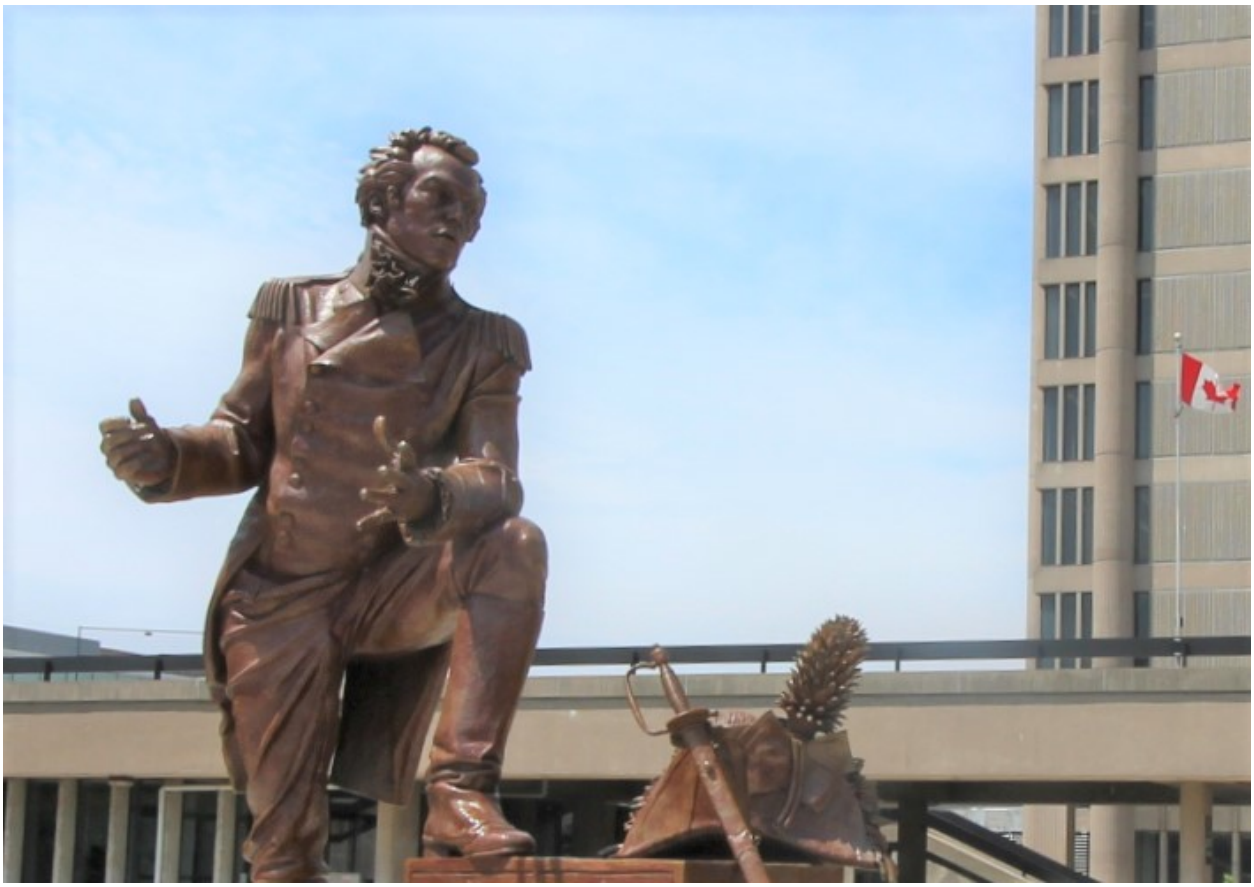
Space Management Framework Documents



December 18, 2019

Executive Summary

Renewed Space Management and Allocation Practices at Brock University

In May 2016 Brock University initiated a planning and consultation process to update the 2006 Facilities Needs & Priorities Study (FNPS). A key deliverable of the FNPS is to strengthen Brock's current space management and space allocation practices. The University wishes to review and renew its practices to ensure they are evidence-based, transparent and equitable. One aspect of this change is the need to adopt space allocation standards that reflect Brock's operational realities and best practices in the sector.

A Working Group was assembled in November 2016 to study and report back to the FNPS Project Steering Committee on the definition of space allocation standards deemed appropriate in defining the space needs and priorities of the University. The Working Group met five times between November 2016 and March 2017 to discuss, evaluate and recommend to the FNPS Project Steering Committee space allocation standards and tools to evaluate space needs.

Recommendations of the Working Group on Space Standards

Classroom Facilities

The Working Group recommends that the need for classrooms space be evaluated based on the number of the number of class-hours that must be scheduled into a given set of rooms, considering the number of students in a class and a pre-set room utilization target.

The Working Group recommends that the target per room be set at 47.7 hours out of 66.0 hours per week in available in daytime, late afternoon and evening. This target exceeds the rate of utilization recommended by the Council of Ontario Universities (COU) as follows:

- Brock Recommended Total Weekly Scheduling Window and Room Utilization Rate — 66 hours x 72% = 47.7 hours per room
- COU Total Weekly Scheduling Window and Room Utilization Rate — 57 hours x 60% = 34.2 hours per room

The Working Group notes that the target should be viewed as a threshold that alert the University to add or remove rooms from the classroom inventory.

Instructional Laboratories

The Working Group recommends that the need for instructional laboratory space also be evaluated based on the number of class-hours that must be scheduled into rooms sharing the same physical attributes and equipment (wet-bench science laboratories, computer laboratories, etc.).

The Working Group recommends that the room utilization target for general computer laboratories be the same as the one it recommends for classroom space.

Instructional Laboratories (continued)

The Working Group recommends that the room utilization target for specialized laboratories be set at 27.0 hours out of 45.0 *daytime* hours a week. This target exceeds the rate of utilization recommended by the Council of Ontario Universities (COU) as follows:

- Brock Recommended Total Weekly Scheduling Window and Room Utilization Rate — 45 hours x 60% = 27.0 hours per room
- COU Total Weekly Scheduling Window and Room Utilization Rate — 45 hours x 40% = 18.0 hours per room

The Working Group notes that the utilization of instructional laboratories in the late afternoon and evening is possible, but creates operational and safety staffing challenges the University will have to consider before the room utilization target can be increased to account for the availability of the facilities at those times.

Academic (Including Graduate Student) and Administrative Offices

The COU methodology to evaluate office space needs is based on a generic space allocation per full-time allocation employee, with minor adjustments related to the status of the employee.

The Working Group has tested and recommends using Brock-specific worksheets to evaluate the office space needs of a given academic or service unit. The proposed worksheets account for the differences between these groups: academic units, library services and administrative units. This finer-grained evaluation of needs considers:

- The full-time, part-time, contract and alternative status of the employee
- The need for office or workspace accommodation by non-full time employee when present on campus
- The nature of the employee's position in terms of confidentially requirements
- The type and size of office or workspace accommodation based on the employee's role and responsibilities in the organization
- The Thesis vs. Professional status of graduate programs, this to determine how much space is allocated

Research Facilities

The Working Group recommends using the COU methodology to evaluate the need for research space at the University, with no modification.

The Working Group notes that using the COU methodology should not be literally applied to the actual design and configuration of research laboratories. Each research initiative is unique, and takes place in varying types of buildings providing very different research environments. Small variations between the COU standard and the actual space allocations will occur. Large variations, on the other hand, should draw the attention of the University and prompt an analysis of reasons and possible remediation measures.

Other Facilities

Other facilities include:

- Library Facilities & Study Space
- Non-Library Study Space
- Athletic / Recreation Space
- Food Services
- Bookstore / Merchandising
- Central Services
- Health Service Facilities
- Common Use and Student Activity
- Assembly and Exhibition Facilities

The Working Group recommends that Other Facilities be monitored and evaluated using the following benchmarks, indicators and institutional planning inputs:

Benchmarks Achieved in Relation to Other Ontario Universities

- Area per full-time equivalent student (SM / FTE) benchmarks achieved by the University in the space category being examined in relation to Ontario's other universities, particularly institutions Brock deems to be similar in terms of program offerings and size (Wilfrid Laurier University for example).

Indicators and Institutional Planning Inputs

- Alignment and benefits of a space allocation in relation to the University's strategic, academic and business plans.

- Results of general or of targeted user satisfaction surveys, including but not limited to annual Key Performance Indicator (KPI) results directly or indirectly linked to the service or amenity provided or considered.

- Relevant reports and data sets describing existing conditions, issues, opportunities and trends in the delivery or configuration of services and amenities.

- Compliance of the University in providing the service or the amenity space allocations in relation to standards set externally by regulators and accrediting bodies.

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Section 1 - Introduction

Context

In May 2016 Brock University initiated a planning and consultation process to update the 2006 Facilities Needs & Priorities Study (FNPS).

The purpose of the FNPS is to guide mid-term (10 years) capital projects at the University based on academic, research and student services plans, recorded shortfalls or surpluses of space allocated to certain functions or user groups, and the condition of existing buildings. The updated version of the FNPS is also guided by the University's Campus Master Plan which sets broad land use, building placement and infrastructure development directions on a long-term basis (30-years).

Renewed Space Management and Allocation Practices at Brock University

A key deliverable requested by the University at the beginning of the FNPS is to strengthen Brock's current space management and space allocation practices. The University wishes to review and renew its practices to ensure they are evidence-based, transparent and equitable.

One aspect of this change is the need to adopt space allocation standards that reflect Brock's operational realities and best practices in the sector. The standards are *not* prescriptive. Rather, the standards are intended to enhance management of the University's valuable space resource when evaluating space current and future allocation priorities, planning major renovations in existing buildings and designing new facilities.

Space Allocation Standards Working Group

A Working Group was assembled in November 2016 to study and report back to the FNPS Project Steering Committee on the definition of space allocation standards deemed appropriate in defining the space needs and priorities of the University.

The following individuals (i.e. the Working Group) met five times between November 2016 and February 2017 to discuss, evaluate and recommend to the FNPS Project Steering Committee space allocation standards and tools to evaluate space needs. This document was prepared to report on the proceedings, considerations and recommendations of the Group regarding the adoption of Brock-specific space allocation standards.

Working Group Members

- Nota Klentrou - Chair — Associate Dean, Applied Health Sciences
- Thomas Dunk — Interim Provost and Vice-President Academic
- Anna Lathrop — Vice-Provost, Teaching and Learning
- Cara Boese — Director, Co-op, Career & Experiential Education
- Geraldine Jones — Registrar
- Neil Culp — Associate Director, Organizational Development & Effectiveness
- Ed Wall — Director, Financial Strategy & Operations
- Julianna McCormick — Director, Campus Planning, Design & Construction Services

Advisors / University Resource Staff to the Working Group

▪ Roland Mech	Associate Director, Space Management and Planning
▪ Gloria Gallagher	Associate Registrar, Enrolment Management, Reporting & Systems
▪ Mark Robertson	University Librarian
▪ Jill Grose	Director, Centre for Pedagogical Innovation

Consultant / Facilitator

Michel de Jocas	Partner, Educational Consulting Services Corp.

Brock University Accessibility (AODA) Policy

The space allocation standards described in this document are aligned with the *Brock University Accessibility (AODA) Policy*. The standards thus consider, where applicable, the amount of space required to achieve barrier-free environments.

However, this document does not describe the detailed physical and design considerations needed to ensure that a space is universally accessible. The Working Group trust that these features and requirements are to be consistently applied by the University in compliance with the Policy, statutory requirements and best practices.

Section 2 -
Classroom Facilities

Definition of Classroom Facilities

The Council of Ontario Universities (COU) defines a classroom facility as follows:

"A room primarily used for scheduled teaching purposes which does not require equipment of a kind that makes the room unsuitable for classroom instruction (i.e., laboratory benches) and rooms directly serving such facilities."

