Project Planning Report for an Instructional Centre at the University of Toronto Mississauga

May, 2009

I Executive Summary

With the recent investment in infrastructure and capital projects, and the recruitment of outstanding faculty and staff, UTM has become a campus of choice for many high school students seeking a university degree. In the current recruitment cycle, UTM has received over 12,000 applications (3,700 of them first choice), for a target incoming class of 3,200. In 2008-09, the entering average of students was 83.5%. UTM enrolls 22% of U of T's first entry population. UTM currently has a student population of 9,000 FTEs, divided amongst Science (36%), Humanities and Social Sciences (44%), and Commerce and Management (20%). At the graduate level there are 256 FTE professional masters students and a total of 111FTE graduate students on site, affiliated with the campus (e.g. Biology has 44 doctoral-stream students on site). UTM faculty participates fully in tri-campus doctoral-stream programs, with many more doctoral-stream students off site.

UTM's inventory of classrooms, seminar rooms, laboratories and computing facilities has not increased since 2002/03, while the number of students has continued to grow. Undergraduate enrolment at UTM has increased by 56% since 2002/03. With this significant increase in undergraduate enrolment and a projected doubling of graduate students, UTM is experiencing a serious shortage of classroom spaces, currently 60% of the space recommended by the Council of Ontario Universities space guidelines for classroom facilities.

Investments in the capacity and quality of undergraduate education support future generations of graduate students, faculty and researchers, and the highly skilled individuals needed for innovation in the private sector and beyond. Researchers at UTM actively collaborate and partner with the local industry hub in areas like R&D, technology, and pharmaceuticals. Strategic priorities for UTM include enriching the student experience, enhancing infrastructure, building upon academic programs, and strengthening University faculty. As part of U of T's overall strategic planning, UTM is planning further enrollment growth. The campus plans to increase undergraduate FTE enrolment in the long term by a total of 3,300 undergraduate students, and graduate FTE enrolment by approximately 900 students.

Additional, modernized instructional spaces are needed to accommodate UTM's growth to date and planned growth in the coming years. The proposed Instructional Centre (IC), which will house nearly half of the campus' facilities required for instruction under a single roof, will add much-needed instructional space to UTM's existing inventory, configured for maximal flexibility in adapting to the teaching and learning needs and instructional best practices of the early 21st century. The new Instructional Centre will provide critical high- and low-capacity instructional space to accommodate current enrolment, to allow more students to enroll in UTM's programs, and to open up more small classes and tutorials (educational formats that are noted for contributing to a high quality educational experience). The Centre will have additional impacts on the quality of undergraduate instruction: by reducing the current shortage of instructional space, UTM will have more room to create course timetables more focused on student success, and less constricted by limited space. Finally, the technological capabilities of the centre will enable instructors to meet emergent best practices in teaching across a full range of UTM's academic programming, including the sciences.

The facility will serve the student population, particularly undergraduate students, with a range of classrooms, study space and amenities. The space program provides for 27 new classrooms, of varying sizes in 4,704 nasm with a total of 2,340 seats and 535 nasm of student study space with 248 study stations. The Instructional Centre will provide this much needed instructional space in digitally-enabled facilities. In many ways this stand alone facility will be unique in Canada, incorporating the full suite of activities associated with classroom teaching and new forms of digital delivery and interaction. The advanced digital infrastructure of the building will allow classrooms to serve not as insular and hermetic spaces, but as spaces of connectivity to other classrooms, research facilities, databases, and knowledge networks. The provision of computer

and general study spaces throughout the building will help alleviate pressure on the popular Hazel McCallion Academic Learning Centre (HMALC), now often operating at or over capacity.

This building will significantly enhance the quality of the student experience on campus and will provide faculty with modern classrooms capable of delivering the highest quality of instruction to both undergraduate and graduate students, and to nurture new forms of learning and new means of communications. The proximity of technical services will ensure the quality of service in the vastly growing use of technology in the classroom. Along with study areas and lounges, the large number of students in this area, attending classes for long periods in a day, will have access to food and related retail services (photocopiers, change machines, ATM etc.).

The nature of its program and proposed location distinguishes this facility as a significant and vibrant hub for student life and learning. The Instructional Centre is planned on a prominent site, visible from Outer Circle Road and North campus quadrant; it will serve the campus at large as both a significant campus entry point and link between academic buildings. By locating the IC between the North Building and the HMALC, the North Building, currently somewhat isolated, will become integrated with the rest of the campus. Thus, just as the campus has a well recognized "5 minute walk" between the South and North buildings, this building will create an additional campus walk, perpendicular to the 5 min walk, and looping on to the North Building. This building also plays a significant role at the campus planning level as it will define one edge of a large campus green: an open space approximately the size of UofT St. George's front campus, King's College Circle. This side of the campus will become even more of a focal point for access to the campus via drop off/ pick up areas by both vehicles and buses.

In the summer of 2008, the Provincial Government solicited capital projects from post-secondary educational (PSE) institutions. UTM developed five capital projects (Instructional Centre, Science Complex, Convergence Institute, North Campus, and South Building master plan) to enable full expansion, of which the Instructional Centre and the Science Complex were forwarded by the U of T to the Provincial Government. These two projects were presented in context at UTM in December 2008 to the Courtyard Group, a consulting firm hired by the Government to assess capital needs of PSE institutions. The U of T's Governing Council approved project committees for UTM's Instructional Centre and Science Complex, and these committees started meeting February 2009. Subsequently, the Federal Government announced a call for proposals for infrastructure, with successful projects receiving 50% funding. UTM's Instructional Centre was submitted through the U of T to the Federal Government (along with five other UofT proposals), in anticipation of a 50% match from the Provincial Government. The UTM projects have been reported to the UTM Council.

The University of Toronto has set as its goal a target of 85% of the COU space guidelines for classroom space. The new Instructional Centre at UTM will allow it to meet that target, for both its current student FTE of 9,045 and its' planned FTE for 2013/14 of 10,344.

The total projected cost of the new Instructional Centre (6,051 net assignable square meters or 12,103 gross square meters) is $70,000,000. The total operating costs are estimated to be approximately $1.7 million annually. Funding for this project is through the Federal Government's Knowledge Infrastructure Fund. The project will be 'materially complete' by March 31, 2011, as stipulated by funding with full occupancy anticipated in September 2011.

Table of Contents

II Project Background

a) Membership

Paul Donoghue, CAO University of Toronto Mississauga (Co-Chair)
Prof. Ian Orchard, Vice-President & Principal University of Toronto Mississauga (Co-Chair)
Prof. Gage Averill, Vice-Principal Academic and Dean University of Toronto Mississauga (Co-Chair)
Sarah Birtles, Planner, Office of the AVP Campus and Facilities Planning (Secretary)
Jaya Persaud, Undergraduate student, Environment Program and Geography, UTM
Kate Dupuis, Graduate student/TA, Psychology, UTM
Anne Cordon, Senior Lecturer, Biology, UTM
Pascal Michelucci, Associate Professor, Language Studies
Lee Bailey, Senior Lecturer, Economics, UTM
Ian Whyte, Associate Librarian, Teaching and Learning, & Deputy Chief Librarian, UTM
Diane Crocker, Registrar & Director of Enrolment Management, UTM
Duncan Hill, Academic Scheduler, UTM
Paull Goldsmith, Director, Facilities Management & Planning, UTM
Stepanka Elias, Facilities Planner, UTM
Anil Vyas, Director, Technology Resource Centre, UTM
Joe Lim, Chief Information Officer, UTM
Julian Binks, Director, Planning and Estimating, Capital Projects, Real Estate Operations
Gail Milgrom, Managing Director, Office of the AVP Campus and Facilities Planning

b) Terms of Reference

1. Make recommendations for a detailed space program and functional layout for the Instructional Centre.
2. Identify the space program as it is related to the existing and approved academic plan at UTM; taking into account the impact of approved and proposed program that are reflected in increasing faculty, student and staff complement.
3. Demonstrate that the proposed space program will be consistent with the Council of Ontario Universities' and the University's own space guidelines.
4. Identify all secondary effects, including space reallocations from the existing site, impact on the delivery of academic programs during construction and the possible required relocation as required to implement the plan of existing units.
5. Address campus-wide planning directives as set out in the campus master plan, open space plan, urban design criteria, and site conditions that respond to the broader University community.
6. Identify equipment and moveable furnishings necessary to the project and their estimated cost.
7. Identify all data, networking and communication requirements and their related costs.
8. Identify all security, occupational health and safety and accessibility requirements and their related costs.
9. Identify all costs associated with transition during construction and secondary effects resulting from the realization of this project.
10. Determine a total project cost estimate (TPC) for the capital project including costs of implementation in phases if required, and also identifying all resource costs to the University.
11. Identify all sources of funding for capital and operating costs.
12. Complete report by May 2009.

c) Background Information

The University of Toronto Mississauga (UTM) is a 97 hectare campus located within the Regional Municipality of Peel, an area of significant population and economic growth. In its size, about 11,000 students in total (9,000 FTE), and breadth of academic programs, UTM is comparable to a medium-sized comprehensive university in the Ontario university system. In 2002-03 UTM saw the completion of its last new instructional building (the Communication, Culture & Technology building). Since that time, UTM has experienced a 48% increase in undergraduate enrolment (56% FTE). Given the significant increase in undergraduate enrolment and a projected more than doubling of graduate students, UTM is experiencing a serious shortage of classroom spaces, currently at 60% of the space recommended by the Council of Ontario Universities space guidelines for classroom facilities. (Overall, UTM is at 71% of the COU space guideline).

Academic and campus-wide planning sets the strategic priorities of UTM, and these have been clearly articulated in the UTM planning documents "UTM Steps Up" and even more recently in UTM's submission to the "Towards 2030" planning exercise. Significant in these plans has been the need for capital renewal – enhancing the quality and quantity of teaching, research and student space; and of achieving critical mass in the complement of faculty, staff and students. Indeed, UTM's ambitions (Towards 2030) are to achieve a total population of about 13,300FTEs.

UTM Fall/Winter Student Headcount and FTE

Headcount			
	2002-2003	**2008-09**	**2013-14**
Undergraduate	7,118	10,506	11,655
Graduate*	250	430	700
Total	7,368	10,936	12,355

FTE			
	2002-2003	**2008-09**	**2013-14**
Undergraduate	5,657	8,678	9694
Graduate*	225	367	650
Total	5,882	9,045	10,344

**Graduate counts include both students registered in UTM graduate programs and graduate students who self identify as physically present at UTM*

A new wave of enrolment growth is anticipated for the Greater Toronto Area, starting with undergraduates and quickly translating into enrolment pressure in professional and graduate programs. The University of Toronto will play an important role in meeting this demand, and is committed to a growth plan for its three campuses. To meet the projected demand in the GTA for additional places in the next 5-10 years, particularly in the Region of Peel, UTM is planning to grow enrolment by approximately 1200 FTE undergraduate students, and by approximately 300 graduate students. To meet the current demand and the anticipated growth, UTM needs not only to increase its classroom and teaching laboratory spaces but also to vastly improve its existing inventory of academic facilities to meet the needs of current and future students.

In the summer of 2008, the Provincial Government solicited capital projects from post-secondary educational (PSE) institutions. UTM developed five capital projects (Instructional Centre, Science Complex, Convergence Institute, North campus, and South Building master plan) to enable full expansion, of which the Instructional Centre and the Science Complex were forwarded by the U of T to the Provincial Government. These two projects were presented in context at UTM in December 2008 to the Courtyard Group, a consulting firm hired by the Government to assess capital needs of PSE institutions. The U of T's Governing Council approved project committees for UTM's Instructional Centre and Science Complex, and these committees started meeting February 2009. Subsequently, the Federal Government announced a call for proposals for

infrastructure, with successful projects receiving 50% funding. The application deadline was March 31, 2009 for projects that could be "materially complete" by March 31, 2011. UTM's Instructional Centre was submitted through the U of T to the Federal Government (along with five other UofT proposals), in anticipation of a 50% match from the Provincial Government. The UTM projects have been reported to the UTM Council.

The Instructional Centre is an essential component of UTM's future growth and development. The inventory of classrooms and seminar rooms has not increased since 2003 while the number of students has continued to grow. The current facilities are being fully utilized, above COU guidelines, and additional, modernized instructional spaces are needed to accommodate UTM's growth to date and planned growth in the coming years. The proposed Instructional Centre will add much-needed instructional space to UTM's existing inventory, configured for maximal flexibility in adapting to the teaching and learning needs and instructional best practices of the early 21st century. This will increase the quality of undergraduate instruction and increase access to undergraduate education as UTM strives to meet current and future enrolment demands.

d) Statement of Academic Plan

With the recent investment in infrastructure and capital projects, and the recruitment of outstanding faculty and staff, UTM has become a campus of choice for many high school students seeking a university degree. In the current recruitment cycle, UTM has received over 12,000 applications (3,700 of them first choice), for a target incoming class of 3,200. In 2008-09, the entering average of students was 83.5%. UTM enrolls 22% of U of T's first entry population. UTM currently has a student population of 9,000 FTEs, divided amongst Science (36%), Humanities and Social Sciences (44%), and Commerce and Management (20%). At the graduate level there are 256 FTE professional masters students and a total of 111FTE graduate students on site, affiliated with the campus (e.g. Biology has 44 doctoral-stream students on site). UTM faculty participates fully in tri-campus doctoral-stream programs, with many more doctoral-stream students off site.

Academic planning is driven by the departments and is informed by departmental external reviews. Chairs, working with the Vice-Principal Academic & Dean, engage in a consultative process to produce 5-year planning cycles. UTM's programs and departments are encouraged to review their offerings and to renew and update constantly, thus staying at the forefront of instructional design. Comprehensive programs offered at UTM span such disciplines as Commerce, Earth Sciences, Physical Anthropology, Visual Culture and Communications, Political Science, Linguistics, Life Sciences, Forensic Science, Environmental Management, Digital Enterprise Management, Biotechnology, the Management of Innovation and Biomedical Communications. UTM's strength in these areas is found at both the undergraduate and graduate levels.

