categories and Fermat theories are both axiomatizations of smooth functions in a Cartesian space. In this talk we introduce both theories, and prove that Fermat theories are cartesian differential categories. We also provide a counterexample to the converse statement by showing the Cartesian differential structure of the differential lambda calculus does not conservatively embed into a Cartesian differential category whose differential structure is given by a Fermat theory. We conjecture there is a similar relationship between Fermat theories, generalized to partiality, and differential restriction categories.

Phil Mulry, Colgate University: Results on distributive and near-distributive laws

Composing monadic data types via distributive laws can be an important tool in both the theory and practice of computer science. Unfortunately finding cases of such laws can often prove elusive, particularly when looking for systematic approaches. In this talk we will detail past and present efforts in this direction including near-distributive laws. This is joint work with Ernie Manes.

Chad Nester, University of Calgary: Realizability structures and Turing categories

Associated with every partial combinatory algebra is its realizability topos. This can be constructed either through tripos theory, or by completing the relevant category of assemblies to a topos. Both of these constructions make heavy use of the machinery in the category of sets and partial maps. Using Turing categories, a more abstract presentation of partial combinatory algebras, we can perform the above constructions of the realizability topos in more generality, replacing partial functions on sets with an appropriate restriction category. Note that this is a work in progress, and as such many details are missing!

Vaughan Pratt, Stanford University: *Model complexity of natural phenomena, by analogy with computational complexity* The complexity of a class of problems measures the difficulty of answering a question as a function from size of problem and desired precision to resources necessary and/or sufficient to answer it. We propose model complexity as a function from size of datasets and desired precision to number of parameters of a model necessary and/or sufficient to answer it. We apply this methodology to some simple models of global climate change since 1850, and estimate their forecasting skill to 2100.

Dorette Pronk, Dalhousie University: Orbifold mapping spaces

We will consider orbifolds as represented by proper etale groupoids in the category of smooth/topological manifolds (and I will explain briefly how to obtain this presentation). To obtain the maps between orbifolds one takes a bicategory of fractions

with respect to essential equivalences of groupoids. Maps are the given by certain spans of groupoid maps and equivalences of 2-cell diagrams between them. We will study the structure of the groupoids obtained by taking these spans as objects and these 2-cells as arrows. In particular, we will see that they are again proper etale groupoids, although the spaces of objects and arrows may become infinite dimensional. The category theory needed to obtain this result involves a nice result about mapping objects in a bicategory of fractions C[W^{-1}] as pseudo colimits of mapping objects in the original 2- or bicategory C. I will present this result in detail.

Bob Rosebrugh, Mount Allison University: Spans of edit lenses

Asymmetric lenses provide an operational strategy to lift updates of view states in a model domain (solving the "view update problem"). Examples of a model domain include sets, orders and categories. A symmetric lens between two model domains incorporates both data for state synchronization and operations for resynchronization after updates. (Certain equivalence classes of) symmetric lenses compose to give a category SLens. In previous work we showed in a variety of domains that (certain equivalence classes of) spans of asymmetric lenses represent morphisms of SLens, and we obtained an equivalence of categories.

What they called "edit lenses" were introduced and studied more recently by Hofmann, Pierce and Wagner. Edit lenses are similar to category-based symmetric lenses, but have updates restricted to a fixed monoid of "edits". They were studied in the symmetric case only. We have now defined an appropriate notion of asymmetric edit lens and found a representation of (symmetric) edit lenses by spans of asymmetric ones. This is joint work with Michael Johnson.

Lucius Schoenbaum, Louisiana State University: A generalization of Topos theory

In this talk I would like to report on progress on a generalization of topos theory to a model of higher category theory. I will brie y survey the foundations of the (generalized) category theory formalism and present two versions of the development as it can be extended to topos theory. I will discuss their pros and cons, and outlook for the project. Among highlights will be a new and interesting generalization of the Yoneda lemma, Lawvere's comma category (and the closely related category of elements, or the Grothendieck construction), and Giraud's theorem. Time permitting I will discuss for comparison Street's extension of the Giraud theorem to 2-toposes and bitoposes.

