



Pacific Institute *for the*  
Mathematical Sciences


# CANADIAN ABSTRACT HARMONIC ANALYSIS

Program

**July 7-8, 2016**

The University of British Columbia  
Earth Sciences Building (ESB)  
2207 Main Mall, Vancouver

# 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 on the 5th floor Meeting centre

### **Q: Where are the sessions?**

All workshop sessions will be in ESB Room 5104 of the Earth Sciences Building at UBC. Once in ESB take the elevator to the 5th Floor where you will find the registration and check-in table.

### **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.

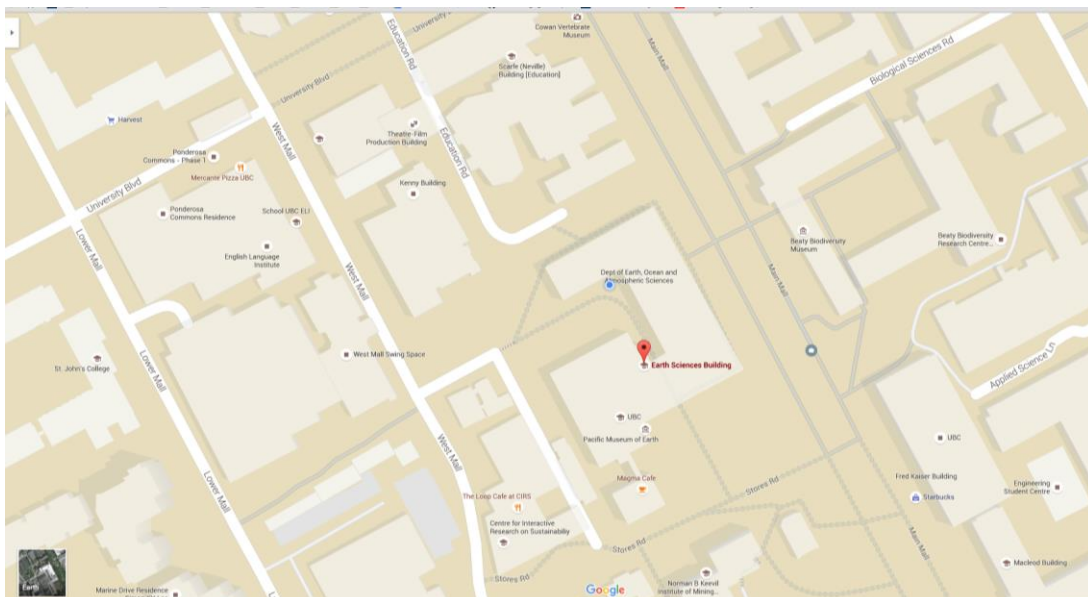
### **Q: Where can I go for help on site?**

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 or online at <http://www.food.ubc.ca/>

## Conference Direction Guide \*Take the elevator to the 5th Floor; Meeting room 5104



## Thursday July 7<sup>th</sup>, 2016

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8:30am - 8:50am	Registration and Check- in (ESB 5th Floor Lobby)
8:50am - 9:00am	<b>Welcome Message:</b> - <b>PIMS Deputy Director:</b> Prof. Brian Marcus, UBC - <b>CAHAS Organizers:</b> Shawn Desaulniers, UBC; Volker Runde, UAlberta; Nico Spronk, UWaterloo.
9:00am - 10:00am	<b>Ian Putnam; UVictoria</b> Hyperbolic algebraic dynamical systems and their C*-algebras
10:00am - 10:30am	Coffee Break (ESB Lobby)
10:30am - 11:00am	<b>Fereidoun Ghahramani; UManitoba</b> Approximate amenability of tensor products of Banach algebras
11:00am - 11:30am	<b>Ed Granirer; UBC</b> Functional analytic properties of some banach algebras, related to the Fourier algebra
11:30am - 12:00pm	<b>John Fournier; UBC</b> Missing objects
12:00pm - 1:30pm	Lunch (Hosted ESB Lobby)
1:30pm - 2:00pm	<b>Eman Aldabbas; UAlberta</b> On the amenability and weak amenability of B(E)
2:00pm - 2:30pm	<b>Ben Willson</b> Simple tensors with a twist make approximate diagonals for amenable groups, quantum groups, and hypergroups
2:30pm - 3:00pm	Coffee Break (ESB Lobby)
3:00pm - 3:30pm	<b>Mehdi Monfared; UWindsor</b> Almost periodic functionals and finite-dimensional representations
3:30pm - 4:00pm	<b>Yong Zhang; UManitoba</b> Weak amenability of central Beurling algebras on compactly generated $[FC]^-$ groups
4:00pm - 4:30pm	<b>Jason Crann; UWaterloo</b> On the operator homology of the Fourier algebra