Investments in the capacity and quality of undergraduate education support future generations of graduate students, faculty and researchers, and the highly skilled individuals needed for innovation in the private sector and beyond. Researchers at UTM actively collaborate and partner with the local industry hub in areas like R&D, technology, and pharmaceuticals.

Strategic priorities for UTM include enriching the student experience, enhancing infrastructure, building upon academic programs, and strengthening University faculty. As part of U of T's overall strategic planning, UTM is planning further enrollment growth. The campus plans to increase undergraduate FTE enrolment in the long term by a total of 3,300 undergraduate students, and graduate FTE enrolment by approximately 900 students.

UTM's current complement of lecture halls, classrooms, and seminar rooms restrict access to undergraduate education and inhibit quality of instruction. Currently, lecture offerings are limited by space, and these space limitations restrict the number of students UTM can admit. For example, room bookings are centrally-controlled through the Office of the Registrar, and the

timetable is currently scheduled from 8 a.m. to 9 p.m., Monday through Friday and Saturday from 9 a.m. to 2 p.m. There are no more seats available to accommodate increases in enrolment. The new Instructional Centre will provide critical high- and low-capacity instructional space to accommodate current enrolment, to allow more students to enroll in UTM's programs, and to open up more small classes and tutorials (educational formats that are noted for contributing to a high quality educational experience). The Centre will have additional impacts on the quality of undergraduate instruction: by reducing the current shortage of instructional space, UTM will have more room to create course timetables more focused on student success, and less constricted by limited space. Finally, the technological capabilities of the centre will enable instructors to meet emergent best practices in teaching across a full range of UTM's academic programming, including the sciences.

e) Space Requirements

Instructional Facilities

Quantity
UTM currently has 6,261 nasm of space in the Classroom category.

Overview of Existing UTM Classroom Facilities – by Building

Controlled by:	South Building	North Building	CCT	Kaneff	Total NASM
Registrar	1608	1995	1502	388	5493
Other Departments	450	0	0	270	720
AccessAbility Resource Centre	11	37	0	0	48
TOTAL	2069	2032	1502	658	6261

The COU classroom space guidelines were used to determine the shortfall of classroom facilities for the current academic year and for 2013/14. A factor of 85% of the COU space guideline has been accepted by the University of Toronto as a reasonable target to achieve. The current shortfall of 3,196 nasm will increase to 4,554 nasm when UTM meets its projected 2013/14 FTE of 10,344 and headcount of 12,355 students. The new Instructional Centre building will add 4,704 nasm of classroom facilities to the campus while 972 nasm of existing classroom facilities will be removed from service, as described under on page 10 of this section. At that time, UTM will be at 9,993 nasm, close to the 10,815 nasm target set for 2013/2014.

Classroom Nasm Actual and Required

Year	FTE	Nasm required at 85% of COU	Actual Nasm	Shortfall Nasm	% of COU (85% Target)
2007/08	8,624	9,017	6,384	2,633	60.2%
2008/09	9,045	9,457	6,261	3,196	56.3%
2013/14 without Instructional Centre	10,344	10,815	6,261	4,554	49.2%
2013/14 with Instructional Centre	10,344	10,815	10,965	-150	86.2%
2013/14 with IC and classrooms removed	10,344	10,815	9,993	900	78.5%

Included in the existing inventory are the 47 classrooms under the control of the Registrar's Office used for undergraduate instruction. (The remaining 10 classrooms are departmentally controlled.) The following chart illustrates the undergraduate instructional space shortage by comparing current room inventory to COU-generated space needs at current and projected enrolment levels.

Room size groups	2008 room inventory	2008 room requirements	2013 room requirements
1-30	9	15	16.8
31-40	4	8	9.0
41-50	6	10	11.2
51-65	4	5	6.1
66-99	12	5	6.2
100-150	4	4	4.5
151-377	7	5	6.1
378+	1	1	1.3
Total	**47**	**54**	**61**

Distribution and utilization

An analysis of room utilization shows that UTM's classrooms are used on average 39 hours per week for regularly scheduled instruction, well above the 34 hours per week guideline set by COU. Further analysis demonstrates that the current room inventory does not adequately match the distribution of course offerings among size groupings. The following chart illustrates UTM room utilization by comparing utilization to the COU guideline at current and projected enrolment levels:

Room size groups	2008 inventory	2008 utilization (hours per week in rooms/number of rooms)	2008 utilization (hours per week offered/number of rooms)	2013 utilization (hours per week offered/number of rooms)	COU recommended utilization
1-30	9	31	55	63	34
31-40	4	37	66	77	34
41-50	6	44	55	63	34
51-65	4	43	45	52	34
66-99	12	40	15	18	34
100-150	4	38	33	38	34
151-377	7	41	26	30	34
378+	1	46	39	45	34
Total	**47**	**39**	**38**	**44**	**34**

The discrepancy between room utilization as allocated, versus potential room utilization as offered, demonstrates that the current inventory is insufficient not only in quantity but in distribution. The result is that many course offerings are allocated unsuitably sized rooms.

Quality

UTM's current classroom inventory contains a significant number of substandard spaces that are unsuitable for teaching, and create chronic problems in both the students' and instructors' classroom experience. In order to meet the needs of instructors now and in the future, the current inventory has been assessed to identify rooms that are unsuitable teaching spaces and require renovation or replacement. The following chart details the current room inventory and the changes required to rooms in each size grouping.

Room size groups	2008 inventory	Projected inventory	Changes
1-30	9	2	-7
31-40	4	5	1
41-50	6	6	0
51-65	4	3	-1
66-99	12	8	-4
100-150	4	1	-3
151-377	7	6	-1
378+	1	1	0
Total	**47**	**32**	**-15**

See Appendix 2 for a detailed survey of the changes.

Of the 47 existing rooms, 17 priority classrooms have been identified for alternate uses; to provide space for expansion such as crush space, meeting space, office and lab conversion. The table above indicates a net reduction of classrooms from the existing inventory of 15 rooms, which accounts for the 17 removed, plus 2 added in the North Building. This adjustment results in a reduction of 972 nasm and a projected Classroom inventory of 5289 nasm within UTM's existing facilities.

There are also plans to improve 5 classrooms through renovation and by furnishing with fewer stations; the end goal is to provide a complete inventory of optimal learning space for students.

Proposed IC Space program

The proposed instructional space program for the IC has been designed to address the projected shortfall in quantity, distribution, and quality of classrooms at UTM. The following chart demonstrates how the IC will help UTM meet COU room utilization guidelines while incorporating some flexibility to enhance UTM's ability to meet demand for undergraduate education.

Room size groups	2013 room requirements	Projected inventory	IC proposed program	Total 2013 inventory incl. IC	2013 course hours per week	2013 room utilization hours per week
1-30	16.8	2	10	12	564	47
31-40	9	5	4	9	307	34
41-50	11.2	6	2	8	381	48
51-65	6.1	3	3	6	208	35
66-99	6.2	8	0	8	211	26
100-150	4.5	1	3	4	152	38
151-377	6.1	6	4	10	209	21
378+	1.3	1	1	2	45	23
Total	**61**	**32**	**27**	**59**	**2,076**	**35**

The space program outlined above has been designed with two key factors in mind: firstly, the program provides rooms in size brackets that will help ease the space shortage in each of those areas as identified using COU guidelines. Second, the program is weighted towards those room sizes that will provide the most amount of flexibility while accommodating the relative space requirements. For example, by including a minimum size of 30 stations, the space program provides flexible space that will help accommodate needs in the 1-25 range and in the 26-30

range. This built-in flexibility will enable UTM to refine and improve course offerings and schedules beyond the current space-constrained model.

The proposed program is based on projections that have been calculated using current course enrolment trends, including average class sizes, durations, and course load per student.

Technology Resource Centre

The Microelectronics department currently has 257 nasm of space at UTM, predominantly located in the South Building.

Building	NASM	# of work stations	Comments
South	212	11	Central location
North	27	2	Satellite location
CCT	18	2	Satellite location
TOTAL	257	15	

Office space has been included in the program to provide an additional satellite location.

Student Study Space

Quantity
UTM has 3,220 nasm of study space with 1180 stations inside the library and 177 stations outside of the library, for a total of 1357 stations. This includes a mix of reading rooms, study carrels, open-stack reading rooms, open computer rooms and study areas.

Building	NASM	# Study Spaces	Type
South	145	33	Computer lab
North	252	100	variety
CCT	75	40	Computer lab
Kaneff	68	NA	MMPA Case Study Rm
Student Centre	5	4	Computer stations (standing)
HMALC	2675	1180	variety
TOTAL	3220	1357	

The COU space guidelines recommend study space for 25% of the student population at 2.4 nasm per space; and the University of Toronto has identified 85% of the COU space guideline for study spaces as a reasonable target to achieve. Currently, UTM is only at 59% and when UTM meets its projected enrolment plan for 2013/14 FTE of 10,344 this percentage will fall to 52% if no additional study facilities are created.

Study Space Nasm Actual and Required

Year	FTE	Nasm required at 85% of COU	Actual Nasm	Shortfall Nasm	% of COU (85% Target)
2008/09	9,045	4,613	3,220	1,393	59.3%
2013/14 w/o IC	10,344	5,275	3,220	2,055	51.9%
2013/14 with IC and increased inventory	10,344	5,275	3,850	1,425	62.0%

The projected 2013/14 shortfall is 594 spaces; 40 spaces planned within existing facilities, as described below, plus the IC will add 288 study spaces. This will bring the campus total to 1,645. UTM will need to address the remaining shortfall in future projects.

Quality

Study space has been raised as a significant student issue at the University of Toronto Mississauga during the last six years, especially given the unprecedented growth in enrolment. Building projects on campus, notably the Hazel McCallion Academic Learning Centre, the Communication, Culture and Technology Building, and the Recreation, Athletics and Wellness Centre have helped to address study space constraints. Ongoing feedback from students and student groups continue to indicate study space concerns.

UTM's library, Hazel McCallion Academic Learning Centre (HMALC) often operates at or over capacity and as such, highlights the demand for well-designed, attractive, flexible, and modern study space on campus. The need for increased study space was substantiated in a recent report entitled: *Spaces for Study and Success: Report on the HMALC and its Environment at the University of Toronto at Mississauga* (Given 2008) See Appendix 8.

The report succinctly summarizes HMALC place on campus as "fulfilling a campus need for student social space, which is beyond this institution's original, academic purpose. The fact that students are flocking to this space in such large numbers, at all times of day, points to a gap on campus for spaces that meet students' diverse social needs." (Given 2008, p.3)

In response to this report and deficit identified as compared to COU, Campus and Facilities Planning were engaged in a master plan for study space; the master plan identifies potential locations for additional study tables, computer terminals, and lounge seating in existing buildings across campus. The first project was implemented in the North Building with the addition of two 4-person study tables, six 4-person cloverleaf computer terminals, 7 laptop stations, and lounge seating to accommodate 8. The existing inventory includes these stations. Plans for the CCT and South Buildings are underway.

Student/Food Services

UTM has 3511 nasm of food service space spread across the campus:

Food Services Space			
Building	**NASM**	**Seats**	**Comments**
South	1793	637	'Cornerstone' locations: Spigel Hall and Meeting Place
North	490	162	'Cornerstone':Cafeteria
CCT	222	57	Circuit Break Cafe
HMALC	93	29	Starbucks
Student Centre	270	129	Blind Duck Pub
Oscar Peterson	637	225	'Cornerstone': Residence Dining Hall-Colman Commons
RAWC	6	NA	Vending Machines
TOTAL	3511	1233	

The existing inventory is made up of a variety of food service space, including "cornerstone" locations and "grab and go" outlets:

Cornerstone outlets are ideally located in areas where people naturally mass; in locations which are already a destination. Food service locations themselves will not bring people to an area where they otherwise would not go. Having said this, food service can strengthen an already existing "destination location" and possibly even make it a special location.

The current food service facilities do not match overall campus development. A master plan was developed by Food Services to identify problem areas with its existing offerings, and potential for improvement and expansion. (see Appendix 9) Current proposals in the master plan will adjust the South Building's existing food service inventory: plans to redevelop the Meeting Place are underway, as part of the South Building master plan; a comprehensive food facility is being proposed, with expansion into the existing Registrar's Space once this office has relocated to the Student Services Plaza. This will facilitate re-allocation of Spigel Hall, the campus' largest food service outlet which is poorly located in the basement, for a more appropriate use.

Approximately 300 seats are included in the Meeting Place expansion. However, with the loss of Spigel Hall, campus-wide seating will experience a net reduction to 896 seats in the short term (from 1233 listed above). The Instructional Centre will add 120 seats to the inventory for a new total of 1016 seats.

Even with the proposed Instructional Centre, UTM falls short of the COU space guidelines, which provide a range of .5-.7 nasm per FTE. Currently, no Ontario campus provides food facilities at greater than .5 and the system average is .33. There are a number of factors which drive the requirement of food service on any given campus. Food service across Ontario institutions range from.16 nasm to .47 nasm per FTE. The location of the campus and ease of access to off-campus food choices have significant impact. UTM has set a target for its campus needs at .45, with a projected 10,344 FTE students. At 3838 nasm, UTM will be at .37 nasm/FTE and will need to address the shortfall in future projects.

III Project Description

a) Vision Statement

The campus, which has a concentration on undergraduate education and unique professional masters programs along with doctoral-stream training, is in need of additional and contemporary instructional facilities to accommodate past and planned growth. While retrofitting has occurred almost continuously since 2001, a new stand alone structure is proposed that will house nearly half of the campus' facilities required for instruction under a single roof.

