



Kansas State University Manhattan Kansas State University Olathe

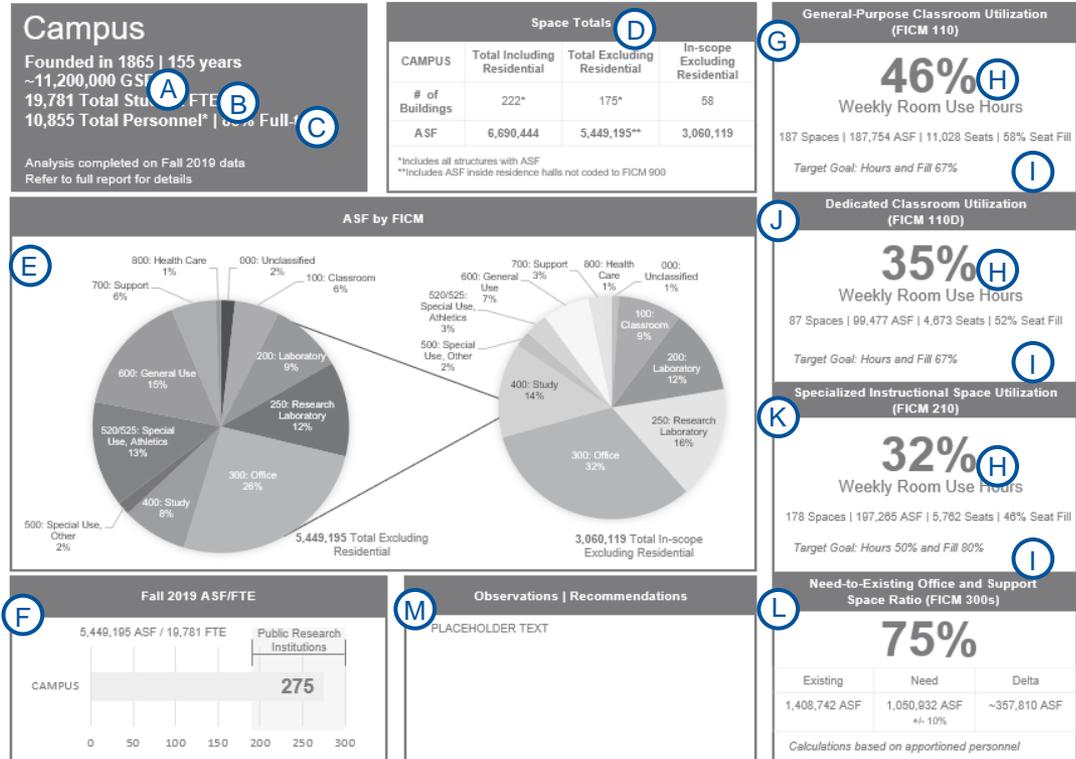


gouldevans

Kansas Board of Regents:
Systemwide Space Utilization Study

13 November 2020

Campus Snapshot Reference Key



- (A) **Gross Square Feet (GSF)** is the sum of all areas on all floors of a building, included within the outside faces of its exterior walls, including all vertical penetration areas for circulation and shaft areas that connect one floor to another. This number is an approximation as the GSF and ASF do not perfectly align due to disparate data sets.
- (B) **Student FTE = Student full-time equivalent.** This number, provided by each institution, incorporates Fall 2019 on-campus full- and part-time undergraduate and graduate students.
- (C) **Personnel Totals** are derived from human resource data as provided by each institution. The numbers exclude student employees.

- (D) **Assignable Square Feet (ASF)** is the area of space in square feet that is assignable to a specific function and/or ownership. The area of an assignable space is measured from the inside faces of surfaces that form the boundaries of that space. The numbers are extrapolated from the existing space inventory as provided by the campus.
- (E) **The Postsecondary Facilities Inventory and Classification Manual (FICM)**, published by the U.S. Department of Education, provides a taxonomy for classifying institutional space into 10 major categories and over 80 sub-categories. The ASF by major FICM category distribution shown here reflects the data in the institutional space inventory.

- (F) **ASF by FTE** is the amount of assignable square feet per full-time equivalent student. This calculation excludes residential space to provide a more direct comparison between institutions of a similar type. ASF per FTE broadly assesses how much campus space is available to conduct daily activities as compared to peers and aspirants.
- (G) **General-Purpose classrooms** are primarily used for lectures or discussions. The spaces are not configured or equipped to limit their use to a particular discipline and are centrally managed by the Registrar.
- (H) **Weekly room use hours** represent the collective percentage of the weekly scheduling window that is scheduled for instruction, across all indicated instructional spaces. The target goal is 67% for general-purpose and dedicated classrooms, and 50% for specialized instructional spaces.
- (I) **Seat fill** reflects the collective percentage of seats or stations that are occupied in an instructional space when a room is scheduled for instruction. The target goal is 67% for classrooms and 80% for specialized instructional spaces.
- (J) **Dedicated Classrooms include the following:**
 - **Departmental Dedicated Classrooms**
 These rooms are dedicated because of a particular item in the room, such as a piano in a Music classroom, or stored demonstration materials related to Anthropology or Geology that makes sharing of the space challenging.
 - **Departmental General-Purpose Classrooms**
 Based on the campus walkthroughs and course assignments, these rooms appear to be more similar to campus general-purpose classrooms, although falling under departmental control.
- (K) **Specialized Instructional Spaces** are configured and equipped for instruction in a particular discipline and are used primarily for regularly-scheduled courses.
- (L) **Need-to-Existing Office Ratio** is the amount of calculated space needed expressed as a percentage against the amount of existing office and support space available identified from the campus space inventory. The closer to 100%, the better alignment there is between calculated need and existing space.
- (M) **Observations and Recommendations** expresses areas where, based on instructional space (FICM 110, FICM 110D, FICM 210) and office space (FICM 300) calculations, there may be opportunity. These numbers are derived from the analyses presented in chapters 2 and 3 of the full report.

KSU Manhattan

Founded in 1863 | 157 years
 ~9,625,053 GSF
 16,578 Total Student FTE
 5,623 Total Personnel | 85% Full-time

Analysis completed on Fall 2019 data
 Refer to full report for details

Space Totals

KSU Manhattan	Total Including Residential	Total Excluding Residential	In-scope Excluding Residential
# of Buildings	208*	173*	67
ASF	5,787,505	4,708,544**	3,042,880

*Includes all structures with ASF

**Includes ASF inside residence halls not coded to FICM 900

General-Purpose Classroom Utilization (FICM 110)

44%

Weekly Room Use Hours

122 Spaces | 129,494 ASF | 8,716 Seats | 54% Seat Fill

Target Goal: Hours and Fill 67%

Dedicated Classroom Utilization (FICM 110D)

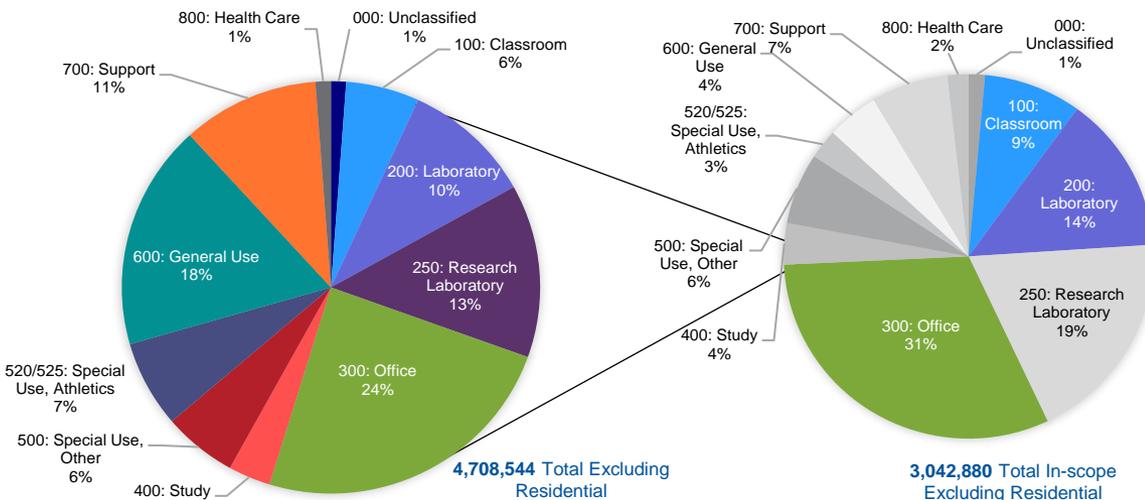
30%

Weekly Room Use Hours

124 Spaces | 113,147 ASF | 5,880 Seats | 48% Seat Fill

Target Goal: Hours and Fill 67%

ASF by FICM



Specialized Instructional Space Utilization (FICM 210)

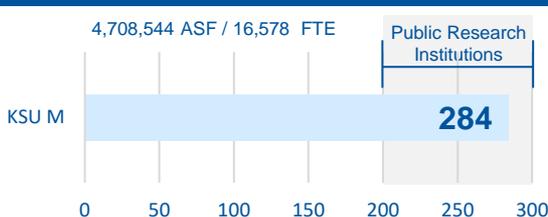
31%

Weekly Room Use Hours

142 Spaces | 200,229 ASF | 5,641 Seats | 48% Seat Fill

Target Goal: Hours 50% and Fill 80%

Fall 2019 ASF/FTE



Observations | Recommendations

- Instructional space analysis indicates a potential surplus of 94 classrooms, or approximately 70,500 ASF.
- Specialized Instructional space analysis indicates a potential surplus of 22 rooms, or approximately 26,400 ASF.
- Unclassified space may offer approximately 54,000 ASF for consolidation.
- Overall, there may be a total net opportunity of 482,000 ASF.

Need-to-Existing Office and Support Space Ratio (FICM 300s)

71%

Existing	Need	Delta
1,142,699 ASF	811,020 ASF +/- 10%	~331,679 ASF

Calculations based on apportioned personnel

KSU Olathe

Founded in 2011 | 9 years
~100,000 GSF

Student FTE: Not reported separately
42 Total Personnel | 64% Full-time

Analysis completed on Fall 2019 data
Refer to full report for details

Space Totals

KSU Olathe	Total Including Residential	Total Excluding Residential*	In-scope Excluding Residential
# of Buildings	N/A	1	1
ASF	N/A	63,121	63,121

*There is no residential space at KSU Olathe

General-Purpose Classroom Utilization (FICM 110)

43%

Weekly Room Use Hours

4 Spaces | 6,091 ASF | 188 Seats | 23% Seat Fill

Target Evening Goal: Hours 80% and Fill 67%

Dedicated Classroom Utilization (FICM 110D)

N/A

Weekly Room Use Hours

0 Spaces | 0 ASF | 0 Seats | 0% Seat Fill

Target Evening Goal: Hours 80% and Fill 67%

Specialized Instructional Space Utilization (FICM 210)

N/A

Weekly Room Use Hours

0 Spaces | 0 ASF | 0 Seats | 0% Seat Fill

Target Evening Goal: Hours 70% and Fill 80%

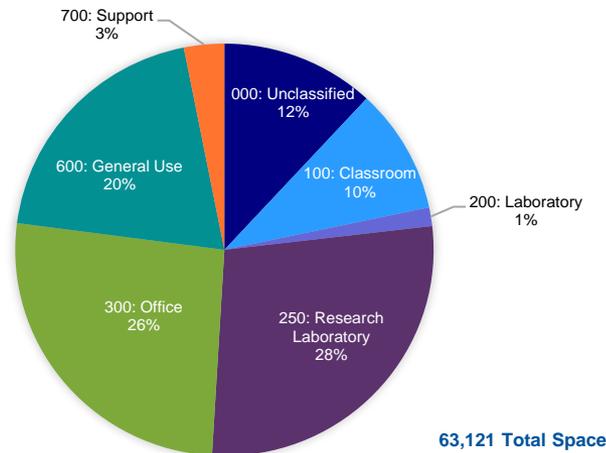
Need-to-Existing Office and Support Space Ratio (FICM 300s)

36%

Existing	Need	Delta
16,491 ASF	5,945 ASF +/- 10%	~10,546 ASF

Calculations based on apportioned personnel

ASF by FICM



Fall 2019 ASF/FTE

N/A*

*There are only 2 confirmed FTE at KSU Olathe for Fall 2019. This number fails to capture the full complement of students utilizing physical space on campus. Therefore the ASF/FTE calculation is not a true indication of spatial efficiency.

