

The background is a vibrant watercolor illustration. It features a central path of white arrows pointing downwards and to the right, starting from the left side and ending near the bottom right. The path is surrounded by various colored washes of paint in shades of blue, green, yellow, orange, and red. The overall effect is artistic and dynamic.

14TH  
INTERNATIONAL  
SYMPOSIUM  
ON FORMAL  
METHODS

# Conference Program

August 21 - 27, 2006, McMaster University, Hamilton, Ontario, Canada

# Program at a Glance

	Monday August 21	Tuesday August 22	Wednesday August 23	Thursday August 24	Friday August 25	Saturday August 26	Sunday August 27
<b>8:00–9:00</b>	Registration	Registration	Registration	Registration	Registration	Registration	
<b>Morning 9:00–12:30</b>	Tutorial T1	Tutorial T8 Tutorial T9 Doctoral Symp.	8:45–12:30 Opening Remarks Invited Talk Industry Day Technical Symp.	Invited Talk Technical Symp.	Invited Talk Technical Symp.	Tutorial T10 Workshop W2 Workshop W3 Workshop W4	Workshop W3 Workshop W4
<b>Noon 12:30–14:00</b>			Posters & Tools	Posters & Tools B. Russell Archive FME Meeting	Posters & Tools B. Russell Archive		
<b>Afternoon 14:00–17:30</b>	Tutorial T2 Tutorial T3 Tutorial T4 Workshop W1	Tutorial T6 Tutorial T8 Tutorial T9 Doctoral Symp.	Invited Talk Industry Day Technical Symp.	Technical Symp.  15:00–22:00 Excursion & Banquet	Invited Talk Technical Symp. Closing Remarks	Tutorial T10 Workshop W2 Workshop W3 Workshop W4	
<b>Evening</b>		18:00–20:00 Reception					

# Welcome

It is our pleasure to welcome you to FM'06, the premier international forum for practitioners and researchers applying mathematical methods to the design of highly reliable computer systems. This is the 14th event in this series, and for the first time takes place in North America, at McMaster University in Hamilton, Ontario, Canada.

A program of five invited talks and 36 outstanding research papers provides the opportunity to learn about the newest developments in the theory and application of formal methods. The program covers a wide range of topics, including theorem proving, modeling, real-time, specification, education, programming languages, and testing. As in previous years, an Industry Day is dedicated for practitioners to share their experiences with industrial applications. Eight speakers will address this year's theme, *Formal Methods for Security and Trust in Industrial Applications*.

Tutorials have always been an essential part of the FM symposia, as an effective way of disseminating emerging tools and techniques. This year we have eight tutorials, given by renowned experts in their fields. The four co-located workshops address the issues of specific formal techniques as well as issues of general interest, namely education, security, and the timely issue of certification.

A Doctoral Symposium is part of FM for the first time this year, giving young researchers the opportunity to learn about the issues of practitioners and in turn have their ideas critically, but constructively examined by the community. A Poster and Tool Exhibition, with twelve reviewed submissions, allows researchers to engage in a dialogue with potential users in early phases of their work. A Book Exhibition accompanies the event.

McMaster University is the host of the Bertrand Russell Archive. The influence of Bertrand Russell on logic and formal methods is still felt today. As a complement to the technical program, we are proud to offer tours through the Russell Archive.

We hope you enjoy a rewarding symposium program.

Emil Sekerinski, General Chair  
Jayadev Misra, Tobias Nipkow, Program Chairs

# **About FME**

Formal Methods Europe is a worldwide association bringing together researchers and practitioners in formal methods developing computing systems and software. FME's aim is to encourage formal methods research and application. The association's members are drawn equally from academic institutes and commercial companies. Our activities include the dissemination of research findings and industrial experience through our symposia and sponsored events; the development of information resources for educators; and a networking function for commercial practitioners through ForTIA, the formal techniques industry association. On the FME web site at [www.fmeurope.org](http://www.fmeurope.org), you will find information about formal methods and about FME, our events and activities. Membership of FME is open to anyone willing to help the association achieve its aims and is free of charge.

# **About ForTIA**

The Formal Techniques Industry Association, [www.fortia.org](http://www.fortia.org), is a subgroup of FME that focuses on the dissemination of research results, the promotion of formal techniques in industry, and the collection of lessons that industry has learned in the application of formal methods. ForTIA was founded in 2003 and is currently supported by some 30 companies. One of the key activities of ForTIA is to organize so-called Industry Days, small events targeted at industrial practitioners rather than at academics. It is a forum to share experiences on the use of formal techniques in an industrial setting. We invite you to participate in this event.