This building will significantly enhance the quality of the student experience on campus and will provide faculty with modern classrooms capable of delivering the highest quality of instruction to both undergraduate and graduate students, and to nurture new forms of learning and new means of communications. The proximity of technical services will ensure the quality of service in the vastly growing use of technology in the classroom. Along with typical student amenities such as computer & general study rooms and lounges, the large number of students in this area, attending classes for long periods in a day, will require access to food and related retail services (photocopiers, change machines, ATM etc.).

The Instructional Centre (IC) will provide this much needed instructional space, and will offer digitally-enabled facilities for teaching. In many ways this stand alone facility will be unique in Canada, incorporating the full suite of activities associated with classroom teaching and new forms of digital delivery and interaction. The advanced digital infrastructure of the building will allow classrooms to serve not as insular and hermetic spaces, but as spaces of connectivity to other classrooms, research facilities, databases, and knowledge networks. The provision of computer and general study spaces throughout the building will help alleviate pressure on the popular Hazel McCallion Academic Learning Centre (HMALC), now often operating at or over capacity.

By locating the IC between the North Building and the HMALC, the North Building, currently somewhat isolated, will become integrated with the rest of the campus. Thus, just as the campus has a well recognized "5 minute walk" between the South and North buildings, this building will create an additional campus walk, between the Kaneff, CCT, HMALC and the new Instructional Centre (perpendicular to the 5 min walk), and looping on to the North Building. Thus attention must be paid to the exits/entrances of the IC that acknowledges and supports this sense of connection to the campus. This side of the campus will become even more of a focal point for access to the campus via drop off/ pick up areas by both vehicles and buses; attention to the relationship of the Instructional Centre to Outer Circle Road and the HMALC is important to accommodate this enhanced function.

The Centre will be open 7am to 10pm, Monday to Friday, and appropriately for teaching on Saturday. It is anticipated that an average of 1400 students will be taking classes at any one time, double that between classes, and so attention to student traffic flow in/out and throughout is essential. In addition, UTM may want to allow 24 hour opening of the computer/study room(s), while at the same time preserving the security and locking up of the remaining parts of the Centre. Detailed attention should be given to the design and location of this space. Areas with limited access should be appropriately secured. For example, food services such as serveries and kiosks may require security screen partitions. Health and safety of students who might use the 24 hour space is paramount.

b) Space Program and Functional Plan

Space Program

	Total Rooms Proposed	NASM Per unit Proposed	Total NASM Proposed	Comments
Instructional Facilities				
Tiered Lecture Hall (500-Seat)	1	800	800	1.60 nasm/seat
Tiered Lecture Hall (350-Seat)	1	600	600	1.70 nasm/seat
Tiered Lecture Room (150-Seat)	3	270	810	1.80 nasm/seat
Tiered Lecture Room (100-Seat)	3	200	600	2.00 nasm/seat
Tiered Floor Classroom(60-Seat)	3	135	405	2.40 nasm/seat
Tiered Floor Classroom(50-Seat)	2	115	230	2.25 nasm/seat
Flat Floor Classroom(40-Seat)	4	96	384	2.40 nasm/seat
Flat Floor Classroom (30-Seat)	10	75	750	2.50 nasm/seat
Classroom Service (Allowance)	Multi	125	125	
Subtotal - Instructional Facilities:	**27**		**4704**	
Student Study Space				
Group Study Room (6-Seat)	10	12	120	2 nasm/seat
General Study-Lounge Area	2	40	80	2.5 nasm/seat
General Study-Group Tables	2	100	200	2.1 nasm/seat
Computer Study Area (60-Seat)	1	135	135	2nd floor
Subtotal – Student Study Space:	**17**		**535**	
Student/Food Services				
Open Seating Area	1	210	210	1.75 nasm/seat
Servery	1	37	37	
Preparation Area	1	37	37	
Wash-up Area	1	6	6	
Dry Storage Area	1	17	17	
Refrigerator/Freezer Area	1	15	15	
Office	1	5	5	
Subtotal – Food Services:	**7**		**327**	
Technology Resource Centre				
Technician Stations	2	13	26	
A/V Repair Area	1	14	14	
Subtotal – Technology Resource:	**3**		**40**	
General Storage		420	420	Below lecture halls
TOTAL	**54**		**6,051**	**nasm**
			12,103	**gsm (2:1)**

The gross up factor for this building is 2.0, which considers a space allowance needed for the activity in corridors generated by classrooms and for crush space. The gross up factor also reflects the Instructional Centre's significant role on campus: a new campus hub for the Northwest quadrant, offering student services, and a new connection from the North Building to the rest of the campus.

A space program reconciliation, prepare by the design consultants, will be required at the end of schematic design, design development and prior to completion of working drawings.

Instructional Facilities

The space program provides for 27 new classrooms, of varying sizes in 4,704 nasm with a total of 2340 seats. All classrooms and instructional space in the building will be controlled centrally and are considered general campus resources. The IC provides an opportunity to expand UTM's existing space inventory in a way that has a significant positive impact on instructional quality. As such, the proposed program includes tiered case-style rooms in the 50- to 100-seat ranges, a style preferred by instructors and students alike in a range of disciplines. Rooms in the 150- to 500-seat ranges will utilize a wide tiered style – one that has been proven successful by existing rooms at UTM. In the lower size ranges, flat-floor classrooms provide the flexibility to be configured in either traditional uni-directional classroom styles, or in circular seminar-style arrangements.

Instructors at the Mississauga campus, particularly first year instructors who teach large section sizes, were asked to provide comment on the quality of teaching space at UTM. In general, the best classrooms provide clear lines of sight to the professor's podium and to the projection screens and boards, lively acoustics without "dead" zones for communication, easy access for the professor (and students) to move back and forth between the lecture floor and the seating areas. Thus, raked and semicircular arrangements work best for rooms larger than seminar rooms. The professor should be able to project ideas, objects, visual material, audio material, equations, internet pages, and so forth without moving from the podium. Students should have adequate and flexible desk space capable of safely holding laptop computers as well as notebooks and textbooks. Classrooms need to be conceived as spaces of interaction, connectivity, and information exchange, not as locations in which lectures are delivered. The following information is to be used for design and construction of the new classrooms.

- large lecture theatres should be wide and shallow for improved sight lines and a more engaging student and teaching experience. i.e. Rozanski Hall, Guelph University
- a mid-theatre cross aisle in the largest classrooms is required for increased engagement between instructor and students; and side access will allow for accessible seating.
- wide tiers with continuous writing surfaces should be installed instead of tablet arms to accommodate students' lecture material (books, and laptops); and to allow for term testing and examination.
- loose seating will be specified in most classrooms, with 'swing-away' seating in the largest lecture theatres to allow flexible teaching styles. i.e. break into group discussion
- a 'horseshoe' configuration is desired for mid-sized classrooms (50- to 150-seats)
- a wide 'fan' configuration is desirable for larger classrooms (350- and 500-seats)
- furniture should be moveable to reconfigure smaller flat-floor classrooms to accommodate a variety of teaching styles and functions (30- and 40- seats)
- side and rear entry doors are required for the largest classrooms; doors at the front of the classroom will be useful for instructor access.
- theatre-style entrances with doors set-back should be considered for the largest classrooms
- warm and bright finishes are desirable.
- acoustic design is of prime importance for instructional space; including entry door location and hardware, furnishings and finishes, especially for larger lecture theatres.
- technology and lighting controls should be located and pre-programmed for easy access by the instructor throughout the lecture. UofT's standard teaching station begins to address this need in larger classrooms.

The IC will offer state of the art instructional technology to permit instructors to access multiple high quality visual aids with dual large screen projection. Connecting the projectors to laptops, and document cameras on the podia– far superior to the old fashioned blackboard – allow instructors to run a presentation while using document cameras to project their hand written notes on the adjacent screen – saving the notes, writing up a second board or document screen, and

then returning to the saved notes later. Furthermore all of the notes from the document camera can be saved for students with disabilities or students who have missed class due to illness, and converted into alternative formats if necessary. Document cameras should be provided in all classrooms. Smart board technology may be considered as an alternate to document cameras for larger classrooms.

Technology Resource Centre

The space program provides for 40 nasm for Technology Resource Centre to support technologies related to IC classrooms. This satellite operation will include two technicians' offices and an AV repair office area room for repair, setup and storage for multi-media equipment.

Student Study Space

The space program provides 535 nasm of student study space, and 248 spaces

Study Space within the IC will build on successes of the HMALC as well as lessons learned:

- Study space encompasses different types of uses, including individual study, group study, eating, socializing, conducting meetings, and many others. Essentially, even students who commute to campus "live" at the University and seek places that satisfy both academic and social requirements. There is value in creating informal and flexible spaces and letting students choose how they will use the space (with constraints).
- 6 person study rooms are proposed in the program. The flexibility of group study rooms could be further enhanced through the use of reconfigurable breakout room furniture. Group study rooms should be bookable using the existing Group Study Room Booking System, currently used in the library.
- Design and furniture should be high quality, comfortable, aesthetically pleasing, and student friendly. Furniture will receive very high use and abuse.
- To provide optimal flexibility, IC student study space will complement existing campus study space with a mix of tables and chairs, soft seating, and computer terminals. The success of the Library's Learning Zones and associated signage should be replicated. i.e. study areas will be designated as *collaborative* or *quiet study* through the use of appropriate signage.
- Study areas should be designed and located within the building to accommodate the potential for 24 hour access; other spaces will need to be locked or partitioned off to limit access.
- It can be anticipated that noise will be a significant issue in the Instruction Centre. Acute attention should be paid to acoustics (i.e., acoustical panels instead of drywall wherever possible, ample soft seating, minimal sound reflecting surfaces), noise dampening (e.g., sound masking), and sound proofing for group study rooms across rooms and between floors.
- A combination of natural light and overhead indirect fluorescent fixtures is desirable.
- The plan for study space should include dense coverage of electrical outlets, predominantly wall-mounted. Electrical outlets will receive heavy use, consequently they should be very good quality with high usability. In limited cases, where floor outlets are required they should be flush mounted (to be easily covered with flooring if not used) and positioned flexibly (to ensure availability as a result of moving furniture over time and to minimize tripping hazards).

Study space also includes a specific allocation for a 60-seat computer area. This area should be open to and accessible from other general study space.

Student/Food Services

The space program provides 327 nasm of food service facilities.

Students whose needs are met on campus have the greatest connection to the community. The development of community is a core fundamental of food service departments on university campuses. Theories are discussed, ideas are furthered, paradigms are shifted and lifelong friendships are forged. It is for these reasons that an investment in the improvement of food service at the University of Toronto Mississauga is important.

The proposed servery area, or café, is intended to feature a cohesive arrangement of the following services: a nationally branded coffee concept, a grab and go concept and a deli featuring freshly prepared and grilled sandwiches.

In addition to the café, 210 nasm dedicated to seating, tables and chairs sufficient to seat 120, creates a destination on campus. More than a place to dine; this space offers informal “hang out” space for study and socializing. This area should be located appropriately to serve the high volume of foot traffic through the building and students who will spend longer periods of time in the building, particularly to use the variety of study space offered. The design of this space should be open, inviting and engaging.

UTM will work directly with a food service facility planner and interior design firm who, together, will liaise with the architect on the overall design of the food service spaces in the building; they will provide the sufficient detail to ensure proper connections and rough-ins by the contractor. UTM’s Hospitality and Retail Services Department will work with vendors to finish and equip the space.

This investment in Student/Food Service space will yield an immediate, measurable and positive impact to the quality of life on campus.

Non-assignable Areas

The non-assignable spaces include, but are not limited to, areas such as corridors, stairs, mechanical stacks. These aspects if the building program will be accommodated within the gross to nasm factor of 2.0.

Further details from relevant departments at UTM, will be provided to the design team. Some specific requirements that have to be met in non-assignable spaces are the following:

1. Custodial closets should be located one per occupied floor level (i.e. four) and should be large enough to accommodate a floor slop sink, ladder, cleaning supplies, vacuum, mops/brooms & cart. Closets should be stacked above each other and close to washrooms.
2. A larger custodial room should be located next to the receiving area and be large enough to accommodate the floor scrubber (with appropriate charging station and dump area – floor drain with curb) and storage of bulk items; such as, toilet paper, cleaning supplies & lamps.
3. A single room for custodial staff will be sufficient – an area the size of a private office will likely be sufficient to accommodate a couple of full-size lockers, small table with several chairs, small bar fridge, bulletin board and telephone.
4. Central vacuuming system(s) should be provided in each of the tiered theatres/ classrooms. The vacuum system and associated hoses/accessories can either be accommodated in dedicated closets within the room (e.g. 'dead' corners in the large lecture theatres) or in adjacent classroom support rooms.
5. At least one telecommunication closet is required on each floor (stacked above each other) with one serving as the "Building Entry Point" (likely in the basement close to tunnel entry); these closets should be separate from electrical closets. The maximum distance between a closet and point served is 90m.
6. Delivery area will ideally be located at grade for Food Services; at the delivery area and inside the building with a small handling/marshalling area (for planning purposes 24 sm) accessed by overhead door to delivery/service area and double doors from corridor, a waste room for three (3) recycling bins (48" x 48" each) for waste that will be taken back to the South Bldg (e.g. fluorescent lamps, glass, metal) and other loose waste (e.g. large boxes, pallets, etc.). The delivery area will also need to accommodate an 8-yard trash compactor and a Genie lift; if these are located outside they need to be covered or otherwise protected from the weather.
7. Recycling depots are required on each floor, where blue totes can be accessed and stored by custodial staff; totes will be taken down to the delivery area by staff on a regular pick-up schedule by recycling vehicle. These depots should be located next to custodial closets.
8. Access to delivery/service area should provide sufficient clearance for a highway semi.
9. Washrooms are required on every floor; there should be a larger number of fixtures on the levels with the large lecture theatres.
10. At least two passenger elevators are required, both being capable of accommodating freight and with one reaching the penthouse; elevators will likely be non-hydraulic but machine room in penthouse still likely; elevator standard must meet UTM approval.
11. The main mechanical and electrical rooms will be located in the basement & the penthouse; a service tunnel will extend from the CUP to the basement of the IC and carry typical utilities. The basement room (at tunnel termination) will serve as entry point for utilities and will accommodate equipment for distribution either throughout building or to penthouse, and assume that the penthouse will house mostly HVAC equipment. A 14'x14' knock out pane is required in the basement room (or nearby corridor) to allow for future extension of utilities toward the North Building.
12. Drinking fountains, with non-tempered water supply, are required on every floor.