Observations | Recommendations

- Instructional space analysis indicates little opportunity for consolidation.
- Unclassified space offers approximately 7,000 ASF of opportunity for consolidation.
- Overall, there may be a total net opportunity of approximately 17,000 ASF.

1.0 Overview & Strategic Drivers

Purpose

Rickes Associates (RA) was engaged by Gould Evans and the Kansas Board of Regents to conduct a targeted space needs analysis. The focus was on instructional space utilization and office space needs with the goal of identifying potential opportunities for realignment, relocation, or consolidation of spaces. The intent of this effort is to improve functionality and promote the highest and best use of existing facilities.

This study was initiated prior to the emergence of Covid-19 and the analysis reflects data based on the Fall 2019 course schedule and the Fall 2019 to Spring 2020 academic year personnel counts. Many changes on campus have occurred as a result of the ongoing pandemic, ranging from the revision of seat counts in instructional spaces to meet social distancing guidelines, as well as the development of remote work arrangements for some University personnel. The extent to which these changes will remain in effect in the long term is currently unknown. The analysis presented here reflects the operational “status quo” for the University prior to the pandemic.

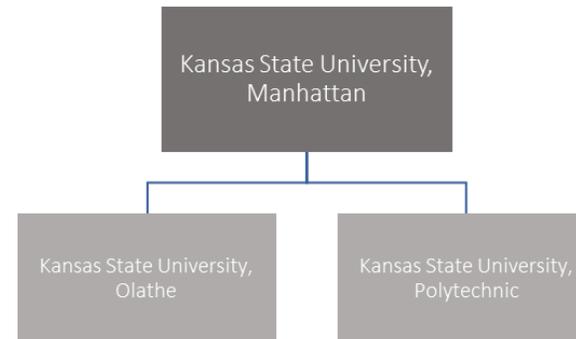
The scope of the study includes an analysis of 67 targeted buildings on the Kansas State Manhattan (KSU Manhattan) campus and the only building on the Kansas State Olathe (KSU Olathe) campus (Chapter 4) and all scheduled instructional spaces across the entirety of the Manhattan and Olathe campuses, including classrooms and teaching labs (Chapter 2). Office space distribution and needs were evaluated for the 67 in-scope buildings, as well as for the campus in its entirety at KSU Manhattan, and for the full array of space at KSU Olathe (Chapter 3).

Outcomes of the analysis will inform future space need determinations and provide a valuable foundation for successive planning efforts at KSU Manhattan and KSU Olathe.

Campus Overviews

KSU Manhattan and KSU Olathe are two of 11 campuses within the Kansas Board of Regents (KBOR) System included in this study and two of three institutions (excluding K-State Global) within the Kansas State University System. They have been combined here into a single report because the Olathe campus was commissioned to serve graduate students for continuing education and professional outreach in the greater Kansas City area. Because of its specialty and its integrated support of KSU Manhattan, the analysis is included within the structure of this report. The analysis associated with Kansas State Polytechnic is detailed in a separate report.

Figure 1: Kansas State University System



Kansas State University Manhattan

Figure 2: Kansas State University Manhattan



KSU Manhattan, founded in 1863, is the flagship university for the KSU System and is a public research university. As the nation's first operational land-grant institution, KSU Manhattan was tasked with teaching agriculture, science, military science, and engineering to any interested student. Embedded in the campus culture since its inception, "The Wildcat Way" prioritizes a commitment to service and putting others first.

In 2019, KSU Manhattan had a total on-campus enrollment of just over 16,500 FTE. The campus is spread out over about 2,300 acres in the city of Manhattan, including agriculture and research facilities.

The university has 65 academic departments distributed among nine colleges with over 250 undergraduate majors and 165 graduate degrees and certificates. The Princeton Review ranked Kansas State University in multiple categories in "The Best 286 Colleges: 2020 Edition," including number one for happiest students.

KSU is a NCAA Division I sports University within the Big 12 Conference and competes as the Wildcats. In 2012-2013 KSU became the second Big 12 school to win conference titles in football, men's basketball, and baseball in the same year.

Campus space inventory data identified a total of 173 buildings, of which 67 are being examined as part of this study. The 67 subject buildings amount to approximately 5 million gross square feet (GSF) and 3 million assignable square feet (ASF). Additional detail about the campuswide distribution of existing space is included in the space inventory analysis section later in this document.

Kansas State University Olathe

Figure 3: Kansas State University Olathe



The KSU Olathe campus, founded in 2011, is home to graduate students as they prepare for careers in biosciences and biotechnology. The campus consists of a single building and is located within the Kansas Bioscience Park. Professionals in the Kansas City metro area come to KSU Olathe and the Bioscience Park to collaborate with industry and earn a master's degree or graduate certificate.

KSU Olathe is the "first higher education facility supported by a local tax, and the ongoing tax support would make it equivalent to one of the country's largest endowments ever to higher education public institution initiative" (Kansas State Olathe).

Campus space inventory data indicates the campus has approximately 100,000 GSF and 63,000 ASF. Additional detail about the campuswide

distribution of existing space is included in the space inventory analysis section later in this document.

Strategic Drivers

Strategic drivers are key data elements that provide context for, as well as directly influence, institutional space needs. The following key strategic drivers were analyzed:

- Enrollment: historical, current, and projected
- Personnel: faculty and staffing levels, current and projected
- Space Inventory: organizational structure, space assignments, and distribution
- Instructional Space Utilization Analysis: course scheduling and space use (see Chapter 2)

These inputs are described in the following sections and collectively provide a baseline to assess the targeted space needs.

Enrollment and Personnel

Quantification of space needs for any institution is driven by the users: students, staff, and faculty (staff and faculty counts analyzed in a subsequent section). Student headcount and FTE provide the working foundation for the space needs calculations. The analysis used Fall 2019 unduplicated student headcount and FTE to calculate instructional space needs, as informed by current course scheduling patterns.

The analysis of historical and current enrollment is intended to provide a “snapshot” of current KSU Manhattan and KSU Olathe populations and an understanding of trends that may influence space needs. Data informing this analysis was provided to RA by the institution based on pre-defined data sets of student level (year) and academic level (full- or part-time).

Personnel

According to the personnel counts received from Human Resources at KSU Manhattan, there were over 5,600 people employed as of Spring 2020. Of this total, 4,759 are full-time employees, while 864 are identified as part-time.

The table below presents KSU Manhattan personnel totals grouped by major RA employment category, exclusive of students. This categorization of personnel data supports uniform comparisons between different institutions and aids in the development of space projections, especially for office spaces in particular. Please refer to the Office Space Analysis section of this report for additional information about office space distribution and calculated needs.

Figure 6: Fall 2019 to Spring 2020 Academic Year, Personnel by Type

Manhattan Personnel	Full-Time	Part-Time	Totals
Coaches	68	1	69
Faculty	1123	73	1,196
Maintenance/Service/Trades	578	20	598
Non Tenure-Track Faculty	294	119	413
Office/Library Support	735	378	1,113
Professional Administrative	158	0	158
Regular Professional Library	21	2	23
Regular Professional Staff	990	80	1,070
Safety/Security	52	44	96
Technical Support	740	147	887
Total	4,759	864	5,623

- Faculty account for the single largest personnel group in the data received, accounting for 21% of all personnel at KSU Manhattan.
- Library personnel account for the smallest personnel group, comprising less than 1% all personnel at KSU Manhattan.

Kansas State University Olathe

On-campus Enrollment

Enrollment data reported within the KSU system attributes any student with credit -hours at KSU Manhattan as a student belonging to that campus. Therefore, KSU Olathe enrollment numbers fail to capture the full complement of students utilizing physical space on campus. KSU Olathe only registers graduate students, based on provided enrollment data. In Fall 2019, KSU Olathe had a total on-campus population of 6 headcount and 2 FTE. The highest year reported was in Fall 2017 with 14 headcount students and 7 FTE. KSU Olathe projects graduate students to rise to 15 headcount and 10 FTE by Fall 2024.

Personnel

According to the personnel counts received from Human Resources at KSU Olathe, there were 42 people employed as of Spring 2020. Of this total, 27 are full-time employees.

The table below presents Olathe personnel totals grouped by major RA employment category, as applied to personnel data received for the purposes of determining order-of-magnitude projections for office space. Please refer to the Office Space Analysis section of this report for additional information about office space distribution and calculated needs.

Olathe Personnel	Full-Time	Part-Time	Totals
Faculty	4	0	4
Office/Library Support	8	5	13
Professional Administrative	9	1	10
Regular Professional Staff	3	1	4
Technical Support	3	8	11
Total	27	15	42

Space Inventory

The space inventory serves as the cornerstone of effective institutional space planning and management, and it should be continuously updated. It informs data-driven decision-making regarding capital and non-capital recommendations within the context of an overall space master plan. Maintenance of a working space inventory is an ongoing effort. The information presented here reflects a snapshot in time.

Space is typically measured in either Gross Square Feet (GSF) or Assignable Square Feet (ASF). GSF encompasses all building space, including wall thickness and mechanical spaces, as if someone were to take a tape measure and wrap it around the exterior footprint of a building. ASF is a metric that is defined as the amount of space assigned to people or programs and measured within the interior walls of that building. ASF represents the amount of usable square footage available within a building and excludes mechanical rooms, stairways, corridors, and other spaces that cannot be attributed to a specific activity (also called non-assignable space). This study uses ASF to calculate needed space as compared to existing.

A critical task at the initiation of this study was a review of the full space inventory provided by KSU. The full space inventory includes the complete array of campus space under the aegis of the University, including buildings owned by KSU Manhattan and KSU Olathe and located off-campus. RA sorted, organized, and filtered the inventory in order to focus first on those buildings coded to the city of Manhattan and then on in-scope buildings. In the case of the Olathe campus, this is a single building. The distribution of space is detailed in the sections below.

RA worked in conjunction with Gould Evans to verify a variety of inventory data. The instructional spaces were reviewed during walkthroughs conducted by Gould Evans Architects, who answered data questions and examined qualitative information including:

- Seat or station count
- Furniture style
- Room anomalies such as columns or other obstructions

- Confirmation of room type (for those rooms not coded as classrooms, but where instruction was assigned)

During walkthroughs, Gould Evans also qualitatively examined select office spaces and flagged any discrepancies with inventory data or floor plans. Although ASF was not confirmed, areas that appeared incorrect were noted for future reconciliation by the campus.

Due to the impact of COVID-19, seat counts and furniture style could not always be confirmed as seats had been removed or space had been redesigned.

Space Categorization by FICM

Facilities Inventory and Classification Manual (FICM) coding provides a coding structure for campus space divided into 10 standard categories and over 80 sub-categories. The taxonomy can support intra-institutional comparisons as well as internal fit studies.

The following table identifies the 10 major FICM categories and the categories within the purview of the study.

Figure 7: FICM Space Type

Main Space Code	Functional Space Type	Description	Calculation
100: Classrooms and Support Space	110: Classrooms	General-purpose instructional spaces	Detailed analysis of weekly hours utilized, seat fill, and ASF per seat. Classrooms campus wide, specialized instructional spaces by program/discipline.
	200: Specialized Instructional and Support Space	210: Instructional Laboratory	Specialized instructional spaces
	220: Open Laboratory	Drop-in labs / not formally scheduled	Calculated as overall campus need at the aggregate level
	250: Research Laboratory	Space dedicated to research	Calculated at the aggregate level based on faculty counts
300: Office and Support Space	310: Office	Academic/ administrative offices and related spaces	Calculated at the aggregate level by department/unit based on personnel counts. Space needs will be identified as a "pool" of space that will include office, support, etc. for each Unit/ Department where possible
	315: Support		
	350: Conference Rooms		
400 to 800 Space	400: Study/Library	Library space Study spaces	Calculated at the aggregate level based on enrollment and personnel information and associated space multipliers
	500: Athletics & Special Use	Athletic, media, demonstration spaces	
	600: Student & General Use	Dining, bookstore, student activities spaces	
	700: Facilities Space	Shops, storage, mailroom, printing services	
	800: Health Services	Campus healthcare	

■ Order-of-magnitude analysis

□ Detailed analysis

Kansas State University Manhattan

Space Distribution by FICM Space Category

The total campus space inventory for the city of Manhattan identifies 173 buildings with assignable square footage and 4,708,544 ASF of space. Additionally, KSU Manhattan has 1,078 ASF of Residential space, which is excluded in the diagrams below.