# Organizers

## Organizing Committee

<b>General Chair</b>	Emil Sekerinski, McMaster University
<b>Program Chairs</b>	Jayadev Misra, University of Texas at Austin Tobias Nipkow, TU Munich
<b>Workshop Chair</b>	Tom Maibaum, McMaster University
<b>Tutorial Chair</b>	Jin Song Dong, NU Singapore
<b>Tools &amp; Poster Exhibition</b>	Marsha Chechik, University of Toronto
<b>Industry Day Chairs</b>	Volkmar Lotz, SAP France Asuman Suenbuel, SAP USA
<b>Doctoral Symposium Chair</b>	Augusto Sampaio, University Pernambuco
<b>Sponsorship Chair</b>	Jürgen Dingel, Queens University

## Local Organization

<b>Publicity</b>	Wolfram Kahl, McMaster University Alan Wassyng, McMaster University Jeff Zucker, McMaster University
<b>Book Exhibition</b>	Spencer Smith, McMaster University
<b>Tools &amp; Posters</b>	Spencer Smith, McMaster University
<b>Social Events</b>	Ridha Khedri, McMaster University
<b>Facilities Coordinators</b>	William Farmer, McMaster University Mark Lawford, McMaster University
<b>Events Coordinator</b>	Ryszard Janicki, McMaster University
<b>Finances</b>	Ryszard Janicki, McMaster University

# Program Committee

Jean-Raymond Abrial	ETH Zürich, Switzerland
Alex Aiken	Stanford University, USA
Keijiro Araki	Kyushu University, Japan
Ralph Back	Turku, Finland
Gilles Barthe	INRIA, France
David Basin	ETH Zürich, Switzerland
Ed Brinksma	Universiteit Twente, Netherlands
Michael Butler	University of Southampton, UK
Rance Cleaveland	Stony Brook University, USA
Jorge Cuellar	Siemens, Germany
Werner Damm	Universität Oldenburg, Germany
Frank de Boer	Universiteit Utrecht, Netherlands
Javier Esparza	Universität Stuttgart, Germany
José Fiadeiro	University of Leicester, UK
Susanne Graf	VERIMAG, France
Ian Hayes	University of Queensland, Australia
Gerard Holzmann	JPL, USA
Cliff Jones	University of Newcastle, UK
Gary T. Leavens	Iowa State University, USA
Rustan Leino	Microsoft, USA
Xavier Leroy	INRIA, France
Dominique Méry	LORIA, France
Jayadev Misra (co-chair)	University of Texas at Austin, USA
Carroll Morgan	University of New South Wales, Australia
David Naumann	Stevens Institute of Technology, USA
Tobias Nipkow (co-chair)	TU Munich, Germany
E.-R. Olderog	Universität Oldenburg, Germany
Paritosh Pandya	Tata Institute of Fundamental Research, India
Sriram Rajamani	Microsoft, USA
John Rushby	SRI, USA
Steve Schneider	University of Surrey, UK
Vitaly Shmatikov	University of Texas at Austin, USA
Bernhard Steffen	Universität Dortmund, Germany
P.S. Thiagarajan	National University of Singapore, Singapore
Axel van Lamsweerde	Université Catholique de Louvain, Belgium
Martin Wirsing	Universität Munich, Germany
Pierre Wolper	Université de Liège, Belgium

# Schedule of Events

ITB: Information Technology Building (49 on Campus Map)

MDCL: Michael DeGroot Centre for Learning and Discovery (52 on Campus Map)

<b>Monday, August 21</b>	
<b>9:00–12:30</b>	<b>Tutorial T1</b> (ITB 225) VDM++ Tutorial
<b>12:30–14:00</b>	<b>Lunch</b>
<b>14:00–17:30</b>	<b>Tutorial T2</b> (ITB 201) Analysis and Verification of Real-Time Embedded Software and Systems  <b>Tutorial T3</b> (ITB 222) An Introduction to CSP    B  <b>Tutorial T4</b> (ITB 238) JML & ESC/Java2  <b>Workshop W1</b> (ITB 225) Second Overture Workshop

<b>Tuesday, August 22</b>	
<b>9:00–12:30</b>	<b>Tutorial T8</b> (ITB 201) The Use of Precise Documentation in Software Development  <b>Tutorial T9</b> (ITB 237) Alloy Modeling Language and Analyzer  <b>Doctoral Symposium</b> (ITB 222)
<b>12:30–14:00</b>	<b>Lunch</b>
<b>14:00–17:30</b>	<b>Tutorial T6</b> (ITB 225) Model Checking: From Hardware to Software  <b>Tutorial T8</b> (ITB 201) The Use of Precise Documentation in Software Development  <b>Tutorial T9</b> (ITB 237) Alloy Modeling Language and Analyzer  <b>Doctoral Symposium</b> (ITB 222)
<b>18:00–20:00</b>	<b>Reception</b> (University Club (Faculty Club))