Functional Plan

While a precise location for program elements has not been determined, several factors begin to shape the building layout and massing:

- efficiency of stacking and massing
- critical adjacencies to, and separation from, other program areas
- desire for natural light
- appropriately scaled ceiling heights and volumes
- direct access to the exterior, at grade
- degree of acoustic privacy required
- clustering of space according to hours of operation
- need for security

Critical relationships have been identified for specific program elements:

1. The two large lecture theatres should be accessible from the main floor at the back, with an additional mid-level entry; these rooms will slope down below grade and will also require exiting at the lower level. Entrances should be indirect/setback (i.e. cinema) to reduce the disruption of late-comers.
2. Food Services should also be located on the main floor with the servery and seating area visually and physically accessible from main entry points. The space should be inviting and open. Natural light is desirable. Note that Food Services is maintained under its own contract. Therefore, along with the desire to be integrated into the design of common space, it must also be clearly delineated by volume, finish, slight change in ceiling or floor level. The servery must be configured so that, after hours, it is easily partitioned from the seating area, which may be used 24-hours a day. The space must also be carefully planned so that food line-ups do not obstruct high-traffic areas or access to other spaces. The servery should ideally be situated within the building so that the back of house area is adjacent to the receiving and waste staging areas while simultaneously fronting the concourse or main assembly and seating areas. The service entrance to the servery should be connected to the receiving and waste staging areas by a service corridor. Deliveries will travel down the corridor through a set of double doors into the back of house area and into the dry or refrigerated/frozen storage located immediately within the servery/café. Food products will be finished in the adjacent preparation area and moved through the facility to the servery or front of house area to be merchandised and sold.
3. Study space should be conceived and clustered in anticipation of 24-hour use. Safety and security is therefore a high-priority in determining the configuration of these spaces.
4. Computer study should be located adjacent to a general study area. The computer area is also anticipated as a 24-hour function. The area should be distinguished from the rest of the study space but complete enclosure is not required. CCT 0160 may serve as an example.
5. Storage and other services will be appropriately located in the basement level.

c) Building Considerations

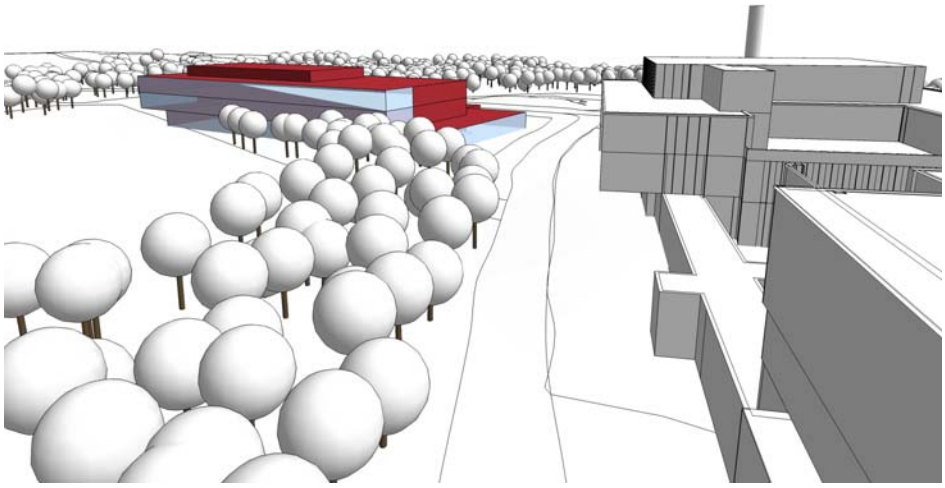
The nature of its program and proposed location distinguishes this facility as a significant and vibrant hub for student life and learning. The Instructional Centre is planned on a prominent site, visible from Outer Circle Road and North campus quadrant; it will serve the campus at large as both a significant campus entry point and link between academic buildings. The facility will serve the student population, particularly undergraduate students, with a range of classrooms, study space and amenities.

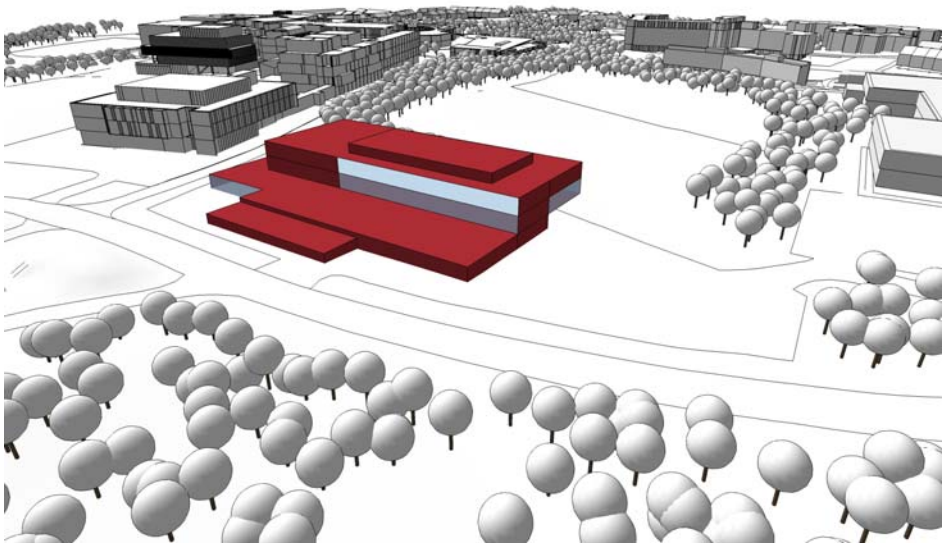
The building should be inspiring and inviting, with large light-filled public spaces. Ideally, a wide feature stair will connect the main floor to the upper levels. Glazing should be located to optimize views of forest to the North and green space to the South. UTM's Hazel McCallion Learning Centre serves as examples of inviting, attractive interior space with sufficient glazing to connect the building to the campus' setting. Two to three exterior entrances should be considered as a means to animate this level. Ideally, public space including food services would have direct openings to the exterior.

It is important that the design and layout of this space intuitively leads people to the areas they should be in. The design and layout should clearly indicate which areas are public, semi-public, private or restricted. Good layout and design will ease pedestrian flow, confusion and provide an enhanced sense of safety and security to users and occupants.

The Instructional Centre should be a high quality, functional, and durable building designed to withstand a high volume of occupants and foot traffic. For example, terrazzo flooring should be considered in high traffic areas. Local materials should be used where possible, for both interior and exterior components and spaces.

As with all recent projects on campus, the Instructional Centre will follow a rigorous set of university design standards, including environmentally sustainable measures. The Instructional Centre will be designed and constructed to meet LEED Silver certification. See "Sustainability design and energy conservation (LEED)" for further detail.





Building characteristics and massing

The new building will be three stories in height, plus a mechanical penthouse. It will also have a full basement. The ground floor's larger footprint and height will accommodate large lecture theatres and a variety of active public space. The floor-to-floor for the main floor is 5.5m. All other floors will be 4.2m.

Accessibility

The University of Toronto is committed to ensuring that its buildings and services are accessible to persons with disabilities and requires all consultants to adhere to the University's Barrier Free Design Standards.

http://www.fs.utoronto.ca/userfiles/page_attachments/library/10/8156_1161423_accessibility_8156_1560105.pdf

It is the intention of the University that, in all new construction, these standards be implemented in full, that all requirements indicated as 'should be met' will be understood as 'shall be met'. While this is also the University's intention for renovations to existing buildings, where a requirement indicated as 'should be met' is impossible to meet (given the constraints of the existing conditions); comparable alternative arrangements are to be explored.

A Universal Design Consultant, and a representative from the AccessAbility Resource Centre, is to be included early in the design process to incorporate the consultant's recommendations into the built project.

Accommodation for both lecturer and students should be integrated into planning and design of classrooms. Loose seating and adjustable tables accommodate a wider variety of ergonomic requirements than fixed furniture. In large lecture theatres, options should be provided for wheelchairs at the front of the lecture theatre and at a middle aisle.

To address the broad diversity of people who will use high-traffic public areas such as food services, study and lounge space, the interior layout, materials and signage system must be designed with way-finding in mind (e.g. Braille, high contrast).

Personal safety and security

The building design must allow its students, faculty, staff and visitors' access as required and as allowed, safely and easily. At the same time, the design must be sensitive to the needs of those whose activities require security after hours. Limited areas of this building will be operational throughout the week, 24 hours a day.

A detailed security plan will need to be developed for each room, zone or floor, and factored into the design of the building to ensure that accessibility, security and functional objectives are all met simultaneously.

Keying Systems

Classroom and building doors (i.e. the ones accessed by students, faculty and visitors) will be electronically/electrically operated and centrally controlled through a network driven system. This system can be locked and unlocked automatically (to inputted schedules). For example, during a typical academic week, classroom doors will be opened at 7am and locked at 10pm, while building doors may open at 7am and lock at midnight; unique schedules may occur during weekends, special events and the summer session. The existing software administered by Network Services has the ability to be driven by uploaded schedules. Study rooms will be unlocked as they should be accessible whenever the building is open.

Card readers will not be required as universal access will be granted during normal hours of operation. The door hardware (currently Chubb Security) will need to have hard key override for use by police, maintenance & custodial staff. Door hardware for classroom and exterior doors will need electrical hardware and network connections.

Non-public areas; for example, mechanical/electrical areas, custodial rooms, telecommunication closets will require standard lock sets: Hard keys will conform to approved Medeco standards.

Food Services' servery areas will need to be secured when not in use with either a retractable security screen such as in North Building, or built-in screen or roll-down shutter.

CCTV Systems

CCTV in public areas is desired.

Security cameras will be required throughout the building, appropriately located in main public areas such as open seating areas, corridor, and at entry vestibules/doors. 12 camera locations should be assumed for planning purposes and will be linked to their own "local" network. At minimum, these cameras should cover any of the open computer stations and doors with rooms containing significant classroom technology.

Given the number of students using the facility, a quick means of communication is required in an emergency situation. The IC should be equipped with a public address (PA) system for emergency communication and notification. The PA system would cover the main hallways and possibly the larger lecture halls.

Sustainable Design and Energy Conservation (LEED)

The University of Toronto has a long commitment to environmental sustainability across the academic and administrative operations of this institution. The University has been guided by an Environmental Protection Policy since 1994. This policy outlines the University's commitment to minimizing negative impacts on the environment, conservation and wise use of natural resources, and including environmental concerns in planning. The policy also commits the University to meeting, and where possible, exceeding, environmental standards, regulations, and guidelines.

U of T Mississauga's banner for growth - *Grow Smart, Grow Green* - balances campus development with environmental sensitivity and responsibility. With the recent establishment of the tri-campus Sustainability Board and its sub-committees reviewing energy, capital projects and funding models for sustainable initiatives, the University of Toronto continues to make strides in the area of sustainability.

The most intriguing of new buildings on the campus are held to a rigorous set of university design standards, including environmentally sustainable measures. The proposed Instructional Centre will follow the lead of recent projects at UTM: the Hazel McCallion Library (HMALC) achieved LEED Silver in 2007; green roofs were installed on three new buildings at UTM constructed within the last 5 years; the Health Science Complex, scheduled for completion in 2011, is designed to achieve LEED Silver, as is the South Building 3rd floor currently under renovation.

The Instructional Centre will be designed and constructed to meet LEED certification at a Silver rating, or better. Some of the sustainable design strategies being considered are:

- Orientation of the building along an E-W axis with glazing along the South façade to maximize natural light.
- Siting the building on an existing surface parking lot, rather than green field, or treed site.
- Set back to preserve natural light and existing views of the adjacent library (HMALC).
- Green roof and/or water cistern installation.
- Low maintenance native plantings
- Water-efficient fixtures
- Durable, local materials with renewable and/or recycled content
- Flexible classrooms to accommodate a variety of teaching styles and functions
- Energy efficient computer and AV equipment
- Energy efficient lighting and controls
- Zoned HVAC control
- Optimal energy efficiency for reduced operating cost and emissions. Two options are being considered: connection to the existing Central Utilities and installation of a geothermal system.
- Provision of recycling depots for source-separation of waste throughout the building to meet the needs of the University's recycling and waste reduction programs and vehicular access to these sites.

The orientation of the building may prove ideal for passive solar design. Depending upon the final design configuration, roof areas may be suited to the incorporation of solar thermal water collectors and photovoltaic collectors if economical opportunities for such installations become available.

