

## *II. Space Analysis and Recommendations*



## 2.1 Overview of Space Analysis

One of the key objectives of the Campus Plan is the investigation of space utilization on campus, including understanding where space shortages are occurring. The goal of this exercise is to use space more efficiently, to know which shortages to address first and to determine how much space the University will need to accommodate its desired growth.

### Space Shortage Issues

#### 1. Potential for enrolment caps and inefficiencies

In a shortage situation, classrooms and labs may not always be available or may be too small to accommodate demand, leading to enrolment caps in programs and courses. Also, the Registrar's office may be forced to schedule classes and labs in rooms that are too large, resulting in inefficiencies.

#### 2. Attracting staff and students

Shortages of common space diminishes the quality of life on campus, and may undermine the attractiveness of the University in the medium to long-term. The shortage of offices and research labs may have a more immediate effect, deterring job applicants from joining UNBSJ for lack of adequate space.

#### 3. Limits on growth

A consequence of space shortages is the impact on UNBSJ's growth potential. If facilities are not available, new programs cannot be offered and quality students and faculty could be lost to competing institutions outside of New Brunswick.

#### 4. Illogical space transformations

The continued shortage of space has led some departments to transform space to address their immediate space needs. This has led to common areas being turned to offices or offices being split in two, one side losing ventilation and/or a window.

#### 5. Lack of flexibility (e.g. scheduling a quick impromptu meeting)

Space shortages mean that most rooms are always spoken for, making it difficult to schedule impromptu meetings. This has led to a dramatic increase in one-time reservations for rooms, which necessitate significant staff time to process.

#### 3. Accelerated wear and tear

The overuse of facilities results in accelerated wear and tear, which in turn raises the cost of operating and maintaining facilities.



*A well-used common area: University of Prince Edward Island, Charlottetown*

## 2.2 Space Needs Findings

The Council of Ontario Universities (COU) space inventory standards were used to perform an analysis of space resources at UNBSJ. It is currently the most up-to-date, rigorous and common standard in Canada and in addition to being used by all universities in Ontario – big and small – it is also used for comparison purposes elsewhere in the country. The standards are based on the reality observed on the ground in Ontario universities and are updated in response to survey results every three years. In the COU spreadsheets, input data like the size of the student body is multiplied by a standard factor – e.g. 1.23 square metres of classroom space per student – and compared to the actual inventory of space.

The analysis led to the findings presented in this section, which identifies a serious shortfall in space resources. However, these findings should be viewed in context of the following caveats:

### Caveats

- 1 Age of buildings – older buildings are usually less efficient;
- 2 Size of the institution – larger institutions can achieve economies of scale;
- 3 Size of classes – class sizes that closely match classroom sizes lead to greater efficiency;
- 4 Size and layout of classrooms – large classrooms and fixed layouts are more efficient;
- 5 Climate – in a colder climate, students require more indoor common spaces;
- 6 Percentage of on-campus residents vs. commuters – residents require more services;
- 7 Exact nature of programming and research – different courses use space differently;
- 8 Type of space – the standards do not include non-assignable space such as hallways, and storage, or residences;
- 9 Impact of technology – for example, the use of wireless networks and laptop computers can reduce the need for labs; allowing telecommuting can reduce the need for offices and parking;



Currently, UNBSJ provides approximately 32,725 net square metres of building area utilized by a campus population of 3,200. (Gross area was determined to be 36,387 square metres).

The figures used for the analysis were gathered in 2003 by a team from Fredericton and have yet to be validated by UNBSJ. Also, the reports lacked complete information for the Modern Languages Centre (MLC) as the building was not completed at the time, and did not include Annex 'B'. For this reason and the fact that the MLC's tenant, Saint John College (SJC), operates very differently than other University departments, the MLC was excluded from the analysis, but its student enrolment was included in the calculation of non-academic space requirements (food services, athletic facilities, etc). *Note: Saint John College is UNBSJ's international academic preparatory college, formerly known as the Modern Languages Centre. Beaverbrook House was excluded for the space analysis as well since it is not located on the Tucker Park Campus.*

The following graph shows the ratio of actual space available by category. A ratio of 1.0 indicates that the University provides the same amount of space in a given category as in the COU standard. **Overall, UNB Saint John is found to operate with about 76% of the space needed, or a shortage of 6,921 NET assignable square metres or 74,420 NET assignable square feet** (space that can be assigned to a use, i.e. excluding circulation areas).

