The 2007
Project Planning Report
for the
Mississauga Academy
and UTM Academic Space
in a
Medical Academy Building
at the
University of Toronto Mississauga

October 16, 2007

Prepared by:
Campus & Facilities Planning

EXECUTIVE SUMMARY

The Faculty of Medicine and the University of Toronto Mississauga (UTM) have had on-going discussions with regard to the potential expansion of the MD program to UTM. With the provincial government's announcement of the enrolment expansion in MD programs in February 2006, a Project Planning Committee was established to develop a space plan for the accommodation of the increased number of medical students at the University. The higher enrolment and associated creation of a new "Mississauga Academy" has implications for space, facilities, and infrastructure at the Medical Sciences Building on the St. George Campus, the University of Toronto Mississauga Campus, and the proposed partner hospital sites – Credit Valley Hospital and Trillium Health Centre.

In the fall of 2006, the Project Planning Committee completed and submitted a report requesting that vacant space in the old library area of the South Building be renovated and a small addition to that building be constructed in order to provide both interim and permanent facilities for the new Mississauga Academy. As well, renovations within the Medical Sciences Building on the St. George Campus were needed to accommodate the approved MD student enrolment increase and to better serve the entire Undergraduate Medical Education/MD program. The $20.107 million capital project for both campuses was approved by the Planning and Budget Committee of Governing Council on October 17, 2006

The renovations in the Medical Sciences Building (MSB) that were needed to provide new anatomy instructional facilities, to update and refurbish the two large lecture theatres, and to develop the new Discovery Commons (which will provide videoconferencing support for the MD program, as well as other services for the Faculty of Medicine) were completed for the start of the 2007/08 academic year. The project was deferred when it became apparent that key external issues had yet to be resolved. In addition, certain technological enhancements to the two large lecture theatres in the MSB were also deferred with a view to ensuring longevity of highly specialized equipment.

The deferral has allowed not only the Faculty of Medicine (and the appointed Mississauga Academy Director) to re-examine the previously approved space program in conjunction with the concurrent curriculum review of the UME/MD program, but also the University of Toronto Mississauga to better assess the opportunities presented by the new Medical Academy Building capital project in meeting its academic and enrolment needs. As well, the Project Planning Committee has been afforded the opportunity to reconsider possible building site options for the new Academy on the UTM Campus.

Vacated space in the South Building on the UTM campus, previously identified as the location of the UTM Medical Academy, will be renovated to accommodate a student services common and additional space for Geography, Sociology and registrarial functions. UTM regards the possibility of a new Medical Academy Building as an essential building block in the on-going implementation of its campus master plan.

As originally planned, the MD first-year enrolment grew from 198 students in the 2004/05 academic year to 204 students in the 2005/2006 academic year, and then to 218 by the start of the 2006/2007 academic year; finally, another 6 students were added this year (2007/2008) for a total annual intake of 224 students The Faculty of Medicine has been able to accommodate these recent enrolment increases within its existing and renovated facilities on the St. George Campus even though the new UTM facilities are not yet available. The Faculty of Medicine is committed to the development of the Academy at UTM and is planning to transfer all 26 new

positions for enrolment expansion to the new site when it is available. The University will also recommend continued enrolment expansion with the same level of funding provided for new medical student spots.

The Mississauga Academy is projected to have an enrolment of 36 students per year for an eventual steady-state total of 144 students across all four years of the MD program. It is considered possible that the Academy could expand further, depending on future decisions by the provincial government regarding medical school enrolment, therefore, the flexibility to accommodate 54 students per year (a total of 216) has been designed into the space program. Prior to the occupancy of the facilities at the UTM Campus, the Faculty of Medicine will be sending students from the existing academies to the community hospitals for various curricular components in all four years of the program as appropriate. The Mississauga Academy will formally commence when its facilities at UTM are ready; the first Academy class is expected to begin at the start of the 2010/11 academic year.

A distinctive component of the expanded MD program will be the use of advanced digital technology that will provide a two-way, interactive videoconferencing system between the Medical Sciences Building and UTM. This system will enable distributed learning between the two campuses as well as to the hospitals and other destinations when needed, and will ensure that all MD students share in the same learning experience regardless of their location.

The Faculty of Medicine remains committed to the principle that the MD curriculum delivered at the UTM Campus (as opposed to in a hospital setting) will be fundamentally the same as that which is found at the St. George Campus, and will consist predominantly of lectures and other large group sessions, seminars, and selected clinical skills training. The only curriculum exceptions will be, firstly, that problem-based learning is expected to take place to a greater extent than is the case downtown and, more significantly, that all MD students, regardless of campus location, will receive primary gross anatomy, neuroanatomy, and related instruction in the specialized facilities in the Medical Sciences Building. To avoid unnecessary midday travel during anatomy instruction periods in the curriculum, other sessions scheduled for the same days will also be taken by all students on the St. George Campus.

The Project Planning Report of October 26 identified a budget of $20.107 million of government funding and the balance of $5.407 million financed through borrowing. Of that budget, the Committee had allocated $5.308 million to renovations in the Medical Sciences Building, $312,000 towards the Mississauga Academy's share of the renovations to the Council Chamber at UTM to create a classroom with videoconferencing capabilities, and $443,250 towards interim Academy space at UTM for a total of $6.063 million paid or committed to date.

The budget balance of $14.044 million would have been available to construct and renovate a total of 1,600 nasm for the Mississauga Academy on the UTM Campus. After further review of the Academy's space program and siting options, the Committee recommended that the Academy's revised space program of 2,005 nasm at UTM be accommodated through the construction of a new building between the north end of the South Building and southeast corner of the Communication, Culture and Technology (CCT) Building.

The new cost estimate for the Mississauga Academy portion of the Medical Academy Building is $25.476 million. This higher 2007 project cost estimate is attributable to: the program being accommodated in all new construction, instead of primarily the renovation of existing space, an increase in the space program, cost escalation due to time, at least 11%, the full costing of the research facilities (previously these were covered by a cost allowance), required technological enhancements and, a portion of the required storm water management pond project.

With regard to the last item above, the new Medical Academy Building will be the first significant development to take place since the requirement to provide a storm water management facility as a condition of future development on the UTM Campus. Enhanced water quality treatment together with erosion control, is required before storm water is discharged into the Credit River in order to protect the Credit River watershed. The proposal for this new building has triggered the need for the University to undertake the necessary studies for, and the design and implementation of, such a facility.

The new plans for the building will also accommodate 975 nasm of displaced and new facilities for UTM at an estimated cost of $10.679 million.

The new Medical Academy Building will have a total assignable area of 2,980 nasm and a total gross area of 5,960 square metres. The estimated total project cost is $36.155 million of which $25.476 million is attributable to the Mississauga Academy and $10.679 million is attributable to UTM.

The new Medical Academy Building is expected to increase operating costs at the UTM campus between $400,000 and $500,000 annually. Final costs will be determined when more information about building design, utility cost estimates, grossing factors and other operating cost driver are finalized. Both the Faculty of Medicine and the University of Toronto Mississauga through their respective divisional administrations will be involved in the apportioning of these costs.

The new Medical Academy Building is projected to be completed and ready for occupancy by July 2010. This challenging schedule will only be possible with governance approval in October/November 2007 and initiation of the design process immediately thereafter. Delay will result in a delay in the completion date.

For the Mississauga Academy portion of $25.476 million, provincial funding will arrive in the form of a stream of payments annually over 20 years. The present value of annualized payments is $14.7 million of which $6.063 million has been spent or committed to work already undertaken, leaving a balance of $8.637 million. The additional funding required for the Mississauga Academy, $16.839 million, will be raised or supported by the Faculty of Medicine. $16.839 contingent financing will be raised through advancement or financed as short-term debt and carried by the Faculty of Medicine.

For the UTM portion of the Medical Academy Building, funding of $10.679 million, will be through borrowing.

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AND UTM ACADEMIC SPACE
IN A NEW MEDICAL ACADEMY BUILDING
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I. Membership

Co-Chair Jay Rosenfield, Vice-Dean, Undergraduate Medical Education, Faculty of Medicine
Co-Chair Ray de Souza, Chief Administrative Officer UTM
Pamela Coates, Academy Director, Mississauga Academy, Faculty of Medicine
Martin Schreiber, Preclerkship Director, Undergraduate Medical Education, Faculty of Medicine
Ramune Pleinys, Chief Administrative Officer, Faculty of Medicine
Robert Reisz, Chair, Department of Biology, UTM, and Chair, Resources, Priorities and Planning Committee, UTM
Kent Moore, Chair, Department of Chemical and Physical Sciences, UTM
Mary Lou Smith, Chair, Department of Psychology, UTM
Wes Robertson, Director, Administrative Computing, Faculty of Medicine
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Dave Paskar, Mississauga Academy Student Representative and MD student (Class of 2010)
Nimrit Dhillon, Mississauga Academy Student Representative and MD student (Class of 2010)
Ali Okhowat, President 2007/08, Medical Society, Faculty of Medicine and MD student (Class of 2010)
Danielle Kain, MD student (Class of 2009)
Julian Binks, Capital Project Planning
William Yasui, Campus and Facilities Planning
Gail Milgrom, Managing Director, Campus and Facilities Planning
Jennifer Anderson, Administrative Coordinator, UME Enrolment Expansion, Faculty of Medicine

II. Terms of Reference

The Project Planning Committee must address the following items:

1. Identify the requirements for additional academic space necessary to accommodate a Medical Academy at UTM (the “Mississauga Academy”).