Laura Scull, Fort Lewis College: The Orbifold Construction

I will discuss general construction of orbifold objects. This is a generalization of the manifold construction described by Grandis. It gives a categorical way to realize the idea of gluings with symmetries and can be applied to any join restriction category. It incorporates the classical definition of orbifolds, but places them in a more general context. This is joint work with R. Cockett and D. Pronk.

Alanod Sibih, Dalhousie University: A new notion of equivalences for Orbifold atlases

Last year, I introduced a new notion of orbifold atlas which can be used to describe noneffective orbifolds. This definition uses the language of double categories, and in particular the double category Bimod of finite groups with group homomorphisms as vertical morphisms and bimodules as horizontal morphisms. To describe an atlas, we first consider the underlying sets of the charts in X. These induce a poset category I. To describe the atlas embeddings, we use two pseudo functors, Abst, Con : HI \rightarrow Bimod and a vertical transformation ρ : Abst \Rightarrow Con. Traditionally, some people have required I to be a full subcategory of O(X), i.e., we give a chart embedding whenever a chart is a subchart of the other. Others have not, and it was shown for Satake's atlases that if the charts are simply connected, the missing embeddings are uniquely induced by the others. This requires a covering space argument. We will show that this is still true for our new atlases, but now this requires extending the pseudo functors and the structure isomorphisms in a coherent way. As an application we will define refinement for orbifold atlases using the notion of so called coloured bimodules over Bimod and derive a new notion of equivalence for orbifold atlases.

Priyaa V. Srinivasan, University of Calgary: Structure of quantum information resource theories

This talk is a summary of the work in mathematical physics towards formalizing the notion of resource in quantum information theory. Scientists working in quantum mechanics are searching for ways to harness quantum effects to do useful tasks. With every task is associated a collection of resources. Hence, the problem of identifying useful tasks is linked to identifying resources provided by quantum theory. The setting that has been adopted for studying resources is a system of free operations that obey certain restrictions: a resource allows the restrictions of the system to be overcome. Resources such as entanglement, coherence, athermality etc., have been studied and developed as resource theories. Recently, there has been interest in providing a mathematically rigorous notion of resources and defining the general structure of resource theories. In this talk I will present Bob Coecke's work on describing resource theories as symmetric monoidal categories and deriving resource theories from partitioned process theories. I will also present examples.

Jamie Vicary, Oxford:

Couse #1: An introduction to Globular

This tutorial will introduce Globular, a new online proof assistant for calculations in higher category theory, with a fully graphical user interface. We will demonstrate practical use of the tool, as well as investigate the theoretical foundations, including semistrict n-categories and rewriting. No previous knowledge of these topics will be assumed.

Course #2 Coherence for Frobenius pseudomonoids and 3d proof nets

Frobenius pseudomonoids are higher-dimensional algebraic structures which are known to underlie models of multiplicative linear logic (MLL). We prove a new coherence theorem for these structures, and show how this gives rise to a 3d version of proof nets, and new methods for determining proof equivalence in MLL.



Student Union Building (1)

Subway Mon - Fri 7:30am-2pm

Starbucks Mon - Fri 7:30am-6pm, Sat 8:30am-3pm

University Village (2)

University Village has many take out and dine in options; diner-style breakfasts, coffee shops, pizza by the slice, bubble tea, a full-service sushi restaurant, a small grocer selling fresh produce and assorted goods, as well as an international food court

Blenz Coffee McDonalds Only U Café Subway Suga Sushi Japanese Booster Juice Pearl Fever Tea House Starbucks Red Burrito Oven Fresh Bakery Mio Japan FreshSlice Pizza Pita Pit Well Tea A&W Granville Island Produce One More Sushi Vera's Burger Shack 5 Tastes Chinese Bistro International Food Court

Wesbrook Village (3)

Wesbrook Village, located on south campus, offers shops, services and homes within a quaint, pedestrianfriendly setting, with access to Pacific Spirit Park and all the amenities of the UBC campus.