**While shortages exist in most types of space, the most acute shortages seem to occur in Library and Student and Central Services.**

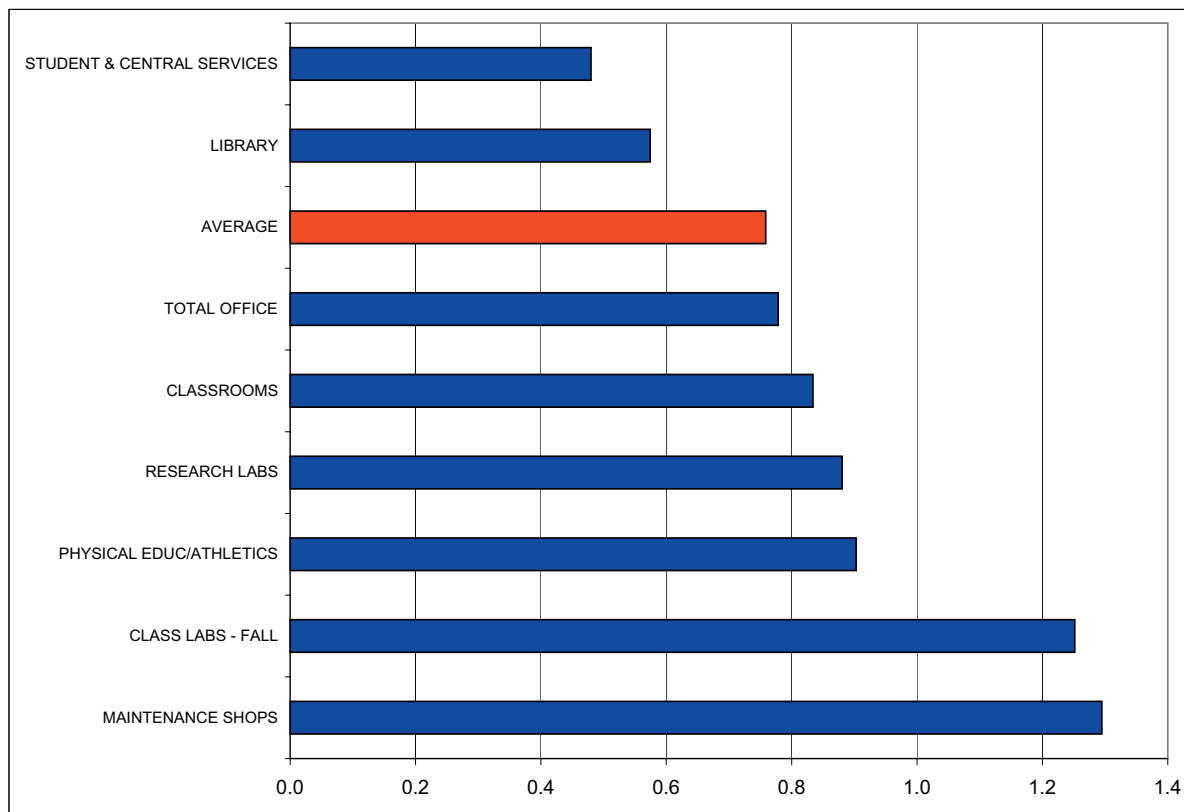


Figure 2: Ratio of individual space categories to Council of Ontario Universities standards

These findings are consistent with concerns expressed during the consultation, except for labs. While a shortage of lab space is apparent, the shortage seems to be mostly limited to research space. The discrepancy between faculty perceptions and the analysis may be due to: unwillingness to schedule lab sessions during less desirable time slots; the layout of the labs constrained by age or building characteristics; or the nature of the equipment used.