## Friday July 8<sup>th</sup>, 2016

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9:00am - 10:00am	<b>Matthew Kennedy; UWaterloo</b> An intrinsic algebraic characterization of $C^*$ -simplicity for discrete groups
10:00am - 10:30 am	Coffee Break (ESB Lobby)
10:30am - 11:00 am	<b>Matthew Wiersma; UAlberta</b> On exotic group $C^*$ -algebras
11:00am - 11:30am	<b>Hun Hee Lee; Seoul National U</b> Integration over the quantum diagonal subgroup and associated Fourier-like algebras
11:30am - 12:00pm	<b>Zsolt Tanko; UAlberta</b> Cyclicity of the left regular representation of a locally compact group
12:00pm - 1:30pm	Lunch: (see list of UBC eateries online at <a href="http://www.food.ubc.ca/">http://www.food.ubc.ca/</a> )
1:30pm - 2:00pm	<b>Volker Runde; UAlberta</b> Ultra-operator amenability
2:00pm - 2:30pm	<b>Nico Spronk; UWaterloo</b> $\rho$ -Fourier algebras on compact groups
2:30pm - 3:00pm	Coffee break (ESB Lobby) with concluding remarks

### Conference Evaluation Survey:

Participants of this event are required to fill in the online event evaluation survey available online at : <https://goo.gl/ApjNgj>

## Abstracts: Plenary

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**Matthew Kennedy** (Waterloo)

*An intrinsic algebraic characterization of  $C^*$ -simplicity for discrete groups*

A discrete group is said to be  $C^*$ -simple if its reduced  $C^*$ -algebra is simple. It is not difficult to see that a group with this property does not have any non-trivial normal amenable subgroups, however it was an open question for many years to determine whether the converse holds. Recent examples constructed by Le Boudec show that the answer to this question is negative, but raise the question of whether there is an intrinsic algebraic characterization of  $C^*$ -simplicity. In this talk I will discuss recent work providing such a characterization.

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**Ian Putnam** (Victoria)

*Hyperbolic algebraic dynamical systems and their  $C^*$ -algebras*

In the 1960's, Smale initiated an ambitious program in dynamical systems, focusing on 'hyperbolicity' as a key property. More recently, a number of different  $C^*$ -algebras have been constructed from these systems and they display a number of remarkable features. I describe what is meant by hyperbolicity and some of these developments. A number of the important examples of hyperbolic systems have the additional feature that the space where the dynamics lives is actually a compact abelian group and the action, in addition to being hyperbolic, is actually a group automorphism. I will focus particularly on these examples where the  $C^*$ -algebra constructions become rather simpler. If time permits, I will discuss one or two more recent ideas in the area of algebraic dynamics.

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## Abstracts:

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**Eman Aldabbas** (Alberta)

*On the amenability and weak amenability of  $B(E)$*

The problem of characterizing the amenable members of the class of Banach algebras  $\mathcal{B}(X)$ , the algebras of bounded operators on a Banach space  $X$ , is still wide open ever since Johnson published his memoir. In 2009, Runde proved that for any  $p \in (1, \infty)$  and for any  $\mathcal{L}^p$ -space  $E$  such that  $E \simeq \ell^p(E)$ , the Banach algebra  $\mathcal{B}(E)$  is not amenable. I will show that for any  $p \in (1, \infty)$  and for any  $\mathcal{L}^p$ -space  $E$  such that  $E = \mathcal{H} \oplus \ell^p$  for some Hilbert space  $\mathcal{H}$ , the Banach algebra  $\mathcal{B}(E)$  is not amenable.

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**Jason Crann** (Waterloo)

*On the operator homology of the Fourier algebra*

This talk will feature recent results on the injectivity of  $VN(G)$  as an operator module over the Fourier algebra  $A(G)$  for general locally compact groups  $G$ . We will show that amenability of  $G$  is equivalent to 1-injectivity of  $VN(G)$  while inner amenability of  $G$  is equivalent to relative 1-injectivity of  $VN(G)$ . In the bimodule setting, we also characterize the (relative) 1-injectivity of  $VN(G)$  and provide the first known examples where  $A(G)$  is not operator biflat. Similar techniques also give examples of weakly amenable groups  $G$  for which  $A_{cb}(G)$  – the cb-norm closure of  $A(G)$  – is not operator amenable. This talk is based on joint work with Zsolt Tanko.

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**John Fournier** (British Columbia)

*Missing objects*

Sometimes, objects with special properties are known to exist, but no examples of such objects are known. When such examples are found, they turn out to have other special properties that lead to further results. We discuss instances of this, as well as cases where suitable examples are still missing, or their properties are not fully understood. For instance, the known lower majorant property in  $L^{4/3}(\mathbb{T})$  is equivalent to the existence of positive definite polynomials,  $G$  say, with suitable control on  $\|G\|_4$  and on the coefficients of  $G\overline{G}G$ . A construction of such polynomials might yield examples with further properties. We also discuss algorithms related to Paley's theorem about lacunary coefficients of functions in an operator-valued version of  $H^1(\mathbb{T})$ .