This study focuses on 67 buildings occupying 3,042,880 ASF. Within this set of subject buildings, classrooms (FICM 100), Laboratories (FICM 200), and Office space (FICM 300) are analyzed in detail (see chapters 2 and 3 of this report). The next two figures summarize the space distribution by FICM for the full inventory as compared to the 67 in-scope buildings.

Figure 8: Percentage Distribution of Space by FICM Category

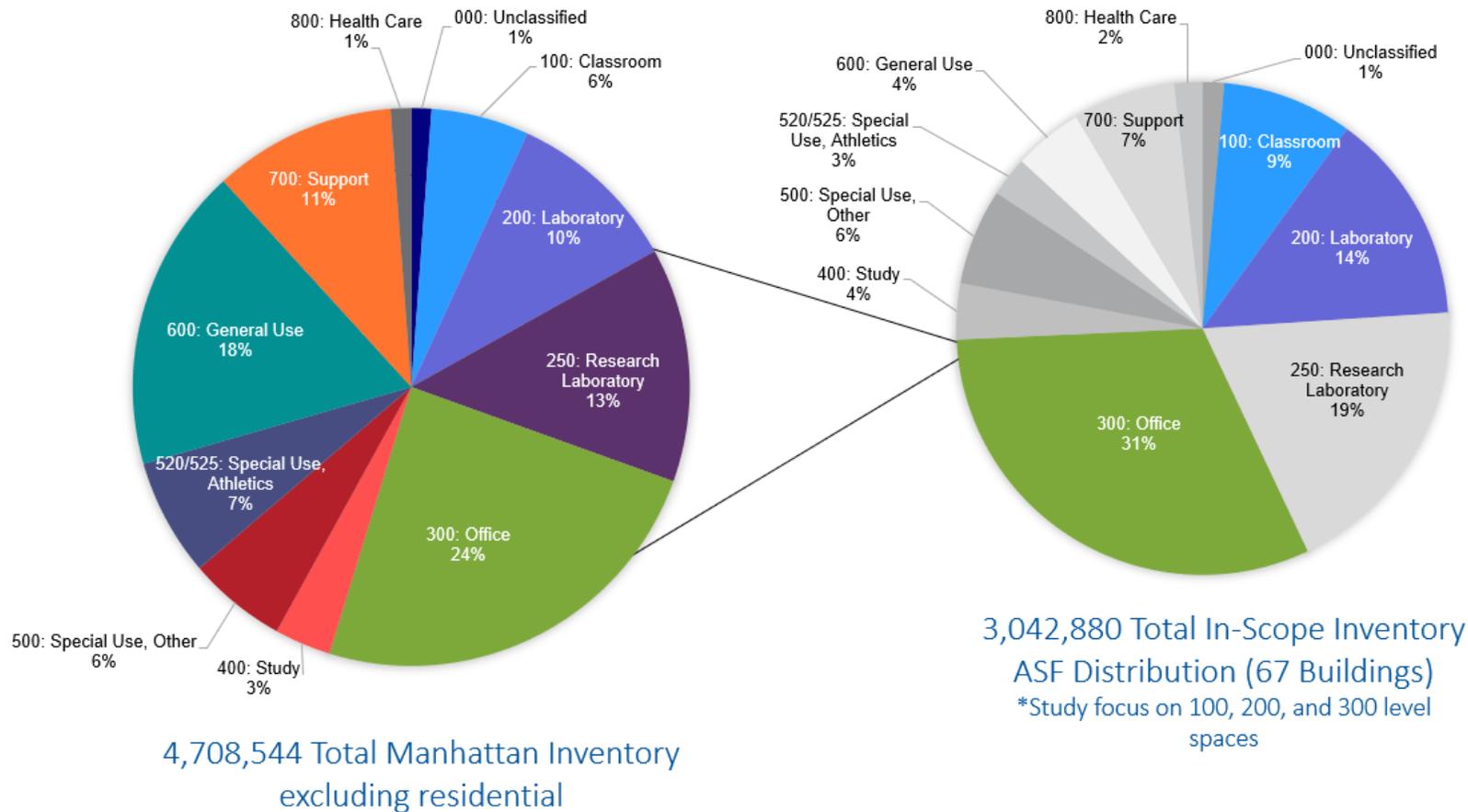


Figure 9: Numerical Distribution of Space by FICM Category

Kansas State University Manhattan		
	Total Space Inventory*	In-Scope Buildings (67)
000: Unclassified	54,825	43,392
100: Classroom	267,345	260,757
200: Laboratory	474,201	425,353
250: Research Laboratory	639,178	577,932
300: Office	1,142,699	952,694
400: Study	153,709	111,817
500: Special Use, Other	269,716	191,908
520/525: Special Use, Athletics	320,406	79,550
600: General Use	831,569	138,753
700: Support	498,958	205,281
800: Health Care	55,938	55,443
Total	4,708,544	3,042,880

Green= Most space; Red= Least Space

*Includes only space as coded to the City of Manhattan

Total Campus FICM Distribution

- The largest category of space in the KSU Manhattan inventory belongs to Office Facilities (300) representing just over 1.1 million ASF of assignable space and accounting for nearly 24% of all assignable square footage.
- The smallest category of space in the KSU Manhattan inventory is attributed to Unclassified (000) occupying 54,825 ASF and approximately 1% of campus space.
- KSU Manhattan has 831,569 ASF of General Use (600) space, accounting for 18% of the overall campus inventory.

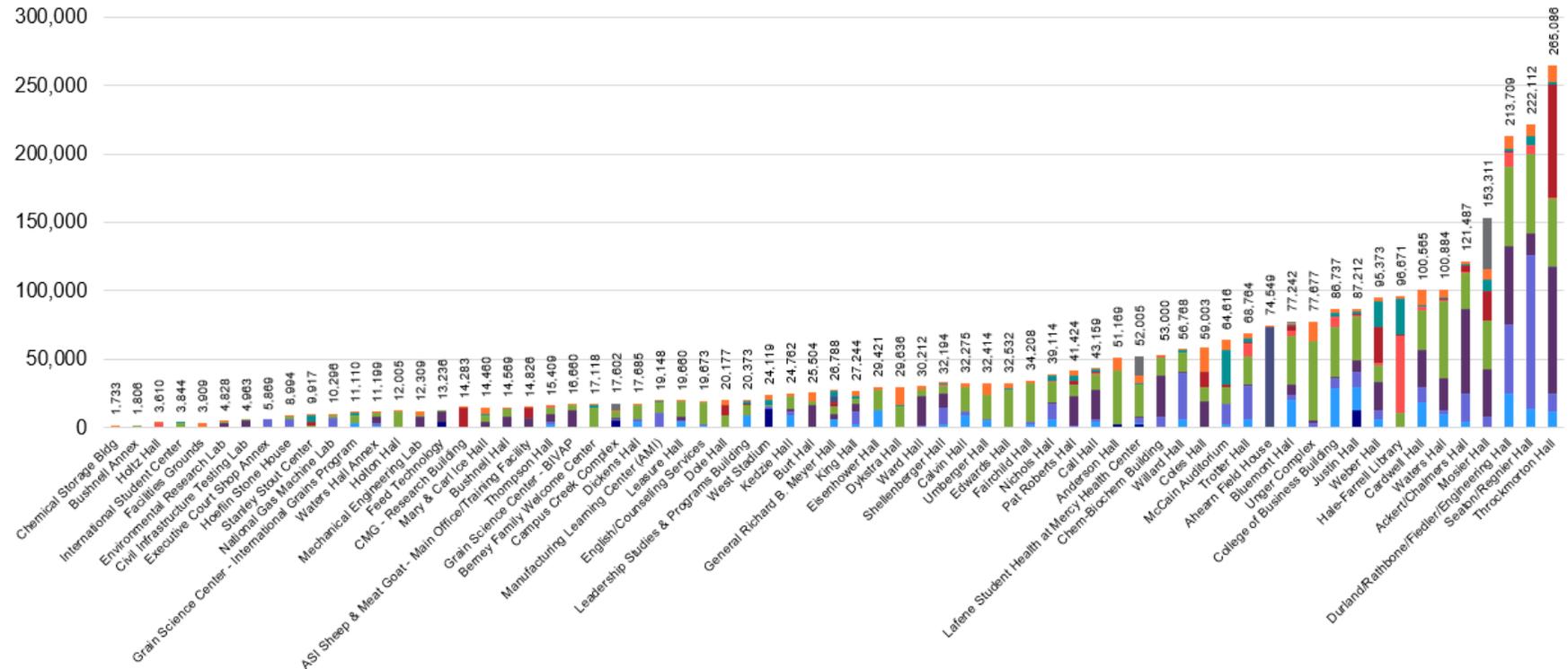
In-Scope Buildings FICM Distribution

- 67 buildings on the KSU Manhattan campus were included in this analysis. Together, they equate to 3,042,880 ASF. Compared to the overall campus total of 4.7 million ASF and 173 buildings, this analysis reviews just over half of all assignable square footage, and just over one-third of all buildings.
- In addition to the 67 buildings that are the focus of this analysis, another three buildings held instructional spaces that were formally scheduled in Fall 2019. Although the instructional analysis includes these spaces, the buildings are not part of the overall review. Please refer to the Instructional Space Utilization Analysis section of this report for additional detail.
- Together, space assigned to Classroom Facilities (100) and Laboratory Facilities (200) represents 23% of the reviewed spaces.
- The largest category of space analyzed within the scope of the 67 identified buildings is Office (300) occupying 952,694 ASF. This mirrors the Total Space Inventory distribution.
- The majority of Study (400) space falls within the confines of the in-scope buildings.
- Approximately 90% of all Research Laboratory (250) space falls within the in-scope buildings
- Most campus General Use (600) space falls outside the buildings in this analysis.

Space Distribution by In-Scope Buildings

The following graphic summarizes the distribution of existing space by building and FICM space category. Each color corresponds to the categories outlined in the pie chart above. For greater detail on the 67 in-scope buildings, refer to Chapter 4 of this analysis.

Figure 10: Distribution of Space (ASF) by Building and FICM Space Category, 67 Buildings in Scope



- The largest building represented is Throckmorton Hall, accounting for 265,086 ASF.
- The smallest building is the Chemical Storage Building, with 1,733 ASF.
- Many of the buildings represented in the space inventory extract are composed of spaces belonging to multiple FICM space categories.
- Almost 470,000 ASF of instructional space was reviewed in 42 out of 67 buildings included in this study. The detailed utilization of classroom and laboratory spaces is in the Instructional Space Utilization Analysis section of this report.
- 952,694 ASF of office and office support space is distributed throughout 64 of the 67 in-scope buildings. Further information specific to office space distribution is available in the Office Space Analysis section of this report.

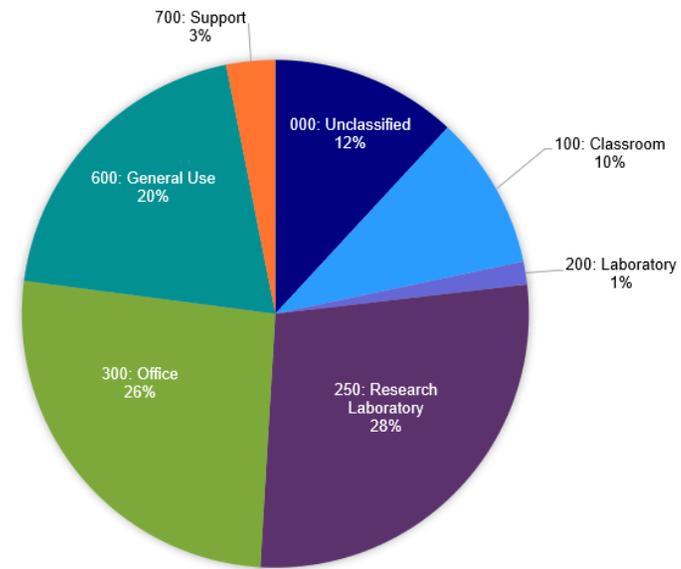
Kansas State University Olathe

Space Distribution by FICM Space Category

The total campus space inventory identifies one building and 63,121 ASF of space. The next two figures summarize the space distribution by FICM percentage and total.