The apparent excess in maintenance space is most likely due to the inability to realize economies of scale that larger institutions enjoy.

**In absolute terms, the largest area of need is in Student and Central Services** (including food services, bookstore, AV/TV facilities, computing facilities and unscheduled labs, health services, common spaces and assembly facilities) with 2,985 square metres or 32,092 square feet reported missing compared to the COU standard. Other areas of need in absolute terms are shown in Table 3 below (negative numbers reflect assumed excesses). Note: Net assignable space is space that can be used for a specific purpose, and excludes all hallways, circulation spaces, washrooms and storage space.

If the Saint John Campus is to grow to an enrolment of 5,000 within ten years – reflecting a 3 percent annual growth, about 24,112 sq.m. (259,269 sq.ft) of new net floor area will be required, keeping the amount of space – and the current shortages – constant. If the campus is to provide the amount of space that corresponds to the COU standards and replace the annexes, about 43,121 sq.m. (463,667 sq.ft) of net assignable space will be needed instead, equivalent to the total amount of space on the current campus (less residences) plus 32 percent. 884 new parking spaces will be required assuming the same ratio of parking spaces over users, which currently corresponds to one space per 2.68 people on campus.

About 57 percent of the total amount of space required represents growth-related space. 25 percent is space required to catch up to the higher standard, and 18 percent results from the application of the higher standard to the new space being built. As enrolment grows, not only must new students, staff and faculty be accommodated, but more space is needed to accommodate each person.

The actual size of buildings required to accommodate this space will be larger to accommodate circulation, washrooms, maintenance and mechanical areas. On average, the net to gross factor assumed is 0.85. For example, a net area of 10,000 square metres will require a gross area of 11,765 square metres.

**Table 3 - CURRENT SPACE SHORTAGES IN ABSOLUTE TERMS (Net assignable square feet)**

	Sq.m.	Sq.ft.
STUDENT & CENTRAL SERVICES	2,985	32,092
LIBRARY	1,698	18,253
OFFICE	1,364	14,665
CLASS LABS - FALL	(378)	(4,059)
RESEARCH LABS	362	3,893
PHYSICAL EDUC/ATHLETICS	445	4,780
CLASSROOMS	551	5,922
MAINTENANCE SHOPS	(105)	(1,127)



## 2.3 Theoretical Phasing

The following table shows the theoretical phasing over a decade of space required to cover the current space shortage, replace the space lost through the elimination of annexes and provide for growth to a student population of 5,000. (All figures in net square metres).

Table 4 - Theoretical Phasing

	Catch up	Replacement of annexes	Growth at new standard	Total	Cumulative	% of current campus
2004-05	1,033	106.1	2,444	3,583	<b>3,583</b>	11%
05-06	1,033	106.1	2,582	3,722	<b>7,305</b>	22%
06-07	1,033	106.1	2,729	3,869	<b>11,174</b>	34%
07-08	1,033	106.1	2,884	4,024	<b>15,197</b>	46%
08-09	1,033	106.1	3,048	4,187	<b>19,385</b>	59%
09-10	1,033	106.1	3,221	4,360	<b>23,745</b>	73%
10-11	1,033	106.1	3,404	4,543	<b>28,288</b>	86%
11-12	1,033	106.1	3,597	4,736	<b>33,024</b>	101%
12-13	1,033	106.1	3,801	4,941	<b>37,965</b>	116%
14-15	1,033	106.1	4,017	5,156	<b>43,121</b>	132%
Total net	<b>10,334 sqm</b>	<b>1,061 sqm</b>	<b>31,726 sqm</b>	<b>43,121 sqm</b>		
Total gross	<b>11,491 sqm</b>	<b>1,180 sqm</b>	<b>35,276 sqm</b>	<b>47,947 sqm</b>		

The above table is provided as a guide only. It is intended to demonstrate the approximate amount of new development necessary to accommodate the desired enrolment growth. It is understood that the academic and strategic plans of the University, actual enrolment figures, the economic context, availability of government funding and donor interest will all have a strong bearing on the actual growth of the campus. Also, campus growth does not take place in equal annual increments, but can be characterized as "lumpy". That is, buildings are constructed in anticipation of future demand. Thus, some areas can temporarily find themselves in an over or undersupply situation.