## Wednesday, August 23

<b>8:45–9:00</b>	<b>Opening Remarks</b> (MDCL 1105)	
<b>9:00–10:00</b>	<b>Invited Talk</b> (MDCL 1105) <b>Tom Henzinger</b> , Embedded Systems Design Challenge	Session Chair: Steve Schneider
<b>10:00–10:30</b>	<b>Break</b>	
<b>10:30–12:30</b>	<p><b>Industry Day</b> (MDCL 1105) Session Chair: Marcel Verhoef</p> <p><b>Werner Stephan</b>, Formal Methods for Security: Lightweight Plug-in or New Engineering Discipline</p> <p><b>Jan Jürjens</b>, Model-based Security Engineering for Real</p> <p><b>Michael Waidner</b>, Cryptography and Tool-Supported Proofs</p> <p><b>Jim Woodcock</b>, The Grand Challenge</p>	<p><b>Interactive Theorem Proving</b> (MDCL 1110) Session Chair: Tobias Nipkow</p> <p><b>Gerhard Schellhorn, Holger Grandy, Dominik Haneberg and Wolfgang Reif</b>, The Mondex Challenge: Machine Checked Proofs for an Electronic Purse</p> <p><b>Jonathan Schmitt, Alwin Hoffmann, Michael Balsler, Wolfgang Reif and Mar Marcos</b>, Interactive Verification of Medical Guidelines</p> <p><b>David Delahaye, Jean-Frédéric Étienne and Véronique Viguié Donzeau-Gouge</b>, Certifying Airport Security Regulations using the Focal Environment</p> <p><b>Shinya Umeno and Nancy Lynch</b>, Proving Safety Properties of an Aircraft Landing Protocol using I/O Automata and the PVS Theorem Prover: A Case Study</p>
<b>12:30–14:00</b>	<b>Lunch</b>	
<b>13:00–14:00</b>	<b>Posters &amp; Research Tools</b> (MDCL)	
<b>14:00–15:00</b>	<b>Invited Talk</b> (MDCL 1105) <b>Ernie Cohen</b> , Validating the Microsoft Hypervisor	Session Chair: Eric Hehner
<b>15:00–15:30</b>	<b>Break</b>	
<b>15:30–17:30</b>	<p><b>Industry Day</b> (MDCL 1105) Session Chair: Asuman Suenbuel</p> <p><b>David von Oheimb</b>, Formal Methods in the Security Business: Exotic Flow-ers Thriving in an Expanding Niche</p> <p><b>Scott Lintelman</b>, Secure Distribution and Storage of Airplane Software</p> <p><b>Randolph Johnson</b>, Cost Effective Software Engineering for Security</p> <p><b>Dusko Pavlovic</b>, Connector-Based Software Development: Deriving Secure Protocols</p>	<p><b>Modeling</b> (MDCL 1110) Session Chair: Dominique Mery</p> <p><b>Kim G. Larsen, Ulrik Nyman and Andrzej Wasowski</b>, Interface Input/Output Automata</p> <p><b>Greg Brunet, Marsha Chechik and Sebastian Uchitel</b>, Properties of Behavioural Model Merging</p> <p><b>Angela Freitas and Ana Lucia Caneca Cavalcanti</b>, Automatic Translation from Circus to Java</p> <p><b>Annabelle McIver</b>, Quantitative Refinement and Model Checking for the Analysis of Probabilistic Systems</p>



## Thursday, August 25

<b>9:00–10:00</b>	<b>Invited Talk</b> (MDCL 1105) <span style="float: right;">Session Chair: William Farmer</span> <b>Nick Griffin</b> , Bertrand Russell: A Philosophy for Formal Methods and a Formal Method for Philosophy	
<b>10:00–10:30</b>	<b>Break</b>	
<b>10:30–12:30</b>	<b>Real Time and Industrial Experience</b> (MDCL 1105) Session Chair: Pamela Zave  <b>Marcel Verhoef, Peter Gorm Larsen and Jozef Hooman</b> Modeling and Validating Distributed Embedded Real-Time Systems with VDM++  <b>Jewgenij Botaschanjan, Alexander Gruler, Alexander Harhurin, Leonid Kof, Maria Spichkova and David Trachtenherz</b> , Towards Modularized Verification of Distributed Time-Triggered Systems  <b>Stefano Bacherini, Alessandro Fantechi, Matteo Tempestini and Nicolò Zingoni</b> , A Story about Formal Methods Adoption by a Railway Signaling Manufacturer  <b>Yujun Zheng, Jinquan Wang and Kan Wang</b> , Partially Introducing Formal Methods into Object-Oriented Development: Case Studies using a Metrics-Driven Approach	<b>Specification and Refinement</b> (MDCL 1110) Session Chair: Tom Maibaum  <b>Tim McComb and Graeme Smith</b> , Compositional Class Refinement in Object-Z  <b>Neil Evans and Michael Butler</b> , A Proposal for Records in Event-B  <b>José Nuno Oliveira and Cesar Jesus Rodrigues</b> , Pointfree Factorization of Operation Refinement  <b>Nuno Amálio, Susan Stepney and Fiona Polack</b> , A Formal Template Language enabling Metaproof
<b>12:30–14:00</b>	<b>Lunch</b>	
<b>13:00–14:00</b>	<b>Posters &amp; Research Tools</b> (MDCL) <b>Bertrand Russell Archive Tour</b> (MDCL) <b>FME Meeting</b> (MDCL 1116)	
<b>14:00–15:00</b>	<b>Programming Languages</b> (MDCL 1105) Session Chair: Emil Sekerinski  <b>Ioannis Kassios</b> , Dynamic Frames: Support for Framing, Dependencies and Sharing without Restrictions  <b>Alcino Cunha, José Nuno Oliveira and Joost Visser</b> , Type-safe Two-level Data Transformation	<b>Algebra &amp; Education</b> (MDCL 1110) Session Chair: Wolfram Kahl  <b>Peter Hofner, Bernhard Moeller and Ridha Khedri</b> , Feature Algebras  <b>Raymond Boute</b> , Using Domain Independent Problems for Introducing Formal Methods
<b>15:00–22:00</b>	<b>Excursion and Banquet</b>	