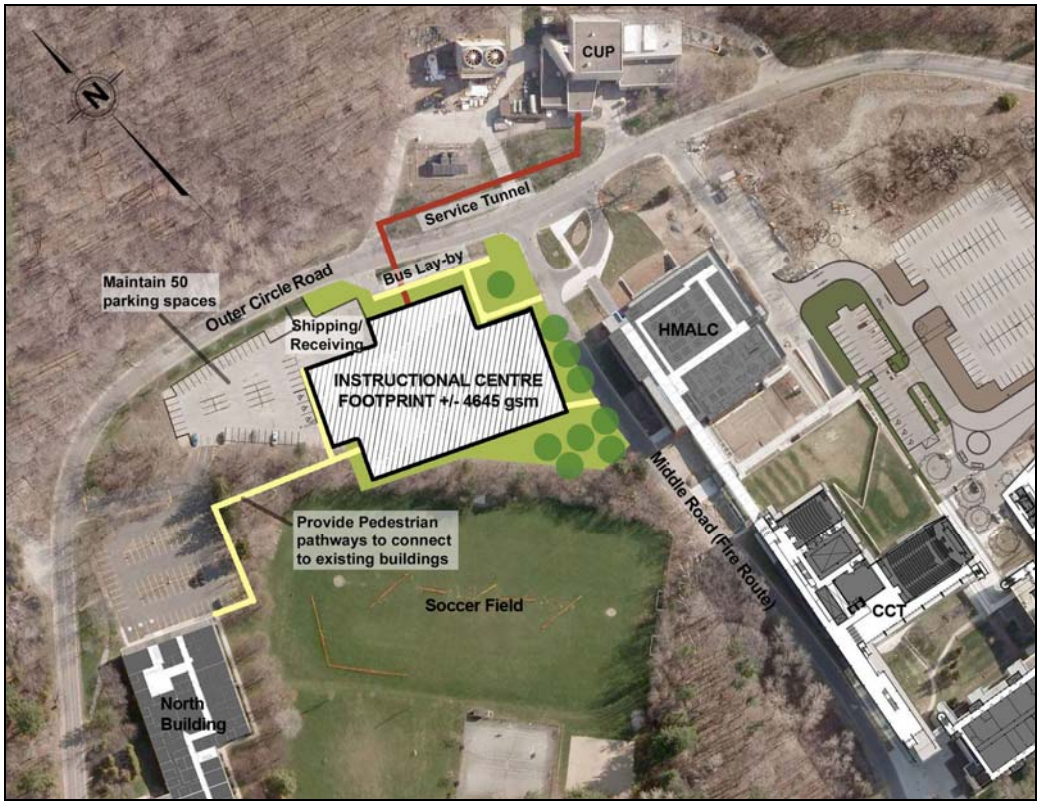
d) Site Considerations

Campus Planning

Campus planning at UTM has evolved with enrolment growth and has built on key principles established in the Campus Master Plan of 2000. Five major buildings have been added at UTM since 2000, their siting and massing following the planning principles. The master plan is being updated to reflect recent construction and to respond to the current campus vision; the plan will be completed in Fall 2009.

The proposed location for the Instructional Centre is currently Parking Lot 2, a site identified in the 2000 Master Plan and maintained in the current master plan; it is adjacent to the HMALC, and bounded by Outer Circle Road, Parking Lot 1, a soccer field and Middle Road which serves as a fire route and a pedestrian path. Locating the Instructional Centre between the North Building and HMALC will improve the integration of the North Building with the rest of the campus. Siting of the building must also allow for future expansion of the North Building into Parking Lot 1, and potential development of the remainder of Parking Lot 2.

The CCT building sets the tone for future planning on campus by creating a major link through the campus, as well as enclosing courtyards on either side. A similar intimacy in scale is desired between the Instructional Centre and the HMALC. This building also plays a significant role at the campus planning level as it will define one edge of a large campus green: an open space approximately the size of UofT St. George's front campus, King's College Circle.



The Instructional Centre's siting and massing must fit within the current master plan and follow University of Toronto campus planning principles.

Site Access

The site is easily accessible for both vehicles and pedestrians. Vehicles will be able to access the drop-off loop in front of the HMALC, the loading dock, and adjacent parking lot from Outer Circle Road. Middle Road, will be maintained as a fire access route and pedestrian pathway. A new layby for the intercampus shuttle bus will be required in front of the Instructional Centre.

Landscape and Open space requirements

Sidewalks are required to connect to existing buildings, walkways, and drop-off loop, as well as the proposed bus lay-by. Hard and soft landscaping should be included in the design, with accommodation for waiting areas, bicycle parking, and with particular attention paid at entrances and the area facing the library (HMALC). Planting trees in this location will offer a desirable view to the HMALC, which was designed with an expanse of glass on this side. To that end, green roofs may also be appropriate for views from the upper floors.

Vehicle Parking is described under Secondary Effects.

Zoning Regulations

The campus is identified by the Mississauga Zoning By-law 0225-2007 as Institutional; "I" refers to Hospital and University/College that serve a regional function, in appropriate locations throughout the City; and "I-5" specifically to UTM campus. Further detail is provided under Part 12 of the By-law. The specified site is well within minimum setbacks and other regulation lines on campus.

Soil Conditions

Test bores hole are being drilled in the adjacent playing field to determine feasibility of a earth energy system. These bores will also provide additional information on soil conditions that will supplement planned geotechnical investigations of the actual construction site. Based on other projects recently constructed on campus, dewatering of this site is anticipated.

Environmental Issues

The selected building site does not fall within environmentally regulated areas such as Area of Natural and Scientific Interest (ANSI) and Environmentally Significant Areas (ESA), verified by the Credit Valley Conservation Authority (CVC) Regulated Features map.

e) Campus Infrastructure Considerations

Utilities (electrical, water, gas, steam lines)

The main mechanical and electrical rooms will be located in the basement & the penthouse; a 12' x 12' (inside dimensions) service tunnel will extend from the Central Utilities Plant (on the opposite side of Outer Circle Road) to the basement of the Instructional Centre and will accommodate all typical utilities (such as steam, chilled water, domestic water, electric power, telecommunications, etc). The basement room in the Instructional Centre (at tunnel termination) will serve as an entry point for utilities and will accommodate equipment needed for the distribution of services either throughout the building or to the penthouse that the penthouse will likely house mostly HVAC equipment. A 14'x14' knock out panel is required in the basement mechanical/electrical room (or nearby corridor) to allow for future extension of utilities toward the North Building. A generator is required for Emergency Power.

The viability of an earth energy system is under consideration and will need to be included in the building's design if the decision is made to proceed. A service tunnel with previously prescribed utilities will still be required as steam and chilled water will still be needed to supplement or back up the earth energy system.

Sewer and Storm Water Management

The sanitary system is currently being upgraded; all new projects will connect to a new diversion line running under the Outer Ring Road. The distance from the site to this line is approximately 250 yards. The system drains west to east and discharges to a 66" diameter sanitary main into the Credit River valley; the existing 300mm diameter water main is sufficient for domestic and fire demand, and water pressure has not been reported as a problem.

With the construction of a storm water management pond, and upgrades to the storm system completed in 2008, UTM has built-in capacity for all future buildings on campus.

Data and Voice Communications

The main termination point for both data and voice is the South Building; room 2039A for data and room 1003A for voice. A main building entry point should be located next to the service tunnel entry into the Instructional Centre and telecommunications closets should be located in a 90m radius on each floor of the building as well as stacked on top of each other from one floor to the other. Communications closets should be large enough to fit at least two 19" racks side by side with at least 3m of working space in front and behind the racks. There should also be ample 110V/30A power receptacles and these receptacles should be properly grounded.

The building should be designed to support wireless communications at both 2.4 and 5Ghz range. 802.11n will be the standard wireless protocol for the Instructional Centre. Cat 6 will be the cabling standard for data, Cat 5e for voice and fibre optic cables for inter-building connections.

Roads and Pedestrian Pathways

The building can be accessed directly from Outer Circle Road. The schematic site plan builds on key principles of the 2000 Campus Master Plan (linkages and courtyards) which create both indoor and outdoor environments for social interaction and an enhanced connection to the campus' natural setting.

Bicycle Parking

Bicycle storage must be provided in a convenient location as part of this project; requirements are further detailed in UofT's Landscape Design Standards.

Servicing and Fire Access

The building can be accessed directly from the Outer Circle and Middle Roads.

f) Secondary Effects

As described under Space Requirements, UTM anticipates the release of 17 unsuitable classrooms across campus for a variety other uses, as a result of this project. Renovation and retrofit of these spaces will take place over several projects, each with individual budgets. This work is not included in the Instructional Project scope.

Vehicle Parking

The proposed Instructional Centre will be constructed on a significant portion of Parking Lot #2; 259 parking spots, or an approved equivalent, must be accommodated elsewhere on the campus. It is estimated that the remaining paved surface can be re-striped to provide 50 spaces.

g) Schedule

Planning & Budget meeting	May 7, 2009
Approval initial expenses	week of April 13th 2009
Business Board meeting	June 18, 2009
Integrated Team Selection	week of April 13th 2009
Construction Start on Site	July 2009
Material Completion	March 2011
Full Occupancy	September 2011

IV Resource Implications

a) Total Project Cost Estimate

The total estimated project cost for the Instructional Centre (12,103 gross square meters or 6,051 nasm) is $70,000,000 with construction beginning July 2009, which includes estimates or allowances for the following:

- Design and construction by an integrated team.
- Construction and project contingencies
- Presently applicable taxes – not including any potential impact of the implementation of HST in mid 2010.
- infrastructure upgrades in the sector – either through upgrades to the central heating and cooling plant, or by means of an earth energy system; includes new service tunnel and associated utilities.
- secondary effects – replacement of lost parking.
- permits and insurance
- professional fees, architect, engineer, misc consultants (ie. LEED etc.), project management.
- computer and telephone terminations
- moving
- miscellaneous costs [signage, security, other]
- commissioning
- escalation

Further assumptions within the total estimated cost for the project of $70,000,000, to be identified separately, are as follows: landscaping, loose furniture, computer equipment, audiovisual equipment, signage and wayfinding, donor recognition ceremonies and financing costs during design and construction.

b) Operating Costs

Operating costs are estimated at $181/nasm/annum for direct costs and $94/nasm/annum for indirect costs for an approximate annual cost of $1,660,750 in 2009 dollars. This includes utilities and maintenance costs as well as engineering, caretaking, security, and maintenance staffing costs.

c) Funding Sources

This project is being submitted under the Federal Knowledge Infrastructure Program, identified as the UTM Instructional and Laboratory Centre, requesting funding of $70 million. The Ontario government, in its budget of March 26, 2009, affirmed commitment to matching federal capital infrastructure investments in the Knowledge Infrastructure Program. No long term borrowing is required.

V Recommendations

It is recommended that the Planning and Budget Committee recommend to the Academic Board:

1. THAT the Project Planning Report for the University of Toronto Mississauga Instructional Centre be approved in principle

2. THAT the project scope, comprising 6,051 nasm (12,103 gross square) at a total project cost of $70,000,000 be approved, subject to receipt of funding.

APPENDICES:

1. Council of Ontario Universities 07/08 Space Inventory
2. UTM Space Utilization and Classroom Analysis
3. Room Data Sheets
4. Total Project Cost Estimate (on request to limited distribution)
5. Cash Flow Analysis (on request to limited distribution)
6. Project Scope Document For Cost Consultant (on request)
7. Design Criteria for Classrooms, revised 2009
8. Spaces for Study and Success, Given 2008 (on request)
9. Food Services Master Plan
10. Campus Planning Principles
11. University of Toronto Design Standards www.fs.utoronto.ca/aboutus/design.htm

APPENDIX 1:

COU 07/08 Space Inventory

Table 20
Institutional Space Requirements As Measured By COU Space Standards, 2007-08

TORONTO (MISSISSAUGA)

	Input Measure	Space Factor	Generated Space	Inventory	% I / G	System Average	*2004-05 % I / G*
TEACHING/RESEARCH/ACADEMIC SUPPORT							
CLASSROOMS							
Total FTE Students	8,624.30	1.23	10,607.89	6,384.29	60.2	76.4	*74.6*
CLASS LABS							
Lab Contact Hours W	0.00	0.8	0.00	0.00			
Lab Contact Hours X	12,021.00	0.6	7,212.60	4,823.29			
Lab Contact Hours Y	1,130.00	0.5	565.00	557.64			
Lab Contact Hours Z	2,883.00	0.3	864.90	426.52			
Unclassified	0.00			0.00			
Total Class Lab	16,034.00		8,642.50	5,807.45	67.2	64.7	*119.2*
RESEARCH							
Research Disciplines A	127.78	45.0	5,750.10	6,040.02			
Research Disciplines B	0.00	30.0	0.00	0.00			
Research Disciplines C	39.25	20.0	785.00	891.74			
Research Disciplines D	27.30	10.0	273.00	99.05			
Research Disciplines E	254.89	1.0	254.89	0.00			
Unclassifed	0.00			0.00			
Total Research	449.22		7,062.99	7,030.81	99.5	74.7	*101.1*
OFFICE - ACADEMIC							
Total FTE Faculty	262.27	13.0	3,409.51	4,358.54	104.5	89.5	*110.5*
Faculty Supplement	39.34	13.0	511.43				
Research Appointments	43.30	13.0	562.90	328.61			
Total FTE Grads	350.60	4.0	1,402.40	1,524.36	108.7	53.1	*86.3*
Total FTE Non-Acd Staff	85.62	13.0	1,113.06	978.70	87.9	108.2	*78.2*
Office Service	6,999.30	0.25	1,749.82	755.48	43.2	85.3	*49.1*
Total Academic Office			8,749.12	7,945.69	90.8	83.3	*90.3*
OFFICE - ADMINISTRATIVE							
Total FTE Non-Acd Staff	204.28	13.0	2,655.64	2,456.95	92.5	96.1	*95.7*
Office Service	2,655.64	0.5	1,327.82	1,451.63	109.3	103.1	*82.1*
Total Admin. Office			3,983.46	3,908.58	98.1	98.4	*91.2*
Total Office - Academic & Administrative			12,732.58	11,854.27	93.1	86.7	*90.5*
LIBRARY FACILITIES & CAMPUS STUDY SPACE							
Study (Total FTE Students)	8,624.30	0.6	5,174.58	3,247.70	62.8	53.8	*42.5*
Traditional Static Shelving Space	10,638.13	0.005	53.19				
Mobile Compact Shelving	462,011.65	0.004	1,848.05				
Super High Density	0.00	0.0035	0.00				
Total Stack	472,649.79		1,901.24	1,903.54	100.1	83.9	*67.7*
Library Support	7,075.82	0.25	1,768.95	924.16	52.2	79.5	*41.4*
Total Library Facilities & Campus Study Space			8,844.77	6,075.40	68.7	70.6	*49.6*
SUB-TOTAL: TEACHING/RESEARCH/ACAD SUPPORT			**47,890.73**	**37,152.22**	**77.6**	**76.5**	***83.1***
OTHER SPACE							
RECREATION / ATHLETICS							
Under 4,000 FTE Enrol.	0.00						
4,000-8,000 Enrol.	0.00						
Total FTE Students	8,624.30	0.9	7,761.87				
Total P.E./Athletics			7,761.87	6,870.26	88.5	68.1	*31.4*
MAINTENANCE SHOPS							
Total NASM Inv. (exc. 16.0)	90,161.84	0.015	1,352.43	678.40	50.2	77.0	*61.7*
STUDENT AND CENTRAL SERVICES							
Total FTE Students	8,624.30	2.0	17,248.60	8,151.39	47.3	54.7	*47.1*
SUB-TOTAL: OTHER SPACE			**26,362.90**	**15,700.05**	**59.6**	**60.1**	***42.7***
TOTAL FORMULA AREAS			**74,253.63**	**52,852.27**	**71.2**	**72.2**	***68.5***