- The largest category of space in the KSU Olathe inventory belongs to Research Laboratory Facilities (250) representing 17,540 ASF of assignable space and accounting for 28% of all assignable square footage.
- The smallest category of space in the KSU Olathe inventory is attributed to Laboratory (200) representing just under 1,000 ASF of space and only 1% of the total assignable square footage.
- KSU Olathe does not have any space identified as Study (400), Special Use (500), or Athletics (520/525).
- KSU Olathe has 7,507 ASF of Unclassified (000), accounting for 12% of the overall campus inventory.

Figure 11: Percentage Distribution of Space by FICM Category



63,121 Total In-Scope Inventory ASF
Distribution (1 Building)

*Study focus on 100, 200, and 300 level spaces

Figure 12: Numerical Distribution of Space by FICM Category

Kansas State University Olathe	
	Total Space Inventory
000: Unclassified	7,507
100: Classroom	6,189
200: Laboratory	922
250: Research Laboratory	17,540
300: Office	16,491
400: Study	0
500: Special Use, Other	0
520/525: Special Use, Athletics	0
600: General Use	12,504
700: Support	1,968
800: Health Care	0
Total	63,121
Green= Most space; Red= Least Space	

Summary

In Fall 2019, KSU Manhattan enrolled approximately 16,578 FTE and KSU Olathe enrolled 6 graduate students, although as noted previously, it is likely not all students physically on the Olathe campus are included in this count. Individually, KSU Manhattan and KSU Olathe supported 5,623 and 42 personnel respectively. Within the purview of this scope, there is more than 3 million ASF across the two locations. Jointly, these key inputs provide the foundation upon which a targeted space needs assessment can be developed

Chapter 2

Instructional Space Utilization Analysis

2.0 Instructional Space Utilization Analysis

Introduction and Methodology

The instructional space utilization analysis determines how current instructional space is used according to generally accepted metrics. The resulting recommendations identify the appropriate number and assignable square footage (ASF) of instructional spaces needed based upon Fall course data and associated institutional enrollment.

The following sections identify the data collection and analysis process, the metrics and guidelines applied, and the resulting findings and recommendations for both Kansas State University Manhattan and the Olathe Campus.

Instructional Space

Instructional spaces are categorized into general-purpose classrooms (GPCR) or specialized instructional (SI) spaces (teaching labs). These groupings reflect the typical lecture- and lab-style teaching and learning environments, respectively.

General-purpose classrooms are primarily used for lectures or discussions. These spaces are not configured or equipped to limit their use to a particular discipline. At some institutions, additional classroom-type spaces are also analyzed, such as dedicated/departmental general-purpose classrooms or associated conference and meeting rooms, to understand the breadth of spaces used for instruction on campus.

Specialized Instructional spaces, however, are configured and equipped for instruction in a particular discipline and used primarily for regularly-scheduled courses. There are various types of teaching labs ranging from the traditional science labs to art studios to culinary kitchens.

Each space type is analyzed against fit/capacity, occupancy, and hour utilization metrics by room and building. The outcome provides a recommended range of rooms and associated ASF needed to support in-person credit-bearing instruction.

Instructional Course Data

The Kansas State University Manhattan (KSU Manhattan) campus and the Kansas State University Olathe (KSU Olathe) campus provided Fall 2019 course scheduling information at the census date, the last day for add/drop. The file included the following data points: course section number, room assignment, seat count, days scheduled, start and end time, enrollment, and general course description. The data was "scrubbed" to eliminate courses with missing elements such as days, times, locations, enrollment, etc.

The instructional spaces were reviewed during walkthroughs conducted by Gould Evans, who answered data questions and examined qualitative information including:

- Seat or station count
- Furniture style
- Room anomalies such as columns or other obstructions
- Confirmation of room type (for those rooms not coded as classrooms, but where instruction was assigned)

Information collected from the walkthroughs, the scrubbed course data, and the square footage data extracted from the space inventory, were used to update and augment the course data file to reflect the confirmed number of GPCR and SI spaces.

Due to the impact of COVID-19, seat counts and furniture style could not always be confirmed as seats had been removed or space had been redesigned.

Instructional Space Metrics

This section presents a review of the statistical methodology used to analyze instructional space and course scheduling data and identifies applicable planning guidelines. The statistical methodology applied by RA to the instructional space utilization analysis is widely used and accepted in higher education.

The three metrics used to determine how well an institution can satisfy instructional demand are:

1. Fit/Capacity: amount of assignable square footage per seat or station,
2. Occupancy: percent of seats or stations occupied when a room is scheduled, (the term “seat occupancy” is used for classrooms while “station occupancy” applies to teaching lab/SI spaces), and
3. Hour utilization: percent of hours scheduled relative to the scheduling window.

The metrics referenced here are planning factors and not to be construed as design guidelines.

All GPCR and SI spaces have been reviewed according to the applicable metrics. Classroom and SI spaces are examined separately, given the varying planning guidelines that apply to each of the three metrics.

- The analysis is on a room-by-room basis to identify over- and underutilized spaces relative to fit, occupancy, and hour utilization.
- The outcome of the analysis identifies the number of spaces, capacities, and ASF needed to support the current instructional load.
- Existing findings are based only on Fall course data with no discussions or input related to programmatic needs.

Fit/Capacity (Seat or Station Size)

The amount of space allocated to each student in an instructional space is referred to as seat size for classrooms and station size for SI spaces.

- This metric is calculated by dividing the room's ASF by the number of seats or stations in the room.
- The ASF guideline varies according to room style (furniture and layout) for classrooms, or discipline for SI labs.
- General-purpose classrooms may range from 12 to 15 ASF/seat in a sizable lecture-style space (101 or more seats), from 20 to 25 ASF/seat for typical flat floor classrooms, to 35 to 40 ASF/seat in flexible or collaborative spaces.
- There are no applicable averages to apply to the SI labs as the space requirements are discipline-specific and can vary significantly from 40 ASF/station in a computer lab to 100+ ASF/student in a dance studio, for example.

Occupancy

Seat or station occupancy is the percent of seats/stations occupied in an instructional space when it is scheduled for instruction.

Classrooms

- The suggested occupancy guideline is 67% for the daytime window for classrooms. This allows for some seating flexibility class-to-class and during the add/drop period. This is an average, and lower and higher occupancy rates will exist on a room-by-room basis.
- Lecture halls with 101 seats or more generally have an occupancy goal of 80% or higher. These larger instructional rooms are expensive to run (lighting, HVAC, etc.) and should be scheduled and filled efficiently.

Specialized Instructional Spaces

- SI spaces generally have prescribed capacities based on the type of instruction, safety guidelines, and the level of instructor supervision, among other factors.
- Because the station count is *consistent*, and many of these labs have high capital costs, a target fill rate of 80% is applied.

Hour Utilization

The weekly room hour utilization rate is the percent of the weekly scheduling window during which that space is scheduled for instruction.

An institution's "scheduling window" refers to that block of time within which it is possible to schedule all or most coursework. Since weekly room hour utilization rates are calculated based on the institution's scheduling window, it is essential to define this window's hours and the division between day and evening.

The defined scheduling window has a direct impact on the total number of instructional spaces required. The more compressed the scheduling window, i.e., the fewer the number of hours available for scheduling, the more instructional spaces required. Similarly, when scheduling is artificially compressed by concentrating courses during peak periods, the result is that many rooms lay fallow during other times.

Traditional daytime scheduling windows generally range from 30 hours per week (community college) to 50 hours per week (research institution). KSU Manhattan, with a 48-hour weekday schedule, falls comfortably within the latter range.

Classrooms

The target utilization guideline is to schedule 67 percent of the available daytime hours, although institutions may prefer higher or lower rates, on average. The 67 percent is the equivalent of 32 hours of the 48-hour official daytime scheduling window. Since classroom sizes, amenities, and course sizes all vary, this flexibility allows the

Registrar to optimize potential matches between course needs and available classrooms.

There are several other reasons that the 67 percent utilization rate is considered standard in academic planning, including:

- Additional capacity is available at the start of a semester when the highest number of course changes occur.
- Special and extracurricular events can be scheduled in classroom space.
- Faculty are more likely to obtain some of their preferred teaching spaces.
- Classrooms can "air out" between uses.
- Access is available to accommodate unanticipated maintenance.
- Scheduling flexibility is provided throughout the semester.

Specialized Instructional Spaces

The standard scheduling guideline for specialized instructional spaces is 50 percent of the defined daytime scheduling window. This allows for:

- Set up and break down of experiments, material, and/or equipment.
- Student access to do independent study outside of scheduled instruction.

Adherence to the guidelines associated with these three variables provides credible and defensible findings to support the planning and prioritization of instructional space needs. It also will help KSU Manhattan and Olathe to appropriately realign instructional space needs on campus, as necessary.

The utilization findings for KSU Manhattan are detailed next, while the findings associated with the four instructional spaces at KSU Olathe are addressed at the end of the chapter.

Instructional Space Utilization Analysis: KSU Manhattan

The following section summarizes the utilization findings for KSU Manhattan’s general-purpose classrooms based on Fall 2019 course data. Detailed room-by-room results can be found in the *Instructional Appendices*.

At KSU Manhattan, the weekly *daytime* scheduling window is 48 hours (7:30 a.m. to 5:30 p.m. on Monday/Wednesday/Friday, and 8:05 a.m. to 5:30 p.m. on Tuesday/Thursday).

Figure 1: Daytime Scheduling Window

Days	Day Start	Day End	Daily Hours	Weekly Hours
MWF	7:30 AM	5:30 PM	10.00	30.00
TR	8:05 AM	5:30 PM	9.42	18.83
Daytime Scheduling Window				48.83

A total of 122 general-purpose classrooms were available for scheduling in Fall 2019 based on the course data, inventory, and walkthrough. The spaces encompassed 129,494 ASF and contained 8,716 seats spanning 24 buildings across campus.

The following table summarizes the distribution of the 122 classrooms by capacity range.