## Friday, August 25

<b>9:00–10:00</b>	<b>Invited Talk</b> (MDCL 1105) <span style="float: right;">Session Chair: John Fitzgerald</span> <b>Peter Lindsay</b> , Distributed Control in Network-Based Systems	
<b>10:00–10:30</b>	<b>Break</b>	
<b>10:30–12:30</b>	<b>Modeling</b> (MDCL 1105) Session Chair: Jürgen Dingel  <b>Pamela Zave</b> , Compositional Binding in Network Domains  <b>Zarrin Langari and Richard Trefler</b> , Formal Modeling of Communication Protocols by Graph Transformations  <b>Marc Aiguier, Karim Berkani and Pascale Le Gall</b> , Feature Specification and Static Analysis for Interaction Resolution  <b>Mass Soldal Lund and Ketil Stølen</b> , A Fully General Operational Semantics for UML 2.0 Sequence Diagrams with Potential and Mandatory Choice	<b>Java &amp; Testing</b> (MDCL 1110) Session Chair: George Necula  <b>Xin Li, Jim Hoover and Piotr Rudnicki</b> , Towards Automatic Exception Safety Verification  <b>Cyrille Valentin Artho, Armin Biere and Shinichi Honiden</b> , Enforcer—Efficient Failure Injection  <b>Frederic Dadeau, Fabrice Bouquet and Bruno Legeard</b> , Automated Boundary Test Generation from JML Specifications  <b>Wojciech Mostowski</b> , Formal Reasoning about Non-Atomic Java Card Methods in Dynamic Logic
<b>12:30–14:00</b>	<b>Lunch</b>	
<b>13:00–14:00</b>	<b>Posters &amp; Research Tools</b> (MDCL) <b>Bertrand Russell Archive Tour</b> (MDCL)	
<b>14:00–15:00</b>	<b>Invited Talk</b> (MDCL 1105) <span style="float: right;">Session Chair: Xavier Leroy</span> <b>George Necula</b> , Data Structure Specifications via Local Equality Axioms	
<b>15:00–15:30</b>	<b>Break</b>	
<b>15:30–17:30</b>	<b>Programming Languages</b> (MDCL 1105) Session Chair: Ana Cavalcanti  <b>Sandrine Blazy, Zaynah Dargaye and Xavier Leroy</b> , Formal Verification of a C Compiler Front-End  <b>Thuan Quang Huynh and Abhik Roychoudhury</b> , A Memory Model Sensitive Checker for C#  <b>Fabian Bannwart and Peter Müller</b> , Changing Programs Correctly: Refactoring with Specifications  <b>Viorel Preoteasa</b> Mechanical Verification of Recursive Procedures Manipulating Pointers using Separation Logic	<b>Modeling</b> (MDCL 1110) Session Chair: Marsha Chechik  <b>Wendy Johnston, Kirsten Winter, Lionel van den Berg, Paul Strooper and Peter Robinson</b> , Model-based Variable and Transition Orderings for efficient Symbolic Model Checking  <b>Alastair F. Donaldson and Al-ice Miller</b> , Exact and Approximate Strategies for Symmetry Reduction in Model Checking  <b>Alexandre Genon, Thierry Massart and Cédric Meuter</b> , Monitoring Distributed Controllers: When an Efficient LTL Algorithm on Sequences is Needed to Model-Check Traces  <b>Aleksandr Zaks and Amir Pnueli</b> , PSL Model Checking and Run-time Verification via Testers
<b>17:30–17:45</b>	<b>Closing Remarks</b> (MDCL 1105)	

## Saturday, August 26

<b>9:00–12:30</b>	<b>Tutorial T10</b> (ITB 238) Spec# <b>Workshop W2</b> (ITB 222) Formal Methods Education Workshop <b>Workshop W3</b> (ITB 225) International Workshop on Formal Aspects in Security and Trust <b>Workshop W4</b> (ITB 201) Workshop on Software Certification
<b>12:30–14:00</b>	<b>Lunch</b>
<b>14:00–17:30</b>	<b>Tutorial T10</b> (ITB 238) Spec# <b>Workshop W2</b> (ITB 222) Formal Methods Education Workshop <b>Workshop W3</b> (ITB 225) International Workshop on Formal Aspects in Security and Trust <b>Workshop W4</b> (ITB 201) Workshop on Software Certification

## Sunday, August 27

<b>9:00–12:30</b>	<b>Workshop W3</b> (ITB 225) International Workshop on Formal Aspects in Security and Trust <b>Workshop W4</b> (ITB 201) Workshop on Software Certification
<b>12:30–14:00</b>	<b>Lunch</b>

# Reception

The Reception takes place on Tuesday at the University Club (formerly Faculty Club) from 18:00 to 20:00. Hors d'oeuvres and wine are served. George Grosman's Jazz trio provides light entertainment. Prizes for the two best "defenses" of the Doctoral Symposium are presented. Take this opportunity to relax, meet and mingle, or stroll through the beautiful surroundings.