2. Demonstrate that the proposed space program will be consistent with the Council of Ontario Universities’ space standards and best practice guidelines for clinical space necessary for the program.

3. Identify all secondary effects (including site remediation if hazardous materials are present) and including space reallocations within the existing building,

impact on the delivery of academic programs during construction, and the relocation of existing units affected by the construction.

4. 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.

5. Identify equipment and moveable furnishings necessary to the project and their estimated cost.

6. Identify all data and communication requirements and their related costs.

7. Identify all security, occupational health and safety, and accessibility requirements and their related costs.

8. Determine a total project cost for the capital project including all aspects identified above.

9. Identify a funding plan for capital and operating costs.

10. Report by October 2007.

III. Background Information

The Faculty of Medicine and the University of Toronto Mississauga have had on-going discussions for some years regarding the expansion of the MD program at UTM. In the spring of 2005, the Government of Ontario, in response to the shortage of primary care and generalist physicians, included in its budget a commitment to expand medical student enrolment in the province by 104 positions per annum.

On February 9, 2006, the Ministry of Training, Colleges and Universities and the Ministry of Health and Long-Term Care announced a plan for many of the 104 new positions to be sited at satellite, community-focused campuses operated by three of Ontario's medical schools, as follows:

- Mississauga: 26 spaces (University of Toronto)
- Waterloo Region and St. Catharines: 38 spaces combined (McMaster University)
- Windsor: 14 spaces (University of Western Ontario)

The Faculty of Medicine's proposal entitled *Undergraduate Medicine (MD) Enrolment Expansion: Proposal to create a new Academy based at The University of Toronto Mississauga (UTM) in partnership with the Mississauga community-affiliated hospitals* was approved by the following Committees:

Faculty Council, Faculty of Medicine	December 12, 2005
Erindale College Council	December 15, 2005
University of Toronto Academic Board	February 16, 2006
University of Toronto Governing Council	March 23, 2006

Following the Government's formal announcement of the expansion in February 2006, a Project Planning Committee was established with the primary responsibility of developing a space plan to accommodate the increased number of medical students at

the university. The higher enrolment and associated creation of the Mississauga Academy has implications for space, facilities, and infrastructure enhancements at:

- the Medical Sciences Building on the St. George Campus,
- the University of Toronto Mississauga (UTM) Campus, and
- the proposed partner hospital sites: Credit Valley Hospital (CVH) and Trillium Health Centre (THC).

In autumn 2006, the Project Planning Committee completed a comprehensive Project Planning Report that recommended the UME/MD enrolment expansion and the new Mississauga Academy at UTM be accommodated through renovations in the Medical Sciences Building on the St. George Campus, and through renovations at UTM in the former library space in the South Building and the construction of a modest addition adjacent to the renovated space. This combination of renovation and modest construction was taken as an expedient solution to meet a very tight deadline, accommodate students already being admitted and utilize a vacant facility. The $20.107 million capital project for both campuses was approved by the Planning and Budget Committee of Governing Council on October 17, 2006.

The renovations in the Medical Sciences Building that were needed to provide new anatomy instructional facilities, to update and refurbish the two large lecture theatres, and to develop the new Discovery Commons were completed for the start of the 2007/08 academic year. However, the project was deferred when it became apparent that key issues had yet to be resolved. In addition, certain technological enhancements to the two large theatres in the MSB were also deferred with a view to ensuring longevity of highly specialized equipment.

The deferral has allowed not only the Faculty of Medicine (and the appointed Mississauga Academy Director) to review the previously approved space program in conjunction with the concurrent curriculum review of the UME/MD program, but also the University of Toronto – Mississauga to better assess the opportunities presented by the new Medical Academy Building capital project in meeting its academic and enrolment needs. As well, the Project Planning Committee has been afforded the opportunity to reconsider possible building site options for the Mississauga Academy on the UTM Campus.

The University of Toronto Undergraduate Medical Education (UME) program's 26-student expansion took place incrementally over three years, producing a total first-year intake of 224 by September 2007:

- 2005/06 6 additional students for a total of 204
- 2006/07 14 additional students for a total of 218
- 2007/08 (current year) 6 additional students for a total of 224

Under the University of Toronto Faculty of Medicine's proposal, approved by Governing Council in early 2006, the Mississauga expansion of the UME will be operated under the "Academy" model that has long been successfully employed for all students at the downtown fully-affiliated teaching hospitals.[1] The new Mississauga Academy will focus on enhancing students' exposure to generalist practice (family and community medicine, general surgery, general internal medicine, general psychiatry, general pædiatrics, and general obstetrics/gynæcology) throughout the MD program.

[1] The three existing Academies are the FitzGerald Academy, located at St. Michael's Hospital, the Peters-Boyd Academy, a joint partnership of Sunnybrook Health Sciences Centre and Women's College Hospital, and the Wightman-Berris Academy, at Mount Sinai Hospital, UHN-Toronto General Hospital, and UHN-Toronto Western Hospital.

The Mississauga Academy will have an enrolment of 36 students per year, comprised of the expansion number of 26 and an additional 10 students who will be reallocated from the existing Academies. The figure of 36 students was deemed to be the lowest viable number for an Academy, in view of the teaching model employed in the current UME program and the critical number appropriate for an excellent student experience (on par with the other Academies). The figure of 36 could increase, depending on future decisions by the provincial government with respect to the volume of medical trainees across Ontario.

Formal student entry to the Mississauga Academy is planned to begin in the 2010/11 academic year with the first group of 36 students. The program will build over the subsequent three years so that all four years will be represented in Mississauga by 2013/14, as illustrated in Table 1. Thus, a total of 144 students will be designated to the Mississauga Academy once fully implemented.

Table 1. Roll-out of MD Students to Mississauga Academy.

	2010/11	**2011/12**	**2012/13**	**2013/14**
UG 1	36	36	36	36
UG 2		36	36	36
UG 3			36	36
UG 4				36
Total UG	**36**	**72**	**108**	**144**

The Mississauga Academy has been granted preliminary accreditation approval by the Liaison Committee on Medical Education (LCME) of the Association of American Medical Colleges (AAMC) and the Committee on Accreditation of Canadian Medical Schools (CACMS) of the Association of Faculties of Medicine of Canada (AFMC). This accreditation is required for any new sites for delivery of medical curriculum. As per LCME and CACMS requirements, a letter advising the two bodies of the planned expansion and new teaching sites was submitted by the Vice-Dean of Undergraduate Medical Education, Dr. Jay Rosenfield, on September 1, 2006. Both bodies have requested a written update on the progress of the Academy in the spring of 2008.

At UTM, a number of developments have occurred since the October 2006 Project Planning Report was approved. The requirement for design and construction of a storm water management (SWM) facility has been identified. The SWM facility must be implemented as a condition of further expansion on the UTM campus. A Project Planning Report for a new SWM pond to be constructed in part of UTM's parking lot 4 will be submitted for approval concurrently to the Planning and Budget Committee with the Medical Academy Building report.

With the delay in implementing the project as approved in October 2006, the Project Planning Committee has had an opportunity to re-examine the space program and the future of the new Academy at UTM. The Committee now considers the original proposal for South Building renovations and a small addition to be too constraining for any future growth or change to the Academy's requirements. A new building on a site with greater development potential would be desirable. As well, UTM regards the possibility of a new Medical Academy Building as an essential building block in the on-going implementation of its campus master plan.

Another consideration for this project was the possibility of the academic consolidation and spatial rationalization of the Biomedical Communications (BMC) programs. BMC currently offers its undergraduate program at UTM with space assigned in the CCT

Building, and operates its graduate program and office facilities on the St. George Campus. With the establishment of the Mississauga Academy, an opportunity arose for the consolidation of BMC's undergraduate and graduate programs on the UTM Campus, while continuing its current academic affiliation with the Institute of Medical Science and the Department of Surgery in the Faculty of Medicine.

IV. Statement of Academic Plan

Undergraduate medical education at the Faculty of Medicine, University of Toronto, is a four-year program divided into two phases: the first and second years comprise the "Preclerkship," while the third and fourth years are the "Clerkship." In 2004, the UME program was accredited for eight years following an extensive joint review by the AFMC Committee on Accreditation of Canadian Medical Schools (CACMS) and the AAMC/AMA Liaison Committee on Medical Education (LCME).

The Faculty of Medicine currently delivers its undergraduate medical curriculum in partnership with three Academies that are located at fully affiliated teaching hospitals in Toronto. The Mississauga Academy will be the fourth Academy and will include both a campus-based venue at UTM for the more didactic parts of the curriculum and hospital sites for the clinically focused elements of the curriculum. The UME curriculum at all four Academies will be equivalent and is determined centrally by the Faculty of Medicine.

The Mississauga Academy provides an opportunity to increase health-science-related teaching and research on the UTM Campus.