APPENDIX 2:

UTM Space Utilization and Classroom Analysis

Current

Statistics

1. Total undergraduate headcount: 10,636
2. In-class hours/week per student: 13.145
3. Average meeting duration: 1.38
4. Average class size: 78

A	B	C	D	E	F	G	H	I	J
Size groups	% of total contact hours	Contact hours ((Headcount * hours per week per student) * B))	Activity hours (C/G)	Total meetings (D/F)	average meeting duration	average class size	Required # rooms (D/34 hours per week)	Required # seats (H * G)	2008 inventory
1-30	8.8%	12,327	493	388	1.27	25	14.5	363	9
31-40	6.9%	9,661	261	196	1.33	37	7.7	285	4
41-50	11.2%	15,710	327	221	1.48	48	9.6	461	6
51-65	7.3%	10,179	179	116	1.54	57	5.3	302	4
66-99	10.2%	14,303	183	129	1.42	78	5.4	421	12
100-150	11.2%	15,658	130	88	1.48	120	3.8	456	4
151-377	31.1%	43,508	181	126	1.43	241	5.3	1,277	7
378+	13.2%	18,465	39	33	1.18	470	1.2	564	1
Total	**100.0%**	**139,810**	**1,792**	**1,297**	**1.38**	**78**	**53**	**4,129**	**47**

Scenario #1

Assumptions

1. Total undergraduate headcount: 12,000
2. In-class hours/week per student: 13.5 (intensified from 20089 data)
3. Contact hour groupings (Based on 20089 data)
4. Average meeting duration: 1.38 (Based on 20089 data)
5. Average class size: 78 (Based on 20089 data)

A	B	C	D	E	F	G	H	I	J
Size groups	% of total contact hours	Contact hours ((Headcount * hours per week per student) * B))	Activity hours (C/G)	Total meetings (D/F)	average meeting duration	average class size	Required # rooms (D/34 hours per week)	Required # seats (H * G)	Projected inventory*
1-30	8.8%	14,283	571	450	1.27	25	16.8	420	2
31-40	6.9%	11,194	303	227	1.33	37	8.9	329	5
41-50	11.2%	18,203	379	256	1.48	48	11.2	535	6
51-65	7.3%	11,795	207	134	1.54	57	6.1	347	3
66-99	10.2%	16,573	212	149	1.42	78	6.2	487	8
100-150	11.2%	18,143	151	102	1.48	120	4.4	534	1
151-377	31.1%	50,413	209	146	1.43	241	6.2	1,483	6
378+	13.2%	21,396	46	39	1.18	470	1.3	629	1
Total	**100.0%**	**162,000**	**2,078**	**1,503**	**1.38**	**78**	**61**	**4,765**	**32**

*Does not include Instructional Centre

room	capacity	NASM	Comments
NE 142*	39	*43.0*	Combine to create larger, better classroom; nasm will remain in category 1
NE 144*	43	*40.8*	
NE 257	25	37.0	Removal for corridor widening/offices
NE 259	25	38.0	
NE 272	35	44.2	Repurposed for office space
NE 286	35	39.3	
NE 295	25	35.3	Removal for corridor widening
NE 297	25	33.0	
SE 1104	80	76.2	Removal for departmental relocations/consolidation
SE 1130	70	65.8	
SE 1143	84	79.1	
SE 1161	30	55.0	
SE 2068	65	74.7	Removal for corridor widening/crush space
SE 3007	30	45.8	Removal for science teaching lab renovation in May 2009
SE 3127	100	105.0	Repurposed for meeting space
SE 3131	57	53.0	
CC 2130	70	117.3	Not ideal as a classroom; convert back to computer lab
CC 2140	59	150.5	
TOTAL (priority classrooms to be removed):		1049.2	*17 priority classrooms should be removed from existing inventory. *Combining NE 142and144 removes one classroom from the inventory*
NE 201	67	61.3	Anthropology departmental consolidation
NE 205	115	117.3	
NE 224	80	126.7	
NE 269	25	39.3	Repurposed for office space
TOTAL (additional classrooms to be removed):		344.6	*4 additional classrooms should be removed from existing inventory in future.*
NE 228	48	60.1	Reduced size and capacity for more appropriate spacing and corridor widening
NE 263	85	81.69	
NE 268	50	72.4	
NE 287	113	101.0	Redesigned for appropriate spacing/room enhancement
NE 292	200	203.0	
TOTAL (to be improve):		518.2	*5 existing classrooms requiring improvement*
NE 167	50	44.5	To be re-integrated into central invent. from FGI dept.
NE 227	50	45.9	New room; repurposed from admin offices
TOTAL (add to inventory):		90.4	*2 new rooms will be added to the inventory*

APPENDIX 3:

Room Data Sheets

(under separate cover)

APPENDICES 4-6:

(on request)

APPENDIX 7:

Design Criteria for Classrooms

DESIGN CRITERIA FOR CLASSROOMS
UNIVERSITY OF TORONTO 2009

MANDATE

The University is committed to providing classrooms that are physically supportive of instructors being able to effectively teach and students being able to effectively learn. At a minimum, all students must be able to see and hear what is being presented and must be comfortable. The full 5th-95th percentile of adult human physical dimensions are to be accommodated in the design and furnishing of classrooms (for details of what this entails, see the appended document based on Ergonomic Workshop – How We Design and Who We Design For from California State University).

GUIDING PRINCIPLES

Criteria in this document are intended to augment the Ontario Building Code (OBC), not to re-state the criteria therein.

The siting and placement of classrooms will respect and facilitate the University's standard 10-minute turnover time between classes.

Classrooms are to be located so that they are able to be accessed 24/7.

General "universal design" principles are to be implemented in classrooms.

The design of the rooms will provide sound isolation between adjacent spaces and minimises other extraneous sound (e.g., noise in the HVAC system or sound from ground level vibration of the transit system) penetrating the rooms.

Image projection and chalkboard capacity are to be maximised within comfortable viewing distance.

The podium will facilitate the use of electronic and non-electronic media as appropriate to the room and not interfere with the sightlines of any student.

The room lighting will facilitate all of the intended functions of the room (chalkboard illustration and notation, note-taking by students, image projection by the various media as described in the room data sheets). Lighting controls are to be simple and straightforward to use.

The media provided and accommodated in each room will be appropriate to the size and type of classroom as well as the anticipated course delivery style.

Classroom finishes are to be selected with durability, ease of maintenance and appropriate acoustic properties in mind. While colours bring some "life" to the room, they are not to be distracting nor the focus of the room. A "timeless" quality is preferred over a look that will become dated.

Where possible, classrooms are to be designed to also facilitate testing.

All classroom furnishings are to come with a minimum10-year warranty.

All classrooms are to be “support capable”, that is, the systems installed will not be proprietary but among those recommended and supportable by the Office of Space Management and Computing and Networking Services (CNS).

1 SITING AND PLACEMENT OF CLASSROOMS

1.1 PLACEMENT OF CLASSROOMS

Scheduling of classrooms is such that while one class is exiting another class is entering and all of this movement must occur within a 10-minute window many, many times a day (this 10-minute window includes travel time to and from the room and the building so exiting must be very efficient).

Classroom buildings will be located in proximity to locations to and from which the students are likely to be travelling.

Classrooms within buildings are to be clustered and positioned to provide ready access to/from the building entrances and exits.

1.2 ENTRANCES AND EXITS

Doors opening into classrooms of all types are to be a minimum of 915 mm (3’0”) wide. In the case of double doors, each entrance will have at least one leaf that is 915 mm (3’0”) wide.

Doors to all classrooms are to have narrow vision panels so that one (including someone using a wheelchair) can see into the room to know if the room is occupied prior to opening the door. The vision panel is to be sized and the door positioned to minimize light spill into the room.

1.3 CRUSH SPACE

Adequate “crush”, or circulation, space immediately outside of the classrooms is essential to the proper functioning of the classrooms.

The bulk of this crush space is to be located near the primary entrance(s) to the room.

A classroom of x nasm requires approximately the same x net square metres of crush space (this space, however, remains part of the gross-up for the building).

This crush space is to be free of obstructions such as lockers, exhibits or food services; these facilities, which may well be adjacent to the crush space, must reside in space of their own.

The design of the crush space will facilitate unimpeded traffic flow.

1.4 PROVISION OF WASHROOM FACILITIES

Washrooms to serve the classrooms are to be located immediately adjacent to the crush space.

There will be sufficient fixtures to accommodate the peak load on these facilities within the class turnover period. This fixture count will be considerably higher than that specified in the building code. What appears to work for classroom situations is one fixture per 30-40 seats (the larger number of fixtures in female dominated faculties); this concentration of fixtures adjacent to the classrooms, however, will not reduce the number of fixtures that will be available in other areas of the building.

The proportion of male to female fixtures will reflect the proportion of the anticipated users of the rooms, if known.

Single user accessible washrooms are to be provided near classrooms (accommodating the transgendered as well as the disabled).

1.5 SECURITY

Locking and unlocking of classrooms is part of a centralised security system. Projector lifts are to be used wherever possible

2 SOUND

2.1 ACOUSTICS, SOUND TRANSMISSION AND MECHANICAL NOISE

The acoustics of the room are to be such that speech and audio are easily heard and understood from every seat. Background mechanical noise and noise from adjacent spaces are to be minimized such that they will not cause distraction within the classroom.

Classrooms are to be designed to prevent sound transmission between the classroom and all adjacent and adjoining spaces (Sound Transmission Class to be STC 50 or greater, as determined by acoustic consultant). Particular attention is to be paid to openings in walls and ceilings in order that the STC rating is maintained across all openings.

Doors are to be acoustically rated and sealed; door closers and any exiting hardware are to be operationally “silent”.

Doors are to be positioned such that disturbance of the class by latecomers is minimized.

Noise criteria levels in classrooms are not to exceed an NC Rating of 25, measured at 4’0” above the finished floor at all points within the room, or as determined by acoustic consultant.

A report is to be provided, prior to tender, by the project’s acoustic sub-consultant verifying that the classrooms as designed meet or exceed the requirements within this document. Those responsible throughout construction are to be diligent to ensure that these criteria in the finished classrooms match those determined in the design stage.

2.2 VIBRATION CONTROL AND MAGNETIC INTERFERENCE

Classrooms are to be designed to prevent vibration transmission (and any resulting sound transmission) and magnetic interference from all nearby generators of same (e.g., subways, streetcars, etc.).

3 SIGHTLINES

3.1 ROOM PROPORTIONS

A compromise must be made in the proportions of classrooms between the wider, shallower room preferred by faculty in order that they can be closer to the students in the most distant seats and the longer, deeper room that provides the best sightlines to the front wall of the room where the course material will be presented. The compromise position is to make the room as square as possible.

3.2 90° CONE OF VISION

While there are several ways of calculating the required 90° cone of vision, the minimum accepted method for new lecture-style classrooms at U of T is the single 90° angle drawn from the centre of the front wall of the room.

The ideal would be multiple measurement calculations that result in every seat being within a 90° cone from all points of the screen and chalkboards, not just the centre point.

In case rooms and horseshoe-shaped seminar rooms only, a maximum of 18% (but preferably fewer) of the seats are permitted to be outside of the 90° cone. Case rooms and horseshoe shaped rooms should be programmed only when the intended use of the room requires this shape, as other principles will necessarily be compromised if these rooms are used as standard lecture rooms.

3.3 VERTICAL RISE

The rake of tiered seating must permit the occupant of every seat unobstructed view from the floor at the front of the room to the top of the projection screen (angle of view to be maximum -55° off the horizontal to the floor and maximum +25° off the horizontal to the top of the projection screen).

Vertical sightlines must take into account the possibility that the lecturer may be using a wheelchair or be of short stature.

3.4 FLAT FLOOR SIGHTLINE CONDITIONS

The ceiling height in a flat floor or small tiered room must be such that the lower edge of the projection screen is no lower than 6’0” above the floor.

Provide absolutely no more than 7 rows of seats (and preferably fewer) in a flat floor classroom.

3.5 AISLE LOCATIONS

Differing priorities come into play in determining the optimal location of aisles within classrooms. Some faculty prefer a centre aisle that they can walk up and down during their presentation. However, the best-seats-in-the-house tend to be those that would be provided in the space otherwise consumed by a centre aisle. For this reason, the preferred location for aisles would be anywhere except running up the centre of the room. The request for a center aisle in seminar room may be met by using a case or horseshoe style layout.