## Excursion and Banquet

### **15:00 Bus leaves for Fort George**

Fort George, a military structure at Niagara-on-the-Lake, was built by the British after the 1783 Treaty of Paris handed Fort Niagara to the Americans. The opposing fortifications of Fort Niagara in New York can be seen from the ramparts. Fort George was captured by the Americans in May 1813 at the Battle of Fort George. They used the fort as a base to invade Upper Canada but they were repulsed at the Battles of Stoney Creek and Beaver Dams. The fort was retaken by the British in December. The Americans attacked the fort again in 1814 but were unsuccessful. The fortification was used as a military training base through the Second World War under the name Camp Niagara. The grounds were eventually abandoned by the military in 1965 and Fort George is now a National Historic Site, maintained by Parks Canada. The staff maintains the image of the fort as it was during the early 19th century, with period costumes, exhibits, and displays of that time.

We take a guided tour through Fort George that ends with a demonstration of the muskets; there is some time left to explore the surroundings of the Fort or the historic village of Niagara-on-the-Lake. You can also skip the tour and stroll through Niagara-on-the-Lake on your own.

### **17:30 Bus leaves for Hillebrand Winery**

The climate of the Niagara Peninsula makes it ideal for wine grapes. A number of excellent wineries in picturesque settings can be found along the *wine route* that starts shortly after Hamilton and extends to Niagara Falls. Icewines are the local specialty.

After arrival at the Hillebrand Winery we have the opportunity to take a tour that ends with a wine tasting in the vineyards. Alternatively, you may just relax and enjoy some hors d'oeuvres before we start our dinner. We have the Best Paper Award to be presented and a fitting after dinner speech by Dave Parnas on *Formal Methods for Dinner Engineering*.

### **21:00 Bus leaves for McMaster**

# Bertrand Russell Archive

McMaster University is home to the scholarly study of Bertrand Russell (1872-1970), British philosopher, logician, essayist, and renowned peace advocate. The *Russell Archives*, which came to McMaster in the late 1960s, include the most extensive collection of original material by or about Russell in the world. Among its holdings are some 25,000 documents written by Russell. The collection includes about 50,000 letters, 80 books, 2,500 shorter essays, papers and articles, four personal journals, draft manuscripts of unpublished books, and Russell's own library of 3,300 volumes and numerous periodical publications and papers.

The McMaster Russell Research Centre, in addition to independent scholarly activity, publishes *Russell: the Journal of Bertrand Russell Studies* (now in its 35th year of publication), and *The Collected Papers of Bertrand Russell*. The *Russell Peace Lectures* are a prestigious annual lecture series, sponsored by the Centre for Peace Studies at McMaster University (Noam Chomsky being among the past lecturers).

The invited talk on Thursday morning is given by Dr. Nick Griffin, Director of the Russell Research Centre. Tours of the Russell Archive are organized during the lunch breaks on Thursday and Friday by Dr. Carl Spadoni, Research Collections Librarian (the archives are not open to the public).

## Excursions to Niagara Falls

On Tuesday and Saturday optional excursions go to Niagara Falls. The tours start at 9:00 at MDCL and return at 17:00. After a stop at the Whirlpool Aero Car the tour continues to the Falls. Participants are free to explore the Whirlpool and the Falls on their own. Meals and admissions are not included. See <http://www.niagaraparks.com/> for attractions.

## Noteworthy

- Tickets for the McMaster Recreational Facilities can be purchased at the registration desk. The facilities at the Ivor Wynne Center include a pool and tennis courts. Call extension 24612 or check <http://www.athrec.mcmaster.ca> for opening hours.
- For wireless access to the Internet, please see the people at the registration desk.

# Places to Eat

## On-Campus

**The Phoenix:** Just opposite the MDCL conference centre with a large patio, the ideal place to have a beer and some good pub food after an exhausting conference day. Open Monday – Friday 11am – 2am, Saturday 5pm – 2am.

**Quarters:** Enjoy pub food in a sports bar atmosphere at good value. Located in the basement of the Student Centre (MUSC)

## Selected Local Off-Campus

**Valentino's Place \$\$** A wonderful family owned and operated Italian restaurant. 824 King Street West (exit McMaster at Sterling, left at King), (905) 523-4240.

**Mac Roni's \$\$** Classic Italian food in a quiet and comfortable atmosphere. Includes patio. 1560 Main Street West (follow Main Street westwards), (905) 527-6422.

**The Bean Bar \$\$** Sip on an herbal tea, hot cider or martini while snacking on one of their many home-made cakes, pies and other deserts. 1020 King Street West (exit McMaster at Sterling, left at King), (905) 524-2326.

**Joya Sushi \$\$** Japanese and Korean cuisine, both eat-in and take-out. Offers lunch specials. 1630 Main Street West, Hamilton (follow Main Street westwards), (905) 525-1114.

**The Snooty Fox \$** Some 23 draught beer selections. Great atmosphere for a casual night out to the pub. 1011 King Street West (exit McMaster at Sterling, left at King), (905) 546-0000.