Delivery of the Preclerkship Curriculum

The faculty at UTM and the community-affiliated hospitals will work in partnership with the UME Preclerkship course directors to deliver the curriculum. Current faculty and new recruits from the UTM Departments of Biology, Chemistry and Physical Sciences, and Psychology are expected to complement the existing pool of Preclerkship instructors. In addition, new clinical faculty will be recruited from the physicians on staff at the two community-affiliated hospitals in Mississauga, Credit Valley Hospital and Trillium Health Centre.

Using advanced information technology, all students will be linked by videoconference to enable distributed learning across the campus sites. The Faculty has explored in detail the distributed campus model in use in British Columbia[2] and the Northern Ontario School of Medicine.

The curriculum to be delivered at the UTM campus will consist predominantly of lectures, other large-group sessions, and seminars, as well as selected clinical skills teaching for the various Preclerkship courses:

Structure and Function
Metabolism and Nutrition
Brain and Behaviour
Pathobiology of Disease
Foundations of Medical Practice
Determinants of Community Health (DOCH) I
Determinants of Community Health (DOCH) II
Art and Science of Clinical Medicine (ASCM) I
Art and Science of Clinical Medicine (ASCM) II

<u>Large Group Lectures</u>

Lectures are held for the entire group of students, and occupy approximately 10 to 15 hours each week in both first and second year. In the first 10 weeks of Structure and Function and on neuroanatomy teaching days in Brain and Behaviour, all students will

[2] Expanding undergraduate medical education in British Columbia: a distributed campus model; CMAJ, 173(6), Sept 13, 2005.

attend lectures in the Medical Sciences Building on the St. George Campus because of the integration of hands-on dissection teaching into the daily schedule; during the remainder of the Preclerkship, Mississauga Academy students will attend lectures at UTM. For each lecture, it is expected that one lecturer will address the entire class from his or her choice of site, with videoconferencing connecting the remote site.

Seminars

These sessions follow a fixed curriculum and are typically case-based and interactive; there is one seminar leader per group and generally one to two two-hour seminars per week, although courses vary. Some seminars in Mississauga will be sited on the UTM Campus with seminar leaders who are faculty of UTM or clinical faculty from the hospitals. Other seminars will take place in the hospital setting. Flexibility in site location is required to minimize travel between sites for both students and faculty.

Problem-Based Learning (PBL)

PBL sessions are delivered in small groups of typically six to nine students and one faculty member acting as a facilitator. Students work through a simulated health care scenario related to the week's topic over the course of two two-hour sessions. Whereas in the existing model, virtually all PBL sessions are conducted in the hospitals, it is anticipated that a significant proportion of PBL in the Mississauga Academy will take place on the UTM Campus.

Clinical Skills/Bedside Teaching

This format of learning occurs principally at the hospitals during the Art and Science of Clinical Medicine courses (ASCM I and ASCM II); however, the UTM Campus will also support student learning in these courses, providing adaptable facilities for student practice.

Delivery of the Clerkship Curriculum

The Clerkship component of the undergraduate curriculum is primarily focused on clinical training. With the exception of DOCH III and DOCH IV, the Clerkship courses are conducted almost exclusively at clinical sites. The UTM Campus will provide teaching space for the seminars and large group lectures/tutorials that are part of the clinical rotations, and for DOCH III and IV.

Overall, the Mississauga Academy presents a valuable opportunity for the Faculty of Medicine to provide a more community-based and community-oriented undergraduate curriculum. Students will be able to receive almost all of their instruction in Mississauga, either at the UTM Campus, the community-affiliated hospitals, or in the greater community. The principal exception is hands-on anatomy teaching in the Preclerkship, which must be provided at the MSB due to the highly specialized facilities it requires.

V. Space Program

A. Nominal Space Requirements

The Project Planning Report of October 2006 included a comprehensive space program for the Mississauga Academy; this space program was developed to readily accommodate the current UME curriculum while ensuring some flexibility for any future curriculum or enrolment changes (potentially up to 54 students per year). The space program identified all of the spaces that would be required at UTM, in the MSB, and at the two community hospitals.

Typically space requirements are calculated using the COU space standards and University of Toronto practices. The specialized nature of the UME curriculum, UME accreditation requirements, and the unique circumstances surrounding a distributed cohort at UTM were also considered in developing the space requirements for the Mississauga Academy.

For the 2007 Project Planning Report, the Committee has reviewed and revised the original space program to reflect experience from the MSB renovations (particularly as they related to the two large lecture theatres) and potential future developments not only for the Mississauga Academy but also the UME/MD curriculum, which is now undergoing a formal review and renewal process. Furthermore, the Committee took into account the significant possibility that the provincial government may create additional medical student spaces in the coming years. The Committee also considered the current and future needs of UTM, and a space program was prepared for UTM to be included within the Medical Academy Building project.

Of the 2006 space program, one element of the Mississauga Academy has already been completed. The Council Chamber in the South Building, which was funded equally by the Academy and UTM, was constructed as interim teaching space and will be available for booking of Academy meetings and curricular sessions.

<u>Anatomy Teaching Facilities</u>

An important portion of the UME first-year Preclerkship curriculum involves the use of anatomy dissection laboratories. With the development of an eighth anatomy dissection laboratory and a fourth small group learning room at the MSB in 2006/07 under the 2006 Medical Academy Project, the increase in UME/MD enrolment has been accommodated. As noted earlier, the gross anatomy portion of the Structure and Function course for students in the Mississauga Academy will be offered in these MSB facilities, as will neuroanatomy instruction in the Year 1 Brain and Behaviour course.

A change has been made to the original 2006 space program with regards to anatomy facilities. Under the 2006 program, when students were spending considerable time at the UTM Campus, they would not have had ready access to the sorts of anatomy resource materials that are available in the MSB. The Committee has therefore proposed that an open instructional laboratory and support facility be included in the space program to display and make available materials (including highly sensitive, cadaverous materials) to be accessed securely by Academy students throughout the academic year.

<u>Lecture Theatres, Classrooms, and PBL/Small Group Learning Rooms</u>

The two-year Preclerkship phase of the UME program involves a mix of formal large-group instruction (usually delivered to the entire year class at once) and small-group instruction such as seminars and problem-based learning (PBL) sessions. These scheduled activities currently involve a range of existing MSB facilities, including two large tiered lecture theatres, several smaller lecture rooms, and a number of wet teaching laboratories that are employed by theUME/MD program almost exclusively for the delivery of concurrent seminars in the absence of a large number of more suitable contiguous seminar facilities in the MSB.

The recent renovations of the two MSB lecture theatres have not only created a better instructional environment but also ensured that they will be able to accommodate the necessary videoconferencing and IT equipment that will be needed when the two campuses are digitally linked.

For the Academy cluster at UTM, the space program includes two 60-seat lecture rooms that will be scheduled and used in parallel with the two large MSB lecture theatres on the St. George Campus. These two rooms will be equipped with the same or compatible AV/IT equipment and infrastructure to those that will be installed in their MSB counterparts. Experiences gained from the design of the renovated MSB lecture theatres to make them videoconferencing capable have resulted in a slight increase in the floor area designated for the two 60-seat lecture theatres at UTM over the 2006 space program.

As well, the UME program requires several 30-seat classrooms primarily for delivery of the Preclerkship seminars; other departments at UTM would also benefit from new classrooms of this size and with sophisticated, integrated technology. Of the six proposed 30-seat classrooms, it is recommended that equipping two of them with a moveable demising wall be considered during the design phase. This will allow them to be converted into a single 60-seat room for use in the Clerkship when the new lecture theatres are occupied by Years 1 and 2, by other groups at UTM, and for other impromptu large-group sessions throughout the MD program when the theatres are not available.

These 30-seat classrooms, along with the 60-seat theatres, will be located along public corridors in the new building which will make them readily accessible to both UME and other UTM programs. By contrast, the 12-seat PBL/small group learning rooms will be located within the Academy's discrete space cluster to ensure security of equipment and privacy when in use for clinical skills practice and student study.

The number of classrooms and seminar rooms was largely determined not only with respect to meeting formal, scheduled instruction needs, but also to informal and/or extra-curricular usage by students and staff. Moreover, the proposed rooms can serve as replacement space for those facilities that are planned for the hospitals in the event of an emergency (such as the recent SARS crisis, which severely limited access to hospitals and thereby disrupted delivery of the UME curriculum). However, the plan to build six 30-seat rooms in particular is provisional and contingent on the space that the partner hospitals will be able to provide. It is possible, depending on the capital projects undertaken by the hospitals, that a reduction of scope in this aspect of the Medical Academy Building may be warranted, down to four 30-seat rooms. A decision is expected to be reached prior to the design phase of the new building.

<u>Other Instructional Facilities</u>

An important aspect of the UME program involves formal instruction with professional "standardized patients" and informal clinical skills practice by students on their classmates. A request for a suite of patient simulation rooms, that duplicate a physician's examination room, along with a central observation room and support facilities, has been submitted to the two community-based hospitals participating in the Mississauga Academy. Similar facilities are employed at the Toronto General Hospital's Helliwell Centre (Wightman-Berris Academy) and other medical schools, including the University of Western Ontario.