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**Fereidoun Ghahramani** (Manitoba)

*Approximate amenability of tensor products of Banach algebras*

A well-known result of Barry Johnson – from 1972 – states that if the Banach algebras  $A$  and  $B$  are amenable, then so is their projective tensor product Banach algebra  $A\hat{\otimes}B$ . In this talk first I'll show that the tensor product of two boundedly approximately amenable Banach algebras need not be approximately amenable – even if they are unital. Then I'll show that with some additional conditions on the components – such as existence of central bounded approximate identities – approximate amenability of  $A\hat{\otimes}B$  necessitates approximate amenability of  $A$  and  $B$ . Our methods can also be used to prove that if  $A\hat{\otimes}B$  is amenable then each of the components  $A$  and  $B$  is amenable. The latter result was proved by Barry Johnson – with some additional assumption – in 1996. This is joint work with Richard J. Loy.

**Ed Granirer** (British Columbia)

*Functional analytic properties of some Banach algebras, related to the Fourier algebra*

We study some Banach algebras related to the Fourier algebra. Among other results, we show that optimisation works in some, yet does not work in others.

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**Hun Hee Lee** (Seoul)

*Integration over the quantum diagonal subgroup and associated Fourier-like algebras*

By analogy with the classical construction due to Forrest, Samei and Spronk we associate to every compact quantum group  $\mathbb{G}$  a completely contractive Banach algebra  $A_\Delta(\mathbb{G})$ , which can be viewed as a deformed Fourier algebra of  $\mathbb{G}$ . To motivate the construction we first analyse in detail the quantum version of the integration over the diagonal subgroup, showing that although the quantum diagonal subgroups in fact never exist, as noted earlier by Kasprzak and Soltan, the corresponding integration represented by a certain idempotent state on  $C(\mathbb{G})$  makes sense as long as  $\mathbb{G}$  is of Kac type. Finally we analyse as an explicit example the algebras  $A_\Delta(O_N^+)$ ,  $N \geq 2$ , associated to Wang's free orthogonal groups, and show that they are not operator weakly amenable

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**Mehdi S. Monfared** (Windsor)

*Almost periodic functionals and finite-dimensional representations*

Perhaps the simplest connection between almost periodic functionals and representation theory is that every coordinate function of a continuous finite-dimensional representation is almost periodic. In this talk we discuss several additional such connections. We show if  $A$  is an involutive Banach algebra,  $\pi: A \rightarrow \mathcal{L}(\mathcal{H})$  is an involutive representation, and  $\xi, \eta \in \mathcal{H}$  are algebraically cyclic vectors such that  $\pi_{\xi, \eta}$  is almost periodic, then  $\dim \mathcal{H} < \infty$ . In particular, if  $A$  is a  $C^*$ -algebra and  $\lambda \in A^*$  is a non-zero almost periodic functional which is a coordinate function of a topologically irreducible involutive representation  $\pi$ , then  $\dim \pi < \infty$ . As an interesting corollary one can give a proof for the (not-so-well-known) result that every topologically cyclic continuous unitary representation of a compact group is finite-dimensional. Next we discuss a construction in which one can associate a residually finite-dimensional (RFD) Banach algebra  $U(A)$  to a Banach algebra  $A$ . We discuss similarities of this construction to almost periodic compactification of locally compact groups. The results in this talk are joint work with M. Filali.

**Volker Runde** (Alberta)

*Ultra-operator amenability*

M. Daws defined a Banach algebra to be ultra-amenable if each of its ultrapowers is amenable. Analogously, one can introduce the notion of ultra-operator amenability for completely contractive Banach algebras. We discuss this notion and, in particular, show that for a large class of locally compact groups  $G$  – including all compact and connected groups –, the Fourier algebra is ultra-operator amenable if and only if  $G$  is finite. This is joint work with K. Schlitt.

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**Nico Spronk** (Waterloo)

*$p$ -Fourier algebras on compact groups*

I will discuss some variations on the Fourier algebra  $A(G)$  of a compact group  $G$ : weighted  $p$ -Fourier algebras  $A^p(G, d^\alpha)$ , for  $1 \leq p \leq \infty$  and  $\alpha \geq 0$ . For  $p = 1$  and  $\alpha = 0$  this gives the Fourier algebra. For  $p = 1$  and  $\alpha = 1$ , we obtain a class of algebras used by B. Johnson in his study of amenability properties of  $A(G)$ ; whereas for  $p = 2$  and  $\alpha = 0$  we gain a class of algebras observed by Forrest, Samei and the speaker whilst investigating Fourier algebras of homogeneous spaces. I will survey a host of properties of these algebras. This represents joint work with E. Samei (Saskatchewan) and H. H. Lee (Seoul).