Additionally, classroom facilities typically include or feature:

- Classrooms, seminar rooms, lecture halls and auditoria used for scheduled instruction and learning activity
- Breakout rooms, if they are used concurrently with scheduled classrooms
- Rooms scheduled centrally or locally by individual academic departments or administrative units
- Various configurations of fixed or movable types of chairs and tables
- Support spaces such as storage areas; front or rear projection facilities; IT/AV equipment rooms; sound/light vestibules and lobbies; stages, technical space, and demonstration areas

Classroom facilities typically exclude:

- Unscheduled breakout rooms used as student study rooms. These are considered learner support spaces (COU Category 11)
- Departmental, faculty or administrative meeting or conference rooms (COU Category 4 and Category 10)
- Large capacity performing arts spaces predominantly used for drama, music, etc. (COU Category 2)

COU Methodology for Assessing Classroom Facility Requirements

COU Methodology Overview

The COU methodology to assess classroom requirements relies, as its primary input, on the population of a university expressed in FTE students. This input is then multiplied by a space factor expressed in square meters (SM). For example:

▪ 1,000 FTE students enrolled at the University	x	1.11 SM per FTE student	=	1,110 SM of classroom facilities space generated

The value of the FTE student figure is based on exacting enrolment reporting protocols set between the University, COU and the Ministry of Advanced Education and Skills Development. This FTE figure accounts for all students enrolled at the University regardless of their need for classroom space. Thus, for example, the FTE figure will include students enrolled in online programs that never attend classes on campus.

COU arrives at the 1.11 square meter per FTE student space allocation based on the following assumptions and calculations:

Assumptions

▪ A (Area) – Average University classroom station size	1.7 SM per station assuming a mix of classroom types and inclusive of classroom service space
▪ H (Hours) – Room utilization target per week	34 hours out of 57 hours a week (60%) assuming 45 daytime weekly hours plus 12 evening weekly hours
▪ S (Seat) – Seat utilization target	70% of the Seats Occupied when the room is used
▪ C (Contact Hours) – Contact hours per student	16 hours (non-laboratory) per student per week

Calculation

- $$\frac{A\ (1.7\ SM)}{H\ (34\ hours) \times S\ (70\%)} \times C\ (16\ hours) = 1.11\ SM\ per\ FTE\ Student$$

Strengths of COU Methodology

- Convenience of using a single input (i.e. FTE student population) to estimate the amount of classroom facility space required on a University-wide basis.
- Consistency and comparability for benchmarking purposes with other Canadian universities that use the same COU methodology (including the majority of G15 institutions).

Weaknesses of COU Methodology

- The SM per FTE method does not account for the institution's practices, plans or needs in terms of section sizes, preferred room configurations and institution-specific room and seat utilization targets.
- The average of 16 contact hours per student is generous considering this figure does not include any laboratory hours. The 16 contact hours figure also does not account for emerging alternative instructional delivery modalities where students attend classes remotely, every other week, etc.
- The 1.7 SM per station allocation assumes that a fair portion of instructional hours is delivered in large sections in lecture halls and auditoria. This may or may not accurately reflect an institution's practices and does not inform decisions on optimizing an institution's classroom inventory in terms of the capacity of each room.
- The 60% room utilization target for a scheduling window of 57 hours a week is low. Many institutions, including Brock University, achieve higher utilization rates particularly during the prime daytime hours (8:00 AM to 3PM) that are preferred by students and faculty.

Proposed Framework for Assessing Classroom Facility Requirements at Brock University

The COU methodology is too broad-based to assist an institution plan or project its classroom space requirements with precision. A more detailed approach is required to assist in day-to-day space management and the scheduling / booking of these spaces. What follows describes the proposed framework for assessing classroom facility requirements at Brock University.

The primary determinants of demand for classroom space in a university setting are:

- The number of hours per day, per week or per semester that must be scheduled in that institution's pool of classrooms
- The size of the student groups that must be accommodated for each of the hours that must be scheduled in a given day, week or semester
- The types of classrooms (regular, lecture hall, active learning, etc.) in which the hours of instruction are or should be scheduled

The primary measure for describing demand for instructional space is the section-hour, calculated as per the following examples:

▪ 1 section of 60 students attending a 1-hour class 3 times per week in a regular classroom (table & chair)	=	3 section-hours generated for sections of 60 students in a 60-seat regular (1 section x 1 hour x 3 times per week = 3 section-hours)
▪ 4 sections of 40 students attending *separate* 2-hour classes 1 time per week in active learning classrooms (mobile furniture)	=	8 section-hours generated for sections of 40 students in a 40-seat active learning classroom (4 sections x 2 hours x 1 time per week = 8 section-hours)
▪ 2 sections of 60 students attending a *joint* 3 hour class one time per week in a lecture hall (fixed furniture)	=	3 section-hours generated for section of 120 students in a 120-seat lecture hall (1 section x 3 hours x 1 time per week = 3 section-hours)

Quantifying and categorizing the section-hours for classroom facilities (i.e. the demand for such space) can be done in several ways:

- Analysis of past or current scheduling records and room timetables to extract and quantify instructional activity expressed in section hours
- Calculation of future number of section hours based on the institution's academic and enrolment plans
- Combination of the two approaches

The facilities used by a university to accommodate the above-referenced section-hours can be characterized as its classroom supply. To inform space allocation and space planning decisions around the adequacy of this supply the following attributes are typically used:

- Room capacities in conjunction with types or configurations (flat floor, tiered, fixed furniture, loose furniture, etc.)

- Room availability for scheduling, usually expressed in hours per day, per week or per semester, often referred to as the scheduling window. For example, most universities in Ontario have adopted a 45-hour daytime weekly scheduling window based on a 5-day week (Monday to Friday) and a 9-hour day (8:00 AM to 5:00 PM).

- Utilization targets, i.e. the number of section-hours scheduled within a given scheduling window. For example, an institution may set a utilization target whereby on average rooms of certain types are used 75% of the 45-hour scheduling window. Space planning decisions to add or remove rooms from the inventory will be based on whether the utilization is approaching or not the target set by the University.

Framework for Assessing Classroom Facility Requirements at Brock University

In view of the above, the worksheet outlined below is to be used to reconcile the demand inputs (expressed in section-hours) and the supply inputs (expressed as the number of a certain type of room by capacity):

Classroom Facility Requirement Worksheet Proforma

		A		B	C.0 = A / B	D = A / B	E	F = E - D
G	Daytime Weekly Scheduling Window - Hours or Periods:			__.__				
H	Daytime Room Utilization Target - Percentage:			____%				
I	Afternoon Weekly Scheduling Window - Hours or Periods:			__.__				
J	Afternoon Room Utilization Target - Percentage:			____%				
K	Evening Weekly Scheduling Window - Hours or Periods:			__.__				
L	Evening Room Utilization Target:			____%				
M = (GxH)+(IxJ)+(KxL)	Weekly Scheduling Target per Room:			##.#				
		Number of Section Hours to Accommodate per Week		*M*	Number of Rooms Required (Rounded to One Decimal)	Number of Rooms Required (Decimals Carried Over to the Next Highest Room Capacity as Appropriate)	Number of Rooms in Inventory	Variation
1 to 8 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
9 to 16 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
17 to 24 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
25 to 32 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
33 to 40 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
41 to 48 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
49 to 60 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
61 to 80 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
81 to 100 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
101 to 120 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
121 to 140 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
141 to 160 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
161 to 180 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
181 to 200 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
201 to 240 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
241 to 280 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
281 to 320 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
321 to 360 Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
361 + Students / Occupants		__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
Total				**Total**				

The worksheet can be used on a campus-wide basis, or for any sub-sets of the space inventory and/or faculty or departmental instructional activity being evaluated. The values for the relevant inputs - section-hours, utilization targets and number of rooms in the inventory - are placed in areas highlighted in yellow. Users then compute the space requirements as per the alphabetic notations and formulas shown on the top and left of the worksheet.

Example of Classroom Facility Requirement Worksheet

The two worksheets example shown below are representative of the Fall 2015 scheduling activity at the University's St. Catharines campus.

Daytime and Evening Activity

The first example looks at daytime and evening hours of instructional activity (column A, i.e. demand) and the optimal capacities of the classrooms needed to absorb this activity (column D, i.e. supply). The number of rooms required is a function of the weekly scheduling target set, which in this instance assumes daytime and evening scheduling windows used as per target rates shown on lines G to M.

		A		B	C.0 = A / B			D = A / B	E	F = E - D
G	Daytime Weekly Scheduling Window - Hours or Periods:			45.0						
H	Daytime Room Utilization Target - Percentage:			75%						
I	Afternoon Weekly Scheduling Window - Hours or Periods:			9.0						
J	Afternoon Room Utilization Target - Percentage:			75%						
K	Evening Weekly Scheduling Window - Hours or Periods:			12.0						
L	Evening Room Utilization Target:			60%						
M = (GxH)+(IxJ)+(KxL)	Weekly Scheduling Target per Room:			**47.70**						
		Number of Section Hours to Accommodate per Week		*M*	Number of Rooms Required (Rounded to One Decimal)			Number of Rooms Required (Decimals Carried Over to the Next Highest Room Capacity as Appropriate)	Number of Rooms in Inventory	Variation
	1 to 8 Students / Occupants	488.0	/	47.7 Hours or Periods per Week	10.2	10.2	0.2	10	0	-10
	9 to 16 Students / Occupants	640.5	/	47.7 Hours or Periods per Week	13.4	13.7	0.7	13	2	-11
	17 to 24 Students / Occupants	1768.0	/	47.7 Hours or Periods per Week	37.1	37.7	0.7	37	60	+23
	25 to 32 Students / Occupants	304.5	/	47.7 Hours or Periods per Week	6.4	7.1	0.1	7	6	-1
	33 to 40 Students / Occupants	387.0	/	47.7 Hours or Periods per Week	8.1	8.2	0.2	8	9	+1
	41 to 48 Students / Occupants	283.5	/	47.7 Hours or Periods per Week	5.9	6.2	0.2	6	10	+4
	49 to 60 Students / Occupants	244.0	/	47.7 Hours or Periods per Week	5.1	5.3	0.3	5	10	+5
	61 to 80 Students / Occupants	263.5	/	47.7 Hours or Periods per Week	5.5	5.8	0.8	5	9	+4
	81 to 100 Students / Occupants	132.5	/	47.7 Hours or Periods per Week	2.8	3.6	0.6	3	3	+0
	101 to 120 Students / Occupants	57.0	/	47.7 Hours or Periods per Week	1.2	1.8	0.8	1	1	+0
	121 to 140 Students / Occupants	31.0	/	47.7 Hours or Periods per Week	0.6	1.4	0.4	1	1	+0
	141 to 160 Students / Occupants	38.0	/	47.7 Hours or Periods per Week	0.8	1.2	0.2	1	1	+0
	161 to 180 Students / Occupants	30.0	/	47.7 Hours or Periods per Week	0.6	0.9	0.9	0	2	+2
	181 to 200 Students / Occupants	23.5	/	47.7 Hours or Periods per Week	0.5	1.3	0.3	1	0	-1
	201 to 240 Students / Occupants	50.0	/	47.7 Hours or Periods per Week	1.0	1.4	0.4	1	2	+1
	241 to 280 Students / Occupants	21.0	/	47.7 Hours or Periods per Week	0.4	0.8	0.8	0	0	+0
	281 to 320 Students / Occupants	6.0	/	47.7 Hours or Periods per Week	0.1	1.0	1.0	0	1	+1
	321 to 360 Students / Occupants	13.0	/	47.7 Hours or Periods per Week	0.3	1.2	0.2	1	0	-1
	361 + Students / Occupants	55.0	/	47.7 Hours or Periods per Week	1.2	1.4	0.4	2	3	+1
	Total	**4836.0**		**Total**	**101.4**	**110.2**	**9.2**	**102**	**120**	**+18**

Daytime-Only Activity – All Classes that Started before 5:00 PM in Fall 2015

The second example looks at daytime hours of instructional activity (column A, i.e. demand) only and the optimal capacities of the classrooms needed to absorb this activity (column D, i.e. supply). The number of rooms required is a function of the weekly scheduling target set, which in this instance assumes a daytime-only scheduling window used as per target rate shown on lines G, H and M.