To maximize flexibility, the PBL/small group learning rooms at UTM will be furnished with portable examination tables and diagnostic equipment, and will also be equipped with video and audio recording equipment to monitor and playback student activity.

Teleconferencing and IT Facilities

Crucial to the establishment of the Mississauga Academy will be the AV/IT network connections between the two campuses and throughout the facilities at both campuses. This infrastructure and the technology in each room necessitates the development of core AV/IT facilities, as well as the rationalization of existing computer service operations at both the MSB and UTM. The core AV/IT facilities to support videoconferencing at both campuses will be the video control rooms and videoconferencing studios.

As discussed previously, the consolidation of computer service operations in the MSB has been completed, with the new Discovery Commons having opened this fall. At UTM, the October 2006 Report recommended the relocation of the Computing Services operations to the vicinity of the Mississauga Academy facilities in the South Building in order for them to better serve the IT and videoconferencing needs of the Academy. It has since been determined that this solution was not optimal from the point of view of Computing Services, and hence, the 2007 Report recommends instead that a single multipurpose facility (with combined Help desk and IT support) that is equally shared between UTM and the Academy be provided within the revised space program.

Academy Office and Student Facilities

The Faculty of Medicine has identified the academic and administrative support that will be required to meet the needs of the new Mississauga Academy at UTM. The majority of these offices and student areas will be accommodated within new space that will be constructed or renovated for the Academy. However, some of the Academy's requirements will be addressed with existing or new UTM facilities (for example, through assigned space within the new Academic Learning Centre and the proposed Student Services Plaza).

Hospital-Based Facilities

As well as extensive campus-based teaching, the UME program involves significant hospital-based instruction and experience. The Faculty of Medicine has submitted to the two Mississauga hospitals a list of rooms that the new Academy will require for consideration in their respective capital projects. With the delay in the new Medical Academy Building, the community hospitals will have additional time to advance their own construction and renovation projects.

Research Facilities

In the October 2006 Report, the hiring of three new research-based faculty supporting the Mississauga Academy and residing in the UTM science departments was anticipated and, as a result, three research laboratory modules were included in the Academy space program along with a fourth module linked to UTM academic growth planning. As these research facilities would require highly serviced laboratory spaces they were not appropriate for inclusion in the original South Building renovations project. Instead, the research facilities were to be accommodated elsewhere on the UTM Campus as part of a future building project. An allowance was set aside for that purpose. In the October 2006 Report the Committee also assumed that the office needs of the new principle investigators' graduate students and support staff would be met through the re-assignment of existing office space.

In contrast, the 2007 Report recommends that the four research laboratory modules be included in the new Medical Academy Building and that offices and office support space also be included in the space program. Because the end users for these facilities are not yet known, the Committee has provisionally assumed for costing purposes that one of these modules should be designed as a heavy wet research laboratory, two should be more typical wet research facilities, and one module should accommodate research requiring a 'dry' laboratory. However, consideration should be given in the design phase for the future conversion of all four laboratories into heavy wet facilities, as well as to the potential for several of them to be dry. As was previously the case, three of the modules will be assigned to the Mississauga Academy and the fourth one to UTM.

UTM-Related Facilities

As discussed later in this report, the proposed location for the new Medical Academy Building will require the removal of a sizeable portable building array. These portables currently accommodate 36 office-sized rooms and a videoconferencing meeting room. The 36 rooms range in assignments from private faculty and union offices to small dry research facilities. The 2007 Report recommends that the 36 rooms be replaced by an equivalent number of offices in the new building, and that an appropriate allocation for support functions such as meeting rooms, lounges and other common rooms, photocopy rooms and storage be included. The videoconferencing meeting room will not need to be replaced as the new videoconferencing facilities in the Mississauga Academy can be booked by UTM for its functions.

This project will also facilitate the consolidation of the Biomedical Communication program onto the UTM Campus. Currently, BMC is allocated 118 nasm in the CCT Building and 369 nasm in the Medical Sciences Building (for a two-campus total allocation of 486 nasm). A review of the space requirements for a consolidated BMC recommended that this program would require 336 nasm if it were to reside solely on the UTM Campus. A final location for BMC has yet to be determined. The space program for the BMC is provided in Appendix D.

The space program for the new Medical Academy Building carries an area allocation of 218 nasm for the consolidation of academic units on the UTM Campus, including BMC. For planning purposes, the Committee assumed that this area allocation would be equivalent to the total amount of space required for the rationalization of BMC onto the UTM Campus less the space currently allocated to BMC in the CCT Building.

B. Space Program for the New Medical Academy Building

The following table lists the complete space program for the new Medical Academy Building:

Table 2. Medical Academy Building Space Program

Room Description	NASM Per Room	No. Rooms	NASM Allocation
A. Instructional Facilities – Shared			
Lecture Theatre (60-seat)	135.0	2	270.0
Classroom A (30-seat)	66.9	4	267.6
Classroom B (30-seat)	66.9	2	133.8
Classroom Support	67.1	TBD	67.1
UME Resource (Anatomy) Laboratory	70.0	1	70.0
UME Resource Support Space	28.0	TBD	28.0
Instructional Facilities Sub-total		**9**	**836.5**
B. Mississauga Academy Cluster			
PBL/Small Group Learning Rooms (12-seat)	23.4	12	280.8
Office – Academy Director	19.0	1	19.0
Office – Site Director DOCH	13.0	1	13.0
Visiting Faculty Offices (Shared)	11.0	3	33.0
Office – Executive Assistant to Academy Director	13.0	1	13.0
Office – UME Curriculum Coordinator	13.0	1	13.0
Offices – UME Administrative Support Staff	13.0	4	52.0
Office Support (copier, supplies, etc.)	10.0	1	10.0
Records & Archives Room	13.0	1	13.0
Mail Room (Faculty & Staff)	5.0	1	5.0
Lounge/Kitchenette (Faculty & Staff)	16.7	1	16.7
Reception/Waiting Area	15.0	1	15.0
Office – Medical Society (Storage)	11.0	1	11.0
Student Lounge (25-seat)	50.0	1	50.0
Mail Room (Students)	6.5	1	6.5
Student Locker Room	41.2	1	41.2
Academy Cluster Sub-total		**34**	**592.2**
C. Videoconferencing Facilities			
Videoconferencing Studio	50.0	1	50.0
Video Control Room	50.0	1	50.0
AV Equipment Transfer Facility	9.0	3	27.0
Videoconferencing Sub-total		**5**	**127.0**
D. Research Facilities			
Research Laboratories	70.0	4	280.0
Research Support Space (40% of lab nasm)	112.0	TBD	112.0
Faculty Office (Private)	13.0	4	52.0
Other Academic Office	13.0	6	78.0
Faculty/Staff/Student Support Space	32.5	TBD	32.5

Research Facilities Sub-total		**14**	**554.5**
E. UTM Computer Services			
Multipurpose Room	67.0	1	67.0
UTM Computer Service Sub-total		**1**	**67.0**
F. UTM – South Portables Replacement Facilities			
Academic Office (Standard)	13.0	36	468.0
Faculty/Staff/Student Support Space	117.0	TBD	117.0
UTM Portables Replacement Sub-total		**36**	**585.0**
G. UTM –Academic Consolidation Space			
Additional space needed to consolidate UTM academic units	218.2	TBD	218.2
UTM Academic Consolidation Sub-total			**218.2**
Total Space Program for New Building		**99**	**2,980.4**

The above space program for the new Medical Academy Building is apportioned to the Faculty of Medicine as follows:

Instructional Facilities – 100%
Mississauga Academy Cluster – 100%
Videoconferencing Facilities – 100%
Research Facilities – 75%
UTM Computer Services – 50%

And for UTM, as follows:

Research Facilities – 25%
UTM Computer Services – 50%
UTM South Building Portables Replacement – 100%
UTM Academic Consolidation – 100%

On the above distribution, the Faculty of Medicine and UTM are allocated 2,005 and 975 net assignable square metres, respectively. Based on a 2.00 gross-up factor, the new Medical Academy Building of 2,980 nasm will have a total building area of 5,960 square metres.

Descriptive room specification sheets for each discrete and unique facility in the space program are provided in Appendix E.

Functional Space Plan

Although the Mississauga Academy and UTM client representatives will have to work closely with the design team to ensure that the space program will be properly accommodated within the new building, some assumptions were made by the Project Planning Committee to develop a functional space plan that would assist in assessing a potential building mass and site selection. This exercise was important for initial campus planning and the effect on resource implications for the Faculty of Medicine and UTM.

In general, a multi-storey structure was considered desirable in optimizing pedestrian traffic into and through the building while ensuring the relative privacy and security of less public operations (such as the research laboratories) can be maintained.

Although the design response to the proposed development site may dictate otherwise, it was assumed that the lecture theatres, classrooms and associated support facilities and Computer Services' multipurpose room would be located on the building's main floor level. Ideally, this floor level would be at grade and at the same elevation as the South Building's second floor level. The new Medical Academy Building would be linked to the South Building on the three levels with floor levels being approximately at the same elevation.