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**Zsolt Tanko** (Alberta)

*Cyclicity of the left regular representation of a locally compact group*

Greenleaf and Moskowitz showed in the early 1970s that the left regular representation of a locally compact group is cyclic exactly when the group is first countable, equivalently when the group von Neumann algebra is  $\sigma$ -finite. We will present a short new proof of this result.

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**Matthew Wiersma** (Alberta)

*On exotic group  $C^*$ -algebras*

Let  $G$  be a (discrete) group. An exotic group  $C^*$ -algebra of  $G$  is a  $C^*$ -algebra  $A$  such that there exists proper  $C^*$ -quotients  $C^*(G) \rightarrow A \rightarrow C_r^*(G)$  which compose to the canonical quotient  $C^*(G) \rightarrow C_r^*(G)$ . In this talk we will recall known constructions of exotic group  $C^*$ -algebras for discrete groups and discuss how these  $C^*$ -algebras have very poor local properties. This is based on joint work with Zhong-Jin Ruan.



**Benjamin Willson**

*Simple tensors with a twist make approximate diagonals for amenable groups, quantum groups, and hypergroups*

One can construct a (virtual) diagonal for the group algebra of a finite group  $G$  in the following way. Consider the following functions in  $\ell^1(G)$ : the identity  $E = \delta_e$  and the characteristic function of the entire group  $F = \chi_G$ . The simple tensor  $F \otimes E$  can be viewed as an element of  $\ell^1(G) \hat{\otimes} \ell^1(G)$  or as a function in  $\ell^1(G \times G)$  where  $F \otimes E(x, y) = F(x)E(y)$ . By slightly twisting this simple tensor, we can make a diagonal for the Banach algebra  $\ell^1(G)$ ,  $d \in \ell^1(G \times G)$  given by  $d(x, y) = F(x)E(xy)$ . In this talk, I will discuss how this approach can be adapted to make bounded approximate diagonals for locally compact quantum groups with  $L^2$  versions of an asymptotically central approximate identity and invariant mean, and amenable double coset hypergroups with a hypergroup analog to an approximately central approximate identity.

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**Yong Zhang** (Manitoba)

*Weak amenability of central Beurling algebras on compactly generated  $[FC]^-$ -groups*

It is known that a nontrivial central Beurling algebra is isomorphic to a central Beurling algebra on an  $[FC]^-_B$ -group. For convenience, we focus on central Beurling algebras on  $[FC]^-$ -groups. For a compactly generated  $[FC]^-$ -group  $G$  there is a natural length function  $|x|: G \rightarrow \mathbb{N}$  so that, for each  $\alpha \geq 0$ ,  $\omega_\alpha(x) = (1 + |x|)^\alpha$  defines a weight function on  $G$ . We show that the central Beurling algebra  $ZL^1(G, \omega_\alpha)$  is weakly amenable if and only if  $0 \leq \alpha < \frac{1}{2}$ . To this end, we will establish some necessary conditions and some sufficient conditions for a central Beurling algebra to be weakly amenable. This is joint work with Varvara Shepelska.



# On-Campus Dining

at the University of British Columbia

## Student Union Building (1)

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**Subway** Mon – Fri 7:30am-2pm

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

## University Village (2)

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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)

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Wesbrook Village, located on south campus, offers shops, services and homes within a quaint, pedestrian-friendly 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.

### Menchie’s Frozen Yogurt

Frozen yogurt and sorbet bar

### Togo Sushi

Fresh sushi made to order

### Blenz

Coffee shop

### Doughgirls Comfort Kitchen + Bakeshop

Fresh made bread and pastries.



m.ubc.ca

## UBC Campus Food Trucks

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### 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

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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