Save-On-Foods

Large grocery store with a deli and small café

Chef Hung Taiwanese Beef Noodle Noodles, soups, rice dishes, and sides Jugo Juice

Fresh fruit smoothies **BierCraft** Craft pub with a French-inspired Bistro menu.

UBC Campus Food Trucks

Menchie's Frozen Yogurt

Frozen yogurt and sorbet bar

Togo Sushi

Fresh sushi made to order **Blenz**

Coffee shop

m ubc ca

Doughgirls Comfort Kitchen + Bakeshop Fresh made bread and pastries.

Hungry Nomad The original UBC food truck! Roaming Bowl Fresh made Asian noodle and rice bowls

The Dog House

The home of the West Coast hot dog

The Nest

The Nest, located on the new University Square beside the Student Union Building, will offer AMS owned and operated restaurants and shops for the summer of 2015!

Perch Uppercase Pier² Pizza Flip Side Qoola Frozen Yogurt Bar Peko Sushi Palate The Pit Grand Noodle Emporium The Delly



On-Campus Dining

at the University of British Columbia



Full-Service Restaurants

Mahoney & Sons Public House (14)

Irish-style pub serving salads, appetizers, pizzas, and a sampling of classic pub fare

Triple O's (15)

Dine in or take out - breakfast sandwiches, beef, chicken, and veggie burgers, and milkshakes

The Point Grill (16)

Burgers and sandwiches, salads, local seafood, and an outdoor patio to enjoy the sun

Sage (17)

Healthy, modern West Coast cuisine paired with breathtaking views.

Mercante (24)

Authentic Cucina Italiana, stone oven Italian pizza, salads, pasta, soups and desserts

Coffee Shops

Tim Hortons (18) Bean Around the World (19) Starbucks (20) The Boulevard Coffee Roasting Co (21) Great Dane Coffee (22) The Well Café (23)

Quick-Service Cafés

These cafés, located in convenient spots across campus, offer a range of snacks and lunch items, including soups, sandwiches, salads, and a variety of hot dishes

Caffe Perugia (4)	Café MOA (6)	lke's Café (8)	Law Café (10)	The Loop Café (12)
Niche Café (5)	Pharmacy Café (7)	Magma Café (9)	Reboot Café (11)	Stir It Up Café (13)