**The Pita Pit \$** A take-out restaurant filled with an expansive selection of healthy pita sandwiches. Popular among students. 7 Sterling Street (exit McMaster at Sterling Street), (905) 529-7482.

\$ = \$10 or less per plate

\$\$ = \$15 – \$20 per plate

# Places to Visit

## McMaster

### McMaster Museum of Art

<http://www.mcmaster.ca/museum/home.htm>

The University's permanent art collection comprises 6,000 works of art by Canadian, American, European, Chinese and Japanese artists, spanning 29 centuries. The permanent collection includes the work of Dürer, Courbet, Monet, Pissaro, van Gogh, Utrillo, Braque, Whistler, and Cassatt.

## Hamilton Area (<http://www.tourismhamilton.com/>)

### African Lion Safari

RR #1 Cambridge ON N1R 5S2

<http://www.lionsafari.com/home.html>

Canada's Original Safari Adventure! This wildlife park is home to over 1,000 exotic birds and animals that roam freely in large, drive-through game reserves. Exciting bird and animal performances for fun and education.

### Art Gallery of Hamilton

123 King St. W. Hamilton ON L8P 4S8

<http://www.artgalleryofhamilton.com/>

Ontario's third largest public art gallery which reopened May 28, 2005 with the banner exhibition "Heaven and Earth Unveiled: European Treasures from the Tanenbaum Collection". Over 200 paintings and sculptures.

### Dundurn Castle National Historic Site

610 York Blvd. Hamilton ON L8R 5H1

The official title is Dundurn National Historic Site, and Hamilton Military Museum, but it is better known simply as Dundurn Castle, a fascinating glimpse of Hamilton life in the mid 1800s.

### Royal Botanical Gardens

680 Plains Rd. W. Hamilton/Burlington ON L7T 4H4

<http://www.rbg.ca/>

Take an exhilarating trip through nature's most beautiful work! Visit Ontario's Royal Botanical Gardens and experience the spectacle of the world's largest lilac collection, 100,000 tulips, 250,000 iris blooms, 3,000 rose bushes, a festival series, a 30-kilometre trail system and four nature sanctuaries.

### Spencer Gorge/Webster's Falls

Short Rd. and Fallsview Rd. Greensville ON

<http://www.conservationhamilton.ca/parks/visit/spencer.asp>

Hamilton is also known as "The City of Waterfalls". This significant natural area contains two beautiful waterfalls: Webster's and Tews Falls. Webster's is a magnificent tiered waterfall and Tews, which towers at 41 metres, is only a few metres shorter than Niagara Falls.

**Wild Waterworks**

585 Van Wagners Beach Rd. Hamilton ON

[http://www.conservationhamilton.ca/parks/visit/Confed\\_Water.asp](http://www.conservationhamilton.ca/parks/visit/Confed_Water.asp)

There's no better way to spend a Summer day than at Wild Waterworks in Confederation Park—with Canada's largest outdoor Wave Pool, Squirt Works for the youngsters, waterslides, and the new action River Ride!

**Niagara Falls Area** (<http://www.niagarafallstourism.com/default.html>)**Maid of the Mist Steamboat**

5920 River Rd. Niagara Falls ON L2E 6V6

<http://www.niagaraparks.com/nfgg/maidmist.php>

**Journey Behind the Falls**

6650 Niagara River Parkway Niagara Falls ON

<http://www.niagaraparks.com/nfgg/behindthefalls.php>

**Botanical Nature Gardens**

2565 Niagara River Parkway Niagara Falls ON

<http://www.niagaraparks.com/nature/botanical.php>

One hundred acres of immaculately maintained gardens provide a visual feast for over 1 million visitors annually. Several hundred students have created, over a 60 year period, one of North America's most outstanding landscapes and botanical collections. The Gardens are open to visitors for a self guided tour of the Plant World as seen in the herb garden, the vegetable garden, the rock garden or the splendid arboretum, embracing one of Canada's finest collections of ornamental trees and shrubs.

**Butterfly Conservatory**

2405 Niagara River Parkway Niagara Falls ON

<http://www.niagaraparks.com/nature/butterfly.php>

In a tropical rainforest setting, explore an ingenious network of pathways among lush, exotic flora. Everywhere exquisite butterflies float in the warm, moist air or spread their iridescent wings on leaves and flowers.

**Marineland Canada**

7657 Portage Rd. Niagara Falls ON L2E 6X8

<http://www.marinelandcanada.com/>

At Marineland, you can make friends with killer whales at the new Friendship Cove. The largest killer whale habitat in the world is surrounded by walkways that include above water and underwater viewing. Beaching areas allow for an even closer look at these wonderful creatures. Best of all, the new Friendship Cove allows guests to touch the killer whales if desired. Experience the fabulous dolphin and sea lion show at the indoor aquarium.

**Toronto Area** (<http://www.toronto.ca/visitors/index.htm>)**Art Gallery of Ontario**

317 Dundas St. W. Toronto ON M5T 1G4

<http://www.ago.net/navigation/flash/frameset.cfm>



Founded in 1900 by a group of private citizens as the Art Museum of Toronto, the Art Gallery of Ontario is now the 10th largest art museum in North America, with a physical facility of 486,000 square feet. The AGO currently has more than 38,000 works in its collection, spanning the 11th century to present day.