Pier<sup>2</sup> Pizza

Flip Side

Qoola Frozen Yogurt Bar

### Peko Sushi

Palate

The Pit

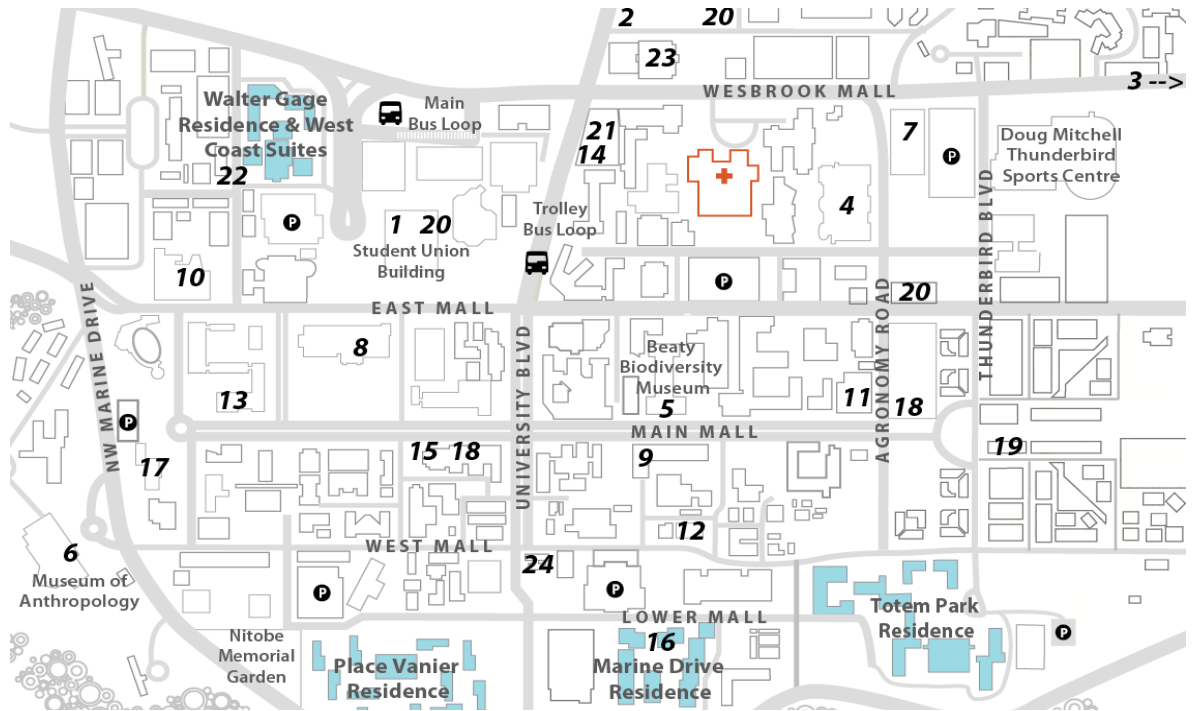
Grand Noodle Emporium

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

### The Point Grill (16)

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

### Triple O's (15)

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

### 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)

### Niche Café (5)

### Café MOA (6)

### Pharmacy Café (7)

### Ike's Café (8)

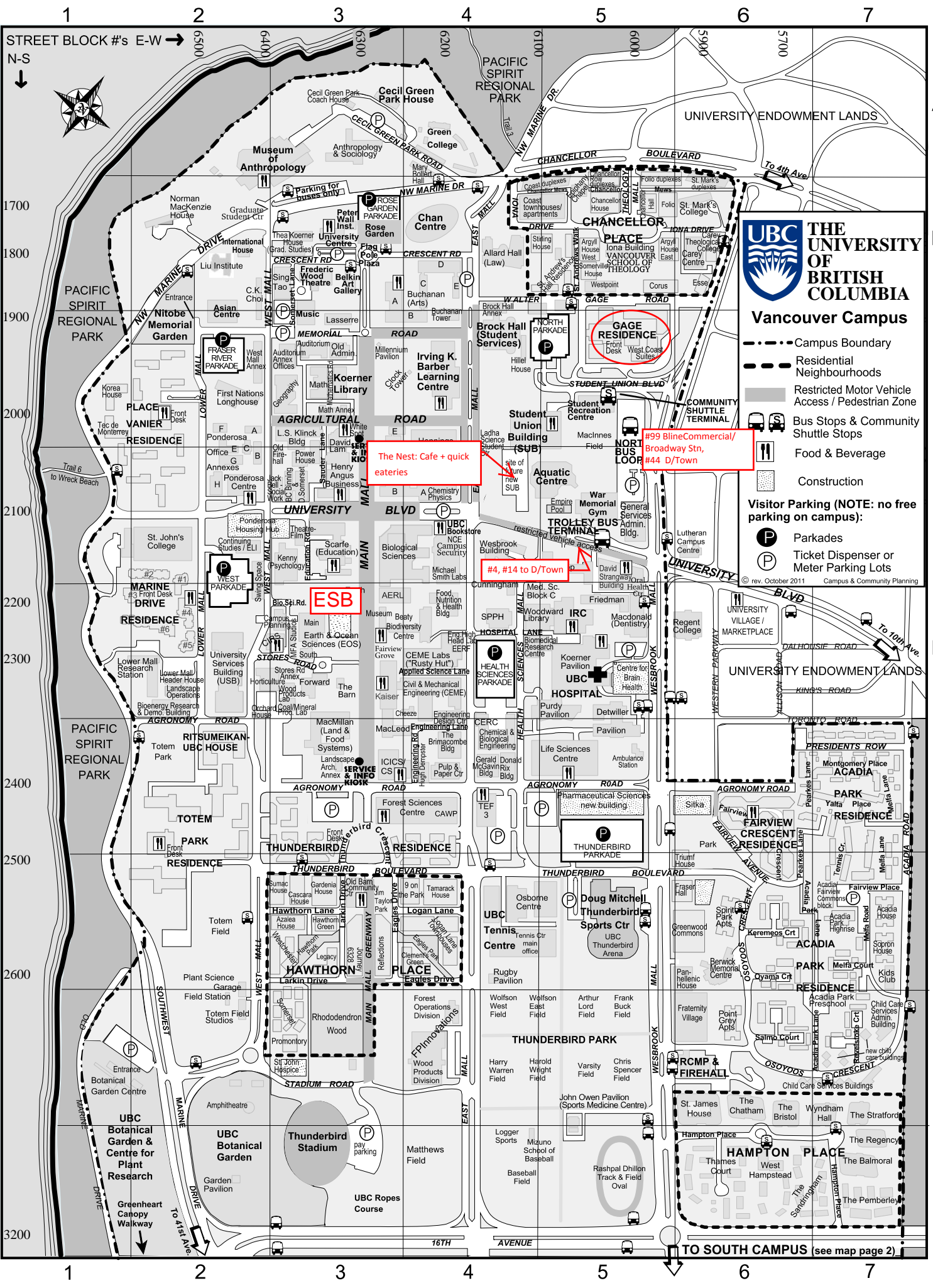
### Magma Café (9)