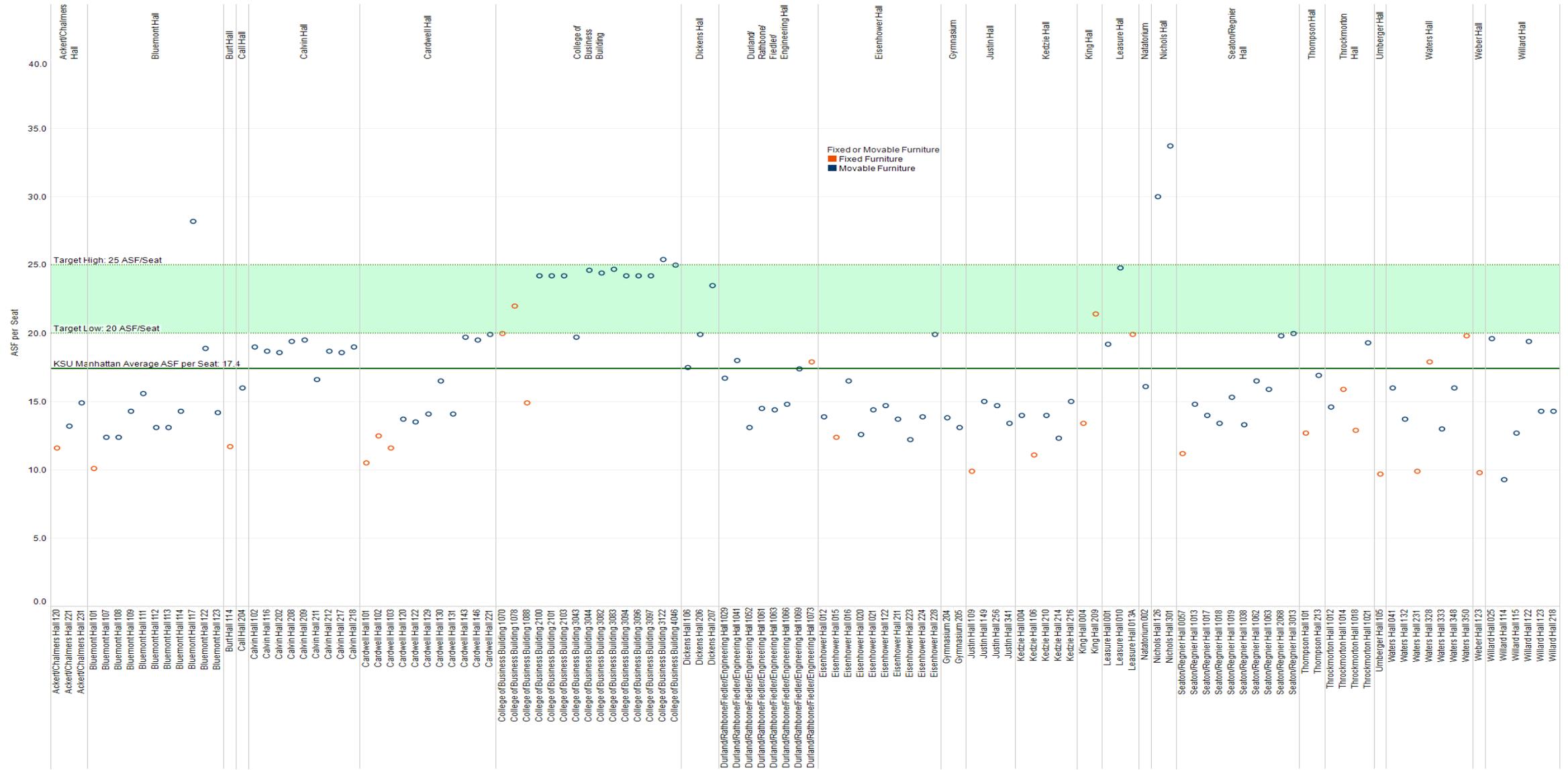
Figure 2: Classrooms and ASF per Seat

Capacity Range	Rooms	ASF	Seats	Average ASF/Seat
1 to 20	-	-	-	-
21 to 30	15	6,791	405	16.8
31 to 40	21	11,880	770	15.4
41 to 50	52	46,307	2,450	18.9
51 to 60	4	3,914	233	16.8
61 to 70	3	3,197	200	16.0
71 to 80	2	2,313	155	14.9
81 to 90	6	8,347	519	16.1
91 to 100	1	1,364	92	14.8
Subtotal, 100 or Fewer	104	84,113	4,824	17.4
101 to 125	3	4,809	320	15.0
126 to 150	-	-	-	-
151 to 175	2	4,355	324	13.4
176 to 200	5	11,527	943	12.2
201 to 250	3	6,660	683	9.8
251 to 300	2	5,443	519	10.5
301 to 350	2	8,220	652	12.6
351 to 400	-	-	-	-
401 to 450	-	-	-	-
451 to 500	1	4,367	451	9.7
Subtotal, 101 or More	18	45,381	3,892	11.7
Grand Total	122	129,494	8,716	14.9

- The majority of spaces seat 41 to 50 students.
- A total of 18 rooms hold 101 or more students.
- All 100-or-fewer-seat rooms show low average square footage per seat or 17.4 ASF/seat. This suggests that the rooms have too many seats relative to the square footage of the room.
- Rooms with reduced ASF/seat (less than the target metric of 22 ASF/seat) have reduced flexibility, limited movement between the rows, and do not accommodate the amount of "stuff" students bring, particularly in colder climates.

The following graph plots each of the 122 classrooms by ASF/seat and building. The more ASF per seat — within reason — the more flexible the space in its ability to support changing pedagogies.

Figure 3: ASF per Seat for Individual Classrooms



Average ASF/seat based on rooms seating 100 or fewer stations

- The rooms are relatively distributed on campus across 44 buildings. Bluemont Hall, College of Business, Eisenhower Hall contained 10 or more rooms each.
- The ASF/seat ranges from a low 9.1 in Waters Hall 231 (a fixed-seat lecture hall with 195 seats) and Willard Hall 114 (235 moveable seats), to a high of 33.7 in Nichols Hall 301 (a 1,011 ASF room with 30 movable seats).
- On average, Umberger Hall, housing a large auditorium, has the lowest building average ASF per seat at 9.7, while Nichols Hall has the highest building average at 31.6 ASF/seat.

Scheduling

Adherence to standard time blocks is a critical factor in effective instructional space utilization as it prevents courses from "running into" other schedulable standard blocks and precluding their usage. It is also a key factor in enabling students to create efficient course schedules. However, there will always be some "out-of-grid" courses due to pedagogical requirements.

Time Blocks

KSU Manhattan's 48-hour daytime scheduling window supports 1,196 courses and 2,630 hours of instruction.

- Of the 1,196 total courses, 67% (813) were assigned to 16 of the 17 standard blocks. One block was unused, and one minimally scheduled (7:30 a.m. to 8:20 p.m.).
- The Tuesday/Thursday schedule is relatively aligned with start times on Monday/Wednesday/Friday to allow for courses to end before 5:30 p.m., the official start of evening classes.
- The remaining 383 scheduled courses were slotted into the 155 non-standard time blocks across the week.

Figure 5: Standard Scheduling Grid (17 standard blocks)

MWF			TR		
Start	End	Courses	Start	End	Courses
7:30 AM	8:20 AM	1			
8:30 AM	9:20 AM	50	8:05 AM	9:20 AM	40
9:30 AM	10:20 AM	88	9:30 AM	10:45 AM	80
10:30 AM	11:20 AM	81			
11:30 AM	12:20 PM	76	11:30 AM	12:45 PM	72
12:30 PM	1:20 PM	58			
1:30 PM	2:20 PM	67	1:05 PM	2:20 PM	77
2:30 PM	3:20 PM	40	2:30 PM	3:45 PM	59
3:30 PM	4:20 PM	9	3:55 PM	5:10 PM	15
4:30 PM	5:20 PM	0			
Total		470			343

Courses by Day

At KSU Manhattan, the 1,196 courses were scheduled for 2,630 hours during the weekly daytime window. Historically most courses were assigned to a three-day per week combination of Monday/Wednesday/Friday, and a two-day per week combination of

Tuesday/Thursday. However, there has been a growing preference for two-day schedules within institutions of higher education. KSU Manhattan has 43 percent of its standard course schedule allocated to two-day meetings (Monday/Wednesday at 14% and Tuesday/Thursday at 29%).

The following identifies the distribution of courses by all-day meeting combinations for both in- and out-of-block schedule. Standard **day combinations** are highlighted in Figure 6A.

Figure 6A: Courses by Meeting Day Combinations

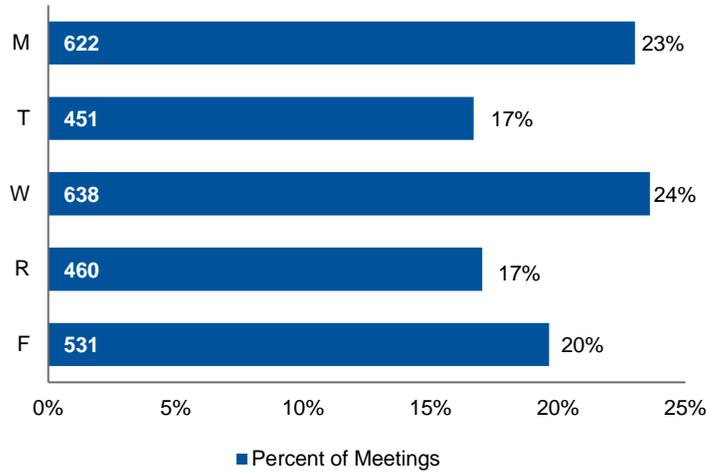
Day Combinations	Daytime Courses	Percent of Day-time Courses
MWF	474	39.6%
TR	399	33.4%
MW	95	7.9%
R	49	4.1%
T	39	3.3%
M	39	3.3%
W	31	2.6%
F	31	2.6%
WF	25	2.1%
MTWR	12	1.0%
MF	1	0.1%
MTW	1	0.1%
Grand Total	1,196	100.0%

12 combinations

- Overall, 12 meeting day combinations were used, ranging from the traditional Monday/Wednesday/Friday combination (474 courses) to single-day meetings (189 individual courses).

When instruction is viewed by day of the week (6B), it would be anticipated that each day would show a 20% utilization rate. KSU Manhattan makes overall good use of its days, including Friday, with 531-course meetings occurring. Friday use shows 20% overall utilization, mainly driven by the MWF and additional single Friday meetings.

Figure 6B: Number and Percent of Course Meetings by Day of Week



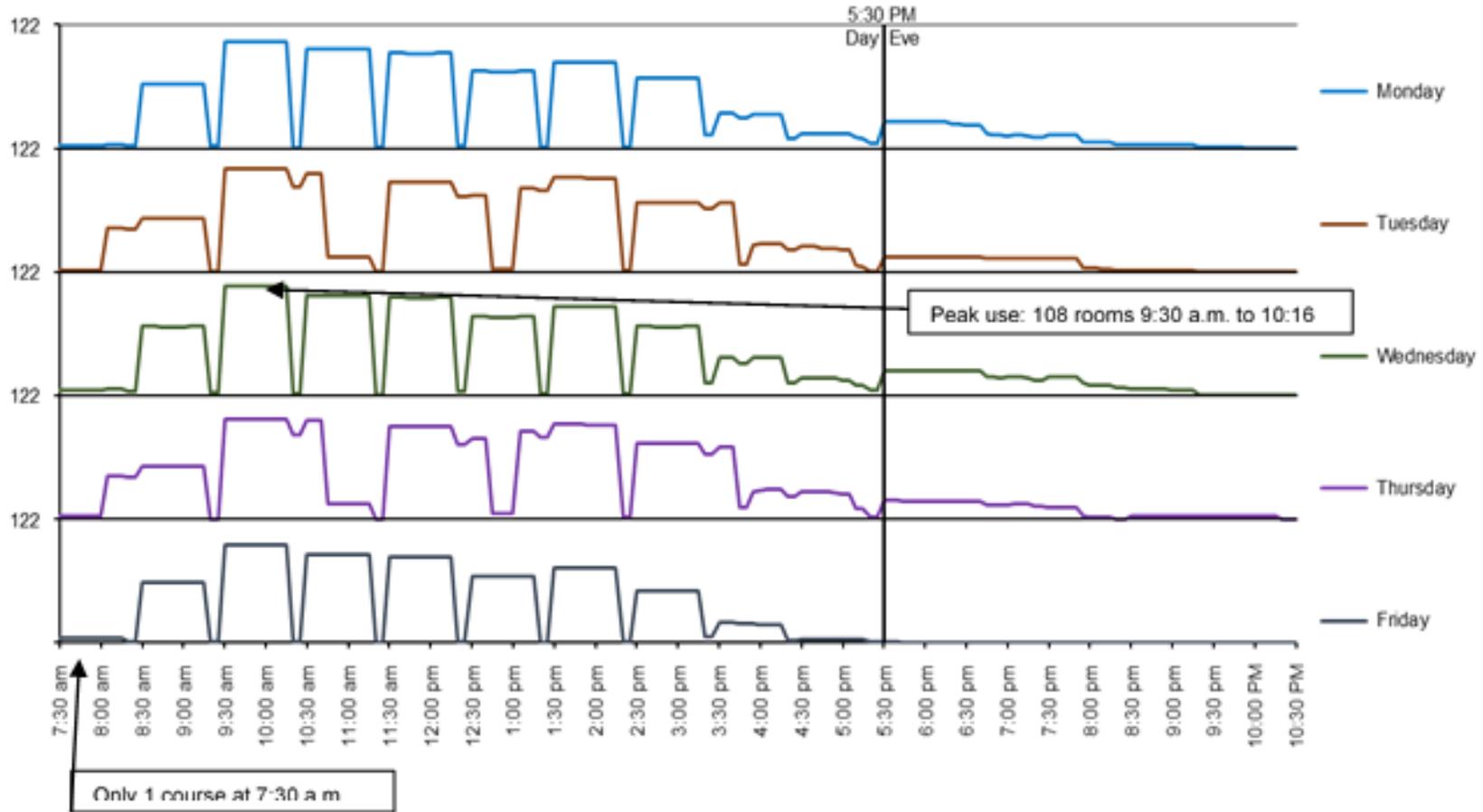
As the number of course meetings increase on any given day, scheduling flexibility declines as a higher number of classrooms are in use.