4 AUDIO VISUAL

Classrooms are to be on a network separate from departmental or faculty networks within the building.

A/V provisions in specific rooms will be guided by what is contained within the room data sheets for those rooms.

4.1 PROJECTION

At least 2 m2 of blackboard surface is required to remain available for use beyond the lowered projection screen; where this is not possible a second “corner” projection screen is required for overhead projection so that the blackboard can be used simultaneously with projected material.

For large or tiered lecture rooms, the minimum width of the projection screen is to be 0.25 times the maximum distance from centre of the front wall of the room to the furthest viewer and the corresponding height of the screen will be based on a this width and the height of the room; the screen needs to be able to accommodate both wide-screen format and standard format projection. All students must be able to see the entire image regardless of format and projection device.

The position of the bottom edge of the retractable projection screen will vary depending what media is being used (e.g., overhead projector vs. data projector). Therefore the screen must be sufficiently long to accommodate the variety of projection equipment and must be able to be raised and lowered such that it will come to a stop at any point along the way.

Fixed projectors are to be positioned so that the image fills the projection screen.

In large tiered rooms the projector must be securely housed on a projector lift that will bring the projector within reach for maintenance.

Screen housing to be mounted inset in drop ceiling, were practicable.

Projectors are to be positioned 6” below the top of the projection screen to prevent keystoning.

The room designer must ensure that the selected screen size for any room will permit the typical size fonts that are found on websites and in PowerPoint presentations to be clearly readable from every seat in the classroom.

For lecture halls where student stations are fixed, the front row of seating is to be no closer to the screen than the dimension of the minimum width of the projection screen.

Large, retractable projection screens are to be tab-tension screens electrically controlled via the touchscreen at the podium.

Small retractable screens will be manually controlled.

4.2 AUDIO

A voice amplification system is required in all tiered classrooms and large (75 seats or more) classrooms as well as a separate sound system for the amplification of soundtracks through the media equipment used in the room

All rooms that have permanently installed a/v equipment must have a minimum of two audio speakers installed in the ceiling of the room (the number of speakers will increase appropriately as the room size increases- the precise location and numbers of speakers to be determined in consultation with the project’s acoustic consultant)

4.3 CHALKBOARDS AND WHITEBOARDS

Chalkboards (black) are preferred over whiteboards in teaching rooms; whiteboards will only be considered on a case by case basis and will be so indicated in the room data sheets.

To prevent chalk dust from interfering with electronic components in the room, the room ventilation is to be designed to draw air directly away from the chalkboards without passing over any other part of the room.

Chalkboards are to be continuous across the front of the room, permitting a portion of the chalkboard to be used simultaneously with the projection screen.

In the case of tiered classrooms, chalkboards are to be multi-tiered (triple-hung).

All chalkboards are to have a chalk tray all along the lower edge.

Bottoms of chalk trays are to be no lower than 36” and no higher than 39”above the finished floor, or raised platform if there is one (located as low as possible within this range, as determined by sightlines).

4.4 PODIUM (electronic) or LECTERN (non-electronic)

A podium and/or lectern is required at every lecture style classroom, regardless of room size.

The podium or lectern in a classroom must be designed to permit lecturers to refer to their notes and, in the case of the podium, to operate their laptop computers at standing height. It is to be positioned in the room to one side of the projection screen and blackboards so as to not interfere with the students’ sightlines.

The 2007 document *Electronic Classrooms at the University of Toronto* recommends installation of the standard Teaching Station and classroom network in lecture theatres with a capacity of 100 or more. Lower capacity rooms to be considered for the station on a case-by-case basis.

LECTERN

Where there is no electronic equipment permanently installed in the room, a portable lectern stand with adjustable height is required.

PODIUM

*** The following requirements are included in the 2008/9 Standard UofT Teaching Station provided by the Office of Space Management (www.osm.utoronto.ca).

> Adequate light must be provided at the podium so that notes are readable if/when the overhead lights are dimmed.
>
> One duplex power outlet and two data ports are to be available at or near the top of the podium for laptops and any peripherals that the lecturer may bring in; in rooms where A/V equipment is not permanently installed, the power and data will be supplied at the front of the room.
>
> A touchscreen with which to operate the room lighting, the retractable projection screen and the various A/V equipment that is permanently installed in the room needs to be secured, to prevent theft, to the top of the podium and within easy reach of the lecturer.
>
> A portable, wireless touchscreen that can do all of the above will be available from the Office of Space Management to lecturers requiring its use.
>
> Care is to be taken in the design of the podium that a glass of water or like substance, if spilled, will not cause any serious damage to any of the components of or within the podium.
>
> A/V equipment stored in the podium will be accessible to the instructor by way of a keypad secured to the top of the podium; other electronic components of the podium are to be accessible only by a technician with a key.

Where required by room data sheets, the document camera will be housed in a drawer that pulls out of the side of the podium that is away from the centre of the room.

For detailed requirements, see appended document Electronic Podium Requirements.

5 LIGHTING

Control of chalkboard lighting is to be such that the chalkboard and the projection screen can be used at the same time with the chalkboard amply lit and there being no more than 3-5% spill on the screen

Placement of blackboard lighting fixtures to minimize the shadows created on multi-tiered blackboards

The design is to incorporate lighting fixtures that use bulbs that are readily available and economical; ease of maintenance (i.e., bulb replacement) to be considered in design.

Lighting is to be even throughout the seating area, regardless of whether the general, the dimmable or both types of lighting are energised.

Lighting in all classrooms will be 50-75 foot candles (538-800 lux) at maximum brightness throughout seating area (i.e., at every seat). The design minimum should be 65 fc (700 lux) in order to compensate for variation in results typically achieved in finished built rooms.

General lighting is to be switched in banks (generally, three: blackboard, and 2 zones on the main room body).

Dimmable writing lights are to be minimum of 50 foot candles at maximum brightness.

Lighting controls are to be as simple as possible and located on a wall near the front of the classroom (same side as podium) as well as on the touch screen where required.

6 SEATING

6.1 GENERAL SEATING CRITERIA

Seating in all classrooms is to be selected to achieve the following criteria:

The number of seats shall be as indicated in approved space programme and room data sheets, as determined by academic requirements.

Classroom seating will provide comfort to the occupant as well as be durable and easily maintained.

Furniture with sharp edges or exposed fasteners is to be avoided.

All points of moveable furniture that come into contact with the floor are to be non-marking.

6.2 DISTANCE BETWEEN ROWS OF SEATING

In order to minimise disruption of the class by students arriving late or leaving early, the distance between rows of seats must be adequate to allow passage of a person when seats are occupied regardless of the type of seating (in the case of tablet arms, when the tablet is in the writing

position). For example, layouts with large tablet armchairs require 1100 mm (43 1/2") minimum depth of rows. Fixed tables are to allow minimum 29" (736mm) between table rows.

6.3 TABLET ARM CHAIRS

The minimum width of the seats to be no less than 21" (centre-of-arm to centre-of-arm). Include the maximum number of 24" wide seats that will work with the layout of the room.

The minimum required size of the retractable tablet is 200 square inches.

Portions of the tablet arm seating must either be easily removable (no tools required) so that wheelchairs can be parked in these vacated spaces or else permanent wheelchair spaces are to be provided in addition to the seat count required for the room. In the first case, the required seat count for the room will be provided when the spaces are filled with persons using wheelchairs/scooters.

6.4 CONTINUOUS WRITING DESKS

Continuous writing surfaces are to be cantilevered from support along the front edge rather than supported on intermittent gables.

Continuous writing surfaces are to be 18-20" (508mm) deep.
Each student station is to be 26" (660mm) wide; 36" wide for accessible stations.

Accessible stations are to be included by making a portion, or portions, of the continuous desks adjustable to accommodate the range of wheelchairs and scooters in current use or a standard chair for a person without a disability, as the case may be. Adjustability mechanism is to be operable from the wheelchair/scooter and require little effort.

Design continuous desks to have the modesty panel high enough above the floor that the students feet will not kick it and therefore destroy the modesty panel. Toe and knee clearance for a wheelchair will be provided at the accessible stations.

Continuous desks are to have no sharp edges and the construction of the desks such that they are not easily vandalized by students; the user edge will be rounded or bevelled for comfort.

6.5 INDIVIDUAL TABLES

Unless otherwise dictated by programme, standard tables in classrooms will measure 2' x 4' such that they can be used singly or combined for use with various sized groups.

Individual tables in tutorial rooms will measure 2' x 3'.

6.6 POWER AND DATA AT SEATS

When power and data connections at seats are specified in the room data sheets:

Power and data ports at seats must be positioned such that they are easily accessible from a seated position.

Where wireless connectivity is provided, the signal must be of adequate strength at every seat and the bandwidth provided adequate to the demand that will be placed on it.

7 MISCELLANEOUS

Access must be provided at the front of the room to accommodate a disabled lecturer (raised platforms are therefore discouraged unless they can be easily and effectively ramped)

Waste and recycling containers are to be provided outside of classrooms.

NOTES

Documents referred to:

4.4
Electronic Classrooms at the University of Toronto
Final Report by the Academic Computing Advisory Committee's
Subcommittee on Classroom Technology Standards
30 April 2007

APPENDIX 8:

Spaces for Study and Success

(on request)

Spaces for Study and Success: Report on the HMALC and its Environment at the University of Toronto at Mississauga Lisa M. Given, Ph.D. Associate Professor, School of Library and Information Studies Director, International Institute for Qualitative Methodology University of Alberta, January 2008

APPENDIX 9:

Food Services Master Plan

Prepared by: Bill McFadden, Director, Hospitality & Retail Operations, Food Services & Retail Planning, UTM

University of Toronto Mississauga
Food Service Planning Outline
March 2009

University graduates often report that they learn as much outside the class as they do inside the class. Students engaged in campus activity and students whose needs are met on campus have the greatest connection to the community. This community connection also provides increased opportunities for personal growth.

The development of community is a core fundamental of food service departments on university campuses. Dining halls provide more than just food. Dining halls and café's bring people together; people of varied ethnic, cultural and socio-economic backgrounds. Theories are discussed, ideas are furthered, paradigms are shifted and lifelong friendships are forged. It is for these reasons that an investment in the improvement of food service at the University of Toronto Mississauga is important. This investment will yield an immediate, measurable and positive impact to the quality of life on campus

Background:

Canadian diners have become more discerning. Restaurants and cafes differentiate themselves and seek to meet the needs of their customers based upon convenient locations, innovative products, distinctive facilities, superior customer service, longer hours of operation, healthier menu choices and price. The hospitality industry has become an industry where minimum standards continue to rise. It is against this yardstick that students at the University of Toronto Mississauga measure the campus food service options. The result is that food service at the University of Toronto Mississauga does not deliver what the campus community desires.

Current Situation:

Food Service at the University of Toronto Mississauga can currently be characterized by:

- Food service facility development that has not matched the overall campus development
- Food service outlets with lengthy lines and long wait times
  - Productivity of students, staff and faculty is affected
  - Students with access to transportation leave campus to satisfy their dining needs. This negatively impacts their connection to community.
- There is currently insufficient food variety to service an increasingly multicultural campus
- Food service currently is deficient in space required for a campus of 10 000 FTE as follows:
  - Deficiency in excess of 1600 nasm when compared to the COU stated food service requirement of 0.5 - 0.7 nasm per FTE
  - A more conservative campus specific target of 0.45 nasm per FTE results in a shortfall of approximately 1100 nasm
  - The above numbers are stated with the reallocation of Spigel Hall Dining Room on a functional basis from 100% to 60% to better reflect its actual use.
  - Attached space plan worksheet details the Food Service Department space plan

- Spigel Hall, the campus' largest food service outlet is poorly located on the basement level of the South Building
    - A number of initiatives have been implemented in order to "build destination" for this location. All initiatives including the opening of a Tim Horton's outlet in this location have failed to improve its viability. Food service by itself does not create destination
    - Spigel Hall's dining room furniture supports study and meeting use more than food service use.
    - Spigel Hall is closed during the final examination period each semester so that it can be converted to an examination hall. This further reduces campus food service choice at this time.
    - The Spigel Hall dining room at 857 nasm accounts for 23% of the food service space allocation on campus. This percentage of space located in such a poor retail location exacerbates the overall food service shortfall on campus and limits the food service department's ability to provide value to the community.

University of Toronto Mississauga Food Service Development Plan

The development of the food service program will focus on the creation of community will follow a formula which focuses on Value.

$$\textbf{Value} = \frac{\text{Product + Service + Location + Ambiance + Image}}{\text{Price}}$$

Where: **Value:** is the quantitative measure of a product's worth in attracting a price in return. Worth is assessed as a sum of tangible and intangible qualities.

Price: capture's the consumer's perception of value and is measured in dollars and cents. Price can be seen as but one component of the value equation.

The discussion, in this brief, will focus on the element **– location**. The physical site of the food service facilities is the first step in creating value on campus.

The Location of Food Service

Campus food service departments should service both the eating and dining needs of the campus community. Where:

- Eating is primarily task focused; to refuel the body - enabling one to continue their day. Coffee shops, grab and go concepts and conveniently located service kiosks address this food service requirement.
- Dining provides more comprehensive choice, provides service to individuals with more time and seeks to provide an element of "experience". More effort is put into developing the value coefficient - ambiance, in the dining segment. Comprehensive dining halls, cafeterias and cafes address this food service requirement.

Dining Outlets – The Identification of Campus Food Service Cornerstones

The concept of destination as it relates to food service is important to clarify. Cornerstone outlets should be located in areas where people naturally mass; in locations which are already a destination. Food service locations themselves will not bring people to an area where they otherwise would not go. Having said this, food service can strengthen an already existing "destination location" and possible even make it a special location.