### Law Café (10)

### Reboot Café (11)

### The Loop Café (12)

### Stir It Up Café (13)



**Vancouver Campus**

- - - Campus Boundary
- - - Residential Neighbourhoods
- ▭ Restricted Motor Vehicle Access / Pedestrian Zone
- 🚌 Bus Stops & Community Shuttle Stops
- ☺ Food & Beverage
- 🚧 Construction
- 🅅 Visitor Parking (NOTE: no free parking on campus):
- 🅅 Parkades
- 🅅 Ticket Dispenser or Meter Parking Lots

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The Nest: Cafe + quick eateries

#99 Blaine Commercial/  
Broadway Str,  
#44 D/Town

ESB

#4, #14 to D/Town

TO SOUTH CAMPUS (see map page 2)

# Map Directory

Site or Building Name & Address	Grid
Abdul Ladhia Science Student Ctr, 2055 East Mall	D4
Acadia/Fairview Commons Block, 2707 Tennis Cres	G7
Acadia House, 2700-2720 Acadia Rd	G7
Acadia Park Residence	F/H-6/7
Acadia Park Highrise, 2725 Melia Rd	G7
Acadia Park Preschool, 2750 Acadia Park Lane	H7
Allard Hall [Faculty of Law], 1822 East Mall	B4
Anthropology & Sociology Bldg, 6303 NW Marine Dr	A3
Aquatic Centre, 6121 University Blvd	D5
Aquatic Ecosystems Research Lab (AERL), 2202 Main Mall	E3
Asian Centre, 1871 West Mall	B2
Auditorium (a.k.a. "Old Auditorium"), 6344 Memorial Rd	C3
Auditorium Annex Offices, 1924 West Mall	C3
Barn (daycare), 2323 Main Mall	E3
B.C. Binning Studios (formerly Hut M-17), 6373 University Blvd	D3
Beaty Biodiversity Centre & Museum, 2212 Main Mall	E3/4
Belkin (Morris & Helen) Art Gallery, 1825 Main Mall	B3
Berwick Memorial Centre, 2765 Osoyoos Cres	G6
Bioenergy Research & Demonstration Bldg., 2337 Lower Mall	E2
Biological Sciences Bldg [Science Faculty office], 6270 University Blvd	D3
Biomedical Research Ctr, 2222 Health Sciences Mall	E4
Biotechnology Laboratory, 2125 East Mall	D4
Bollert (Mary) Hall, 6253 NW Marine Dr	A4
Bookstore, 6200 University Blvd	D4
Botanical Garden Centre/Gatehouse, 6804 SW Marine Dr	H1
Botanical Garden Pavilion (enter at Gatehouse, 6804 SW Marine Dr)	J2
Botan. Gard. Greenhouses/ Workshops, 6088 S. Campus Rd	South Campus
Brimacombe Building, 2355 East Mall	F4
<b>BROCK HALL: Student Services &amp; Welcome Centre, 1874 East Mall</b>	<b>C4</b>
Brook Hall Annex, 1874 East Mall	C4
Buchanan Building (Blocks A, B, C, D, & E) [Arts], 1866 Main Mall	B3/4
Buchanan Tower, 1873 East Mall	C4
C.K. Choi Building for the Institute of Asian Research, 1855 West Mall	B2
Campus & Community Planning, 2210 West Mall	E3
Campus Security, 2133 East Mall	D4
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 Coach House, 6323 Cecil Green Park Rd	A3
Cecil Green Park House, 6251 Cecil Green Park Rd	A3
CEME — see <i>Civil &amp; Mechanical Engineering Building</i>	
Centre for Comparative Medicine, 4145 Wesbrook Mall	South Campus
Centre for Interactive Research on Sustainability (CIRS), 2260 West Mall	E3