### **CN Tower**

301 Front St. W. Toronto ON M5V 2T6

<http://www.cntower.ca/portal/>

Recently nominated one of the Seven Wonders of the Modern World, the CN Tower features glass floor observation decks, a revolving restaurant, and a Simulator Theatre. It is Toronto's most recognizable landmark and as such, it receives almost two million visitors annually.

### **Ontario Place**

955 Lakeshore Blvd W. Toronto ON M6K 3B9

<http://www.ontarioplace.com/>

A 96-acre modernistic culture, leisure and entertainment parkland complex built on three human-made islands over the lake, Ontario Place features restaurants, a children's village, an outdoor amphitheatre, a water play area, mini-golf, the Rush River Raft Ride and many other attractions. The highlight of Ontario Place is the Cinesphere—a six-story curved screen capable of showing not only regular 35 and 70 millimetre films, but IMAX films as well.

### **Ontario Science Centre**

770 Don Mills Rd. Toronto ON

<http://www.ontariosciencecentre.ca/>

The Ontario Science Centre offers interactive and multi-media exhibits with live demonstrations and exhibits on topics that include sports, space, the environment and the information highway.

### **Royal Ontario Museum (ROM)**

100 Queen's Park Toronto ON M5S 2C6

<http://www.rom.on.ca/RoyalOntarioMuseum>

The ROM is Canada's preeminent museum. It is the largest museum in Canada to explore both the natural world and humankind's cultural past. It houses world-renowned collections, is home to leading scholars, and, through innovative programs and galleries, engages over 700,000 visitors each year.

### **Toronto Zoo**

361A Old Finch Ave. Scarborough ON M1B 5K7

<http://www.torontozoo.com/>

Divided into geographic regions, the zoo's 710 acres feature more than 5,000 animals in their natural environments. Its new Africa Savanna exhibit includes a 32-acre walking safari through the wild lands of East Africa.

# Some Fun Facts about Canada

1. The second largest country in the world by area, Canada consists of 10 provinces and 3 territories and has six time zones.
2. Canada is about 4% smaller than the continent of Europe.
3. With oceans on three of its sides, Canada has the world's longest coastline.
4. Canada's two million lakes hold one-fourth of the fresh water in the world.
5. Canada and the United States share the world's longest undefended border, which stretches for 8,893 km.
6. The modern state of Canada was created in 1867 from British colonies in North America, but Canada did not gain full control over its constitution and legislative process until 1982.
7. Canada is a federal constitutional monarchy. The Canadian head of state is Elizabeth II, the Queen of the United Kingdom.
8. Although Canada has two official languages, English and French, the vast majority of those who speak French as a first language live in the province of Quebec.
9. About one million of Canada's 32 million people are of aboriginal descent.
10. The national symbol of Canada, the *Maple Leaf*, became a part of the Canadian flag in 1965, although the symbol was regionally used as a symbol as far back as the 1700s.
11. A one dollar coin is called a "loonie" after the picture of the loon on the back of the coin and a two dollar coin is called a "toonie", a humorous contraction of "two loonie". A loon is a black aquatic bird whose distinctive call is a symbol of the great Canadian north.
12. The *Canadian Shield* is a large circular-shaped bedrock region covering half of Canada. It is one of the world's richest areas in terms of mineral ores and is covered by thick forests and tundra.
13. Toronto, the largest city in Canada and the capital of Ontario, is the most culturally diverse city in the world, with 43% of the population belonging to minority groups.
14. Hamilton is in the center of *Southern Ontario*, the southernmost, warmest, richest, and most populated part of Canada.
15. The town of *Alert, Nunavut* is the northernmost permanently inhabited place in the world, lying 800 km from the North Pole.
16. *Iqaluit*, the capital of Nunavut, experiences 24 hours of daylight per day in June, and 6 hours per day in December.
17. Canada and the United States have an integrated telephone system. Thus both countries have the same country code (1), the same emergency telephone number (911), and the the same directory assistance telephone number (411).