Cornerstone food service locations at the University of Toronto Mississauga are currently:

1. Colman Commons

Current State:

Colman Commons is the centre of residential dining program. Colman Commons is conveniently located in Oscar Peterson Hall - in the heart of the student residence area. This location also provides service to member of the university community located in the North Building, the Student Centre and the Kaneff Building. This cornerstone serves as a foodservice anchor on the north east of campus.

Proposed Future Development:

Colman Commons is located appropriately but requires enhancements to become a stronger destination. A small renovation was completed after the first year of operation in order to increase menu selection and the service capacity. The proposed future enhancement is centered upon the addition to the dining room. This addition will create a warm engaging seating area with softer lounge type seating, a fireplace and a coffee house. The proposed dining room addition will also capitalize on the view to the forested ravine between Erindale and Oscar Peterson Halls. This enhancement will strengthen Colman Commons as a destination for resident students and the broader UTM community.

2. North Building

Current State:

This dining hall is conveniently located on the ground level of the North Building. It is located at the end of the five minute walk and as a result the dining room is used as a transit corridor to the building's main hallway. The dining room also serves as a study lounge and meeting place. The servery area has been intensified and provides four service counters. The food service capacity is currently appropriate for the building.

Possible Future Development:

The dining hall enjoys a tremendous view to the patio, the north field and the forest of the five minute walk. In the short term the community would be better serviced if the dining room / lounge space was improved. The transit corridor could become subtly re-routed and formalized. The dining / lounge space could be improved through the addition of more (and different styles) of seats, warmer paint colours, plants and wood fixtures, some flooring changes and possibly the addition of a fireplace.

In the longer term, if there is an addition to this building or if additional buildings are placed adjacent to the North Building, then a review of the service counters should be undertaken. The food service department could rearrange the kiosks in a more cohesive fashion through better utilization of the back of house space. This change would further improving the dining room and possibly create the opportunity to open the dining room/lounge space directly onto the North Building main hallway.

3. South Building Meeting Place

Current State:

The Meeting Place is conveniently located on the main level of the South Building and is aptly named; this is where members of the community meet. The food service in this location is not adequate. There is insufficient choice, the lines are long and there is not enough seating.

Spigel Hall (one level down) as described above, is poorly located and does not adequately provide assistance to the Meeting Place in the delivery of services to the University.

The redevelopment of the Meeting Place, as part of the South Building redevelopment, is critically important to both the success of the food service department and to the provision of value through food service to the community.

Proposed Future Development

It is proposed that the Meeting Place food service will be redeveloped to provide a comprehensive food facility within the existing Registrar's Space once this office has relocated to the Student Services Plaza. Spigel Hall will be closed as a food service servery in this plan.

It will be critical to provide sufficient seating to support the expanded Meeting Place food service operation as the South Building is redeveloped. It is estimated that a minimum of 250 -300 seats will be required for customers of this facility.

A number of draft plans have been created for discussion regarding this location. One plan introduces a dining room addition to the south elevation of this building. This plan was created to:

- ensure sufficient seating capacity
- to introduce an option where community members can escape from the rigors of academia; to relax and to enjoy the view that this location would provide

Eating Outlets - Conveniently located supporting facilities

A comprehensive food service program should also provide a number of conveniently located supporting facilities.

Current University of Toronto Mississauga outlets which address this campus food service requirement:

- Circuit Break Café – This grab and go coffee shop is located on the main level of the CCT building; immediately outside the facilities largest lecture theatre – CCT 1080

- HMALC Starbucks- This full licensed Café is located at the end of the link – immediately inside the front doors of the campus library. This location has been extremely successful and has illustrated that there is a need for more quality cafés on campus.

Campus Locations identified as potential sites for further food service development:

The Kaneff Building: An upscale Coffee House to service the resident population as well as the significant transient population of this key campus building.

Proposed New Buildings: The number and type of food service outlets to be developed in any new proposed campus buildings will be contingent upon the following factors"

- The number of proposed occupants resident to the new building
- The number of proposed transient users of the new building
    - Will the building be attached to an existing campus building
- The building's proximity to an existing food service outlet
- The building's plan for movement / massing of people
    - Specifically, will the building have lounge/study space as part of the program

1. **The Proposed New Science Complex**: Detailed Space Plan Attached

   The food service plan for this building varies significantly depending on its campus siting:

   Option 1 Stand alone: Small Stand Alone Coffee Kiosk
   - Designed to provide as a convenient service to building occupants
   - To be located in the lobby area with a few seats
   - Mobile kiosk, easily removable as it has a single source of power, a single water connection and a single drain connection. The cart could be removed and floor repaired leaving no visible indication that a cart occupied the space if the volume of business did not support its placement in this location.

   Option 2 Re-siting of building – adjacent to South Building
   - Addition of this building to this location allows an opportunity to add capacity to an existing underserviced area of the South Building.
   - Small grouping of food service outlets with seating to address the needs of the campus community in the existing South Building Science Wing, the new Medical Academy and the proposed New Science Complex.
   - The proposed food service facility will be intended to work in harmony with the proposed redeveloped South Building Meeting Place

2. **The Proposed New Instructional Centre:** Detailed Space Plan Attached

Option 1 – Adjacent to South Building

- Proposed small grouping of outlets with seating to address the needs of the transient users of this building as well as the needs of the individuals in the current Science Wing of the South Building This facility is intended to work in harmony with the proposed redeveloped South Building Meeting Place.

Option 2 – Stand Alone Building

a. Built with Lounge / Study Seating in Building Program

- The same small grouping of food service outlets would be required to service this building if it were to be constructed as a stand alone building.
- Proposed small grouping of outlets with more seating than if it were to be sited adjacent and attached to the South Building.

b. Built with No Capacity for Lounge / Study Seating in Building Program

- Small stand alone coffee kiosk
- Designed to provide as a convenient service to building occupants
- To be located in the lobby area with a few seats

Proposed Science Complex
Food Service Requirement

Friday March 6, 2009

It is proposed that the new Science Complex food service outlet be developed in addition to the current Meeting Place food service plan.

It is proposed that this facility by constructed at the connection point of the South Building and the new Science Complex. This facility will provide a convenient point of service to the research teams in the Science Complex while also serving as an alternative point of service to community members in the South Building and the proposed Medical Academy; to take pressure off the Meeting Place.

The incremental space commitment for this revised plan is as follows:

Revised Space Commitment resulting from re-siting building:	**225.90 nasm**
Original Space Commitment from earlier submission:	**66.95 nasm**
Incremental Space Commitment	**158.95 nasm**

Specifically, the new Science Complex food service facility may include:

- **A Branded Coffee Operation**
- **An Upscale Deli Bar Operation**
- **A Grab and Go Operation:**

The following space plan will be required for this operation:

o Office	5 nasm
o Storage	30.0 nasm
o incl.15 nasm for fridge/freezer	
o incl.15 nasm for dry storage	
o Preparation	37.2 nasm
o Servery	37.2 nasm
o Dish and pot washing	5 nasm
o Seating	111.5 nasm ***
Total Proposed Space	**225.9 nasm**

***Seating Notation: Food services have provided the above seating space number as a starting point. In keeping with recent discussion regarding food service seating/ student lounge space /informal study space, we are committed to working with the building committee to provide common seating that is appropriate to both the context of the building and the needs of the community. The number provided above represents approximately 80 food service appropriate seats at a standard of 15 square feet per seat – for a total of approximately 1200 square feet (111.5 nasm)

Proposed Instructional Centre
Food Service Requirement

Friday March 6, 2009

The relocation of the Proposed Instructional Centre poses a number of questions in the formulation of a final food service operating proposal

The preferred scenario will be based upon the campus plan for the movement of people

- Will the complex be classroom only
- Will the complex be designed to enable students to stay
    - Meet / study / sit and relax

2 basic scenarios have been established based upon the new siting.

Scenario 1 – with no seating provided in the complex:

Concept: Concourse Coffee Kiosk

Kiosk	37 nasm
Storage and Support	9.3 nasm
Total Space Requirement	**46.3 nasm**

The incremental space commitment for this revised plan is as follows:

Revised Space Commitment resulting from re-siting building:	**46.30 nasm**
Original Space Commitment from earlier submission:	**231.7 nasm**
Reduction in Space Commitment	**- 185.4 nasm**

Scenario 2 – with seating provided in the complex:

Concept: 3 concept café featuring

- A Branded Coffee Operation
- A prepared sandwich /grilled sandwich concept
- A Grab and Go Operation

The following space plan will be required for this operation:

o Storage /office	37.0 nasm
o incl.15 nasm for fridge/freezer	
o incl.17 nasm for dry storage	
o incl 5 nasm	
o Preparation	37.2 nasm
o Servery	37.2 nasm
o Dish and pot washing	6.0 nasm
o Seating (150 seats)	210. nasm
***	
Total Space Requirement	327.4 nasm

The incremental space commitment for this revised plan is as follows:

Revised Space Commitment resulting from re-siting building:	**327.4 nasm**
Original Space Commitment from earlier submission:	**231.7nasm**
Incremental Space Commitment	**95.7 nasm**

APPENDIX 10:

Campus Planning Principles

Prepared by: Campus & Facilities Planning, November 2008

CAMPUS PLANNING PRINCIPLES

To ensure excellence in campus planning and design, directives that guide the University towards a systematic and comprehensive approach for evaluating design alternatives for buildings and grounds are necessary.

The general planning principles relating to campus planning, building design, site planning and landscaped open space to assist the University in various development proposals are identified below. This list incorporates the principles established in 1990 which were based on the principles approved in 1975 and 1983.

A. Campus Planning

1. It should be recognized that the University is set within an established urban environment and that campus development must fall within the parameters of the existing context and the planning of the Cities of Toronto and Mississauga and the broader GTA.

2. The development capacity of University of Toronto property should be fully realized, while respecting the integrity of the campus to support the University's academic endeavours.

3. The use of transit should be encouraged while co-operating with the Cities of Toronto and Mississauga in new endeavours to examine and rationalize parking.

4. The architectural and visual coherence of the campus should be sustained and enhanced by campus development.

5. Structures and outdoor spaces of historical, architectural, or environmental significance should be preserved.

6. The University's heritage and tradition should be enhanced and emphasized.

7. Unified academic communities should be planned with a fundamental framework of social and environmental amenities (e.g. child care, food services, recycling facilities etc.).

8. The expansion of campus-wide service networks, such as utilities and communications, should be integral to campus planning.

9. The University campus and global environment as set out in the Environmental Protection Policy should be maintained and enhanced.

B. Site Planning

1. Structures, open space, and areas of historic significance should be preserved and enhanced and an appropriate integration of new development, renovations, or additions must be ensured.

2. A system of continuous pedestrian routes throughout the campus should be established which provide safe and convenient access to all University facilities, including convenient access for the physically disabled.

3. The grouping of buildings with related use and technical support facilities should be encouraged.

4. Aesthetic aspects of public areas should be enhanced.

5. Personal safety considerations must be paramount in building and landscape design.

C. Landscaped Outdoor Open Space

1. Designated funding for landscape improvements are required to be included within the total building project budgets in accordance with the University's budget guidelines.

2. Priority should be given to landscape improvements on the St. George Campus identified in the open space master plan "Investing in the Landscape" and on the Mississauga and Scarborough Campuses identified in their respective master plans.

3. Existing University open space, gardens and treed areas of significance should be respected and enhanced when planning new development, renovations and additions to adjacent buildings.

4. Optimal microclimatic conditions should be promoted through site and building design. Specifically, design must take into account that peak use of the campus occurs in fall and winter.

5. Streetscapes should be identifiable through distinctive paving, lighting, signage, and outdoor furnishings.

D. Property and Land Use

1. The use of physical resources of all kinds should aim to promote the University's academic goals. All University lands should be regarded as resources to serve the University's overall mission.

2. No buildings or campus areas should be irrevocably assigned to or controlled by a particular division or department.

3. Capital improvements and the use of existing space should be coordinated to ensure the most effective use of all resources. The secondary ramifications of every major capital project should be identified as part of the planning for the project.

4. Building renovation and adaptation should be given equal consideration with building replacement in order to maximize use of the existing space inventory and to preserve sites for development.

5. Where possible and desirable, the University should plan multiple use facilities.

6. The periphery of the campus should be planned in a consultative fashion so as to reflect the plans of both adjacent communities and the University.

7. Faculties and departments that have close functional or disciplinary relationships should be grouped whenever possible.

8. The University should vacate leased space funded by the operating budget whenever cost effective alternatives are presented to do so.

9. Surface parking should be replaced wherever possible by parking structures.

10. The university should retain oversight of design when leasing land to a third party.

E. Considerations for Building Design

1. All buildings should be identifiable as University facilities and contribute to the quality and coherence of the campus.

2. On the perimeter of the campus, the buildings should convey the identity of the University as well as ensuring appropriate integration with the adjacent communities.

3. Each building project should be developed as part of an integrated whole, consisting of built space, open space, and functional inter-relationships.

4. The gross area of each building should be minimized to reduce capital and operating costs while fulfilling program requirements according to a system of objective space standards.

5. Building design should make efficient use of each building site taking into account the limited availability of undeveloped campus lands.

6. Building design should take into account impact on micro-climatic conditions.

7. Facilities that do not require surface locations should be built below grade when possible.

8. Infill should be considered to capitalize on unused space or where it can preserve and reinforce the historical, aesthetic, or functional attributes of existing buildings.

9. Accessibility for the disabled must be taken into account in building design.

10. Building design should provide flexibility to facilitate changes in use and improvements in technical support facilities.

11. All building projects should take into account the principles described above in order to improve adjacent existing facilities whenever possible.

12. When making decisions about designs, processes and products that influence resource use and other environmental impact, alternative methods that result in good environmental practices should be considered.

13. All buildings are to be designed according to principles of green building in order to minimize energy and materials demand, and to minimize interior pollution.