CERC (Clean Energy Research Ctr), 2360 East Mall	F4
Chan Centre for the Performing Arts, 6265 Crescent Rd	B4
Chancellor Place neighbourhood	B5
Chemical & Biological Engineering Bldg, 2360 East Mall	F4
Chemistry A Block - Chemistry Physics Building, 6221 University 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.	H7
CIRS — see <i>Centre for Interactive Research on Sustainability</i>	
Civil & Mechanical Eng. Bldg (CEME), 6250 Applied Science Lane	E4
Civil & Mechanical Eng. Labs ("Rusty Hut"), 2275 East Mall	E4
Coal & Mineral Processing Lab, 2332 West Mall	E3
Continuing Studies Bldg [English Language Institute], 2121 West Mall	D2
Copp (D.H.) Building, 2146 Health Sciences Mall	D5
Cunningham (George) Building [Pharmaceutical Sc.], 2146 East Mall	E4
David Lam Learning Centre, 6326 Agricultural Rd	C3
David Lam Management Research Ctr, 2033 Main Mall	C3
Donald Rix Building, 2389 Health Sciences Mall	F4
Doug Mitchell Thunderbird Sports Centre, 6066 Thunderbird Blvd	G5
Dorothy Somerset Studios (formerly Hut M-18), 6361 University Blvd	D3
Earth Sciences Building (ESB) under construction, 2207 Main Mall	E3
Earth & Ocean Sciences (EOS) - Main and South, 6339 Stores Rd	E3
Earthquake Engineering Research Facility (EERF), 2235 East Mall	E4
Engineering High Head Room Lab, 2225 East Mall	E4
English Language Institute (E.L.I.) — see <i>Continuing Studies Building</i>	
Environmental Services Facility, 6025 Nurseries Rd	South Campus
Fairview Crescent Residence, 2600-2804 Fairview Cres	F6
Fire Department, 2992 Wesbrook Mall	H6
First Nations Longhouse, 1985 West Mall	C2
Flag Pole Plaza (Main Mall & Crescent Rd)	B3
Food, Nutrition and Health Bldg, 2205 East Mall	E4
Forest Sciences Centre [Faculty of Forestry], 2424 Main Mall	F4
Forward (Frank) Building, 6350 Stores Rd	E3
FPInnovations (Forest Operations & Wood Products), 2601/2665 E. Mall	H4
FPInnovations (Pulp & Paper Division), 3800 Wesbrook Mall	South Campus
Fraser Hall (public rental housing), 2550 Wesbrook Mall	G6
Fraternity Village, 2880 Wesbrook Mall	H6
Frederic Wood Theatre, 6354 Crescent Rd	B3
Friedman Bldg, 2177 Wesbrook Mall	E5
Gage Residence, 5959 Student Union Blvd	C5
General Services Administration Bldg (GSAB), 2075 Wesbrook Mall	D5
Geography Building, 1984 West Mall	C3
Gerald McGavin Building, 2386 East Mall	F4
Graduate Student Centre — see <i>Thea Koerner House</i>	
Green College, 6201 Cecil Green Park Rd	A4
Greenheart Canopy Walkway, Botanical Garden, 6804 SW Marine Dr	H1
Greenwood Commons (public rental housing), 2660 Wesbrook Mall	G6
Hampton Place neighbourhood	H/J-6/7
Hawthorn Place neighbourhood	G/H3
Hebb Building, 2045 East Mall	D4
Hennings Building, 6224 Agricultural Rd	C4
Henry Angus Building [Sauder School of Business], 2053 Main Mall	D3