		A		B	C.0 = A / B			D = A / B	E	F = E - D
G	Daytime Weekly Scheduling Window - Hours or Periods:			45.0						
H	Daytime Room Utilization Target - Percentage:			75%						
I	Afternoon Weekly Scheduling Window - Hours or Periods:			9.0						
J	Afternoon Room Utilization Target - Percentage:			0%						
K	Evening Weekly Scheduling Window - Hours or Periods:			12.0						
L	Evening Room Utilization Target:			0%						
M = (GxH)+(IxJ)+(KxL)	Weekly Scheduling Target per Room:			33.75						
		Number of Section Hours to Accommodate per Week		M	Number of Rooms Required (Rounded to One Decimal)			Number of Rooms Required (Decimals Carried Over to the Next Highest Room Capacity as Appropriate)	Number of Rooms in Inventory	Variation
	1 to 8 Students / Occupants	433.0	/	33.75 Hours or Periods per Week	12.8	12.8	0.8	12	0	-12
	9 to 16 Students / Occupants	479.0	/	33.75 Hours or Periods per Week	14.2	15.0	0.0	15	2	-13
	17 to 24 Students / Occupants	1580.5	/	33.75 Hours or Periods per Week	46.8	46.9	0.9	46	60	+14
	25 to 32 Students / Occupants	222.5	/	33.75 Hours or Periods per Week	6.6	7.4	0.4	7	6	-1
	33 to 40 Students / Occupants	297.0	/	33.75 Hours or Periods per Week	8.8	9.2	0.2	9	9	+0
	41 to 48 Students / Occupants	198.5	/	33.75 Hours or Periods per Week	5.9	6.1	0.1	6	10	+4
	49 to 60 Students / Occupants	190.0	/	33.75 Hours or Periods per Week	5.6	5.8	0.8	5	10	+5
	61 to 80 Students / Occupants	192.0	/	33.75 Hours or Periods per Week	5.7	6.4	0.4	6	9	+3
	81 to 100 Students / Occupants	107.5	/	33.75 Hours or Periods per Week	3.2	3.6	0.6	3	3	+0
	101 to 120 Students / Occupants	46.0	/	33.75 Hours or Periods per Week	1.4	2.0	1.0	1	1	+0
	121 to 140 Students / Occupants	23.5	/	33.75 Hours or Periods per Week	0.7	1.7	0.7	1	1	+0
	141 to 160 Students / Occupants	26.0	/	33.75 Hours or Periods per Week	0.8	1.5	0.5	1	1	+0
	161 to 180 Students / Occupants	22.0	/	33.75 Hours or Periods per Week	0.7	1.1	0.1	1	2	+1
	181 to 200 Students / Occupants	20.5	/	33.75 Hours or Periods per Week	0.6	0.7	0.7	0	0	+0
	201 to 240 Students / Occupants	39.0	/	33.75 Hours or Periods per Week	1.2	1.9	0.9	1	2	+1
	241 to 280 Students / Occupants	16.0	/	33.75 Hours or Periods per Week	0.5	1.3	0.3	1	0	-1
	281 to 320 Students / Occupants	4.0	/	33.75 Hours or Periods per Week	0.1	0.5	0.5	0	1	+1
	321 to 360 Students / Occupants	10.0	/	33.75 Hours or Periods per Week	0.3	0.8	0.8	0	0	+0
	361 + Students / Occupants	39.0	/	33.75 Hours or Periods per Week	1.2	1.9	0.9	2	3	+1
	Total	**3946.0**		**Total**	**116.9**	**126.7**	**10.7**	**117**	**120**	**+3**

Other Considerations

The worksheet proforma can also be used to evaluate the classroom space needs of specific academic units of the University, including for example:

- The classroom requirements of the Faculty of Education at the Hamilton Campus
- The impact on classroom facilities of adding a new program(s) and / or new student cohort(s) that increase the number of section hours to be scheduled, or the size of the sections to be scheduled. A practical way of evaluating these changes is to overlay the new or modified section-hour values generated because of such initiatives over existing data sets, such as the one shown in worksheet example above.

Utilization Targets

The Working Group recommends the following utilization factors which, in combination, define the weekly utilization target for classroom facilities at Brock University:

▪ Daytime Scheduling Window – Monday to Friday 8:00 AM to 5:00 PM	45 hours
▪ Daytime Room Utilization Target (%)	75%
▪ Daytime Utilization Target (Hours)	33.8 hours per room
▪ Afternoon Scheduling Window – Monday to Thursday 5:00 PM to 7:00 PM	8 hours
– Friday 5:00 PM to 6:00 PM	1 hour
▪ Afternoon Room Utilization Target (%)	75%
▪ Afternoon Utilization Target (Hours)	6.7 hours per room
▪ Evening Scheduling Window – Monday to Thursday 7:00 pm to 10:00 PM	12 hours
▪ Evening Room Utilization Target (%)	60%
▪ Evening % Utilization Target (Hours)	7.2 hours per room
▪ Total Weekly Scheduling Window	66 hours
▪ Total Weekly Utilization Target (%)	72%
▪ Total Weekly Utilization Target (Hours)	47.7 hours per room

The above targets expressed in percentages and hours should be viewed as thresholds that alert the University to a need, for example, to shift delivery times between afternoon and evening, or to add or remove rooms from the classroom inventory.

When aggregated, the targets recommended by the Working Group match or exceed the COU standards outlined on page 2-2.

▪ COU Daytime Scheduling Window and Room Utilization Rate	45 hours x 60% = 27.0 hours
▪ Brock Recommended Daytime Scheduling Window and Room Utilization Rate	45 hours x 75% = 33.8 hours
▪ COU Evening Scheduling Window and Room Utilization Rate	12 hours x 60% = 7.2 hours
▪ Brock Recommended Afternoon and Evening Scheduling Window and Room Utilization Rate	21 hours x 66% = 13.9 hours
▪ COU Total Weekly Scheduling Window and Room Utilization Rate	57 hours x 60% = 34.2 hours
▪ Brock Recommended Total Weekly Scheduling Window and Room Utilization Rate	66 hours x 72% = 47.7 hours

These targets achieve a balance between good utilization of the rooms and the development of timetables that acknowledge student and faculty conflicts at certain times of the day and the need to maintain some availability for one-time bookings during semesters.

Of note, Brock achieved in Fall 2015 a 73% utilization average of its classroom pool in daytime, thus almost reaching the 75% target indicated above. The utilization rates of large-capacity rooms ranged between 75% and 90%.

In the coming years, the Working Group believes the overall daytime target could be set at 80%. However, the Working Group was advised by its consultant / facilitator that few universities in Canada achieve an overall utilization average of 80%, and that only one or two consistently achieves a rate of 85% across the *entire* range (in terms of seat capacities) of their room inventories.

Achieving rates higher than 85% consistently is difficult given the complexity and inter-dependency of many scheduling variables and constraints in play.

Quantitatively, such constraints include the removal of any margin (i.e. room availability) to adjust schedules once they are set, or to occasionally book a room for ad hoc one-time events. Further, as higher education makes the transition from semester-long courses to offering varying course delivery formats and lengths (hybrid, short-duration, etc.), it will become more difficult to achieve high rates of utilizations. Here is why: traditional delivery can be imagined as a set of uniform Lego blocks stacked neatly and regularly on a board (i.e. a room's weekly time grid). Emerging course delivery formats can be imagined as odd-shaped Lego blocks that vary in size and duration from week to week stacked ***in combination*** with the previously described and uniform Lego blocks. There is bound to be some gaps (i.e. unused time) left between the Lego blocks in their final arrangement.

Qualitatively, scheduling variables and constraints include a variety of factors, including but not limited to the following:

- Policy-sanctioned, time-related accommodations for professors and instructors that dictate when a course can be scheduled. These may trigger cascading effects throughout many room, student and other instructor schedules.

- Like the above, the availability of highly-sought part-time lecturers may have the same type of cascading effects as described above.

- Sequencing and pacing of the courses for students over the course of a given week, with attention given to allowing them to create schedules that avoid, for example:

  - Having to travel to and from campus on a given day for a single one-hour class
  - Long gaps (4 hours or more) between classes during a given day
  - Having too many back-to-back classes in a given day when one is following the program of study recommended by a department
  - etc.

Area per Classroom Seat or Station

The Working Group recommends the following guidelines for estimating the size of classrooms based on both their intended capacity and configuration.

Type of Furniture	Loose Tables & Chairs	Fixed Tables & Seating	Theater Seat with Tablet Arms	Loose Chairs with Tablet Arms	Active Learning Classroom
Suitability as per Classroom Layout Designations	• Classroom Layout (Exam / Traditional / Presentation) • Discussion / Seminar Space	• Classroom Layout (Exam / Traditional / Presentation)	• Classroom Layout (Exam / Traditional / Presentation)	• Classroom Layout (Exam / Traditional / Presentation) • Discussion / Seminar Space	• Active Learning Space • Collaborative Technology Learning Space • Adaptable / Flexible Learning Space
	SM per Seat or Station	SM per Seat or Station	SM per Seat or Station	SM per Seat or Station	SM per Seat or Station
up to 5 seats	2.6				
6 to 10 seats	2.5				
11 to 15 seats	2.4				
16 to 20 seats	2.4			1.6	3.3
21 to 25 seats	2.3			1.6	3.3
26 to 30 seats	2.2	1.7		1.6	3.0
31 to 35 seats	2.2	1.7		1.6	2.8
36 to 40 seats	2.1	1.6		1.5	2.8
41 to 50 seats	2.0	1.6		1.5	2.8
51 to 60 seats	1.9	1.6		1.5	2.8
61 to 70 seats	1.8	1.6		1.4	2.3
71 to 80 seats	1.7	1.5		1.4	2.3
81 to 90 seats		1.5		1.4	
91 to 100 seats		1.5			
100 +		1.5	1.1		

not recommended

The areas per seat or station indicated above are inclusive of internal circulation (i.e. aisles) and the teaching / lecture area at the front of the room. The areas indicated above exclude specialized facilities sometimes associated with large capacity rooms such as projection and AV rooms or demonstration preparation rooms.

Section 3 –
Instructional Laboratories

Definition of Instructional Laboratory Facilities

The Council of Ontario Universities (COU) defines instructional laboratory facilities as follows:

"A room used for instruction of undergraduate students that requires special purpose equipment or is so arranged that use is restricted to a particular field of study; and rooms directly serving these facilities. Activities in these facilities would include student participation, experimentation, observation or practice in a field of study."

Laboratory facilities as defined above include rooms scheduled centrally and room scheduled locally by individual academic departments or administrative units.

Instructional laboratory facilities typically exclude:

- Gymnasia, fitness rooms, physical training rooms, facilities shared between academic and recreational or varsity users, pools, day care facilities - unless they are used primarily for instructional purposes.

- Unscheduled, open laboratories, workshops or studios used for study or practice

COU Methodology for Assessing Instructional Laboratory Facility Requirements

COU Methodology Overview

The COU methodology to assess instructional laboratory requirements relies, as its primary input, on the number of contact hours accommodated during a typical academic week. These weekly student laboratory contact hours (WSLCH) are calculated as shown in the following example:

- 24 students in a Chemistry laboratory class x 3 hour class = 72 WSLCH generated

The amount of space required to accommodate these activities is tied to the discipline / subjects taught in the laboratory. COU classifies in groups W, X, Y and Z as listed below along with examples of the disciplines:

- Group W: Visual Arts, Communication, Popular Culture and Film, Computer Science
- Group X: Chemistry, Fine Arts, Geology, etc.
- Group Y: Anthropology, Geography, Psychology, etc.
- Group Z: Business, Mathematics, Sociology, etc.

As per the above example, the 72 WSLCH generated in a Chemistry laboratory belongs in Group X.

The number of WSLCH generated by laboratory instructional activity is assigned to one of the four groups (W, X, Y and Z), totaled, and multiplied by a space allocation factor as follows:

- 800 Group X WSLCH generated x 0.6 SM / WSLCH = 480 SM

The SM / WSLCH factors used by COU to evaluate space requirements are defined as follows:

	A SM per Laboratory Station	**B** Hours of Laboratory Utilization per Week (COU designated target)	**C** Seat Utilization (COU designated target)	**D=A (BxC)** SM/WSLCH
▪ Group W:	20.25 SM	18 Hours	75%	1.5 SM / WSLCH
▪ Group X:	10.80 SM	18 Hours	75%	0.8 SM / WSLCH
▪ Group Y:	6.75 SM	18 Hours	75%	0.5 SM / WSLCH
▪ Group Z:	4.05 SM	18 Hours	75%	0.3 SM / WSLCH

Strengths of COU Methodology

- Based on *actual* activity taking place in the institution's laboratories.
- Space allocations per station include service space outside the laboratory and are generally adequate (8.10 SM for Group X for example).
- Consistency and comparability for benchmarking purposes with other Canadian universities that use the same COU methodology (including the majority of G15 institutions).

Weaknesses of COU Methodology

- The SM / WSLCH method does not account for the institution's practices, plans or needs in terms of section sizes, preferred room configurations and institution-specific room and seat utilization targets.
- The 18 hours per week room utilization rate is exceptionally low if one assumes a daytime delivery window of 45 hours a week (8:00 AM to 5:00 PM from Monday to Friday). The room utilization rate expressed in percentage is 40%.
- The 75% seat utilization rate is somewhat low, considering that the size of a student group scheduled in a laboratory is often set based on the capacity of the laboratory itself.