The Mississauga Academy's main cluster of administrative, student, and small group learning space, as well as the videoconferencing facilities, would be located on the floor level above the classrooms; these facilities should be readily accessible not only from the classrooms below but also the building's main public entrance.

The research laboratories and support space, and the UME Resource (Anatomy) Laboratory and associated support rooms should be located on the uppermost floor level. This location will not only allow this level to be secured from the more public floors but also facilitate the servicing of those areas that typically have a significantly higher demand for building infrastructure; such infrastructure could also make use of available penthouse space.

The remaining space program – that is, the academic office and support space associated with the South Portables replacement and the UTM academic consolidation proposal – could be distributed over the building's three floor levels. UTM has not yet determined the allocation of this space to its users on campus. This space may be allocated to individuals, academic or administrative clusters, or both. For planning purposes, the Committee assumed that these spaces would be arranged in discrete clusters on each floor and that they would have their own unique profile (and attendant security) within the new building.

VI. Special Considerations

Campus and Site Planning

The construction of a new building to accommodate the Mississauga Academy on the UTM Campus presents an opportunity to further develop a sector of the campus that recently has seen the opening of two architecturally dramatic buildings: the Communication, Culture and Technology (CCT) Building, and the Hazel McCallion Academic Learning Centre (HMALC). The accompanying campus plan shows the proposed location for the new Medical Academy Building off the north end of the South Building.

The proposed building site is currently occupied by part of the South Building portable array and a number of parking spots (associated with Parking Lot 9).There is some hard landscaping that was included as part of the CCT project, but the remainder of the site is undeveloped and undisturbed from CCT construction.

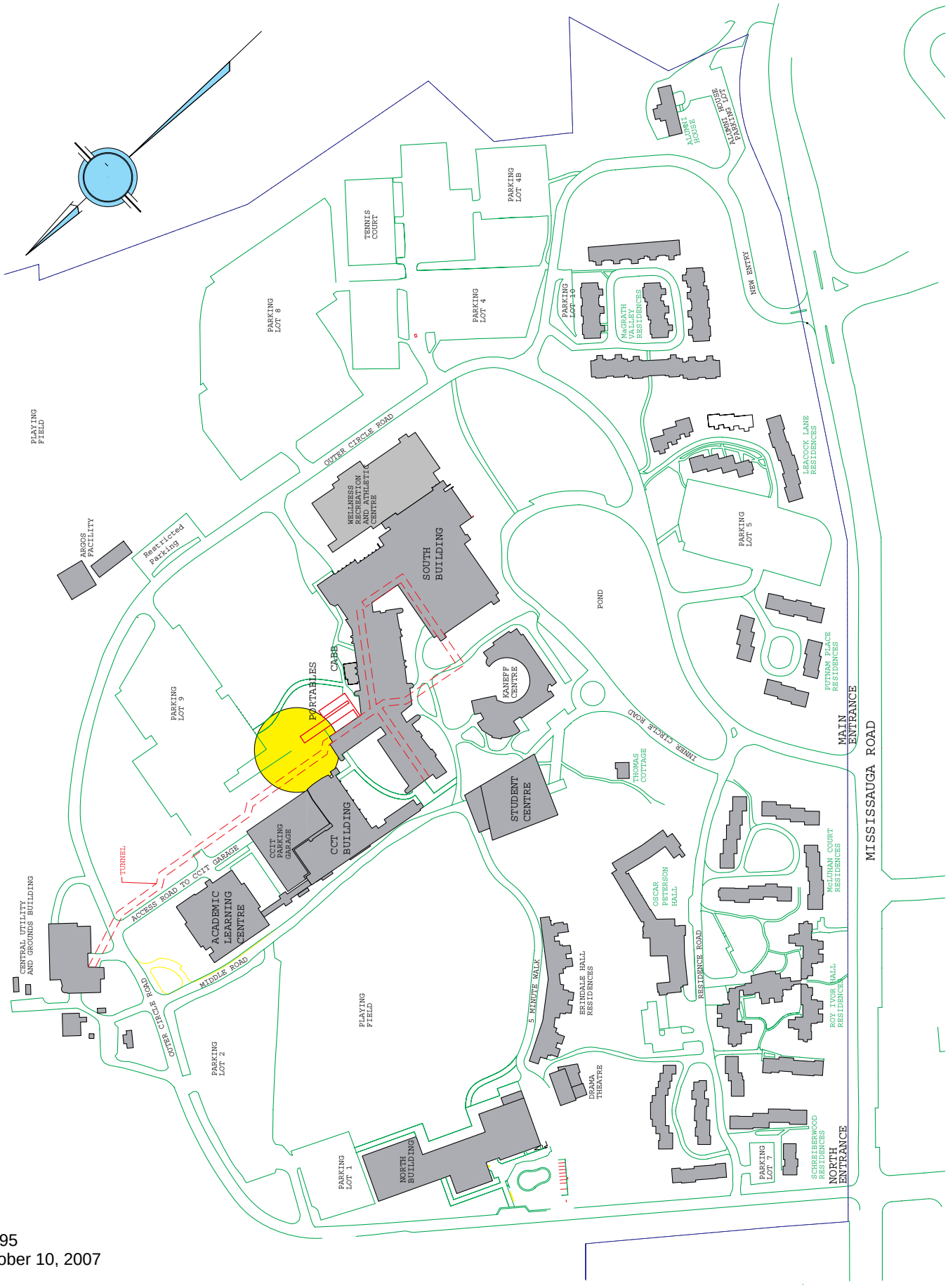
The project will also require the removal of a grove of trees commemorating UTM's 25th anniversary. The UTM Campus and Grounds Committee is preparing a proposal that would replace and enhance this grove elsewhere on campus as part of UTM's naturalization program.

This site was selected because it could readily accommodate a large structure with easy links to the South Building, the Meeting Place, student services, classrooms and laboratories. This central location provides an opportunity to have a stand-alone facility with its own "street" profile. As well, the selected site will be directly over the campus' major utility service tunnel, which will ensure ready access to utilities and infrastructure.

Although the design team will have a significant amount of latitude to develop a new building on this site, the Project Planning Committee and UTM recommend that the following master planning guidelines be incorporated:

- a prominent facade;
- a sense of architectural transparency and porosity to ensure both visual connections to neighbouring buildings and open spaces;
- a strong connection to the existing CCT courtyard;
- access to natural light and views for adjacent buildings must be preserved;
- secondary building entrances should be linked to existing pedestrian paths;
- the landscape design should define pedestrian connections, provide shelter from the sun and winds, and strengthen the presence of a new gateway to the centre of the main campus;
- the existing parking lot should accommodate vehicular access and visitor drop-offs to the new building while improving vehicular and pedestrian traffic flows to and from the parking lot, CCT Parking Garage, surrounding buildings and the campus core;
- as many parking spots should be preserved as possible;
- existing natural vegetation should be protected (with as little loss or damage as possible due to site development and construction);
- any service functions (such as shipping and receiving, garbage disposal, etc.) should be physically and visually separated from the main entrance and pedestrian pathways;
- the connection (and its subsequent extension in the new building) to the existing service tunnel should consider future building extensions to the South Building (i.e. to the east and southeast of the new Medical Academy Building);
- the siting of the building should be mindful of future development of the quadrant for UTM; and,
- permeable exterior surfaces (such as pavers, gravel and vegetation) should be incorporated as much as possible instead of non-permeable materials

Appendix A includes a larger-scale plan of the proposed site for the new Medical Academy Building.



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Inter-Campus AV Infrastructure

A critical element in the establishment of the new Mississauga Academy is the development of an effective infrastructure that will link key UME instructional facilities at UTM with their counterparts in the Medical Sciences Building via videoconferencing. Notably, the UME curriculum in the new distributed model will involve simultaneous instruction at both locations; it is essential for quality of education and successful accreditation that students have the same learning experience regardless of where they attend class. This includes not only the ability to view a lecture, but also to interact with both the instructor and their fellow students in the course of a session.

The end points of the interconnecting telecommunications will be the video control rooms at both campuses. From these rooms, audio-video and data will be streamed not only between campuses, but also between the individual facilities within each campus location. The two large lecture theatres (rooms 3153 and 3154) within the Medical Sciences Building, the two new 60-seat lecture theatres at UTM, and the videoconferencing studios (one each per campus) will be fully videoconferencing-capable. A mobile videoconferencing cart will enable videoconferences to take place in other rooms within each building as well, as required. Furthermore, two office videoconferencing units (doubling as computer monitors) at each site will permit more private remote meetings between faculty, staff, and/or students as required.

Although a significant amount of audio-visual equipment has been supplied for the MSB renovations, the Committee decided that the videoconferencing-specific equipment, software and inter-campus connections should not be supplied and installed until the new Medical Academy Building project was underway. Essential equipment requirements have been identified for each Academy room at both campuses and cost estimates have been included in the total project cost estimate and provided in Appendix C.