Site or Building Name & Address	Grid
Hillel House - The Diamond Foundation Centre for Jewish Campus Life, 6145 Student Union Blvd	C4
Horticulture Building/Greenhouse, 6394 Stores Rd	E2/3
Hugh Dempster Pavilion, 6245 Agronomy Rd	F4
ICICS/CS (Institute for Computing, Information & Cognitive Systems/Computer Science), 2366 Main Mall	F4
Instructional Resources Centre (IRC), 2194 Health Sciences Mall	E5
International House, 1783 West Mall	B2
In-Vessel Composting Facility, 6035 Nurseries Road	South Campus
Irving K. Barber Learning Centre, 1961 East Mall	C4
Jack Bell Building for the School of Social Work, 2080 West Mall	D3
John Owen Pavilion & Allan McGavin Sports Medicine Centre, 3055 Wesbrook Mall	H5
Kaiser (Fred) Building [Faculty of Applied Science], 2332 Main Mall	E3
Kenny (Douglas T) Building, 2136 West Mall	D3
Kids Club, 2855 Acadia Rd	G7
Klinck (Leonard S.) Bldg, 6356 Agricultural Rd	C3
Koerner (Walter C.) Library, 1958 Main Mall	C3
Landscape Architecture Annex, 2371 Main Mall	F3
Lasserre (Frederic) Building, 6333 Memorial Rd	C3
Law, Faculty of — see <i>Allard Hall</i>	
Leon 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	E2
Lower Mall Residence, 2269 Lower Mall	B2
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 Bldg #3), 2205 Lower Mall	E2
Material Recovery Facility, 6055 Nurseries Rd	South Campus
Mathematics Annex, 1986 Mathematics Rd	C3
Mathematics Building, 1984 Mathematics Rd	C3
Medical Sciences Bldg C, 2176 Health Sc. Mall	E4
M.F.A. Studios (formerly B.C. Binning MFA Studios), 6363 Stores Rd	E3
Michael Smith Laboratories, 2185 East Mall	D4
Museum of Anthropology (MOA), 6393 NW Marine Dr	A2/3
Music Building, 6361 Memorial Rd	B/3
Networks of Ctrs of Excellence (NCE), 2125 East Mall	D4
Nitobe Memorial Garden, 1895 Lower Mall	B/C2
Nobel Biocare Oral Health 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
NRC Administration Building, 6328 Memorial Rd	C3
Old Auditorium — see <i>Auditorium</i>	
Old Barn Community Centre, 6308 Thunderbird Blvd	G3
Old Firehall, 2038 West Mall	D3
Orchard House, 2336 West Mall	E2
Osborne (Robert F.) Centre/Gym, 6108 Thunderbird Blvd	G4
Panhellenic House, 2770 Wesbrook Mall	G6
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

Site or Building Name & Address	Grid
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	F4
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	D3
School of Population & Public Health (SPPH), 2206 East Mall	E4
Simon K.Y. Lee HCU-UBC House — Bldg #1, Marine Drive Residence	E2
Sing Tao Building, 6388 Crescent Rd	B3
Sopron House, 2730 Acadia Rd	G7
South Campus Warehouse, 6116 Nurseries Rd	South Campus
Spirit Park Apartments, 2705-2725 Osoyoos Cresc	G8
St. Andrew's Hall/Residence, 6040 Iona Dr	B5
St. John's College, 2111 Lower Mall	D2
St. Mark's College, 5935 Iona Dr	B6
Staging Research Centre, 6045 Nurseries Rd	South Campus
Stores Road Annex, 6368 Stores Rd	E3
Student Recreation Ctr, 6000 Student Union Blvd	C5
Student Union Bldg (SUB), 6138 Student Union Blvd	C4
TEF3 (Technology Enterprise Facility 3), 6190 Agronomy Rd	F4
Thea Koerner House [Faculty of Graduate Studies], 6371 Crescent Rd	B3
Theatre-Film Production Bldg, 6358 University Blvd	D3
Thunderbird Residence, 6335 Thunderbird Cresc	F3/4
Thunderbird Stadium, 6288 Stadium Rd	J3
Thunderbird Winter Sports Ctr — see <i>Doug Mitchell Thunderbird Sports</i>	
Totem Field Studies, 2613 West Mall	H2
Totem Park Residence, 2525 West Mall	F/G2
TRIUMF, 4004 Wesbrook Mall	South Campus
Triumf House (TRIUMF Visitor's Residence), 5835 Thunderbird Blvd	G6
UBC Bookstore, 6200 University Blvd	D4
UBC Farm, 6182 Wesbrook Mall	South Campus
UBC Hospital, 2211 Wesbrook Mall	E5
UBC Tennis Centre, 6160 Thunderbird Blvd	G4
UBC Thunderbird Arena (in Doug Mitchell Centre), 2555 Wesbrook Mall	G5
University Centre (Leon & Thea Koerner), 6331 Crescent Rd	B3
University Neighbourhoods Association, 5923 Berton Ave	South Campus
University Services Building (USB), 2329 West Mall	E2
Vancouver School of Theology, 6000 Iona Drive	B5
Walter H. Gage Residence, 5959 Student Union Blvd	C5
War Memorial Gymnasium, 6081 University Blvd	D5
Wayne & William White Engineering Design Ctr, 2345 East Mall	E4
Wesbrook Bldg, 6174 University Blvd	D4
Wesbrook Place neighbourhood	South Campus
Wesbrook Village shopping centre	South Campus
West Mall Annex, 1933 West Mall	C2
West Mall Swing Space Bldg, 2175 West Mall	D2
Wood Products Laboratory, 2324 West Mall	E3
Woodward IRC, 2194 Health Sciences Mall	E4/5
Woodward Library, 2198 Health Sciences Mall	E4/5

## SOUTH CAMPUS MAP

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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](http://www.maps.ubc.ca)