Map Directory

Site or Building Name & Address	Grid
Abdul Ladha Science Student Ctr, 2055 East Mall	D4
Acadia/Fairview Commonsolock, 2707 Tennis Cres	G7 G7
Acadia Park Residence	F/H-6/7
Acadia Park Highrise, 2/25 Melta Kd	G/ H7
Allard Hall [Faculty of Law], 1822 East Mall	B4
Anthropology & Sociology Bldg, 6303 NW Marine Dr	A3
Aquatic Centre, 6121 University Blvd Aquatic Ecosystems Research Lab (AERL) 2202 Main Mall	D5 F3
Asian Centre, 1871 West Mall	B2
Auditorium (a.k.a. "Old Auditorium"), 6344 Memorial Rd	C3
Auditorium Annex Offices, 1924 West Mall Barn (davcare), 2323 Main Mall	C3 F3
3.C. Binning Studios (formerly Hut M-17), 6373 University Blvd	D3
Beaty Biodiversity Centre & Museum, 2212 Main Mall	E3/4
3elkin (Morris & Helen) Art Gallery, 1825 Main Mall Berwick Memorial Centre, 2765 Osovoos Cres	B3 G6
Bioenergy Research & Demonstration Bldg., 2337 Lower Mall	
Biological Sciences Bldg [Science Faculty office], 6270 University	/ BlvdD3
Biomedical Research Ctr, 2222 Health Sciences Mail	E4
Bollert (Mary) Hall, 6253 NW Marine Dr	
Bookstore, 6200 University Blvd	D4
Botanical Garden Centre/Gatehouse, 6804 SW Marine Dr	H1
Botan. Gard. Greenhses/ Workshops, 6088 S. Campus RdS	South Campus
Brimacombe Building, 2355 East Mall	F4
BROCK HALL: Student Services & Welcome Centre, 1874 Ea	st Mall C4
Buchanan Building (Blocks A, B, C, D, & F) [Arts], 1866 Main Ma	04 II B3/4
Buchanan Tower, 1873 East Mall	C4
K. Choi Building for the Institute of Asian Research, 1855 West	t Mall B2
Campus & Community Planning, 2210 West Mall	E3
Carey Centre, 5920 Iona Drive	B6
Carey Theological College, 1815 Wesbrook Mall	B6
CAWP (Centre for Advanced Wood Processing), 2424 Main Mall	F4
Cecil Green Park House, 6251 Cecil Green Park Rd	A3
CEME — see Civil & Mechanical Engineering Building	
Centre for Comparative Medicine, 4145 Wesbrook Mall	South Campus
Centre for Interactive Research on Sustainability (CIRS), 2260 W	est Mall E3 F4
Chan Centre for the Performing Arts, 6265 Crescent Rd	B4
Chancellor Place neighbourhood	B5
Chemical & Biological Engineering Bldg, 2360 East Mall	F4 Blvd D4
Chemistry B.C,D & E Blocks, 2036 Main Mall	D3
Child Care Services Administration Bldg, 2881 Acadia Rd	H7
Child Care Services Bldgs, Osoyoos Cresc and Revelstoke Crt CIRS — see Centre for Interactive Research on Sustainability	H/
Civil & Mechanical Engineering Bldg (CEME), 6250 Applied Science	nce Lane E4
Civil & Mechanical Eng. Labs ("Rusty Hut"), 2275 East Mall	E4
Coal & Mineral Processing Lab, 2332 West Mall	E3
Copp (D.H.) Building, 2146 Health Sciences Mall	
Cunningham (George) Building [Pharmaceutical Sc.], 2146 East	Mall E4
David Lam Learning Centre, 6326 Agricultural Rd	C3
Donald Rix Building, 2389 Health Sciences Mall	
Doug Mitchell Thunderbird Sports Centre, 6066 Thunderbird Blvc	JG5
Dorothy Somerset Studios (formerly Hut M-18), 6361 University E	3lvdD3
Earth & Ocean Sciences (EOS) under construction, 2207 Main Ma Earth & Ocean Sciences (EOS) - Main and South, 6339 Stores R	a⊪E3 ≳dE3
Earthquake Engineering Research Facility (EERF), 2235 East Ma	all E4
Engineering High Head Room Lab, 2225 East Mall	E4
English Language Institute (E.L.I.) — see Continuing Studies But Environmental Services Facility, 6025 Nurseries Rd	ioing South Campus
airview Crescent Residence, 2600-2804 Fairview Cres	F6
ire Department, 2992 Wesbrook Mall	H6
-irst Nations Longhouse, 1985 West Mall	C2
Food, Nutrition and Health Bldg, 2205 East Mall	
orest Sciences Centre [Faculty of Forestry], 2424 Main Mall	F4
Forward (Frank) Building, 6350 Stores Rd	E3
Plnnovations (Pulp & Paper Division), 3800 Wesbrook MallS	South Campus
raser Hall (public rental housing), 2550 Wesbrook Mall	G6
Fraternity Village, 2880 Wesbrook Mall	H6
Friedenic Wood Theatre, 6354 Crescent Rd	вэ Е5
Gage Residence, 5959 Student Union Blvd	C5
General Services Administration Bldg (GSAB), 2075 Wesbrook N	1all D5
beography bullding, 1904 West Mall Gerald McGavin Building, 2386 Fast Mall	C3
Graduate Student Centre — see Thea Koerner House	
Green College, 6201 Cecil Green Park Rd	
preenneart Canopy warkway, Botanical Garden, 6804 SW Marin Greenwood Commons (public rental housing), 2660 Westrook M	е ∪гH1 1all С6
ampton Place neighbourhood	H/J-6/7
Hawthorn Place neighbourhood	G/H3
1eod Building, 2045 East Mall Teonings Building, 6224 Agricultural Rd	D4
Henry Angus Building [Sauder School of Business], 2053 Main M	lallD3