Classroom Utilization by Day and Time

The fundamental assumption in the calculation of classroom need is scheduling courses *evenly* throughout the day and week. Many campuses generally show intensified use during "prime time" between 9:00 a.m. and 2:00 p.m. Monday through Thursday, with low use on the "shoulders" (early morning or late afternoon), and frequently accompanied by minimal use on Friday.

The chart below presents the number of classrooms in use by day by five-minute intervals during Fall 2019, with the demarcation between day and evening identified. The peak use was Wednesday, with 108 rooms in simultaneous use.

Figure 7: Number of Classrooms in Use Monday through Friday, by Five minute Intervals (n=122)

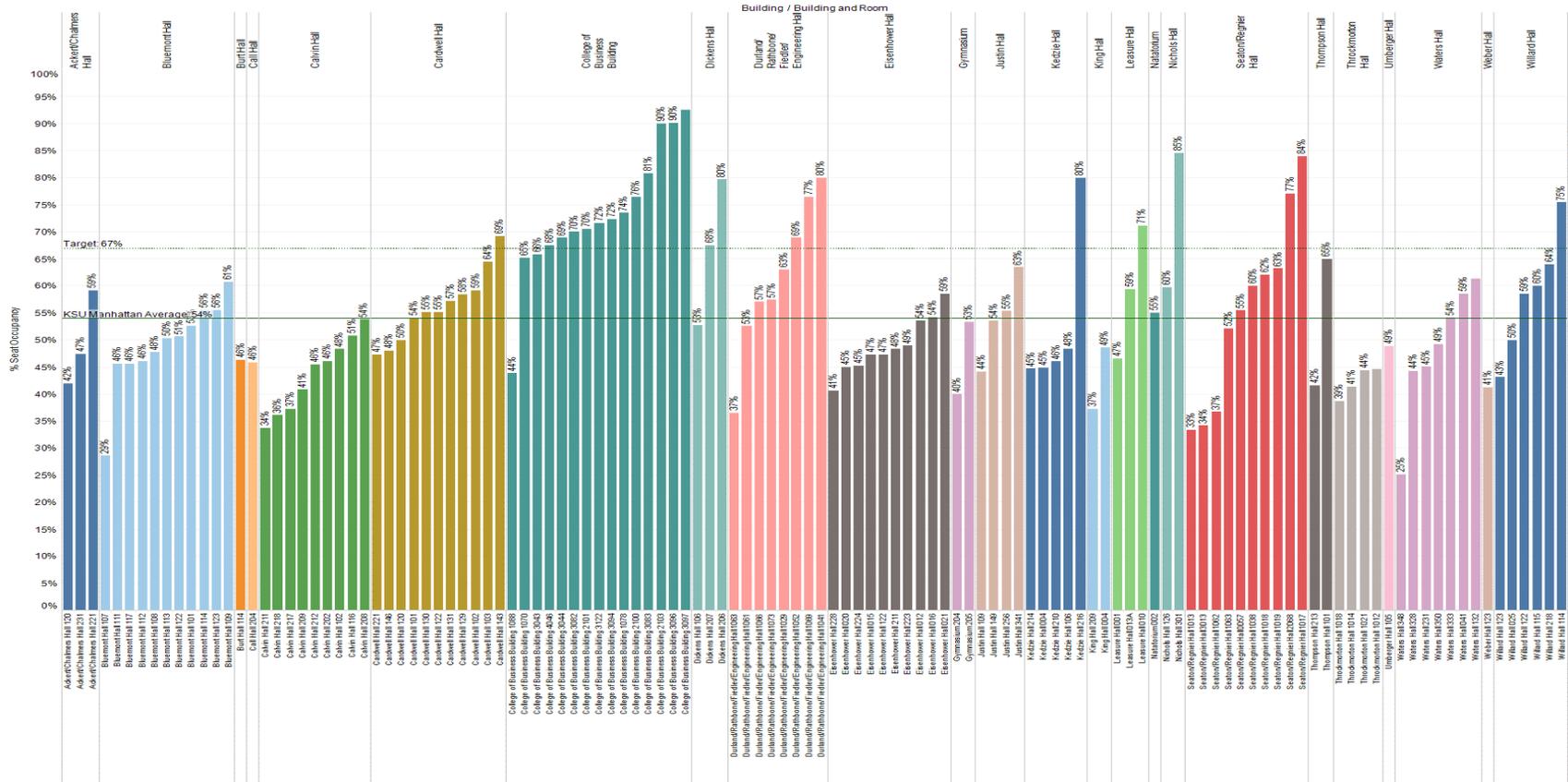


Although officially course scheduling begins at 7:30 a.m. and 8:05 a.m., practice shows courses begin at 8:00 or 9:30 a.m. and end, for the majority, by 3:30 p.m. This effectively shortens the scheduling window to a 35-hour week. These schedules are more reflective of a small liberal arts institution.

Occupancy

The following chart presents the average seat occupancy for each classroom by building.

Figure 8: Classroom Seat Occupancy by Building and Room (n-122)



- KSU Manhattan’s classrooms had an overall average of 54% of their seats filled when the rooms were scheduled. This is below the target guideline of 67% fill, indicating misalignment of course size to room capacity, leading to inefficiencies.
- Low seat occupancy must be tempered by the ASF per seat. A room that is “tight” with too many seats for the square footage of the room may be counterbalanced by an artificially low occupancy rate.
- Building averages ranged from an average seat occupancy rate of 40% in Throckmorton Hall (19 classrooms) to 71% in the College of Business Building (24 classrooms).
- Among the individually scheduled rooms, seat occupancy ranged from a low of 7% in West Stadium 117 (a 150-seat classroom with seven courses enrolling 4 to 27 students) to a high of 100% in Ackert/Chalmers Hall 228 (a 28-seat room) and Justin Hall 325 (a 25-seat room), each with one course.

General-Purpose Classroom Summary

The following table summarizes the distribution of the 122 classrooms by building and capacity and indicates average hour utilization, seat occupancy, and ASF per seat. Guidelines for average hour utilization and seat occupancy are provided at the top of their respective columns.

Figure 9A: All Classrooms Summary Findings by Building and Capacity Category

Numbers in **red** are 10% or more below guideline, and those in **blue** are 10% or more above guideline.

Seat Range	Ackerly/Chalmers Hall	Bluemont Hall	Burt Hall	Call Hall	Calvin Hall	Cardwell Hall	College of Business Building	Dickens Hall	Durland/Rathbone/Fiedler/Engineering Hall	Eisenhower Hall	Gymnasium	Justin Hall	Kedzie Hall	King Hall	Leasure Hall	Natorium	Nichols Hall	Seaton/Regnier Hall	Thompson Hall	Throckmorton Hall	Umberger Hall	Waters Hall	Weber Hall	Willard Hall	Rooms	Hour Utilization	Seat Occupancy	ASF per Seat	
21 to 30		2							2		2		1				1	5		1					1	15	28%	65%	16.8
31 to 40		3				2		1		8			1		1		1	1		1			1	1	21	47%	49%	15.4	
41 to 50		5		1	8	5	11	2	3	1		3	1	1	1	1		2	1			3		3	52	44%	59%	18.9	
51 to 60	1				1		1															1			4	46%	43%	16.8	
61 to 70						1			1									1							3	47%	59%	16.0	
71 to 80			1																				1		2	52%	45%	14.9	
81 to 90	1						1			1				1	1						1				6	53%	55%	16.1	
91 to 100									1																1	54%	57%	14.8	
Subtotal	2	10	1	1	9	8	13	3	7	10	2	3	3	2	3	1	2	9	1	3	0	6	0	5	104	43%	56%	17.4	
101 to 125						1	1													1					3	48%	63%	15.0	
151 to 175													1								1				2	42%	41%	13.4	
176 to 200	1					1			1				1										1		5	51%	52%	12.2	
201 to 250		1										1												1	3	50%	60%	9.8	
251 to 300																		1							2	58%	48%	10.5	
301 to 350						1	1																		2	48%	51%	12.6	
451 to 500																					1				1	34%	49%	9.7	
Subtotal	1	1	0	0	0	3	2	0	1	0	0	1	2	0	0	0	0	1	1	1	1	1	1	1	18	49%	52%	11.7	
Rooms	3	11	1	1	9	11	15	3	8	10	2	4	5	2	3	1	2	10	2	4	1	7	1	6	122	Overall Avg.	Overall Avg.	Overall Avg.	
Hour Utilization	43%	40%	48%	21%	41%	49%	58%	59%	41%	56%	5%	34%	37%	41%	48%	35%	45%	32%	26%	38%	34%	54%	58%	37%	Overall Avg.	44%	Overall Avg.	Overall Avg.	
Seat Occupancy	48%	50%	46%	46%	44%	57%	67%	71%	58%	48%	47%	49%	48%	44%	60%	55%	70%	55%	60%	40%	49%	47%	41%	69%	Overall Avg.	54%	Overall Avg.	Overall Avg.	
ASF per Seat	12.6	13.7	11.7	16.0	18.6	13.1	20.9	20.5	16.0	14.2	13.5	11.7	12.7	16.2	21.1	16.1	31.6	13.8	14.0	14.5	9.7	13.6	9.8	12.3	Overall Avg.	14.9	Overall Avg.	Overall Avg.	

- Of the 122 classrooms, 72% seat 50 or fewer students.
- The College of Business Building accounts for the largest classroom inventory of 15 spaces, followed by Cardwell Hall at 11 classrooms.
- Of the 24 buildings, 5 of them host only one general-purpose classroom space.
- Almost every seating capacity range has an average hour utilization and occupancy 10% or more below the target guideline of 67%.
- Only three buildings, the College of Business Building, Dickens Hall, and Weber Hall, showed hour utilization within 10% of the guideline of 67%.
- Fourteen of the 24 buildings house rooms with 101 or more seats.
- The largest classroom on campus, Umberger Hall 104, has 451 seats. This space is scheduled for 17 hours or 34% of the weekly hours, with a fill rate of 49% (averaged over 8 courses). Enrollments range from 103 to 400 students.
- On average, KSU Manhattan's classrooms have low hour utilization and low seat occupancy rates. The low usage suggests significant opportunities to add courses, reassign courses to more appropriate spaces, or transform targeted classrooms to alternative uses.
- Low seat occupancy, however, must be tempered by the ASF per seat. A room that is "tight" with too many seats for the square footage of the room may be counterbalanced by an artificially low occupancy rate.

Occupancy and Hour Utilization

Determining why some rooms exhibit low average occupancy relative to their seat size is an essential step towards improving the fit between course section sizes and adequately-sized classrooms. Reasons for low occupancy and utilization may range from spatial quality, location, and available technology, among others. Conversely, some rooms have high hour utilization and high occupancy rates. Understanding why these spaces are scheduled more frequently and more fully than other classrooms provides essential information to help determine how to improve under scheduled instructional spaces.

- Rooms that had low hour utilization and low occupancy:
 - Durland/Rathbone/Fiedler/Engineering Hall 2097 (2% average hour utilization and 13% average occupancy) one course.
 - Durland/Rathbone/Fiedler/Engineering Hall 2191 (5% average hour utilization and 15% occupancy) one course.
- Rooms that had high hour utilization and high occupancy:
 - Dickens Hall 206 (79% average hour utilization and 80% occupancy) 22 courses.
- Buildings with overall low hour utilization and high occupancy:
 - Kramer Food Center 169B (3% hour utilization and 77% average occupancy) one course.
 - College of Business Building 2114 (5% hour utilization and 79% occupancy) one course.
- Buildings with overall high hour utilization and high occupancy:
 - Gymnasium 009A (72% hour utilization and 81% average occupancy) one course.
 - Dickens Hall 206 (79% hour utilization and 80% occupancy) one course.