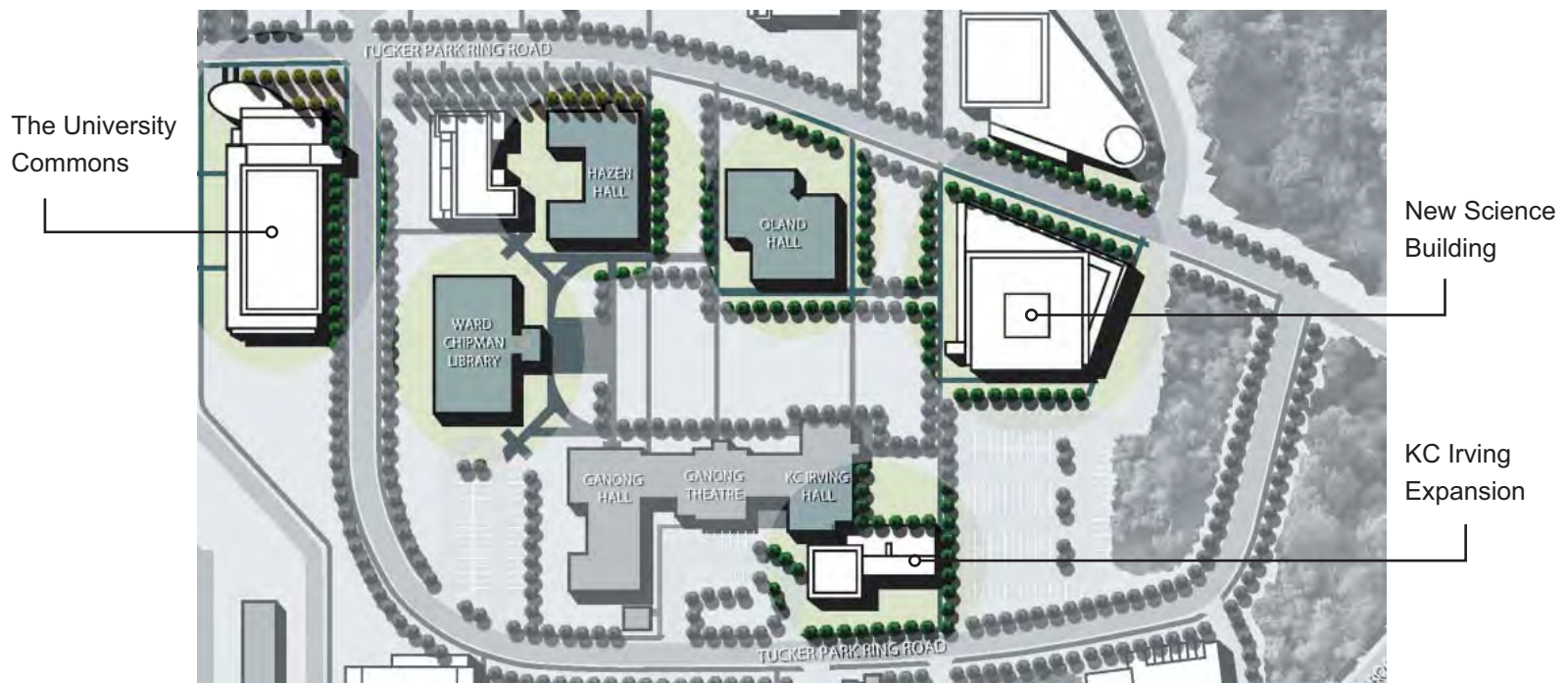
## 2.4 Space Management Recommendations

In addition to following the phasing plan to add space as the University grows, a number of actions are suggested to mitigate the consequences of the shortages:

- The Steam Plant should be turned into a storage facility and possibly expanded. With the assistance of a storage policy (see p. 144), valuable space throughout the University could be liberated, leading to efficiencies in labs and offices as stored items are moved off-site or disposed of.
- To address the office shortage, alternative office layouts should be considered, such as an open concept layout, already implemented in the Modern Languages Centre.
- The shortage of communal space can be addressed qualitatively in addition to quantitatively. In existing lobbies and meeting spaces, additional high-quality seating can be installed, allowing lighting and wireless access to make the space truly usable as impromptu meeting space.
- Outdoor spaces are currently underused and could be improved to serve as additional common spaces. Examples include the terrace behind the Ward Chipman Library and the surroundings of Oland and Ganong Halls.

- Based on the Soft Analysis (please refer to appendices), the following initiatives should be considered, pending the confirmation of the University's Academic Plan. These buildings are presented in further detail in Section III of the Plan.

- **The University Commons** – this new building will become the home of all library uses, the bookstore, Information Services (currently located in Hazen Hall), as well as Student Services.
- **A New Science Building** should be built as a signature building in the vicinity of Irving Hall and frame the east end of the Quad. This facility could include classrooms, labs and offices, as well as classrooms with seating for 50 to 60, accessible to other disciplines. On the ground floor, an advancement / welcome centre is recommended.
- Additional Science uses can be accommodated in the **Expansion of KC Irving Hall**.
- The relocation of Administration, as well as the Math and Computer Science departments should be considered to **the Ward Chipman Library** upon completion of the University Commons. The remainder of the space is used for classrooms and offices for general use.
- The Faculty of Arts could occupy **Hazen Hall** in its entirety.
- The School of Business could occupy **Oland Hall** in its entirety.



## 2.5 Timetable Analysis

The timetable was reviewed to identify potential opportunities for more efficient use of space on campus. As part of the methodology, the number of students on campus at certain times was reviewed on the premise that campus facilities are capable of handling the peak population number. When the on-campus population drops below this peak, at least some facilities are being underutilized.

- Generally, the population on campus is greatest between 10:00 am and 2:00 pm, drops significantly in the afternoon and climbs back up in the evening, due to a large number of classes scheduled primarily by the School of Business.
- There is a large jump in campus population between 8:30 am and 9:30 am, especially on Mondays, Wednesdays and Fridays.
- The campus population is lower on Thursdays, with a peak just exceeding 700, while the peak on other days hovers around 1,200.
- The campus population drops on Friday afternoons. By 5:30 pm, the campus is completely vacated.

Currently, many classes follow a non-standard pattern, resulting in students not being able to take courses because classes start before others end. In addition, when overlap occurs, additional demand is imposed on classrooms and labs. At this point, it is difficult to determine whether this is limited to relatively self-contained disciplines. However, as students increasingly pursue multi-disciplinary degrees, inter-departmental coordination is of the utmost importance.

An ideal timetable has all classes starting and ending simultaneously. Allowances should be made for classes that need to be longer or shorter. This can be addressed with a standard schedule comprised of modules that can be assembled to accommodate specific requirements. A nine-hour day from 8:30 to 5:30 allows for three blocks of three hours, allowing the scheduling of three lab sessions or long classes as required in certain disciplines. A nine-hour model is also divisible into nine one-hour sessions and six 90-minute sessions. See p. 25 for a sample schedule template.