Site or Building Name & Address	Grid
Hillel House - The Diamond Foundation Centre for Jewish Cam	pus Life,
6145 Student Union Blvd	C4
Horticulture Building/Greenhouse, 6394 Stores Rd	E2/3
Hugh Dempster Pavilion, 6245 Agronomy Rd	F4
CICS/CS (Institute for Computing, Information	
& Cognitive Systems/Computer Science), 2366 Main Mall	F4
nstructional Resources Centre (IRC), 2194 Health Sciences Ma	all E5
nternational House, 1783 West Mall	B2
n-Vessel Composting Facility, 6035 Nurseries Road	South Campus
rving K. Barber Learning Centre, 1961 East Mall	C4
Jack Bell Building for the School of Social Work, 2080 West Ma	llD3
John Owen Pavilion & Allan McGavin Sports Medicine Centre,	
3055 Westrook Mall	H5
Naiser (Fred) Building [Faculty of Applied Science], 2332 Main I	VialiE3
(de Club 2955 Acadia Dd	D3
(lingk (Loopard S.) Plda, 6356 Agricultural Pd	G/
Koerner (Walter C.) Library 1958 Main Mall	
andscane Architecture Anney, 2371 Main Mall	
asserre (Frederic) Building, 6333 Memorial Rd	
aw Faculty of - see Allard Hall	
eon and Thea Koerner University Centre, 6331 Crescent Rd	B3
Life Sciences Centre, 2350 Health Sciences Mall	F5
Liu Institute for Global Issues, 6476 NW Marine Dr	B2
Lower Mall Header House, 2269 Lower Mall	E2
Lower Mall Research Station, 2259 Lower Mall	E2
Macdonald (J.B.) Building [Dentistry], 2199 Wesbrook Mall	E5
MacLeod (Hector) Building, 2356 Main Mall	F3
MacMillan (H.R.) Bldg [Faculty of Land & Food Systems], 2357	Main Mall F3
Marine Drive Residence (Front Desk in Bidg #3), 2205 Lower M	allE2
Material Recovery Facility, 6055 Nurseries Ro	South Campus
Mathematics Annex, 1900 Mathematics Rd	
Medical Sciences Block C 2176 Health Sc Mall	
MEA Studios (formerly B.C. Binning MEA Studios) 6363 Store	s Rd F3
Michael Smith Laboratories 2185 East Mall	D4
Museum of Anthropology (MOA), 6393 NW Marine Dr	
Music Building, 6361 Memorial Rd	B/C3
Networks of Ctrs of Excellence (NCE), 2125 East Mall	D4
Nitobe Memorial Garden, 1895 Lower Mall	B/C2
Nobel Biocare Oral Heath Centre (David Strangway Bldg),	
2151 Wesbrook Mall	E5
Norman MacKenzie House, 6565 NW Marine Dr	B2
NRC Institute for Fuel Cell Innovation, 4250 Wesbrook Mall	South Campus
Uld Administration Building, 6328 Memorial Rd	
Old Auditorium — See Auditorium	C 2
Old Barn Community Centre, 0000 Thunderbird Biva	
Orchard House, 2336 West Mall	
Osborne (Robert F) Centre/Gvm 6108 Thunderbird Blvd	
Panhellenic House, 2770 Wesbrook Mall	
Peter Wall Institute for Advanced Studies, 6331 Crescent Rd	B3
Place Vanier Residence, 1935 Lower Mall	C/D2
Plant Ops Nursery/Greenhouses, 6029 Nurseries Rd	South Campus
Plant Science Field Station & Garage, 2613 West Mall	H2