Environmental Impact and LEED Certification

Both the University of Toronto and the University of Toronto Mississauga are strongly committed to the development and maintenance of exemplary strategies that are aimed at enhancing not only the campus but also the global environment. This commitment is set out in UTM's "*Grow Smart Go Green* Philosophy" and the University's *Environmental Protection Policy*, dated March 7, 1994 which is available for viewing or downloading from the Governing Council website http://www.utoronto.ca/govcncl/pap/policies/enviro.html

These policies have had, and will continue to have, an important impact on construction projects that range from siting policy to material selection. Recently, the Environmental Protection Advisory Committee (EPAC), under which the *Environmental Protection Policy* was originally administered, was replaced by the Tri-Campus Sustainability Board. With this new Board and its Sustainability Office, the University expects that its earlier environmental policy will be strengthened and enhanced.

As well, the University of Toronto Mississauga has been actively pursuing the development of sustainable strategies in all aspects of campus activities and operations. *Grow Smart, Grow Green* is the banner under which UTM's comprehensive, multi-faceted initiative was launched and it provides a framework to guide all decisions that may impact upon the environment.

UTM's Environmental Affairs Office is an essential resource in this initiative and will be an active participant in the development of the new Medical Academy Building.

No one underestimates the difficulties in making the most effective environmental choices, nor can the budget implications of such choices be ignored. On campus, buildings represent the single most important element that affects the environment; they give it a recognizable form and are major consumers of natural resources in their construction and operation. Building design professionals have an inherent responsibility to foster good environmental practices as do building users and university administrators.

In order to encourage building designs that meet the University's environmental policy, an environmental section has been incorporated into the University's *Design Standards Manual* (see Section 9 of the Facilities and Services website, which details environment-related standards: www.fs.utoronto.ca/Assets/Environment.pdf).

This section obligates the design team to adhere to a set of environmental design principles:

- When making decisions about designs, processes and products that influence resource use (e.g., energy, water, materials) and other environmental impacts (e.g., indoor air quality, lighting, waste management), to consider alternative choices, including innovative but proven alternatives;
- When making decisions about life cycle costs, to consider those which also offer environmental benefits; and,
- To assess environmental impact broadly – recognizing that impacts in one area must be assessed in relation to others so that the "system" can be effective.

Notwithstanding the University's environmental goals, this Project Planning Committee does want to clarify that the environmental design strategies cannot compromise the specified requirements of the new building's occupants and activities.

The new Medical Academy Building represents a sizeable addition to the UTM Campus' building stock. Its size (with respect to both floor area and building envelope) and mixed academic, administrative and research uses will result in environmental implications, such as increases in energy and water consumption, hazardous and non-hazardous waste generation, etc. From a simplistic standpoint, better environmental designs can reduce operating costs over the life of the building; conversely, a poor design can not only add to operating costs but also can provide a less than comfortable working environment for its occupants.

This project can reinforce the environmental progress made in recent building designs for future building projects. Because of the Medical Academy Building's siting and size, the design team should pay particular attention (but not be limited) to:

- building orientation, form and envelope to maximize the use of natural energy or passive strategies such as the use and control of sunlight, ventilating air movements, and diurnal and seasonal temperatures,
- minimizing energy use for heating, cooling and lighting through the careful design of the building envelope, mechanical and electrical systems, and the use of low energy fixtures in combination with natural daylight and task lighting wherever possible,
- water conservation through the use of water saving fixtures and close-looped equipment cooling systems,
- metering of energy and water use in the building, or parts of it,
- building materials, finishes (e.g. paint), furnishings (e.g. carpets) and furniture which are not only emission-free (to provide building occupants with the highest quality of

indoor environment) but also are the most environmentally friendly in their manufacture and installation,
- 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,
- conveniently locating waste receptacles to minimize litter,
- creating a sufficiently large central area for the consolidation of and access to recycled materials and waste,
- directing rainwater (roof) runoff from the campus' stormwater system and other sources of 'gray' water to satisfy landscaping needs,
- using water penetrable systems in outdoor areas where hard landscaping is required to minimize flows to the City's stormwater system, and choosing paving materials to assist the University in minimizing the amount of salt used in snow and ice clearance,
- the design of roofs and access to them to permit future use as campus open space by building users, where practical,
- the landscape design to promote local plant species that require low maintenance and
- the design of outdoor spaces for all-season use, with shade and cool air movement for the summer, and sun-trapping and wind shelter for winter use.

The Committee recognizes that all of the above strategies may not be practical to implement; however, the design team and the building's users must make an earnest effort to ensure that this building, when viewed in its entirety, will satisfy the environmental goals set out by the University.

It is the intent and desire of the Project Planning Committee, the University of Toronto Mississauga, the Faculty of Medicine and the University of Toronto that the new Medical Academy Building's design will meet or exceed the requirements for *Silver Certification* under the *Leadership in Energy and Environmental Design (LEED)* Green Building Rating System.

Secondary Effects

The proposed building site is partially occupied by the South Building portable array, which currently houses 36 private academic offices, research rooms and support facilities, as well as a videoconferencing meeting room. The development of this site and the construction of this project will require the removal of these portables. This capital project will be directly responsible for the relocation of the current occupants from the portables into temporary accommodations for the duration of the construction period. The project will also be responsible for the removal and disposal of the portables from the building site.

Permanent replacement space along with associated support facilities will be incorporated into the new building, except for the videoconferencing room, which will have its activities scheduled into appropriately equipped Academy facilities.

The proposed location includes a portion of the northwest corner of Parking Lot 9. It is anticipated that some parking spots will be lost due to the new building but the exact numbers will not be known until the building's design is developed. During design development, the effect of any loss of vehicle parking spots will have to be carefully assessed and any needed remediation will have to be incorporated into the project. All such initiatives will require the approval of UTM's governance.

The new Medical Academy Building will be the first significant development to take place since the requirement for a storm water management facility as a condition of future development on the UTM Campus. Enhanced water quality treatment together with erosion control is necessary before storm water is discharged to the Credit River in order to protect the Credit River watershed. The proposal for this new building has triggered the need for the University to undertake the necessary studies for, and the design and implementation of, such a facility. The construction of this facility can only occur during the summer months when there will be a reduced need for vehicle parking.

That study has been completed and the project planning report will be submitted concurrently. The Medical Academy Building and landscape design comply with the requirements identified in the study and share an appropriate portion of the estimated costs of the new storm water management system.

VII. Resource Implications

The Capital Projects Department has prepared a Total Project Cost (TPC) estimate which incorporates information from various sources. The construction cost estimate was prepared by the firm of A W Hooker & Associates based on the program and room data sheets supplied in September 2007. The briefing that was provided to them also included the conceptual stacking and massing of the building, totaling 5,960 gross square metres. Also included was site work to modify the current driveways to create a new suitably landscaped drop off at the building entry. The construction cost estimate assumes that some major building services will be provided centrally (chilled water, hot water, and a high voltage electrical service). It also assumes that other necessary services such as water, storm and sanitary sewers are located nearby and have significant capacity.

The construction cost is based on a competitive lump sum tender issued in October 2008. Other project delivery methods could impact the cost, as would any delay. An allowance of 6% per annum should be made for a later tender.

The TPC has been formatted to divide the base cost of construction of the building between the Mississauga Academy and UTM on a pro-rata basis based on their respective proportion of the total space program.

The Mississauga Academy portion of the TPC also includes a contribution towards the cost of the required new storm water management pond, and incorporates an audio-visual equipment budget supplied by the IT group within the Faculty of Medicine.

The total project cost for the Medical Academy Building is estimated to be $36.155 million. Of this total, $25.476 million is attributable to the Mississauga Academy project and $10.679 million is attributable to the University of Toronto Mississauga. A more detailed summary of the total project cost estimate is provided in Appendix C.

Operating Costs

The new Medical Academy Building is expected to increase operating costs at the UTM campus between $400,000 and $500,000 annually. Final costs will be determined when more information about building design, utility cost estimates, grossing factors and other operating cost driver are finalized. Operating costs will be apportioned as follows:

1. The Faculty of Medicine will be responsible for operating costs of space (calculated in gross square metres) that are part of the space program attributed directly to the delivery of the undergraduate medical education program. Research space will be excluded from the Faculty of Medicine's operating expenses.

2. UTM will be responsible for operating costs of space (calculated in gross square metres) that are part of the space program attributed directly to UTM. Operating costs for all research space within the building will also be assumed by UTM.

The AV/IT Infrastructure has an estimated annual operating cost of $290,000 for the continued support of the AV/IT equipment and infrastructure at both campus locations. This amount provides warranty support, maintenance and parts and network connectivity in the building. Maintenance costs will be shared by the Mississauga Academy and UTM in proportion to each division's respective utilization of the AV/IT infrastructure.

VIII. Funding Sources

The total project cost of the Medical Academy Building is $36.155 million. $25.476 million is attributable to the Mississauga Academy program and $10.7 million is attributable to UTM programs displaced as a result of the construction on this site and related program elements.

Provincial funding for the Mississauga Academy program will arrive in a stream of payments annually over 20 years. The net present value of the annualized payments is $8.637 million. The balance of the funding required for the Academy will be raised or supported by the Faculty of Medicine. $16.839 million contingent funding will be raised through advancement or financed as short term debt and carried by the Faculty of Medicine.

Funding of the $10.7 million for the UTM portion of the Medical Academy Building will be through borrowing, amortized over 20 years.