Proposed Framework for Assessing Instructional Laboratory Facility Requirements at Brock University

The proposed framework for assessing instructional laboratory facility requirements at Brock University is the same as the one proposed for the assessment of classroom space requirements.

In summary, the framework must reconcile demand inputs (expressed in section-hours) with supply inputs (expressed in the number of certain types of laboratory by capacity). Please refer to pages 2-3 and 2-4 where the concepts of demand and supply are described in more detail.

When using the framework Brock University will be able to broaden or narrow the analysis of instructional laboratory space requirements as it deems appropriate. For example, questions such as these ones can be asked:

- Does the University have sufficient wet bench life science laboratories for instructional needs in the following subjects: biology, anatomy, zoology, botany, etc.?

- What should be the capacity profile of the University's pool of general computer laboratories?

Framework for Assessing Instructional Facility Requirement at Brock University

In view of the above, the worksheet outlined below is to be used to reconcile the demand inputs (expressed in section-hours) and the supply inputs (expressed in the number of certain types of room by capacity):

Instructional Laboratory Facility Requirement Worksheet Proforma

		A		*B*	*C.0 = A / B*	*D = A / B*	*E*	*F = E - D*
G	Daytime Weekly Scheduling Window - Hours or Periods:			__.__				
H	Daytime Room Utilization Target - Percentage:			____%				
I	Afternoon Weekly Scheduling Window - Hours or Periods:			__.__				
J	Afternoon Room Utilization Target - Percentage:			____%				
K	Evening Weekly Scheduling Window - Hours or Periods:			__.__				
L	Evening Room Utilization Target:			____%				
M = (GxH)+(IxJ)+(KxL)	Weekly Scheduling Target per Room:			##.#				
		Number of Section Hours to Accommodate per Week		*M*	Number of Rooms Required (Rounded to One Decimal)	Number of Rooms Required (Decimals Carried Over to the Next Highest Room Capacity as Appropriate)	Number of Rooms in Inventory	Variation
	1 to 8 Students / Occupants	__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
	9 to 16 Students / Occupants	__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
	17 to 24 Students / Occupants	__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
	25 to 32 Students / Occupants	__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
	33 to 40 Students / Occupants	__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
	41 to 48 Students / Occupants	__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
	49 to 60 Students / Occupants	__.__	/	##.# Hours or Periods per Week	__.__	__.__	__.__	__.__
	Total			**Total**				

The worksheet can be used on a campus-wide basis, or for any sub-set of the space inventory and/or faculty or departmental instructional activity being evaluated. The values for the relevant inputs - section-hours, utilization targets and number of rooms in the inventory - are highlighted in yellow. Users compute the space requirements as per the alphabetic notations and formulas shown on the top and left of the worksheet.

Examples of Instructional Laboratory Facility Requirement Worksheets

The worksheet example shown below is representative of the Fall 2015 scheduling activity at the University's St. Catharines campus.

General Computer Laboratories

		A		B	C.0 = A / B		D = A / B		E	F = E - D
G	Daytime Weekly Scheduling Window - Hours or Periods:			45.0						
H	Daytime Room Utilization Target - Percentage:			75%						
I	Afternoon Weekly Scheduling Window - Hours or Periods:			9.0						
J	Afternoon Room Utilization Target - Percentage:			75%						
K	Evening Weekly Scheduling Window - Hours or Periods:			12.0						
L	Evening Room Utilization Target:			60%						
M = (GxH)+(IxJ)+(KxL)	Weekly Scheduling Target per Room:			47.70						
		Number of Section Hours to Accommodate per Week		M	Number of Rooms Required (Rounded to One Decimal)		Number of Rooms Required (Decimals Carried Over to the Next Highest Room Capacity as Appropriate)		Number of Rooms in Inventory	Variation
	1 to 8 Students / Occupants		/	47.7 Hours or Periods per Week	0.0	0.0	0.0	0	0	+0
	9 to 16 Students / Occupants		/	47.7 Hours or Periods per Week	0.0	0.0	0.0	0	0	+0
	17 to 24 Students / Occupants	152.0	/	47.7 Hours or Periods per Week	3.2	3.2	0.2	3	9	+6
	25 to 32 Students / Occupants	25.0	/	47.7 Hours or Periods per Week	0.5	0.7	0.7	0	1	+1
	33 to 40 Students / Occupants	86.0	/	47.7 Hours or Periods per Week	1.8	2.5	0.5	2	3	+1
	41 to 48 Students / Occupants	118.0	/	47.7 Hours or Periods per Week	2.5	3.0	1.0	3	3	+0
	49 to 60 Students / Occupants		/	47.7 Hours or Periods per Week	0.0	0.0	0.0	0	0	+0
	Total	**381.0**		**Total**	**8.0**	**9.4**	**2.4**	**8**	**16**	**+8**

Chemistry Laboratories

		A		B	C.0 = A / B		D = A / B		E	F = E - D
G	Daytime Weekly Scheduling Window - Hours or Periods:			45.0						
H	Daytime Room Utilization Target - Percentage:			60%						
I	Afternoon Weekly Scheduling Window - Hours or Periods:			0.0						
J	Afternoon Room Utilization Target - Percentage:			0%						
K	Evening Weekly Scheduling Window - Hours or Periods:			0.0						
L	Evening Room Utilization Target:			0%						
M = (GxH)+(IxJ)+(KxL)	Weekly Scheduling Target per Room:			27.00						
		Number of Section Hours to Accommodate per Week		M	Number of Rooms Required (Rounded to One Decimal)		Number of Rooms Required (Decimals Carried Over to the Next Highest Room Capacity as Appropriate)		Number of Rooms in Inventory	Variation
	1 to 8 Students / Occupants		/	27 Hours or Periods per Week	0.0	0.0	0.0	0	0	+0
	9 to 16 Students / Occupants	93.0	/	27 Hours or Periods per Week	3.4	3.4	0.4	3	4	+1
	17 to 24 Students / Occupants		/	27 Hours or Periods per Week	0.0	0.4	0.4	0	0	+0
	25 to 32 Students / Occupants	33.0	/	27 Hours or Periods per Week	1.2	1.7	0.7	2	1	-1
	33 to 40 Students / Occupants		/	27 Hours or Periods per Week	0.0	0.0	0.0	0	0	+0
	41 to 48 Students / Occupants		/	27 Hours or Periods per Week	0.0	0.0	0.0	0	0	+0
	49 to 60 Students / Occupants		/	27 Hours or Periods per Week	0.0	0.0	0.0	0	0	+0
	Total	**126.0**		**Total**	**4.7**	**5.6**	**1.6**	**5**	**5**	**+0**

Biology Laboratories

		A		B	C.0 = A / B			D = A / B	E	F = E - D
G	Daytime Weekly Scheduling Window - Hours or Periods:			45.0						
H	Daytime Room Utilization Target - Percentage:			60%						
I	Afternoon Weekly Scheduling Window - Hours or Periods:			0.0						
J	Afternoon Room Utilization Target - Percentage:			0%						
K	Evening Weekly Scheduling Window - Hours or Periods:			0.0						
L	Evening Room Utilization Target:			0%						
M = (GxH)+(IxJ)+(KxL)	Weekly Scheduling Target per Room:			**27.00**						
		Number of Section Hours to Accommodate per Week		*M*	Number of Rooms Required (Rounded to One Decimal)			Number of Rooms Required (Decimals Carried Over to the Next Highest Room Capacity as Appropriate)	Number of Rooms in Inventory	Variation
	1 to 8 Students / Occupants		/	27 Hours or Periods per Week	0.0	0.0	0.0	0	0	+0
	9 to 16 Students / Occupants	63.0	/	27 Hours or Periods per Week	2.3	2.3	0.3	2	2	+0
	17 to 24 Students / Occupants		/	27 Hours or Periods per Week	0.0	0.3	0.3	0	0	+0
	25 to 32 Students / Occupants	133.0	/	27 Hours or Periods per Week	4.9	5.3	0.3	6	5	-1
	33 to 40 Students / Occupants		/	27 Hours or Periods per Week	0.0	0.0	0.0	0	0	+0
	41 to 48 Students / Occupants		/	27 Hours or Periods per Week	0.0	0.0	0.0	0	0	+0
	49 to 60 Students / Occupants		/	27 Hours or Periods per Week	0.0	0.0	0.0	0	0	+0
	Total	**196.0**		**Total**	**7.3**	**7.9**	**0.9**	**8**	**7**	**-1**

Utilization Targets

General Computer Laboratory Utilization Target

The Working Group recommends the same utilization targets for general computer laboratories as recommended for classroom facilities – see page 2-6.

Specialized Instructional Laboratory Utilization Target

The Working Group deems that the use of instructional laboratories in the late afternoon (5:00 PM to 7:00 PM) and evening (7:00 PM to 10:00 PM) creates operational challenges and safety concerns around the work load of technicians and the availability of first responders. Based on current human resources limitations, the Working Group recommends the following utilization factors which, in combination, define the weekly utilization target for specialized instructional laboratories at Brock University:

- Daytime Scheduling Window – Monday to Friday 8:00 AM to 5:00 PM — 45 hours
- Daytime Room Utilization Target (%) — 60%
- Daytime Utilization Target (Hours) — 27 hours per room

The Working Group notes that extending the utilization window of specialized laboratories in the afternoon and evening will require adjustments to the allocation of staff overseeing the operation and safety of the facilities. Use of afternoon and evening hours should be reconsidered if daytime hours are at capacity.

The utilization target of 27 scheduled daytime hours of use per week allows for nine 3-hour laboratory sessions that can be delivered as shown generically here:

	Mon	Tue	Wed	Thu	Fri
8:00 AM to 9:00 AM	Set-up	Set-up	Set-up	Set-up / Maintenance	Set-up
9:00 AM to 12:00 PM	Lab Session	Lab Session	Lab Session		Lab Session
12:00 PM to 1:00 PM	Set-up / Clean Up	Set-up / Clean Up	Set-up / Clean Up		Set-up / Clean Up
1:00 PM to 4:00 PM	Lab Session	Lab Session	Lab Session	Lab Session	Lab Session
4:00 PM to 5:00 PM	Set-up / Clean Up	Set-up / Clean Up	Set-up / Clean Up	Set-up / Clean Up	Set-up / Clean Up

Of note, the 27-hour daytime utilization target set by the Working Group is 33% longer than the 18-hour target set by COU.

Space Allocation Guidelines to Evaluate the Size of an Instructional Laboratory in Relation to Intended Capacity

The Working Group recommends using the following area figures to estimate the size of instructional laboratories based on type and intended capacity. The SM per laboratory station values shown in the table below apply to generic instructional laboratory configurations, inclusive of the spaces typically found to support them.

The area per laboratory station figures should prove useful in the early planning and evaluation stages of projects involving instructional laboratories, when the amount of space needed is not yet known.

The actual SM per workstation allocations will likely vary from the guideline given actual conditions (a renovation in an existing building for example), unique curricular requirements and special equipment in place. In view of this the SM per laboratory station figures are expressed as a range with lower and upper ends. Any space allocation that fall below or above this range should warrant particularly scrutiny as to the reasons why.

Laboratory, Workshop, Studio Description	SM per Laboratory Station, Including Support Areas Low End of Range	SM per Laboratory Station, Including Support Areas High End of Range
Computer, General	3.3	3.7
Computer, Graphic or Specialized	4.2	4.6
Dry Lab (Humanities / Social Sciences / Business)	4.2	4.6
Electronics & Electrical / Automation	5.6	6.0
Wet Lab, Life Sciences	5.6	6.0
Wet Lab, Physical Sciences	5.6	6.0
Media Studio / Performance Arts Studio	5.6	6.0
Media Post-Prod. / Music Practice Suites	4.2	4.6
Fine Arts / Graphic Arts / Drafting	4.2	4.6
Patient Care / Simulation / Therapy / Dental	5.6	6.0
Daily Living / Counseling / OSCE / Briefing	4.2	4.6
Fitness / Exercise / Weight / Combat / Climbing Facility	7.4	8.0

Section 4 - Offices

Definition of Office Facilities

The Council of Ontario Universities (COU) defines offices in two broad categories:

Academic Departmental Offices and Related Space

"A room usually assigned to one or more individuals on a permanent basis, containing office-type equipment and used by faculty, departmental administrative and support staff, and students, or a room directly serving these facilities. Also included are general purpose offices and project rooms used for the conducting of research".