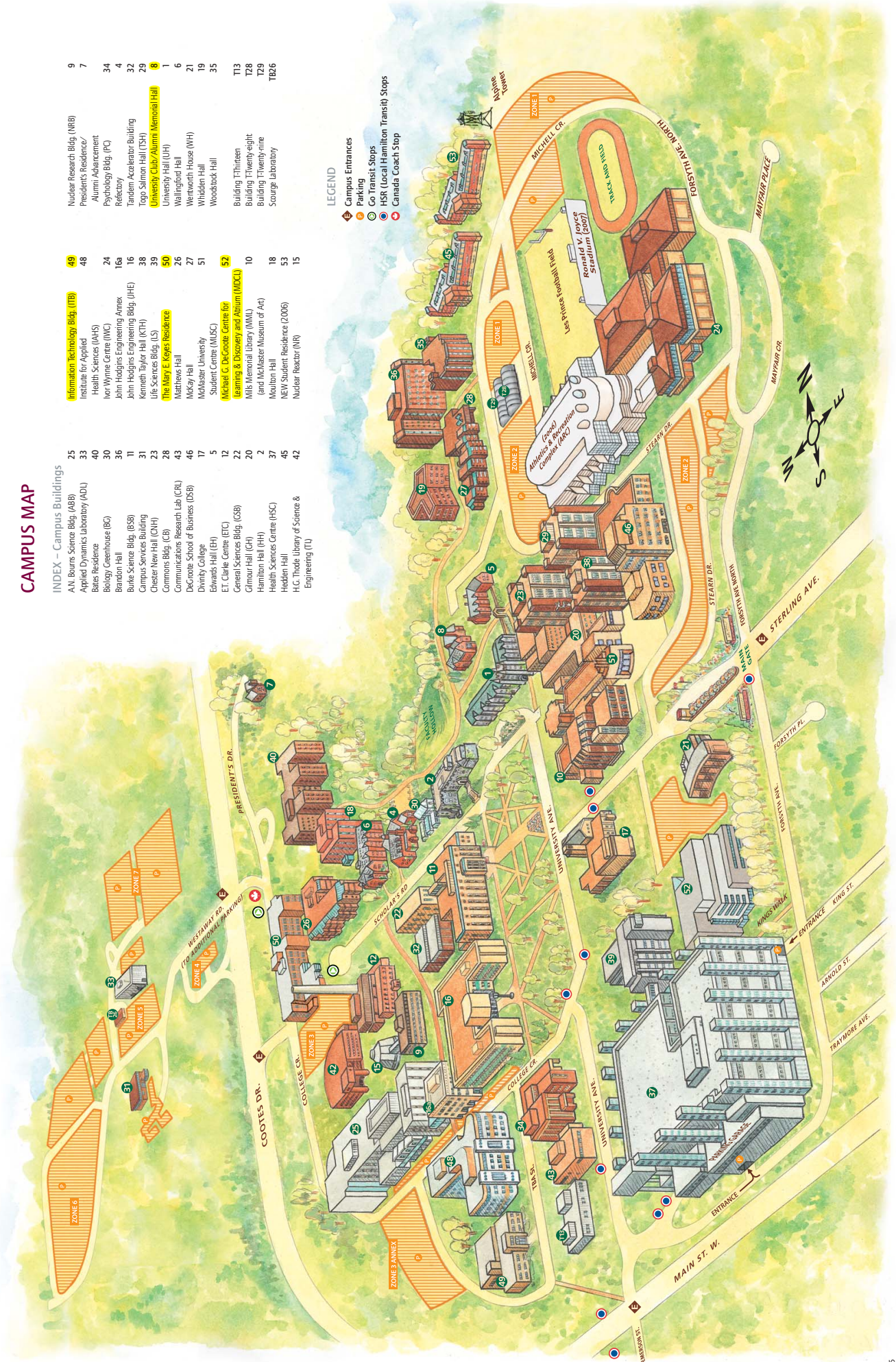
# CAMPUS MAP

## INDEX - Campus Buildings

25	A.N. Bourne Science Bldg. (AB8)	49	Information Technology Bldg. (ITB)	9	Nuclear Research Bldg. (NRB)
33	Applied Dynamics Laboratory (ADL)	48	Institute for Applied	7	President's Residence/
40	Bates Residence	24	Health Sciences (AHS)	34	Alumni Advancement
36	Biology Greenhouse (BG)	16a	Ivan Wynne Centre (IWC)	4	Psychology Bldg. (PC)
11	Brandon Hall	16	John Hodgins Engineering Annex	32	Refectory
31	Buik Science Bldg. (BSB)	38	John Hodgins Engineering Bldg. (JHE)	29	Tandem Accelerator Building
23	Campus Services Building	39	Kenneth Taylor Hall (KTH)	8	Urology Salmon Hall (USH)
28	Chester New Hall (CNH)	50	The Mary E. Kapes Residence	1	University Club/Alumni (Memorial Hall)
43	Commons Bldg. (CB)	26	Matthews Hall	6	University Hall (UH)
46	Communications Research Lab (CRL)	27	McKay Hall	21	Wellington House (WH)
17	DeCooze School of Business (DSB)	51	McMaster University	19	Whidden Hall
5	Divinity College	52	Michael G. DeCooze Centre for Learning & Discovery and Autism (MDCU)	35	Woodstock Hall
12	Edwards Hall (EH)	10	Mills Memorial Library (MML)	TT3	Building Thirteen
22	E.T. Clarke Centre (ETC)	2	Grand McMaster Museum of Art	T28	Building Twenty-eight
20	General Sciences Bldg. (GSB)	18	Moulton Hall	T29	Building Twenty-nine
10	Gilmour Hall (GH)	15	NEW Student Residence (2006)	TB26	Source Laboratory
2	Hamilton Hall (HH)	42	H.C. Thode Library of Science & Engineering (TL)		
37	Health Sciences Centre (HSC)				
45	Hidden Hall				
42	H.C. Thode Library of Science & Engineering (TL)				

## LEGEND

- Campus Entrances
- Parking
- Go Transit Stops
- HSR (Local Hamilton Transit) Stops
- Canada Coach Stop



# Sponsors