Figure 9B presents another perspective on classroom utilization, combining classroom seat occupancy (low|high) and hour utilization (low|high) findings by individual room (only select rooms labeled).

The following graphic shows the distribution of rooms among the four possible combinations, or quadrants:

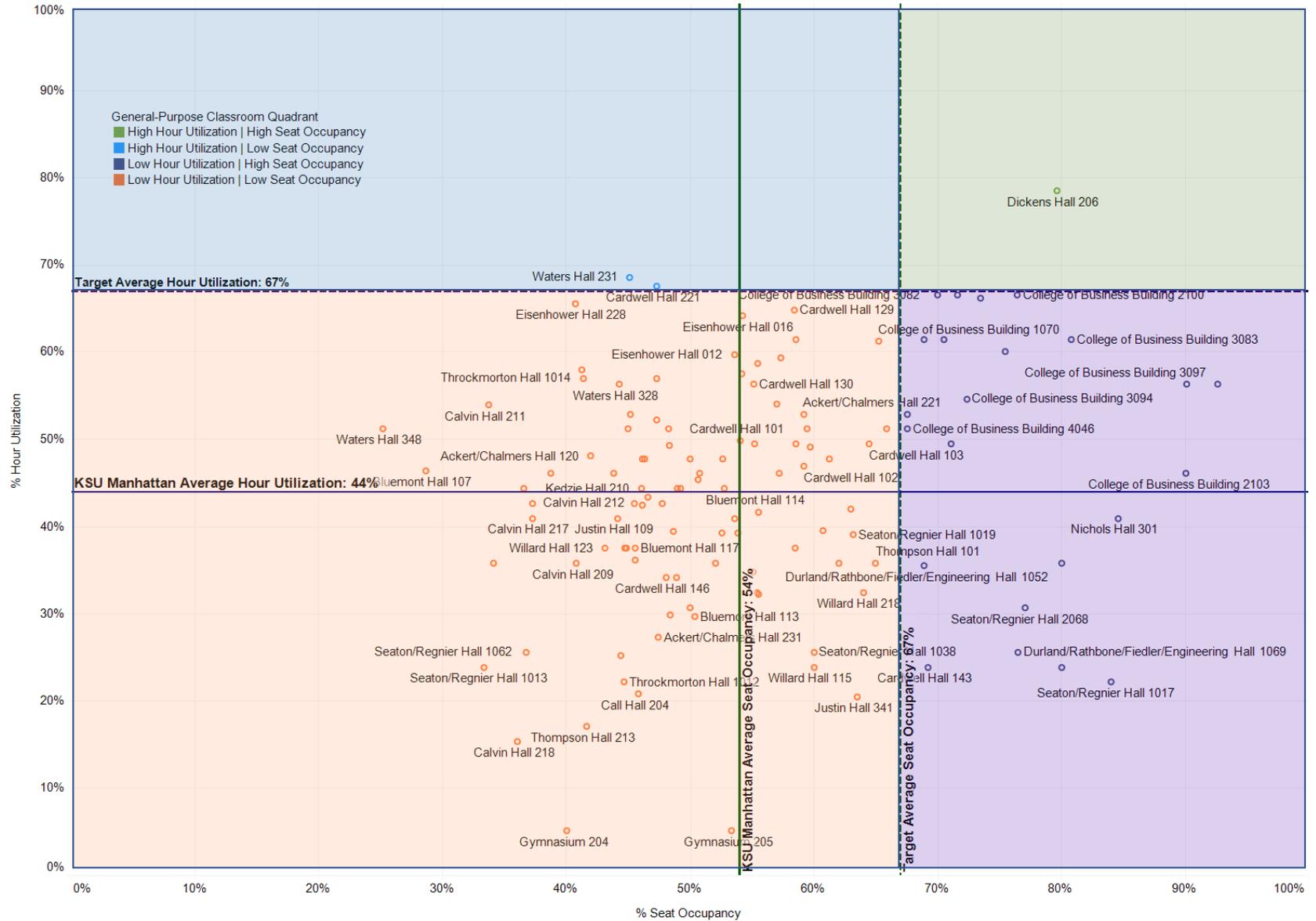
- High Hour Utilization | High Seat Occupancy
- High Hour Utilization | Low Seat Occupancy
- Low Hour Utilization | High Seat Occupancy
- Low Hour Utilization | Low Seat Occupancy

For comparative purposes, two sets of measurements are indicated:

- Target Average Hour and Seat Occupancy
- Institutional Average Hour and Seat Occupancy

KSU Manhattan has capacity to house additional courses, enrollment, or programs, or consolidate and schedule instructional spaces more efficiently.

Figure 9B: All Classrooms Summary Findings by Building and Capacity Category



Dedicated Classrooms.

Dedicated classrooms are those that are assigned to a specific department in which only courses for that department may be held. There are three types of departmental space:

- **Departmental Dedicated Classrooms.** These rooms are dedicated because of a particular item in the room, such as a piano in a Music classroom, or stored demonstration materials related to Anthropology or Geology that makes sharing of the space challenging.
- **Departmental General-Purpose Classrooms.** Based on the walkthroughs and course assignments, these departmental classrooms appear to be general-purpose classrooms under the auspices of the department to which they are assigned.
- **Departmental Conference/Meeting Rooms.** These are departmental spaces serving dual purposes as meeting/conference rooms for the department and seminar rooms for small group discussions. The primary use, however, is departmental use for non-instructional meetings.

There are 124 spaces and 113,147 ASF identified as departmental dedicated or departmental general-purpose classrooms. This is in contrast to the 122 general-purpose classrooms analyzed above. Generally, departmentally owned spaces are scheduled less than 50 percent of the time and are pressed into service during prime hours when general-purpose classrooms are heavily scheduled. KSU Manhattan averaged only 30 percent of the 48-hour daytime scheduling window, or the equivalent of 14 hours or use per week per room. This indicates that these spaces are significantly underutilized. Although some of the low use may relate to location, away from the core or within a suite of spaces, the rooms still provide future opportunities for a realignment of use.

The following table summarizes departmental classroom use by building and room capacity.

Figure 10: Dedicated Classrooms Summary Findings by Building and Capacity Category

Numbers in **red** are 10% or more below guideline, and those in **blue** are 10% or more above guideline.

Seat Range	Buildings																												Rooms	Hour Utilization	Seat Occupancy	ASF per Seat							
	Ackert/Chalmers Hall	Bluemont Hall	Call Hall	Calvin Hall	Campus Creek Complex	Cardwell Hall	Chem-Biochem Building	College of Business	Dickens Hall	Dole Hall	Durland/Rathbone/Fiedler/	Eisenhower Hall	English/Counseling Services	Fairchild Hall	General Richard B. Mever Hall	Grain Science Center	Hoeflin Stone House	Justin Hall	Kedzie Hall	Kramer Food Center	Lafene Student Health at	Leadership Studies &	McCain Auditorium	Mosier Hall	Nichols Hall	Seaton/Regnier Hall	Shellenberger Hall	Throckmorton Hall					Trotter Hall	Umberger Hall	Ward Hall	Waters Hall	Waters Hall Annex	Weber Hall	Willard Hall
1 to 20	1	1		2						1	2									1															9	22%	46%	23.4	
21 to 30		2						1	1	2	7	2						3	1	2				1								1			28	23%	48%	20.5	
31 to 40		2	1		1	1	1			4		1		1		1	3	1				3			3	4		2		1		1		32	27%	49%	18.8		
41 to 50		2								2					2		2	2			1					2					1	1	2		21	35%	48%	21.0	
51 to 60		3	1					2		1			1									2	1	1				1						13	29%	40%	20.3		
61 to 70		2				1	1																1										1	7	41%	48%	19.4		
71 to 80			1							1								1										1						4	44%	50%	18.9		
81 to 90																																	1	1	46%	38%	15.5		
91 to 100																1	1																	2	47%	45%	19.9		
Subtotal	1	12	3	2	1	2	1	3	2	1	11	9	3	1	3	1	1	10	4	2	1	6	3	1	5	6	2	7		1	1	4	2	4	1	117	29%	47%	19.9
101 to 125							1																												1	39%	60%	19.8	
126 to 150																		1													2				3	29%	62%	19.8	
151 to 175											1																								1	70%	55%	20	
201 to 250																							1												1	31%	59%	14.1	
251 to 300											1																								1	57%	41%	9.6	
Subtotal	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	2	0	0	0	0	0	7	41%	53%	16.4	
Rooms	1	12	3	2	1	2	1	4	2	1	13	9	3	1	3	1	1	11	4	2	1	7	3	1	5	6	2	7	2	1	1	4	2	4	1	124	Overall Avg.	Overall Avg.	Overall Avg.
Hour Utilization	30%	31%	43%	20%	24%	33%	20%	23%	23%	18%	40%	31%	42%	18%	17%	24%	29%	36%	30%	12%	39%	21%	42%	10%	24%	36%	47%	22%	18%	54%	34%	6%	41%	34%	17%	Overall Avg.	30%	Overall Avg.	Overall Avg.
Seat Occupancy	55%	50%	51%	50%	40%	48%	28%	61%	50%	35%	46%	46%	60%	27%	35%	11%	21%	50%	42%	67%	44%	50%	40%	34%	52%	73%	33%	42%	73%	40%	14%	28%	47%	41%	58%	Overall Avg.	48%	Overall Avg.	Overall Avg.
ASF per Seat	24.4	19.6	19.8	22.0	17.9	19.9	20.0	19.8	19.8	19.6	16.1	18.9	18.8	29.4	23.4	19.7	19.5	20.8	20.4	23.1	23.0	17.5	25.6	15.0	18.4	17.4	19.9	23.3	19.8	20.1	19.2	18.8	19.8	17.1	14.5	Overall Avg.	19.2	Overall Avg.	Overall Avg.

- The buildings with the lowest hour utilization of their departmental classrooms are:
 - Waters Hall is home to the *College of Agriculture* and departments associated with the College of Arts and Sciences.
 - There are four instructional spaces identified as dedicated and assigned to Grain Science, Entomology, and Sociology/Anthropology/Social Work.
 - The spaces are scheduled for an average of 3 hours per week.
 - Mosier Hall is home to the *Veterinary Medicine Teaching Hospital and Department of Clinical Sciences*. It is separated from the core campus and self-contained. Only one room is identified as departmental and is scheduled for 4 hours per week.
- The buildings with the highest hour utilization of their dedicated classrooms are:
 - Shellenberger Hall is home to the *Department of Grain Science and Industry* and the *International Grains Program* and is located next to Waters Hall. There are two instructional spaces assigned to Grain Science. On average, they are scheduled 47% of the time or roughly 23 hours per week.
 - English/Counseling Services is home to English and Counseling Services and is located by the Hale Library. The three rooms are scheduled for 42% of the time or 20 hours per week.

Current Classroom Need

Previous sections of the report described a snapshot of how KSU Manhattan scheduled courses in Fall 2019. This section explains what type of spaces KSU Manhattan optimally needs to accommodate the course demand based on the same Fall 2019 course data.

What do we have?

A total of 277 spaces were codified as instructional in Fall 2019. Using the space inventory, course schedule, and walkthrough information, the spaces were categorized as general-purpose (registrar) classrooms (122 scheduled, 8 unscheduled), departmental dedicated classrooms (42 scheduled, 13 unscheduled), and departmental general-purpose classrooms (82 scheduled, 10 unscheduled). These groupings help inform the identification of potentially sharable spaces.

The following table summarizes the spaces by type and aligns the final number of instructional spaces that are — or could be used as — general-purpose classrooms in Fall 2020

Figure 11: Summary of Classroom Count

Space Type	Scheduled	Not Scheduled	Total Available
GPCR	122	8	130
Dept. General-Purpose CR	82	10	92
Dept. Dedicated CR	42	13	55
Subtotal Dedicated	124	23	147
Total	246	31	277

General-Purpose Classrooms:

- The core analysis was based on the 122 general-purpose instructional spaces, 129,494 ASF, and the associated hours of instruction scheduled in Fall 2019.
- An additional eight rooms and almost 15,000 ASF were identified as available for use but were unscheduled in Fall 2019.