Academic departmental offices typically accommodate all employees and graduate students attached to a faculty or school, up to and including its decanal offices. The space is further sub-categorized as follows:

- Academic offices
- Research office / project space
- Graduate student offices
- Departmental administrative and support employee offices
- Office support space

Central Administrative Offices and Related Space

"A room usually assigned to one or more individuals on a permanent basis containing office-type equipment and used by central administrative and support staff in non-academic departments/faculties/divisions, or a room directly serving these facilities."

The Central Administrative Office space category is comprehensive and is meant to capture the needs of all non-academic employees of the institution, excluding the office space assigned to Library employees and to on-campus contracting employees not directly hired by the University. The space is further sub-categorized as follows:

- Office areas
- Office support space

COU Methodology for Assessing Office Space Requirements

COU Methodology Overview

The COU methodology to assess office space requirements relies, as its primary input, on employee and graduate student counts. The tallies are done as per the following two methods:

Academic Departmental Offices and Related Space

- Full-time equivalent faculty count
- Full-time equivalent post-doctoral fellows, research associates and funded research support employee count
- Full-time equivalent non-academic departmental support staff count
- Full-time equivalent graduate students

Depending on the category of staff/student, factors are applied to the counts to calculate area requirements. Full-time equivalent employee inputs (the total employee count) are multiplied by 12 square meters (SM); graduate student inputs are multiplied by 3 SM. An additional 25% is added to the area calculation to account for office support space requirements (meeting rooms, storage, etc.). A sample calculation is shown below:

▪ 12 full-time equivalent employee	x	12 SM	=	144 SM
▪ 24 full-time equivalent graduate student	x	3 SM	=	72 SM
▪ Office support areas		25% of above	=	54 SM
			Total	**270 SM**

Central Administrative Offices and Related Space

- 100% of the full-time equivalent employee count

The employee inputs (the total employee count) is multiplied by 12 square meters (SM). An additional 50% is added to the area calculation to account for office support space requirements (meeting rooms, storage, etc.). A sample calculation is shown below:

▪ 15 full-time equivalent employee	x	12 SM	=	180 SM
▪ Office support areas		50% of above	=	90 SM
			Total	**270 SM**

Strengths of COU Methodology

- Consistency and comparability for benchmarking purposes with other Canadian universities that use the same COU methodology (including the majority of G15 institutions).

- Simplicity for estimating, at a high level, the space requirements of a given group of employees (an academic department, a service unit).

Weaknesses of COU Methodology

- The COU methodology does not provide a framework for the conversion of non-full time employee counts to full-time equivalent employee counts. This can prove problematic: the office space needs of a cadre of part-time employees are usually quite different from those of full-time employees. The problem is further compounded by the fact that part-time to full-time employee ratios may vary substantially from one faculty or administrative unit to the next.

- The use of a generic 12 SM allocation for all employees ignores the need to size office accommodations based on the position and responsibilities of a person. Student counsellors, for example, need access to dedicated or shared spaces where privacy can be achieved. Senior leaders of the University should have offices that befit their role in the organization and in which they can host small group meetings. In future, more and more University employees will telecommute and be on campus only occasionally, if not at all.

- The use of a generic 12 SM allocation leaves the impression among many stakeholders that their office space should exactly be of that size, and private.

Proposed Framework for Evaluating Office Space Requirement at Brock University

The Working Group has tested and recommends using the following three worksheets to evaluate the office space needs of a given academic or service unit of the University. The Working Group notes the following regarding the use of the worksheets:

- The worksheet can readily be used when planning new facilities or major renovations in existing buildings to determine the amount of office space needed on a green field basis.

- When evaluating existing office space allocations, the worksheets should be used to calculate what the University considers to be the *optimal* amount of office space. The area figures generated in this way can then be compared to actual space allocations to determine if a unit is in a surplus or shortfall situation. Once that assessment is made key questions should be asked:

  Assuming a space surplus assessment: can the surplus be practically and economically recouped?

  Assuming a space shortfall assessment: can the shortfall be mitigated by reassigning facilities so that more employees are accommodated in spaces that meet the University's standards?

- The worksheet should not be viewed as a design standard that stipulates if employees should be accommodated in private offices or in suites of open offices.

  Overall both types of accommodations (private and open) require approximately the same amount of space when factoring the circulation space needed by private offices of various sizes (11, 15, 24 SM) placed along a corridor.

  The size of workstations in an open office environment will tend to be more uniform (6 to 8 SM per station) with the balance of the space allocated in the worksheets on a per capita basis redirected to sought-after open office amenities (private interview rooms, coat rooms, coffee stations, etc.) above and beyond the 25% and 30% office support allocations embedded in the calculations.

- In some instances, the worksheets indicate if an allocation should be in a "Shared Office", or a "Station in Workroom". A "Shared Office" allocation suggests an enclosed office ranging in size between 11 and 24 SM occupied by two, three or four employees at their designated desks. A "Station in Workroom" allocation suggests an open office environment where desk space and related are not assigned to a given employee but are used instead on a first-come-first-serve basis (i.e. the *hoteling* model).

- Graduate offices follow the COU standard of allocating 3 SM per full-time equivalent student enrolled in thesis-based programs. However, the allocation of office space for professional graduate programs follows instead the trend observed in other Canadian universities whereby workrooms and group study spaces are made available rather than individual dedicated desk allocations. An allocation of 0.6 SM per student is proposed instead to dedicate individual and group study space to students enrolled in professional-stream programs. Of note, this allocation is above the general allocation of general study space made available on campus in the Library and elsewhere.

Academic Offices

School / Department / Group Name: _____

Status	Title or Title Equivalent	A Employee Headcount		B Headcount Employee to FTE Employee Conversion Factor		C Ratio of FTE Employee or Student per Office or Desk		D Area per Office or Station (NASM)	E = A x B x C x D Area Allocated (NASM)	
Full-Time										
	Dean		x	1.00	x	1.00	x	24		
	Associate Dean		x	1.00	x	1.00	x	15		
	Department Chair/ Program Director		x	1.00	x	1.00	x	15		
	Full-time Faculty		x	1.00	x	1.00	x	11		
	Research Appointment (Post-Doctoral)		x	1.00	x	1.00	x	11		
	Administrative Director/Manager		x	1.00	x	1.00	x	11		
	Administrative Employee		x	1.00	x	1.00	x	6	*Shared Office*	
	Student Advisor		x	1.00	x	1.00	x	11		
	Support & Technical Employee		x	1.00	x	1.00	x	6	*Shared Office*	
								Sub-total		**F**
Term / Contract / Part-Time										
	LTA/ILTA Faculty		x	1.00	x	1.00	x	11		
	CUPE Instructors		x	0.10 (C1)	x	1.00	x	6	*Shared Office*	
	Teaching Assistant		x	0.03 (C2)	x	1.00	x	4	*Station in Workroom*	
	Student Employee		x	0.50 (C3)	x	1.00	x	4 to 6	*Station in Workroom*	
								Sub-total		**G**
Contractor / Alternative Status										
	3 or 4 Days a Week Work on Campus		x	0.80	x	1.00	x	6	*Shared Office*	
	2 Days a Week Work on Campus		x	0.40	x	1.00	x	6	*Shared Office*	
	1 Day a Week Work on Campus		x	0.20	x	1.00	x	6	*Shared Office*	
	Off-Site Clinical/Placement Faculty/Staff		x	1.00	x	0.20 (S1)	x	4	*Station in Workroom*	
	Multi-Campus Employee		x	1.00	x	0.20 (S1)	x	4	*Station in Workroom*	
								Sub-total		**H**
FTE Graduate Student										
	Thesis		x	1.00	x	1.00	x	3	*Station in Workroom*	
	Professional		x	1.00	x	0.20 (S1)	x	3	*Station in Workroom*	
								Sub-total		**I**
								Offices and Workstations Space Allocated		**J = F + G + H + I**
								25% Office Support Space Allocated		**K = (J x 1.33) - J**
								TOTAL ALLOCATION – Excluding Internal Circulation		**L = J + K**
								TOTAL ALLOCATION – Including 25% Internal Circulation Space Allocation		**M = L x 1.33**

C1 1 Half Credit Course compared to faculty workload = 0.10 FTE

C2 60 hours per half credit course = 0.03 FTE

C3 Contracts range in number of hours

S1 2 Hours Use per FTE / 10 Hours AM or PM Weekly Window = 0.20

Academic Offices - Library

School / Department / Group Name: _____

Status	Title or Title Equivalent	A Employee Headcount		B Headcount Employee to FTE Employee Conversion Factor		C Ratio of FTE Employee or Student per Office or Desk		D Area per Office or Station (NASM)	E = A x B x C x D Area Allocated (NASM)	
Full-Time										
	University Librarian		x	1.00	x	1.00	x	24		
	Associate University Librarian		x	1.00	x	1.00	x	15		
	Unit Head		x	1.00	x	1.00	x	15		
	Full-time Librarian		x	1.00	x	1.00	x	11		
	Administrative Director/Manager		x	1.00	x	1.00	x	11		
	Administrative Employee		x	1.00	x	1.00	x	6	*Shared Office*	
	Support & Technical Employee		x	1.00	x	1.00	x	6	*Shared Office*	
								Sub-total		**F**
Term / Contract / Part-Time										
	Administrative Employee		x	1.00	x	1.00	x	6	*Shared Office*	
	Support & Technical Employee		x	1.00	x	1.00	x	6	*Shared Office*	
	Student Employee		x	0.50 (C1)	x	1.00	x	4 to 6	*Station in Workroom*	
								Sub-total		**G**
Contractor / Alternative Status										
	3 or 4 Days a Week Work on Campus		x	0.80	x	1.00	x	6	*Shared Office*	
	2 Days a Week Work on Campus		x	0.40	x	1.00	x	6	*Shared Office*	
	1 Day a Week Work on Campus		x	0.20	x	1.00	x	6	*Shared Office*	
	Multi-Campus Employee		x	1.00	x	0.20 (S1)	x	4	*Station in Workroom*	
								Sub-total		**H**
								Offices and Workstations Space Allocated		**I = F + G + H**
								30% Office Support Space Allocated		**J = (I x 1.43) – I**
								TOTAL ALLOCATION – Excluding Internal Circulation		**K = I + J**
								TOTAL ALLOCATION – Including 25% Internal Circulation Space Allocation		**L = K x 1.33**

C1 Contracts range in number of hours

S1 2 Hours Use per FTE / 10 Hours AM or PM Weekly Window = 0.20

Administrative / Student Services Offices

School / Department / Group Name: _____

Status	Title or Title Equivalent	A Employee Headcount		B Headcount Employee to FTE Employee Conversion Factor		C Ratio of FTE Employee or Student per Office or Desk		D Area per Office or Station (NASM)	E = A x B x C x D Area Allocated (NASM)	
Full-Time - Administrative										
	President		x	1.00	x	1.00	x	50		
	Vice-President		x	1.00	x	1.00	x	24		
	Associate VP / Vice-Provost		x	1.00	x	1.00	x	15		
	Executive Director / Director		x	1.00	x	1.00	x	15		
	Associate Director / Manager		x	1.00	x	1.00	x	11		
	Administrative Employee - Confidential		x	1.00	x	1.00	x	11		
	Administrative Employee		x	1.00	x	1.00	x	6	*Shared Office*	
	Support & Technical Employee		x	1.00	x	1.00	x	6	*Shared Office*	
	Full-Time Student Employee		x	1.00	x	1.00	x	4 to 6	*Shared Office*	
								Sub-total		**F**
Student Services – Confidential										
	Accessibility Employee		x	1.00	x	1.00	x	15		
	Counsellor / Student Advisor		x	1.00	x	1.00	x	11		
	Administrative Employee – Confidential		x	1.00	x	1.00	x	11		
	Full-time Student Employee		x	1.00	x	1.00	x	4 to 6	*Shared Office*	
								Sub-total		**G**
Term / Contract / Part-Time										
	Administrative Employee - Confidential		x	1.00	x	1.00	x	11		
	Administrative Employee		x	1.00	x	1.00	x	6	*Shared Office*	
	Support & Technical Employee		x	1.00	x	1.00	x	6	*Shared Office*	
	Student Employee		x	0.5 (C1)	x	1.00	x	4	*Station in Workroom*	
								Sub-total		**H**
Contractor / Alternative Status										
	3 or 4 Days a Week Work on Campus		x	0.80	x	1.00	x	6	*Shared Office*	
	2 Days a Week Work on Campus		x	0.40	x	1.00	x	6	*Shared Office*	
	1 Day a Week Work on Campus		x	0.20	x	1.00	x	6	*Shared Office*	
	Multi-Campus Employee		x	1.00	x	0.20 (S1)	x	4	*Station in Workroom*	
								Sub-total		**I**
								Offices and Workstations Space Allocated		**J = F + G + H + I**
								30% Office Support Space Allocated		**K = (I x 1.43) – J**
								TOTAL ALLOCATION – Excluding Internal Circulation		**L = J + K**
								TOTAL ALLOCATION – Including 25% Internal Circulation Space Allocation		**M= L x 1.33**

C1 Contracts range in number of hours

S1 2 Hours Use per FTE / 10 Hours AM or PM Weekly Window = 0.20

Section 5 -
Research Facilities

Definition of Research Facilities

The Council of Ontario Universities (COU) defines research facilities as follows:

"A room used for laboratory applications, research or training in research methodology which requires special-purpose equipment for staff or graduate student experimentation or observation and preparation, service and other rooms directly serving these facilities."