	Point Grey Apartments, 2875 Osoyoos Cresc	H6
	Police (RCMP) & Fire Department, 2990/2992 Wesbrook Mall	H6
	Ponderosa Centre, 2071 West Mall.	D2
	Ponderosa Office Annexes: A, B, & C, 2011-2029 West Mall	C/D2
	Ponderosa Office Annexes: E to H, 2008-2074 Lower Mall	C/D2
	Power House, 2040 West Mall	D3
	Pulp and Paper Centre, 2385 East Mall	
	Ritsumeikan-UBC House 6460 Agronomy Rd	F2
	Rose Garden	B3
	Roy Barnett Recital Hall - in Music Building	
	Rugby Pavilion 2584 East Mall	G4
	Scarfe (Neville) Building [Education] 2125 Main Mall	
	School of Population & Public Health (SPPH) 2206 East Mall	
	Simon K V Lee HKULUBC House - Bldg #1 Marine Drive Res	idence E2
	Sing Tao Building, 6388 Crescent Rd	R3
	Sopron House 2730 Acadia Rd	G7
	South Campus Warehouse, 6116 Nurseries Rd	South Campus
	Spirit Park Apartmente, 2705 2725 Osoucos Cross	
	St Andrew's Hall/Residence 60/0 long Dr	
	St. John's College 2111 Lower Mall	
	St. Mark's College, 5035 Jona Dr.	
	Staning Research Centre 60/5 Nurseries Rd	South Campus
	Stores Dead Anney, 6368 Stores Dd	
	Student Decreation Ctr. 6000 Student Union Blud	L.
	Student Lipion Bldg (SLIP), 6138 Student Lipion Blvd	
	TEE3 (Tochoology Enterprise Escility 3) 6100 Agronomy Pd	
	Thes Keerner House [Eaculty of Graduate Studies] 6371 Cross	ont Dd 83
	Theatro Film Droduction Pldg. 6259 University Plvd	
	Theaderbird Decidence, 6225 Thunderbird Cross	D3
	Thurderbird Residence, 0555 Thurderbird Cresc	۲۵/4
	Thunderbird Stadium, 6200 Stadium Rd	d Sporte
	Totom Field Studios, 2613 West Mall	и эронз
	Totem Dark Desidence, 2525 West Mall	E/C2
	TDIUME 4004 Weekreek Mell	South Comput
	TRIDIVIE, 4004 WESDIOOK Wall	
	IIBC Bookstore 6200 University Blvd	Divu
	UBC BOOKSTOLE, 0200 UTIVEISITY DIVU	South Comput
	UDC Fallil, 0102 Westilook Wall	
	UBC Hospital, 2211 Westfook Mali	E3
	UBC Terrinis Centre, 6160 Thuriderbird Biva	
	UBC Thuriderbild Arena (In Doug Mitchell Centre), 2000 Weshing	OOK IVIAIIG3
	University Centre (Leon & Thea Roeniet), 0331 Crescent Ru	South Comput
	University Neighbourhoods Association, 5925 Berton Ave	
	Versey vest Mail	E2
	Vancouver School of Theology, 6000 Iona Drive	B3
	Walter H. Gage Residence, 5959 Student Union Biva	
	War Memorial Gymnasium, 6081 University Bivd	
	wayne & william white Engineering Design Ctr, 2345 East Mail	E4
	Wesbrook Bldg, 6174 University Blvd	
	Westrook Place neighbourhood	South Campus
	vvesbrook village shopping centre	South Campus
	west Mall Annex, 1933 West Mall	C2
	vvest viaii Swing Space Bldg, 21/5 West Mail	D2
	Wood Products Laboratory, 2324 West Mall	E3
	Woodward IRC, 2194 Health Sciences Mall	E4/5
	Woodward Library, 2198 Health Sciences Mall	E4/5
-		

Site or Building Name & Address

Grid



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Note:

 Local traffic only
along Wesbrook Mall on South Campus

Map Information

Need help finding your way on campus? Call the Campus & Community Planning MapInfo Line at 604-827-5040, M-F, 8:30-4:30

Or use the online searchable colour map at www.maps.ubc.ca