IX. Schedule

A preliminary project schedule for completion of the new Medical Academy Building is as follows:

Tender process	October 2008
Construction completed	May 2010
Occupancy	July 2010

This is a challenging schedule that assumes no delays related to municipal approvals, unexpected site conditions, weather affecting construction timelines, and no strikes in the construction industry.

X. Recommendations

That the Planning and Budget Committee recommend to the Academic Board:

1. THAT the Project Planning Report for the Medical Academy Building at the University of Toronto Mississauga be approved in principle;

2. THAT the project scope of 2,980 nasm (5,960 gross square meters) for the Medical Academy Building having a total estimated project cost of $36.155 million be approved; and

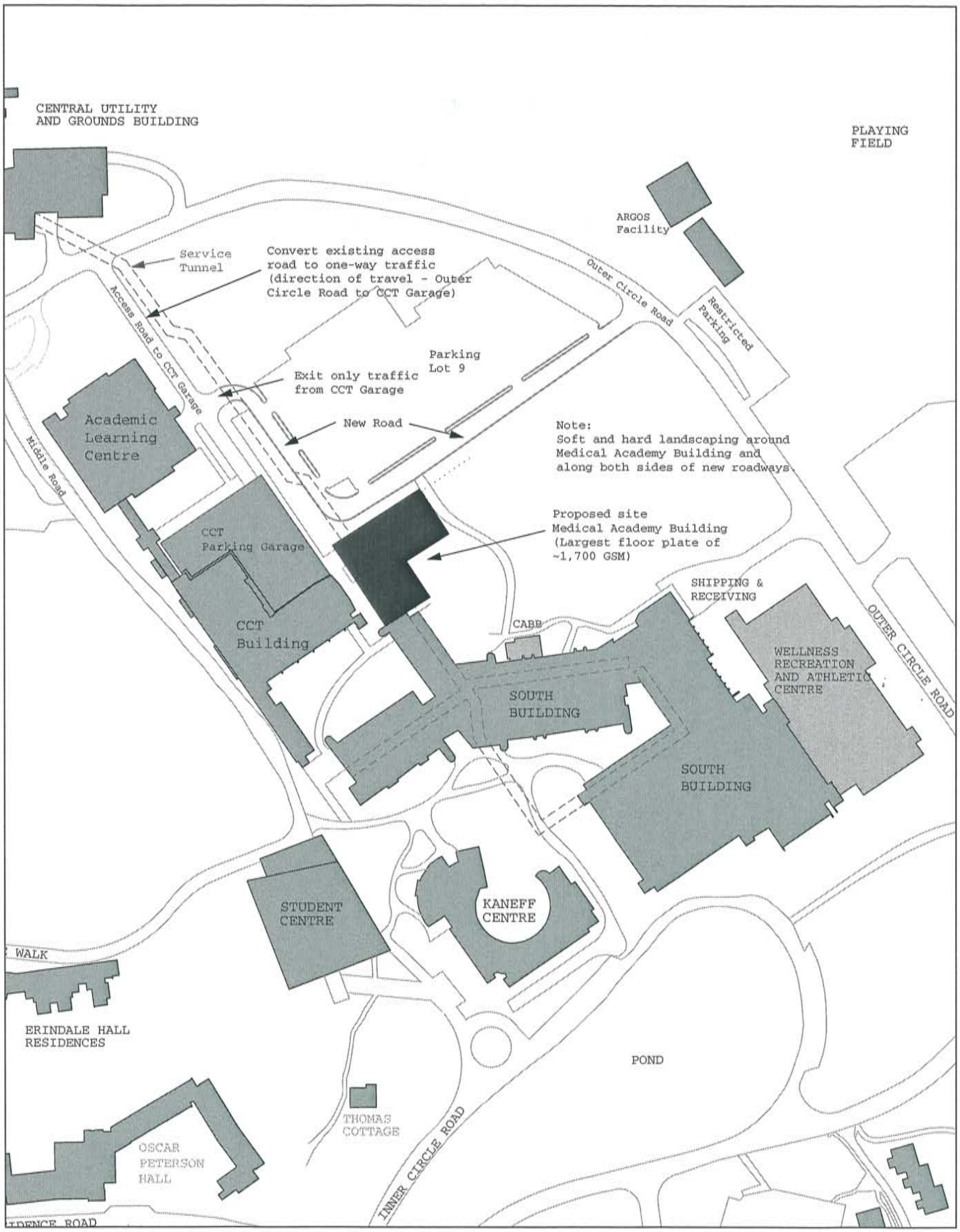
3. THAT $36.155 million funding required for the UTM Medical Academy Building comprise:

i) For the Mississauga Academy funding of $25.476 million
   a) provincial funding in the form of annualized payments having a present value of $8.637 million, and
   b) $16.839 million contingency financing carried by the Faculty of Medicine

ii) For the University of Toronto Mississauga portion, funding of $10.679 million through borrowing paid from the University of Toronto Mississauga operating budget.

APPENDIX A:

Proposed Site Development Plan For the Medical Academy Building



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APPENDIX B:

Total Project Cost Estimate for the Medical Academy Building

Project Title: **Medical Academy Building at UTM**

TABLE 1: Total Project Cost Estimate: breakdown between Mississauga Academy and UTM is intended to be notional; only for information purposes to be indicative of each party's share of the total cost.

Items	notes	Mississauga Academy	UTM	Total
Program Data	A			
Classrooms		836	0	836
Mississauga Academy		592	0	592
Videoconferencing		127	0	127
Research facilities		416	139	555
Computer Services		34	34	67
Replace portables		0	585	585
Academic space		0	218	218
Total Program NASM's		**2,005**	**976**	**2,980**
percent of total		67.3%	32.7%	
		pro-rata share by program area		
Total Construction Estimate	B	15,371,421	7,480,579	**22,852,000**
Construction Contingency		1,075,999	523,641	**1,599,640**
Applicable GST		325,659	158,484	**484,142**
Total Estimated Construction Costs, including taxes & contingency		$16,773,079	$8,162,703	**$24,935,782**
Infrastructure Upgrades in Sector	C	650,000	0	**650,000**
Secondary Effects		0	0	**incl**
Landscaping		incl	incl	**incl**
Permits & Insurance	D	208,522	101,478	**310,000**
Professional Fees	D	2,364,093	1,150,498	**3,514,591**
Computing Infrastructure		25,000	10,000	**35,000**
Telephone Terminations	E	20,000	20,000	**40,000**
Audio/Visual	F	2,845,000	10,000	**2,855,000**
Moving	E	10,000	50,000	**60,000**
Staging	G	300,000	0	**300,000**
Furnishings: Department	E	295,000	281,000	**576,000**
Furnishings: Classrooms	E	155,000	0	**155,000**
Equipment		5,000	5,000	**10,000**
Security & access systems	D	67,265	32,735	**100,000**
Signage: Interior & Exterior	D	33,633	16,367	**50,000**
Signage: Donor Recognition	E	10,000	5,000	**15,000**
Groundbreaking & Building opening	E	10,000	5,000	**15,000**
Miscellaneous	E	16,816	8,184	**25,000**
Project Contingency Allowance	D	678,616	330,011	**1,008,627**
Finance Costs	H	1,008,977	491,023	**1,500,000**
Total Project Cost Estimate (GST included)		**$25,476,000**	**$10,679,000**	**$36,155,000**

Notes:

A per program information August 2007
B per AW Hooker estimate Sept 12 2007, apportioned pro-rata
C approx 25% of estimated storm water management pond cost
D allowance apportioned pro-rata
E allowance
F per Faculty of Medicine estimate 23 Aug 2007
G allowance for temporary accomodation for 36 offices for 2 years
H see cashflow forecast

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UTM Medical Academy Cashflow

Cash Flow by Quarter

Quarter	aug-oct	nov-jan	feb-apr	may-jul	aug-oct	nov-jan	feb-apr	may-jul	aug-oct	nov-jan	feb-apr	may-jul	aug-oct	totals	
	2007	2007/8	2008	2008	2008	2008/9	2009	2009	2009	2009/10	2010	2010	2010		
Approval & Cons. Select Oct 07															
Design															
Tender & construction															
												occupy	LT finance		
Funding:															
Province of Ontario			$0				$0				$0			$0	
University of Toronto														$0	
Donors														$0	
long term financing													$36,079	$36,079	
subtotal	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$36,079	**$36,079**	
Expenditure:															
proff fees & permits.	$0	$659	$659	$659	$969	$125	$125	$125	$125	$125	$125	$126	$0	$3,822	
construction	$0	$0	$0	$0	$0	$3,206	$3,206	$3,206	$3,206	$3,206	$3,206	$3,206	$2,494	$24,936	
furn,equip, proj. cont., misc.	$0	$0	$650	$0	$150	$0	$0	$0	$150	$0	$2,450	$2,450	$0	$5,850	$34,608
subtotal, not including interest	**$0**	**$659**	**$1,309**	**$659**	**$1,119**	**$3,331**	**$3,331**	**$3,331**	**$3,481**	**$3,331**	**$5,781**	**$5,782**	**$2,494**	**$34,608**	
Net Cash Flow	**$0**	($659)	($1,309)	($659)	($1,119)	($3,331)	($3,331)	($3,331)	($3,481)	($3,331)	($5,781)	($5,782)	**$33,585**		
1 interest rate payable	4.45%	4.45%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%	4.75%		
2 interest rate earned	3.95%	3.95%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%		
open bal	$0	$0	($663)	($1,987)	($2,674)	($3,831)	($7,227)	($10,664)	($14,142)	($17,811)	($21,373)	($27,443)	($33,585)		
net cashflow before interest	$0	($659)	($1,309)	($659)	($1,119)	($3,331)	($3,331)	($3,331)	($3,481)	($3,331)	($5,781)	($5,782)	$33,585		
int exp	**$0**	($4)	($16)	($28)	($38)	($65)	($106)	($146)	($189)	($231)	($288)	($360)	**$0**	($1,471)	**Est int exp**
int earned	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	Est Inc Earn
close bal	$0	($663)	($1,987)	($2,674)	($3,831)	($7,227)	($10,664)	($14,142)	($17,811)	($21,373)	($27,443)	($33,585)	$0		

Notes:

1 90 Day T-Bill rate plus 0.25% for short term financing.