COU Methodology for Assessing Research Laboratory Facility Requirements

COU Methodology Overview

The COU methodology to assess research laboratory requirements relies, as its primary input, on staff and graduate student counts. The tallies are done based on the following designations and count adjustments:

- 100% of the full-time equivalent faculty count
- 50% of the full-time equivalent post-doctoral fellow count
- 50% of the full-time equivalent research associate count
- 50% of the full-time equivalent graduate student count

Of note, the staff counts used to assess research space requirements include both full-time and part-time staff and students, with the important caveat that the part-time staff and student counts must be converted into full-time equivalent (FTE) values. The staff counts exclude administrative staff.

The staff and graduate student counts are used to calculate space requirements using allocation factors that reflect the nature of the research being done. A list of the discipline groupings and allocations assigned based on their classification of instructional programs (CIP) codes and as defined by COU is provided on pages 5-4 to 5-10.

- Group A 45 NASM per FTE Staff
- Group B 30 NASM per FTE Staff
- Group C 20 NASM per FTE Staff
- Group D 10 NASM per FTE Staff
- Group E 5 NASM per FTE Staff
- Group F 2 NASM per FTE Staff

Based on the above inputs and factors, the research space requirements for a unit of the university can be calculated as per the following example describing a department attached to a faculty of science:

▪ Group A	8 FTE faculty	x	1	x	45 NASM per FTE Staff	=	360 NASM
▪ Group A	1 FTE postdoc	x	0.5	x	45 NASM per FTE Staff	=	23 NASM
▪ Group A	2 FTE RAs	x	0.5	x	45 NASM per FTE Staff	=	45 NASM
▪ Group A	13 FTE grads	x	0.5	x	45 NASM per FTE Stud.	=	293 NASM
▪ Group B	12 FTE faculty	x	1	x	30 NASM per FTE Staff	=	360 NASM
▪ Group B	3 FTE postdoc	x	0.5	x	30 NASM per FTE Staff	=	45 NASM
▪ Group B	1 FTE RAs	x	0.5	x	30 NASM per FTE Staff	=	15 NASM
▪ Group A	8 FTE grads	x	0.5	x	30 NASM per FTE Stud.	=	120 NASM
					Total		**1,207 NASM**

Strengths of COU Methodology

- Consistency and comparability for benchmarking purposes with other Canadian universities that use the same COU methodology (including the majority of G15 institutions).

- Each research undertaking is unique and calls for varying allocations of human, space and equipment resources. In view of this, the COU methodology achieves a balance between:

  - the need to evaluate the space requirements of a research group (i.e. a faculty, a department, a team) at a high level
  vs.
  - the need to describe in detail the specific space needs of that research group.

Weaknesses of COU Methodology

- The use of a "per FTE capita" count as the primary input to evaluate research space requirements does not consider key aspects of an institution's research enterprise. When the demand or the expectations for research space exceeds supply, other criteria or parameters must be considered. These include, for example, the source and amount of funding support of a research undertaking, the alignment of the research activity with strategic directions of the institution, the support accorded by the institution to tenure-track faculty at the start of their research careers, etc.

- The "*One-Size-Fits-the-Group*" approach of the COU methodology is often poorly received by research stakeholders, particularly when there are perceived or real inequities in the allocation of space within a department, a faculty or a university.

Proposed Framework for Evaluating Research Facility Space Requirement at Brock University

For evaluating the overall demand for research space at Brock University, the Working Group recommends using the COU methodology as previously outlined, with no modification.

Use of the COU methodology will inform Brock of trends and the benchmarks it achieves when compared to other institutions. Importantly, it will also inform the University on relative surpluses and shortfalls between faculties or departments using a neutral, third-party framework.

The Working Group notes that using the COU methodology to inform space planning decisions around needs and priorities should not be literally applied to the actual design and configuration of research laboratories. Each research initiative is unique, and takes place in varying types of buildings providing very different research environments (Cairns vs. Mackenzie Chown vs. Walker for example). In other words, the COU methodology should be used to calculate the quantity of space deemed adequate to accommodate a given sets of researchers. Small variations between the COU standard and the actual space allocations will occur. Large variations, on the other hand, should draw the attention of the University and prompt an analysis of reasons and possible remediation measures.

Finally, the Working Group also notes that the allocation of research space to departments and faculties that predominantly fall in COU groups E and F will yield relatively small allocations. Typically, these 5 and 2 NASM "per capita" space allocations are aggregated in a way that allows a department or a faculty to dedicate space to a given research centre (a European Studies resource centre for example) or a given type of research activity (a Social Science room for focus group research for example).

Research Space Needs Evaluation Worksheet

Faculty / Department / Group Name: _____

COU Classification	Position Description	A FTE Count		B COU FTE Adjustment Factor		C COU Allocation per FTE (NASM)		D = A x B x C Area Requirment Evaluation (NASM)
Group A								
	Faculty	*FTE*	x	1.0	x	45	x	*NASM*
	Post Doctoral Fellow	*FTE*	x	0.5	x	45	x	*NASM*
	Research Associate	*FTE*	x	0.5	x	45	x	*NASM*
	Graduate Student	*FTE*	x	0.5	x	45	x	*NASM*
Group B								
	Faculty	*FTE*	x	1.0	x	30	x	*NASM*
	Post Doctoral Fellow	*FTE*	x	0.5	x	30	x	*NASM*
	Research Associate	*FTE*	x	0.5	x	30	x	*NASM*
	Graduate Student	*FTE*	x	0.5	x	30	x	*NASM*
Group C								
	Faculty	*FTE*	x	1.0	x	20	x	*NASM*
	Post Doctoral Fellow	*FTE*	x	0.5	x	20	x	*NASM*
	Research Associate	*FTE*	x	0.5	x	20	x	*NASM*
	Graduate Student	*FTE*	x	0.5	x	20	x	*NASM*
Group D								
	Faculty	*FTE*	x	1.0	x	10	x	*NASM*
	Post Doctoral Fellow	*FTE*	x	0.5	x	10	x	*NASM*
	Research Associate	*FTE*	x	0.5	x	10	x	*NASM*
	Graduate Student	*FTE*	x	0.5	x	10	x	*NASM*
Group E								
	Faculty	*FTE*	x	1.0	x	5	x	*NASM*
	Post Doctoral Fellow	*FTE*	x	0.5	x	5	x	*NASM*
	Research Associate	*FTE*	x	0.5	x	5	x	*NASM*
	Graduate Student	*FTE*	x	0.5	x	5	x	*NASM*
Group F								
	Faculty	*FTE*	x	1.0	x	2	x	*NASM*
	Post Doctoral Fellow	*FTE*	x	0.5	x	2	x	*NASM*
	Research Associate	*FTE*	x	0.5	x	2	x	*NASM*
	Graduate Student	*FTE*	x	0.5	x	2	x	*NASM*
						Total Space Generated		*NASM*	A
						Total Space Allocated		*NASM*	B
						Variation		*NASM*	C = A - B

COU Space Allocation Factors by Group and CIP Codes

CIP Code	CIP Name	COU Group	COU Space Allocation Factor (NASM)
CIP 1.00	Agricultural, general	Group A	45
CIP 1.01	Agricultural business and management	Group A	45
CIP 1.02	Agricultural mechanization	Group A	45
CIP 1.03	Agricultural production operations	Group A	45
CIP 1.04	Agricultural and food products processing	Group A	45
CIP 1.05	Agricultural and domestic animal services	Group A	45
CIP 1.06	Applied horticulture/horticultural business services	Group A	45
CIP 1.07	International agriculture	Group A	45
CIP 1.08	Agricultural public services	Group A	45
CIP 1.09	Animal sciences	Group A	45
CIP 1.10	Food science and technology	Group C	20
CIP 1.11	Plant sciences	Group A	45
CIP 1.12	Soil science	Group A	45
CIP 1.99	Agriculture, agriculture operations and related sciences, other	Group A	45
CIP 3.01	Natural resources conservation and research	Group D	10
CIP 3.02	Natural resources management and policy	Group D	10
CIP 3.03	Fishing and fisheries sciences and management	Group D	10
CIP 3.05	Forestry	Group B	30
CIP 3.06	Wildlife and wildlands science and management	Group D	10
CIP 3.99	Natural resources and conservation, other	Group D	11
CIP 4.02	Architecture	Group E	5
CIP 4.03	City/urban, community and regional planning	Group D	10
CIP 4.04	Environmental design/architecture	Group F	2
CIP 4.05	Interior architecture	Group F	2
CIP 4.06	Landscape architecture	Group F	2
CIP 4.08	Architectural history and criticism	Group F	2
CIP 4.09	Architectural sciences and technology	Group F	2
CIP 4.10	Real estate development	Group F	2
CIP 4.99	Architecture and related services, other	Group F	2
CIP 5.01	Area studies	Group F	2
CIP 5.02	Ethnic, cultural minority, gender and Group studies	Group F	2
CIP 5.99	Area, ethnic, cultural, gender, and Group studies, other	Group E	5
CIP 9.01	Communication and media studies	Group F	2
CIP 9.04	Journalism	Group E	5
CIP 9.07	Radio, television and digital communication	Group F	2
CIP 9.09	Public relations, advertising and applied communication	Group E	5
CIP 9.10	Publishing	Group F	2
CIP 9.99	Communication, journalism and related programs, other	Group F	2
CIP 10.01	Communications technology/technician	Group E	5
CIP 10.02	Audiovisual communications technologies/technicians	Group E	5
CIP 10.03	Graphic communications	Group E	5
CIP 10.99	Communications technologies/technicians and support services, other	Group E	5
CIP 11.01	Computer and information sciences, general	Group D	10
CIP 11.02	Computer programming	Group D	10
CIP 11.03	Data processing and data processing technology/technician	Group D	10
CIP 11.04	Information Science/Studies	Group E	5
CIP 11.05	Computer systems analysis/analys	Group E	5
CIP 11.06	Data entry/microcomputer applications	Group E	5
CIP 11.07	Computer science	Group D	10
CIP 11.08	Computer software and media applications	Group E	5
CIP 11.09	Computer systems networking and telecommunications	Group E	5
CIP 11.1	Computer/information technology administration and management	Group E	5
CIP 11.99	Computer and information sciences and support services, other	Group E	5
CIP 12.03	Funeral service and mortuary science	Group F	2
CIP 12.04	Cosmetology and related personal grooming services	Group F	2
CIP 12.05	Culinary arts and related services	Group F	2
CIP 12.99	Personal and culinary services, other	Group F	2
CIP 13.01	Education, general	Group F	2
CIP 13.02	Bilingual, multilingual and multicultural education	Group E	5
CIP 13.03	Curriculum and instruction	Group E	5
CIP 13.04	Educational administration and supervision	Group E	5
CIP 13.05	Educational/instructional media design	Group E	5
CIP 13.06	Educational assessment, evaluation and research	Group E	5
CIP 13.07	International and comparative education	Group E	5

COU Space Allocation Factors by Group and CIP Codes (continued)