**Campus Presence - Tuesday**

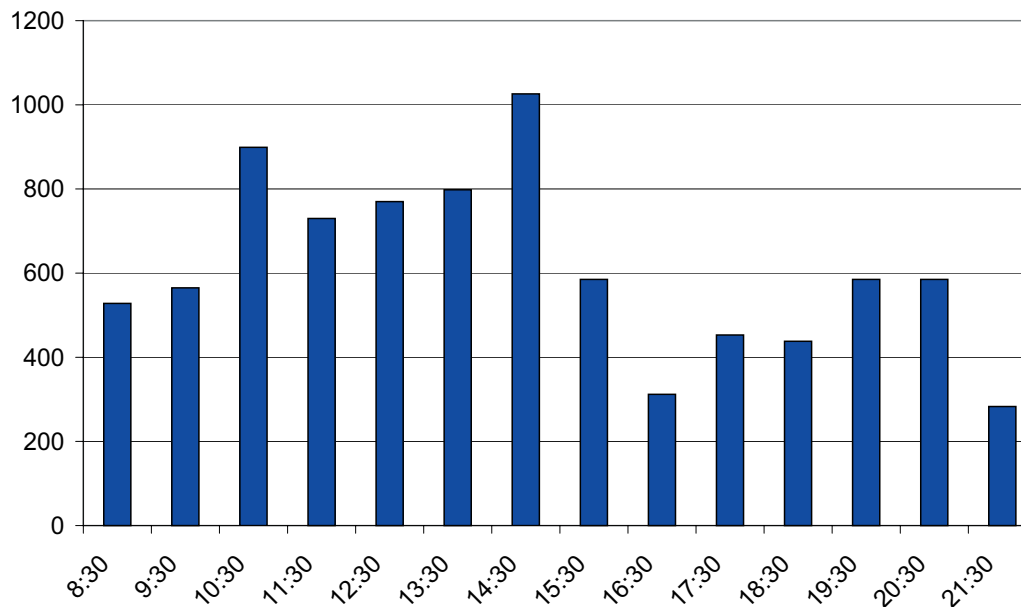


Figure 3: Number of Students on Campus



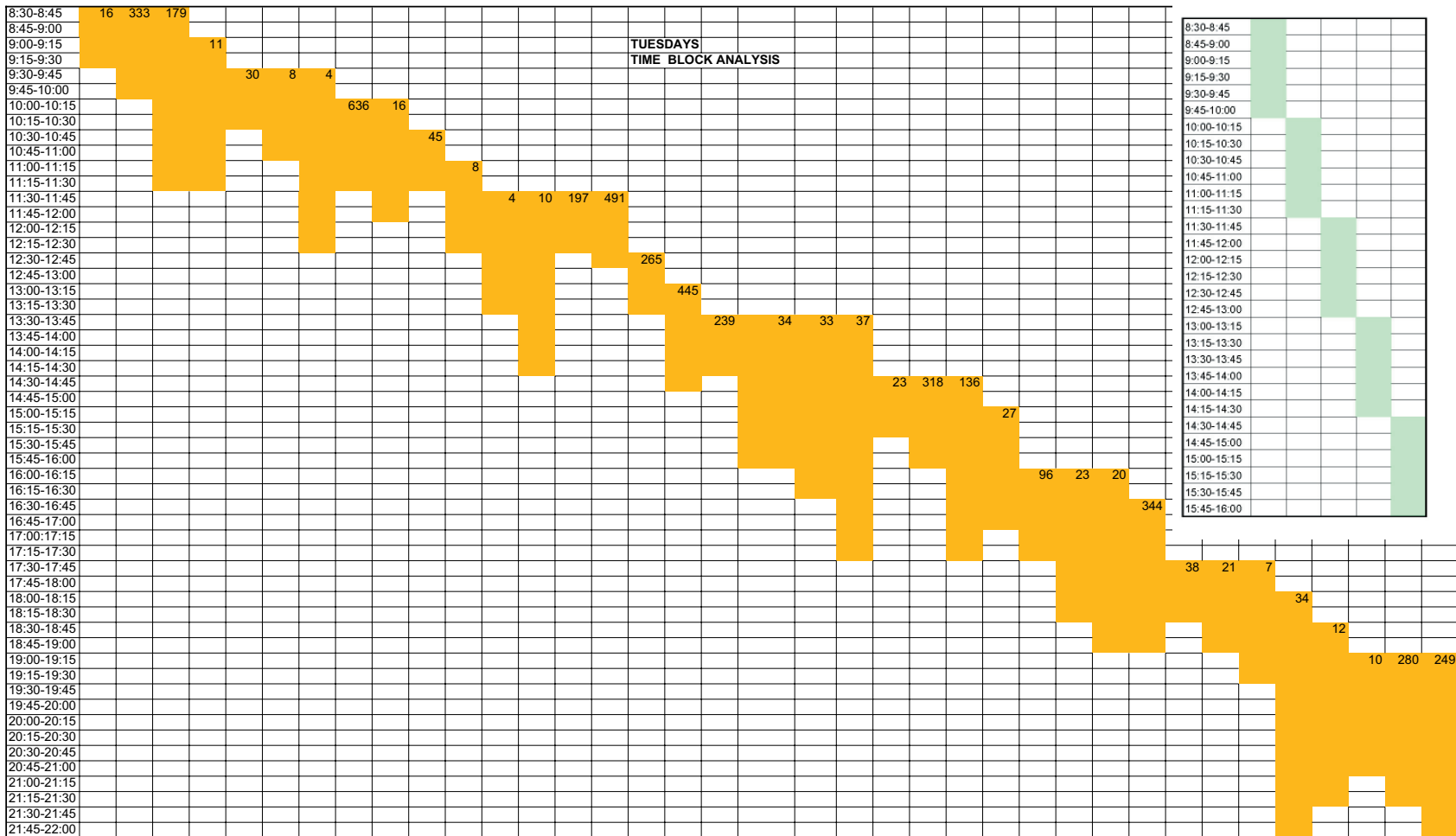


Figure 4: Start and End Times from 2003-2004 schedule. Each yellow bar represents a time block, when classes or labs start and end. The number at the top of each bar represents the number of students enrolled in the corresponding time block. Ideally, the diagram should be in the form of a staircase, whereby time blocks do not begin before the previous time block has ended. In an ideal situation (inset), all classes start and end at the same time, or occupy two time slots - in this instance two 90-minute blocks.



## 2.6 Timetable Recommendations

The following recommendations are designed to address shortcomings of the current schedule. The objective is to better utilize the current facilities outside of the hours during which the campus is busiest. A parallel benefit is a better utilization of parking facilities. An increased use of the Campus in the evenings and Fridays will also help animate the Campus.

- Currently, class times are usually “bundled”, that is, a class is scheduled at the same time on Monday, Wednesday and Friday or Tuesday and Thursday for the entire term, for example from 8:30 am to 9:20 am. Faculty (and students!) would view an 8:30 start more favourably if no commitment was required to meet at 8:30 am on multiple days (e.g. Monday, Wednesday and Friday). For example, a class would be scheduled for Monday at 8:30, but Wednesday at 9:30 am and Friday at 10:30 am.
- More classes could be scheduled in the afternoon and evening.
- More classes could be scheduled on Fridays.
- One way to encourage students and faculty to teach outside of “popular” hours may be to provide more services, activities and events on campus.
- The implementation of a standard nine-hour schedule should be explored and controls should be adopted to minimize the use of non-standard time blocks. UNBSJ has policies in place on the creation of schedules, but they are not consistently applied.
- The existing Timetable Guidelines should be revised and amended to ensure that they are applied by all.
- The above recommendations and additional guidelines should be incorporated in the design of the planned timetable system. It is important to determine what these rules should be to ensure that they can be incorporated as the software package is implemented.
- Space Management and Space Allocation Policies should be adopted, outlining processes and strategies to allocate scarce space resources among users over time – please refer to the Appendix for details, p. 145 and p. 147.



## 2.7 Scheduling Opportunities

The summer course offering can be expanded to utilize University facilities more efficiently and take advantage of the season when the Campus is most attractive. Consideration should also be given to the adoption of a three-semester system, with a full palette of courses being offered year-round. While this option merits consideration, the move to a year-round system requires extensive investigation and consultation as its impacts on staff, students and faculty would be far-reaching. Also, it must be understood that while teaching space would be used more efficiently, office and research space would still have to grow proportionately with the hiring of new faculty and staff.

### Figure 5: Sample Standardized Schedule