2 90 Day T-Bill rate less 0.25% for short term interest income.

APPENDIX C:

AV/IT Equipment Cost by Room for the Mississauga Academy

UTM IT / AV Cost Estimate
23 August 2007

1. COST ESTIMATE SUMMARY

Subtotal:	$2,349,740.91
Manuals and Training (5%):	$117,487.05
Contingency (5%):	$117,487.05
Applicable Taxes:	$260,280.80
Total:	$2,844,995.81

2. ROOM-BY-ROOM LISTING

A. UTM VC-Capable Offices

Quantity: 2

Description: Offices outfitted with VC appliances that double as LCD monitors for a PC, for one-on-one videoconferences.

Estimated Per-Room Cost: $4,500.00

Estimated Total Cost: $9,000.00

B. UTM PBL / Small Group Learning Rooms

Quantity: 12

Description: Each room outfitted with a large, wall-mounted plasma display with a classroom PC as a display source, a small, wall-mounted LCD touchscreen control device and associated controller, and two ceiling-mounted PTZ video cameras with audio. Also including a single, central monitoring / surveillance / recording system serving all rooms, controllable via touchscreen or PC.

Estimated Per-Room Cost: $19,540.33

Estimated Total Cost: $234,484.00

C. UTM 30-Seat Classrooms

Quantity: 6

Description: Each room outfitted with a ceiling-mounted DLP projector with a classroom PC as a display source, an interactive whiteboard, a small, wall-mounted LCD touchscreen control device and associated controller, and an audio amplifier and loudspeakers.

Estimated Per-Room Cost: $32,575.50

Estimated Total Cost: $195,453.00

D. UTM Video Control Room

Quantity: 1

Description: A control room and work room for video technicians. Contains a video network management station consisting of an array of monitors and workstations, various signal processors, an audio system with "voice of god" microphone, and a large control system touchscreen. Also contains a video editing workstation, a videoconferencing cart that can be moved anywhere in the building, and a video recording / streaming cart and device.

Estimated Per-Room Cost: $198,057.52

Estimated Total Cost: $198,057.52

E. UTM VC Studio

Quantity: 1

Description: A purpose-built videoconferencing and video production studio, with production-grade lighting, room sound system (amplifiers, loudspeakers), and room control system (wireless and wall-mount touchscreens, plus controller), including lighting control via Lutron modules. The videoconferencing system will consist of a high-end VC codec (located in the control room), triple wall-mounted plasma displays, two wall-mounted high-definition PTZ cameras, a "teaching station" with integrated instructor PC, dual-purpose monitor / control touchscreen, document camera, annotation device, DVD/VHS, microphones (gooseneck and wireless lavalier). Other equipment includes a ceiling-mounted IP PTZ camera for room monitoring, and HD video camera with tripod and all required accessories.

Estimated Per-Room Cost: $231,075.51

Estimated Total Cost: $231,075.51

F. MSB Lecture Theatres Deferred Equipment

Quantity: 2

Description: Add the following to the partially-outfitted MSB lecture theatres: confidence monitors (millwork plus three LCD monitors), full high-end HD videoconferencing systems with four HD PTZ cameras and pressure-sensitive mats behind the teaching stations, student microphones (1 for every 2 students), annotation and KVM devices, and a third high-end projector for each theatre, including mirror assemblies and lenses.

Estimated Per-Room Cost: $236,217.59

Estimated Total Cost: $472,435.18

G. UTM 60-Seat Lecture Theatres

Quantity: 2

Description: Major lecture theatres, each with triple front projection video displays, large-room audio amplification and loudspeakers, a high-end HD videoconferencing system with three HD PTZ cameras and pressure-sensitive mats behind teaching station, student microphones (1 for every 2 students), control system including lighting control via Lutron modules, 3-screen confidence monitor assemblies, and a "teaching station" including a PC, dual-purpose monitor / control touchscreen, document camera, annotation device, DVD/VHS, and microphones (gooseneck and wireless lavalier). Also includes all "back-room" equipment such as system switchers, microphone mixers, racks, UPSes, and monitoring equipment.

Estimated Per-Room Cost: $403,117.85

Estimated Total Cost: $806,235.70

H. Videoconferencing Networking Costs

Quantity: 1

Description: A dedicated, high-speed network connection between the St. George campus and the UTM campus, separate from the current high-usage link. Likely composed of single-mode fiber on the St. George campus, a connection to GTANet, then to the Orion fiber network to the Sheridan College POP, and via the Peel dark fiber network to UTM, where more single-mode fiber will be used.

Estimated Total Cost: $100,000.00

I. In-Building Networking Costs

Quantity: 1

Description: This item includes the cost of switches, racks, and cable termination equipment sufficient to meet the needs of the new Medical Academy building (with an estimated 335 drops). Note that the actual cable and termination equipment, conduit, and wall jacks are NOT included in this estimate, and must be included in the construction budget. This item also includes sufficient wireless access points to cover the building with a strong wireless network signal.

Estimated Total Cost: $103,000.00

APPENDIX D:

Space Program for the Biomedical Communications Program

Biomedical Communication - Space Program

	Existing MSB			Existing UTM				Proposed St.George while maintaining UTM				Proposed St.George campus only				Proposed UTM campus*			
	Number [-]	Room No [-]	Area [nasm]	Number [-]	Capacity [-]	Room No [-]	Area [nasm]	Number [-]	Capacity [-]	Room Size [nasm]	Area [nasm]	Number [-]	Capacity [-]	Room Size [nasm]	Area [nasm]	Number [-]	Capacity [-]	Room Size [nasm]	Area [nasm]
Teaching Space																			
Seminar room	1	2364	38.9	-	-	-	-	1	16	40	40	1	16	40	40	1	16	40	40
Computer room	1	2357	76.1	-	-	-	-	1	16	64	64	1	16	64	64	1	16	64	64
Computer room off-site	-	-	-	1	8	3075	48.3					-	-	-	-	1	8	48	48
Grad Student Space																			
Studio	1	2369A,2367 ,2367A	59.0	-	-	-	-	1	20	80	80	1	24	96	96	1	20	80	80
Video Editing Suite	1	2363A	2.9	-	-	-	-	1	-	13	13	1	-	13	13	1	-	13	13
Faculty Offices																			
Large	1	2360	21.3	1	1	3073B	15.4	1	1	18	18	1	1	18	18	1	1	18	18
Private	4	2358A,2358 B,2368,237 2	62.9	4	1	3073,3071,30 67,3065	54.2	4	1	13	52	4	1	13	52	4	1	13	52
Private off-site												-	-	-	-	3	2	13	39
Shared (PT Profs)	1	2362,2370	35.8	-	-	-	-	2	3	13	26	3	3	13	39	2	3	13	26
Small (Prof Emeritus)	1	2365	11.2	-	-	-	-												
Admin Offices																			
Workstation	1	2356	21.6	-	-	-	-	1	-	10	10	1	-	10	10	1	-	10	10
Wait area								1	-	5	5	1	-	5	5	1	-	5	5
Support Space																			
Kitchenette	1	2369	16.5	-	-	-	-	1	-	10	10	1	-	10	10	1	-	10	10
Copy/FAX	1	2363	11.3	-	-	-	-	1	-	10	10	1	-	10	10	1	-	10	10
Storage	1	2363	11.3	-	-	-	-	1	-	10	10	1	-	10	10	1	-	10	10
Server Room	1	UME space		-	-	UTM space		1	-	6	6	1	-	6	6	1	-	6	6
TOTAL Areas [nasm]		@ MSB =	368.5			@ CCT =	117.8			@ St.George =	344	TOTAL St.George campus =			373	TOTAL UTM main campus =			431
				TOTAL existing (both campuses) =			486.4	TOTAL proposed (incl UTM) =			461.8								

Note: * relocation of BMC to UTM will require maintaning small space at the St.George campus to facilitate the relationship between IMS, medical specialists and BMC students

Yellow - existing space
Green - highlites areas different among the three proposed Space Programs

APPENDIX E:

Space Program
Room Specification Sheets
for the
Medical Academy Building

(Available under separate cover)