CIP Code	CIP Name	COU Group	COU Space Allocation Factor (NASM)
CIP 13.09	Social and philosophical foundations of education	Group E	5
CIP 13.10	Special education and teaching	Group E	5
CIP 13.11	Student counselling and personnel services	Group E	5
CIP 13.12	Teacher education and professional development, specific levels and methods	Group E	5
CIP 13.13	Teacher education and professional development, specific subject areas	Group E	5
CIP 13.14	Teaching English or French as a second or foreign language	Group E	5
CIP 13.15	Teaching assistants/aides	Group E	5
CIP 13.99	Education, other	Group E	5
CIP 14.01	Engineering, general	Group B	30
CIP 14.02	Aerospace, aeronautical and astronautical /space engineering	Group C	20
CIP 14.03	Agricultural engineering	Group C	20
CIP 14.04	Architectural engineering	Group C	20
CIP 14.05	Bioengineering and biomedical engineering	Group C	20
CIP 14.06	Ceramic sciences and engineering	Group B	30
CIP 14.07	Chemical engineering	Group B	30
CIP 14.08	Civil engineering	Group B	30
CIP 14.09	Computer engineering	Group D	10
CIP 14.1	Electrical, electronics and communications engineering	Group C	20
CIP 14.11	Engineering mechanics	Group A	45
CIP 14.12	Engineering physics/applied physics	Group A	45
CIP 14.13	Engineering science	Group A	45
CIP 14.14	Environmental/environmental health engineering	Group B	30
CIP 14.18	Materials engineering	Group B	30
CIP 14.19	Mechanical engineering	Group B	30
CIP 14.2	Metallurgical engineering	Group B	30
CIP 14.21	Mining and mineral engineering	Group A	45
CIP 14.22	Naval architecture and marine engineering	Group A	45
CIP 14.23	Nuclear engineering	Group A	45
CIP 14.24	Ocean engineering	Group A	45
CIP 14.25	Petroleum engineering	Group A	45
CIP 14.27	Systems engineering	Group D	10
CIP 14.28	Textile sciences and engineering	Group B	30
CIP 14.32	Polymer/plastics engineering	Group B	30
CIP 14.33	Construction engineering	Group B	30
CIP 14.35	Industrial engineering	Group B	30
CIP 14.36	Manufacturing engineering	Group C	20
CIP 14.37	Operations research	Group B	30
CIP 14.38	Surveying engineering	Group B	30
CIP 14.39	Geological/geophysical engineering	Group B	30
CIP 14.40	Paper science and engineering	Group B	30
CIP 14.41	Electromechanical engineering	Group B	30
CIP 14.42	Mechatronics, robotics, and automation engineering	Group B	30
CIP 14.43	Biochemical engineering	Group B	30
CIP 14.44	Engineering chemistry	Group B	30
CIP 14.45	Biological/biosystems engineering	Group B	30
CIP 14.99	Engineering, other	Group B	30
CIP 15.00	Engineering technology, general	Group B	30
CIP 15.01	Architectural engineering technology/technician	Group A	45
CIP 15.02	Civil engineering technology/technician	Group A	45
CIP 15.03	Electrical and electronic engineering technologies / technicians	Group A	45
CIP 15.04	Electromechanical and instrumentation and maintenance	Group A	45
CIP 15.05	Environmental control technologies/technicians	Group A	45
CIP 15.06	Industrial production technologies/technicians	Group A	45
CIP 15.07	Quality control and safety technologies/technicians	Group A	45
CIP 15.08	Mechanical engineering related technologies/technicians	Group A	45
CIP 15.09	Mining and petroleum technologies/technicians	Group A	45
CIP 15.10	Construction engineering technology/technician	Group A	45
CIP 15.11	Engineering-related technologies	Group A	45
CIP 15.12	Computer engineering technologies/technicians	Group A	45
CIP 15.13	Drafting/design engineering technologies/technicians	Group A	45
CIP 15.14	Nuclear engineering technology/technician	Group A	45
CIP 15.15	Engineering-related fields	Group B	30
CIP 15.16	Nanotechnology	Group A	45
CIP 15.99	Engineering technologies and engineering-related fields, other	Group A	45

COU Space Allocation Factors by Group and CIP Codes (continued)

CIP Code	CIP Name	COU Group	COU Space Allocation Factor (NASM)
CIP 16.01	Linguistic, comparative and related language studies and services	Group F	2
CIP 16.02	African languages, literatures and linguistics	Group E	5
CIP 16.03	East Asian languages, literatures and linguistics	Group E	5
CIP 16.04	Slavic, Baltic and Albanian languages, literatures and linguistics	Group E	5
CIP 16.05	Germanic languages, literatures and linguistics	Group E	5
CIP 16.06	Modern Greek language and literature	Group E	5
CIP 16.07	South Asian languages, literatures and linguistics	Group E	5
CIP 16.08	Iranian languages, literatures and linguistics	Group E	5
CIP 16.09	Romance languages, literatures and linguistics	Group E	5
CIP 16.10	Aboriginal languages, literatures and linguistics	Group E	5
CIP 16.11	Middle/Near Eastern and Semitic languages, literatures and linguistics	Group E	5
CIP 16.12	Classics and classical languages, literatures and linguistics, general	Group E	5
CIP 16.13	Celtic languages, literatures and linguistics	Group E	5
CIP 16.15	Turkic, Uralic-Altaic, Caucasian and Central Asian languages	Group E	5
CIP 16.16	Sign language	Group E	5
CIP 16.17	Second language learningCAN	Group E	5
CIP 16.99	Aboriginal and foreign languages, literatures and linguistics, otherr	Group E	5
CIP 19.00	Work and family studies	Group C	20
CIP 19.01	Family and consumer sciences/human sciences, genera	Group C	20
CIP 19.02	Family and consumer sciences/human sciences business services	Group C	20
CIP 19.04	Family and consumer economics and related services	Group C	20
CIP 19.05	Foods, nutrition and related services	Group C	20
CIP 19.06	Housing and human environments	Group E	5
CIP 19.07	Human development, family studies and related services	Group E	5
CIP 19.09	Apparel and textiles [NOT fashion: see 50.04]	Group E	5
CIP 19.99	Family and consumer sciences/human sciences, other	Group E	5
CIP 21.01	Pre-technology education/pre-industrial arts programsCAN	Group E	5
CIP 22.00	Non-professional general legal studies (undergraduate)	Group E	5
CIP 22.01	Law (LLB, JD, BCL)	Group E	5
CIP 22.02	Legal research and advanced professional studies (post-LLB/JD)	Group E	5
CIP 22.03	Legal support servies	Group E	5
CIP 22.99	Legal professions and studies, other	Group E	5
CIP 23.01	English language and literature, general	Group E	5
CIP 23.13	English rhetoric and composition/writing studies	Group E	5
CIP 23.14	English literature	Group E	5
CIP 23.99	English language and literature/letters, other	Group E	5
CIP 24.01	Liberal arts and sciences, general studies and humanities	Group F	2
CIP 25.01	Library science and administration	Group E	5
CIP 25.03	Library and archives assisting	Group E	5
CIP 25.99	Library science, other	Group E	5
CIP 26.01	Biology, general	Group A	45
CIP 26.02	Biochemistry/biophysics and molecular biology	Group C	20
CIP 26.03	Botany/plant biology	Group A	45
CIP 26.04	Cell/cellular biology and anatomical sciences	Group A	45
CIP 26.05	Microbiological sciences and immunology	Group B	30
CIP 26.07	Zoology/animal biology	Group A	45
CIP 26.08	Genetics	Group A	45
CIP 26.09	Physiology, pathology and related sciences	Group B	30
CIP 26.10	Pharmacology and toxicology	Group A	45
CIP 26.11	Biomathematics, bioinformatics, and computational biology	Group A	45
CIP 26.12	Biotechnology	Group A	45
CIP 26.13	Ecology, evolution, systematics and population biology	Group A	45
CIP 26.14	Molecular medicine	Group A	45
CIP 26.15	Neurobiology and neurosciences	Group A	45
CIP 26.99	Biological and biomedical sciences, other	Group A	45
CIP 27.01	Mathematics	Group F	2
CIP 27.03	Applied mathematics	Group E	5
CIP 27.05	Statistics	Group E	5
CIP 27.99	Mathematics and Statistics, Other	Group E	5
CIP 28.08	Military science, leadership and operational artCAN	Group A	45
CIP 29.05	Military technologies and applied sciencesCAN	Group A	45
CIP 30.01	Biological and physical sciences	Group A	45
CIP 30.05	Peace studies and conflict resolution	Group E	5
CIP 30.06	Systems science and theory	Group E	5

COU Space Allocation Factors by Group and CIP Codes (continued)

CIP Code	CIP Name	COU Group	COU Space Allocation Factor (NASM)
CIP 30.08	Mathematics and computer science	Group E	5
CIP 30.10	Biopsychology	Group E	5
CIP 30.11	Gerontology	Group E	5
CIP 30.12	Historic preservation and conservation	Group E	5
CIP 30.13	Medieval and renaissance studies	Group E	5
CIP 30.14	Museology/museum studies	Group E	5
CIP 30.15	Science, technology and society	Group E	5
CIP 30.16	Accounting and computer science	Group E	5
CIP 30.17	Behavioural sciences	Group D	10
CIP 30.18	Natural sciences	Group D	10
CIP 30.19	Nutrition sciences	Group C	20
CIP 30.20	Global/international studies	Group E	5
CIP 30.21	Holocaust and related studies	Group E	5
CIP 30.22	Classical and ancient studies	Group E	5
CIP 30.23	Intercultural/multicultural and diversity studies	Group E	5
CIP 30.25	Cognitive science	Group A	45
CIP 30.26	Cultural studies/critical theory and analysis	Group E	5
CIP 30.27	Human biology	Group E	5
CIP 30.28	Dispute resolution	Group E	5
CIP 30.29	Maritime studies	Group E	5
CIP 30.30	Computational science	Group E	5
CIP 30.31	Human computer interaction	Group E	5
CIP 30.32	Marine sciences	Group E	5
CIP 30.33	Sustainability studies	Group D	10
CIP 30.99	Multidisciplinary/interdisciplinary studies, other	Group D	10
CIP 31.01	Parks, recreation and leisure studies	Group F	2
CIP 31.03	Parks, recreation and leisure facilities management	Group F	2
CIP 31.05	Health and physical education/fitness	Group D	10
CIP 31.06	Outdoor education	Group D	10
CIP 31.99	Parks, recreation, leisure and fitness studies, other	Group F	2
CIP 32.01	Basic skills (not for credit)	Group E	5
CIP 33.01	Citizenship activities (not for credit)	Group E	5
CIP 34.01	Health-related knowledge and skills (not for credit)	Group E	5
CIP 35.01	Interpersonal and social skills (not for credit)	Group E	5
CIP 36.01	Leisure and recreational activities (not for credit)	Group E	5
CIP 37.01	Personal awareness and self-improvement (not for credit)	Group E	5
CIP 38.00	Philosophy and religious studies, general	Group E	5
CIP 38.01	Philosophy, logic and ethics	Group E	5
CIP 38.02	Religion/religious studies	Group E	5
CIP 38.99	Philosophy and religious studies, other	Group E	5
CIP 39.00	Theology and religious vocations	Group E	5
CIP 39.02	Bible/Biblical studies	Group E	5
CIP 39.03	Missions/missionary studies and missiology	Group E	5
CIP 39.04	Religious education	Group E	5
CIP 39.05	Religious/sacred music	Group E	5
CIP 39.06	Theological and ministerial studies	Group E	5
CIP 39.07	Pastoral counselling and specialized ministries	Group E	5
CIP 39.99	Theology and religious vocations, other	Group E	5
CIP 40.01	Physical sciences, general	Group A	45
CIP 40.02	Astronomy and astrophysics	Group C	20
CIP 40.04	Atmospheric sciences and meteorology	Group C	20
CIP 40.05	Chemistry	Group A	45
CIP 40.06	Geological and Earth sciences/geosciences	Group A	45
CIP 40.08	Physics	Group A	45
CIP 40.10	Materials sciences	Group B	30
CIP 40.99	Physical sciences, other	Group A	45
CIP 41.00	Science technologies/technicians, general	Group B	30
CIP 41.01	Biology technician/biotechnology laboratory technician	Group B	30
CIP 41.02	Nuclear and industrial radiologic technologies/technicians	Group B	30
CIP 41.03	Physical science technologies/technicians	Group B	30
CIP 41.99	Science technologies/technicians, other	Group B	30
CIP 42.01	Psychology, general	Group B	30
CIP 42.27	Research and experimental psychology	Group B	30
CIP 42.28	Clinical, counselling and applied psychology	Group B	30

COU Space Allocation Factors by Group and CIP Codes (continued)

CIP Code	CIP Name	COU Group	COU Space Allocation Factor (NASM)
CIP 42.99	Psychology, other	Group B	30
CIP 43.01	Criminal justice and corrections	Group D	10
CIP 43.02	Fire protection	Group D	10
CIP 43.03	Security and protective services, specialized programs	Group D	10
CIP 43.99	Security and protective services, other	Group D	10
CIP 44.00	Human services, general	Group F	2
CIP 44.02	Community organization and advocacy	Group E	5
CIP 44.04	Public administration	Group E	5
CIP 44.05	Public policy analysis	Group E	5
CIP 44.07	Social work	Group E	5
CIP 44.99	Public administration and social service professions, other	Group E	5
CIP 45.01	Social sciences, general	Group E	5
CIP 45.02	Anthropology	Group C	20
CIP 45.03	Archaeology	Group D	10
CIP 45.04	Criminology	Group E	5
CIP 45.05	Demography and population studies	Group D	10
CIP 45.06	Economics	Group F	2
CIP 45.07	Geography and cartography	Group D	10
CIP 45.09	International relations and national security studies	Group E	5
CIP 45.10	Political science and government	Group F	2
CIP 45.11	Sociology	Group F	2
CIP 45.12	Urban studies / affairs	Group E	5
CIP 45.13	Sociology and anthropology	Group E	5
CIP 45.14	Rural sociology	Group E	5
CIP 45.99	Social sciences, other	Group E	5
CIP 46.00	Construction trades, general	Group E	5
CIP 46.01	Masonry/mason	Group E	5
CIP 46.02	Carpentry/carpenter	Group E	5
CIP 46.03	Electrical and power transmission installers	Group E	5
CIP 46.04	Building/construction finishing, management and inspection	Group E	5
CIP 46.05	Plumbing and related water supply services	Group E	5
CIP 46.99	Construction trades, other	Group E	5
CIP 47.00	Mechanics and repairers, general	Group E	5
CIP 47.01	Electrical/electronics maintenance and repair technology	Group E	5
CIP 47.03	Heavy/industrial equipment maintenance technologies	Group E	5
CIP 47.04	Precision systems maintenance and repair technologies	Group E	5
CIP 47.05	Stationary energy sources installer and operatorCAN	Group E	5
CIP 47.06	Vehicle maintenance and repair technologies	Group E	5
CIP 47.99	Mechanic and repair technologies/technicians, other	Group E	5
CIP 48.00	Precision production trades, general	Group E	5
CIP 48.03	Leatherworking and upholstery	Group E	5
CIP 48.05	Precision metal working	Group E	5
CIP 48.07	Woodworking	Group E	5
CIP 48.08	Boilermaking/boilermaker	Group E	5
CIP 48.99	Precision production, other	Group E	5
CIP 49.01	Air transportation	Group E	5
CIP 49.02	Ground transportation	Group E	5
CIP 49.03	Marine transportation	Group E	5
CIP 49.99	Transportation and materials moving, other	Group E	5
CIP 50.01	Visual, digital and performing arts, general	Group C	20
CIP 50.02	Crafts/craft design, folk art and artisanry	Group C	20
CIP 50.03	Dance	Group E	5
CIP 50.04	Design and applied arts [includes fashion]	Group E	5
CIP 50.05	Drama/theatre arts and stagecraft	Group E	5
CIP 50.06	Film/video and photographic arts	Group E	5
CIP 50.07	Fine arts and art studies	Group D	10
CIP 50.09	Music	Group F	2
CIP 50.10	Arts, entertainment, and media management	Group E	5
CIP 50.99	Visual and performing arts, other	Group E	5
CIP 51.00	Health services/allied health/health sciences, general	Group D	10
CIP 51.01	Chiropractic (DC)	Group B	30
CIP 51.02	Communication disorders sciences and services	Group C	20
CIP 51.04	Dentistry	Group A	45
CIP 51.05	Advanced/graduate dentistry and oral sciences (Cert., MS, MSc, PhD)	Group A	45

COU Space Allocation Factors by Group and CIP Codes (continued)

CIP Code	CIP Name	COU Group	COU Space Allocation Factor (NASM)
CIP 51.06	Dental support services and allied professions	Group A	45
CIP 51.07	Health and medical administrative services	Group E	5
CIP 51.08	Allied health and medical assisting services	Group E	5
CIP 51.09	Allied health diagnostic, intervention and treatment professions	Group E	5
CIP 51.10	Clinical/medical laboratory science/research and allied professions	Group A	45
CIP 51.11	Health/medical preparatory programs	Group A	45
CIP 51.12	Medicine (MD)	Group A	45
CIP 51.14	Medical scientist (MS, MSc, PhD)	Group A	45
CIP 51.15	Mental and social health services and allied professions	Group A	45
CIP 51.17	Optometry (OD)	Group A	45
CIP 51.20	Pharmacy, pharmaceutical sciences and administration	Group B	30
CIP 51.21	Podiatric medicine/podiatry (DPM)	Group A	45
CIP 51.22	Public health	Group E	5
CIP 51.23	Rehabilitation and therapeutic professions	Group B	30
CIP 51.24	Veterinary medicine (DVM)	Group A	45
CIP 51.25	Veterinary biomedical and clinical sciences	Group A	45
CIP 51.26	Health aides/attendants/orderlies	Group E	5
CIP 51.27	Medical illustration and informatics	Group E	5
CIP 51.31	Dietetics and clinical nutrition services	Group E	5
CIP 51.32	Bioethics/medical ethics	Group E	5
CIP 51.33	Alternative and complementary medicine and medical systems	Group E	5
CIP 51.35	Somatic bodywork and related therapeutic services	Group E	5
CIP 51.36	Movement and mind-body therapies	Group E	5
CIP 51.37	Energy-based and biologically-based therapies	Group E	5
CIP 51.38	Registered nursing, nursing administration and clinical nursing	Group F	2
CIP 51.39	Practical nursing, vocational nursing and nursing assistants	Group F	2
CIP 51.99	Health professions and related clinical sciences, other	Group A	45
CIP 52.01	Business/commerce, general	Group F	2
CIP 52.02	Business administration, management and operations	Group F	2
CIP 52.03	Accounting and related services	Group F	2
CIP 52.04	Business operations support and assistant services	Group E	5
CIP 52.05	Business/corporate communications	Group E	5
CIP 52.06	Business/managerial economics	Group E	5
CIP 52.07	Entrepreneurial and small business operations	Group E	5
CIP 52.08	Finance and financial management services	Group E	5
CIP 52.09	Hospitality administration/management	Group E	5
CIP 52.10	Human resources management and services	Group E	5
CIP 52.11	International business/trade/commerce	Group E	5
CIP 52.12	Management information systems and services	Group E	5
CIP 52.13	Management science and quantitative methods	Group E	5
CIP 52.14	Marketing	Group F	2
CIP 52.15	Real estate	Group E	5
CIP 52.16	Taxation	Group E	5
CIP 52.17	Insurance	Group E	5
CIP 52.18	General sales, merchandising and related marketing operations	Group E	5
CIP 52.19	Specialized sales, merchandising and marketing operations	Group E	5
CIP 52.20	Construction management	Group E	5
CIP 52.21	Telecommunications management	Group E	5
CIP 52.99	Business, management, marketing and related support services, other	Group E	5
CIP 53.01	High school/secondary diploma programs	Group E	5
CIP 53.02	High school/secondary certificate programs	Group E	5
CIP 54.01	History	Group F	2
CIP 55.01	French language and literature, general	Group F	2
CIP 55.13	French rhetoric and composition/writing studiesCAN	Group F	2
CIP 55.14	French literatureCAN	Group F	2
CIP 55.99	French language and literature/letters, otherCAN	Group F	2
CIP 60.01	Dental residency programs	Group A	45
CIP 60.03	Veterinary residency programs	Group A	45
CIP 60.04	Medical residency programs - general certificates	Group A	45
CIP 60.05	Medical residency programs - subspecialty certificates	Group A	45
CIP 60.06	Podiatric medicine residency programs	Group A	45
CIP 60.99	Dental, medical and veterinary residency programs, other	Group A	45

Section 6 -
Other Facilities

Preamble

The previous sections of this report considered Brock-specific space standards as follows:

- Section 2 Classroom Facilities
- Section 3 Instructional Laboratories
- Section 4 Office Facilities
- Section 5 Research Facilities

The impetus for clear, evidenced-based and transparent methods to assess needs and allocations of the spaces listed above is driven by their repetitive and distributed nature across a typical campus. The standards for these types of spaces are intended to answer questions such as:

- How many classrooms of this capacity do we need on campus?
- How many private 11 square meter private faculty offices will this new building require?
- How much space will be required by this new research initiative based on the number of PIs, RAs and graduate students involved?

The framework and standards outlined in sections 2 to 5 of this report can provide answers to these questions.

This "Other Facilities" section covers the types of spaces where questions like the ones listed above cannot be distilled into calculations set up as inputs (staff count, section hours, etc.) multiplied by set space allocation factors. Such a methodology does not easily support answering questions such as:

- How much space should be allocated to library collections?
- How much campus space should be allocated to food services and dining facilities?
- How big should the Art Gallery be?
- Should the University have a semi-Olympic or Olympic pool? A running track?

Sensible answers to these questions must take into account institutional strategy and priorities, a campus' urban context, history and legacy factors and a host of other considerations that are difficult to quantify, describe, or apply.

In other words, space allocation decisions for other facilities rightfully tend to be or have to be made on a case-by-case basis. These decisions typically concern common academic and campus services and amenities that benefit the University community as a whole, or very large stakeholder groups.

This section outlines the approach recommended by the Working Group to monitor and inform Brock University space planning and capital decisions that touch on other facilities.

Description of Other Facilities

"Other Facilities" represent approximately one fifth of Brock's gross square footage inventory, excluding residence buildings. For most space types the COU space standard framework relies on the FTE student count of the University to notionally assess space requirements, as noted below:

Space Type	COU Primary Space Standard Input	% of Brock Space Inventory Excluding Residences
▪ Library Facilities & Study Space	Size of Collections / FTE Population	4.3 %
▪ Non-Library Study Space	FTE Student Population	1.9 %
▪ Athletic / Recreation Space	FTE Student Population	6.4 %
▪ Food Services	FTE Student Population	2.5 %
▪ Bookstore / Merchandising	FTE Student Population	0.8 %
▪ Central Services	FTE Student Population	2.2 %
▪ Health Service Facilities	FTE Student Population	0.4 %
▪ Common Use and Student Activity	FTE Student Population	0.9 %
▪ Assembly and Exhibition Facilities	FTE Student Population	2.2 %

Considerations for Assessing Other Facilities Space Requirements

The Working Group recommends that other facilities be monitored and evaluated using the following benchmarks, indicators and institutional planning inputs:

1) Benchmarks Achieved in Relation to Other Ontario Universities

- Area per full-time equivalent student (SM / FTE) benchmarks achieved by the University in the space category being examined in relation to Ontario's other universities, particularly institutions Brock deems to be similar in terms of program offerings and size (Wilfrid Laurier University for example).

The Working Group notes that calculated SM / FTE benchmarks must be interpreted with discernment and should primarily be viewed as a prompt to ask key questions such as:

- ***Benchmark Below Other Institutions*** - Why is Brock XX% below the provincial benchmark and how does this notional shortfall truly affect student success, campus life, the University brand, etc.? How does the University get by without this space, and does the situation warrant a planning and one-off space allocation response?

- ***Benchmark Above Other Institutions*** – Why is Brock XX% above the provincial benchmark, and how does this benefit or hamper the University in terms of quality of service and campus experience, future campus development plans, etc.? Can the space be recouped now or will it be needed as the university develops?

2) Indicators and Institutional Planning Inputs

- Alignment and benefits of a space allocation in relation to the University's strategic, academic and business plans.

- Results of general or of targeted user satisfaction surveys, including but not limited to annual Key Performance Indicator (KPI) results directly or indirectly linked to the service or amenity provided or considered.

- Relevant reports and data sets describing existing conditions, issues, opportunities and trends in the delivery or configuration of services and amenities.

- Compliance of the University in providing the service or the amenity space allocations in relation to standards set externally by regulators and accrediting bodies.