Departmental Classrooms:

- 124 spaces were identified as departmentally-controlled and supported 823 courses and 1,809 hours of instruction. Each of these spaces was reviewed by RA to determine the reason for the classification.

- Of the 124 spaces, 82 rooms appeared to be comparable to general-purpose classrooms with no identifiable reason to be dedicated except for departmental proximity. The additional 42 rooms appeared to be departmentally dedicated and will remain dedicated to their respective departments.
- An additional 23 rooms were also coded as departmental instructional spaces, but were not scheduled for instruction: 10 departmental general-purpose and 13 departmentally dedicated, bringing the total to 55 departmental instructional spaces.

These rooms are as follows:

Figure 12: Fully Dedicated Departmental Classrooms (55)

Building and Room	Department	ASF	Day Courses	Day Hours
Agronomy Education Center 103	Agronomy	588	0	0.00
Agronomy Education Center 104	Agronomy	588	0	0.00
ASI Swine - Main Office/Headquarters B101A	Animal Sciences and Industry	385	0	0.00
Bluemont Hall 217	Curriculum and Instruction	786	9	17.33
Bluemont Hall 225	Curriculum and Instruction	1,023	10	16.50
Bluemont Hall 256	Curriculum and Instruction	861	7	14.50
Bluemont Hall 339	Special Education, Counseling, and Student Affairs	468	4	4.25
Bluemont Hall 342	Curriculum and Instruction	432	3	8.17
Bluemont Hall 343	Curriculum and Instruction	1,043	8	13.17
Bluemont Hall 344	Curriculum and Instruction	1,096	7	13.67
Cardwell Hall 119	Physics	629	4	3.33
Cardwell Hall 223	Physics	1,222	8	29.33
Chem-Biochem Building 209	Chemistry	640	6	10.00
College of Business Building 2114	Building Maintenance	1,027	1	2.50
College of Business Building 2116	Building Maintenance	1,042	3	7.50
Derby Food Center 134A	Housing and Dining Services	581	0	0.00
Dickens Hall 203	Philosophy	558	5	12.50
Dickens Hall 302	Statistics	613	4	10.00
Dole Hall 164	Vice President for Communications and Marketing	451	3	9.00
Durland/Rathbone/Fiedler/Engineering Hall 0033	Electrical and Computer Engineering	947	0	0.00
Durland/Rathbone/Fiedler/Engineering Hall 0088	Civil Engineering	789	7	19.83
Durland/Rathbone/Fiedler/Engineering Hall 3023	Mechanical and Nuclear Engineering	642	3	6.67
Fairchild Hall 203A	International Programs	1,497	4	8.83
General Richard B. Meyer Hall 007	Military Science (Army ROTC)	980	5	11.67
General Richard B. Meyer Hall 011	Military Science (Army ROTC)	1,437	4	6.67
General Richard B. Meyer Hall 201	Aerospace Studies (Air Force ROTC)	724	0	0.00
General Richard B. Meyer Hall 209	Aerospace Studies (Air Force ROTC)	720	6	6.67
Grain Science Center - International Grains Program 103	Grain Science and Industry	1,170	0	0.00
Grain Science Center - International Grains Program 106	Grain Science and Industry	1,815	2	11.67
Hoeflin Stone House 003	Applied Human Sciences	741	7	14.00
Justin Hall 226	Interior Design and Fashion Studies	797	6	10.00
Justin Hall 325	Interior Design and Fashion Studies	622	1	7.67
Justin Hall 327	Interior Design and Fashion Studies	1,284	7	25.83

Building and Room	Department	ASF	Day Courses	Day Hours
Kedzie Hall 208	Journalism and Mass Communications, A.Q. Miller School of	918	6	16.67
Kedzie Hall 220	Journalism and Mass Communications, A.Q. Miller School of	401	4	13.50
McCain Auditorium 104A	Music, Theatre, and Dance, School of	863	8	15.83
McCain Auditorium 105	Music, Theatre, and Dance, School of	1,115	14	29.17
McCain Auditorium 135	Music, Theatre, and Dance, School of	555	9	15.83
Natatorium 007	Kinesiology	744	0	0.00
Natatorium 015B	K-State Global Campus	329	0	0.00
Nichols Hall 024	Music, Theatre, and Dance, School of	397	0	0.00
Nichols Hall 122	Music, Theatre, and Dance, School of	1,004	5	12.50
Nichols Hall 127	Music, Theatre, and Dance, School of	675	4	8.33
Pat Roberts Hall 1013	Biosecurity Research Institute	707	0	0.00
Seaton/Regnier Hall 2016	Architectural Engineering and Construction Science, GE Johnson Dept. of	676	2	5.67
Throckmorton Hall 2413	Horticulture and Natural Resources	647	3	6.33
Throckmorton Hall 2414	Horticulture and Natural Resources	1,584	10	16.50
Throckmorton Hall 2738	Horticulture and Natural Resources	575	1	2.00
Throckmorton Hall 2752	Horticulture and Natural Resources	785	3	6.17
Umberger Hall 313	Communications and Agricultural Education	328	0	0.00
Unger Complex T321	Engineering Extension	859	0	0.00
Waters Hall 009	Grain Science and Industry	1,056	2	5.67
Waters Hall 255A	Sociology, Anthropology, and Social Work (evening use only)	489	0	0.00
Weber Hall 111	Animal Sciences and Industry	1,270	12	22.33
Willard Hall 202B	Art	727	4	8.33
Grand Total		44,902	221	486.09

Includes 13 unscheduled departmentally dedicated spaces

The total possible available spaces for scheduling may be as high as 222 general-purpose style classrooms, *excluding* the 55 dedicated departmental rooms.

What do we need?

Using the Fall 2019 data and associated metrics, the calculated classroom need was 128 general-purpose classrooms, excluding the dedicated departmental rooms and GPCR identified as offline in 2020. This includes 130 general-purpose classrooms and 92 departmental classrooms.

Figure 13: Summary Classroom Count

Classroom Type	Existing			GPCR Needed vs. Available		
	# of Rooms	# of Hours	# of Courses	# of Rooms	# of Courses	# of Rooms Needed
GPCR*	130	2,630.33	1,196			
Dept. Dedicated GPCR	92	1,322.83	603	222	1,798	128
<i>Subtotal</i>	<i>222</i>	<i>3,953.16</i>	<i>1,798</i>	<i>222</i>	<i>1,798</i>	<i>128</i>
Dept. Dedicated CR	56	468.09	221			
Grand Total	278	4,439.25	2,019			

How do we get there?

The consolidated option and distribution will address the calculated need. However, are they the right capacity?

KSU Manhattan has access upwards to 222 rooms classified as general-purpose classroom spaces, some of which are departmental general-purpose classrooms. While the number of available rooms is more than sufficient based upon calculations, they do not necessarily solve the capacity challenge.

The following exercise will address the fit-to-capacity issue, determining if KSU Manhattan has sufficient numbers of rooms at varying capacity levels – assuming target ASF/seat -- to support 2019 enrollments.

Right-sizing is a hypothetical exercise that applies an average 22 ASF/seat to individual classrooms in the existing space inventory,

bringing all the spaces into relative alignment. The applied average supports movable tables and chairs and contemporary desks/tablets. Because it is an average, in reality, there will be spaces with both lower and higher ASF/seat depending upon room type and configuration. For example, flexible and collaborative furniture needs roughly 35 to 40 ASF/seat, depending on the capacity and layout. In other classrooms, a denser configuration may be acceptable. The 22 ASF/seat planning guideline provides the flexibility to support both pedagogical needs.

Example: A room has 50 seats, 18 ASF/seat, and with an occupancy rate of 50 percent, 25 seats are occupied. If the room is "right-sized," meaning the extraneous seats are decanted to *raise* the 18 ASF/seat to 22 ASF/seat, it *reduces* the physical seat count from 50 to 40 seats and *increases* the occupancy rate from 50 percent to an acceptable 62 percent.

Same number of students enrolled, fewer seats in the room.

	Room ASF	# of Seats	ASF/Seat	# Enrolled in Course	% Seats Occupied
Original	900	50	18.0	25	50%
Right-sized	900	40	22.0	25	62%

This approach is a *non-capital* test to identify if the existing classrooms (excluding the qualitative issues) can provide the desired distribution of space by capacity as identified through the utilization analysis.

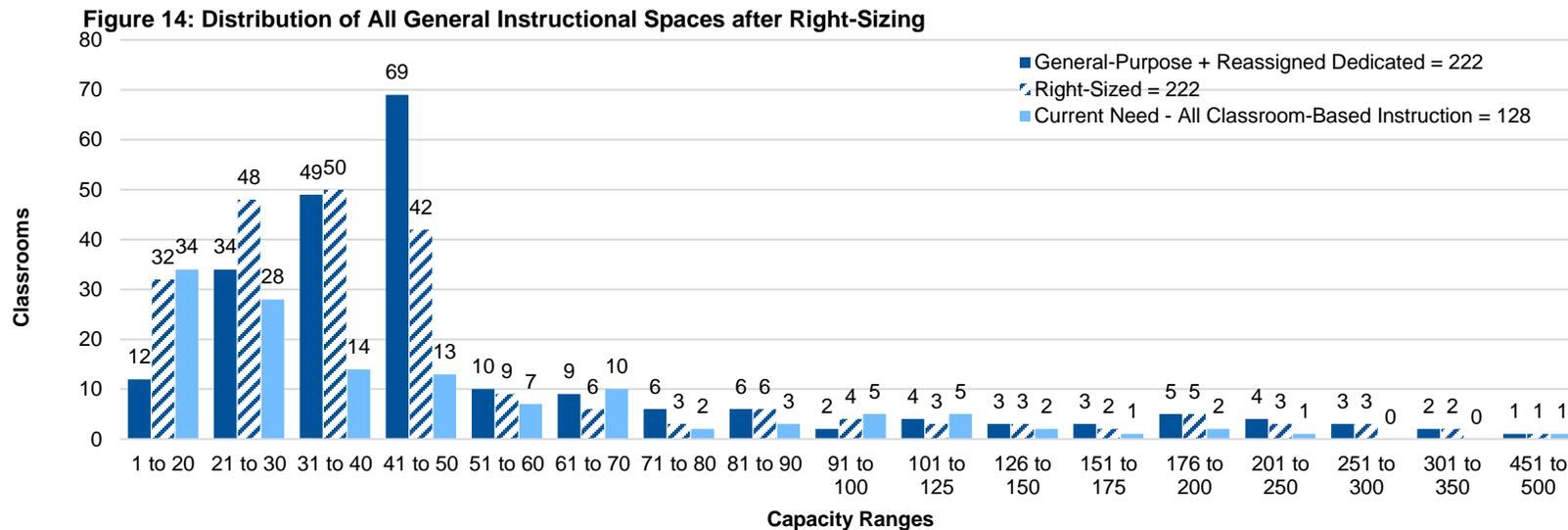
The following graph provides a comparative analysis by capacity range, aligning the 222 existing rooms by capacity (dark blue), with the theoretically right-sized number of rooms (striped), and with the calculated need (light blue). This assumes a 67 percent fill rate, a 67 percent weekly hour utilization rate (using the 48-hour window), and an average of 22 ASF/seat

Right-Sizing and Realignment

Right-sizing is a hypothetical exercise that applies an average 22 ASF/seat to individual classrooms in the existing space inventory, bringing all the spaces into relative alignment. The applied average supports movable tables and chairs and contemporary desks/tablets. Because it is an average, the reality would have spaces with both lower and higher ASF/seat depending upon room type and configuration. For example, flexible and collaborative furniture needs roughly 35 to 40 ASF/seat, depending on the capacity and layout. In other classrooms, a denser configuration may be acceptable. The 22 ASF/seat planning guideline provides the flexibility to support both pedagogical needs.

This approach is a *non-capital* test to identify if the existing classrooms (excluding the qualitative issues) can provide the distribution of space by capacity as identified by the analysis.

Figure 14 compares the distribution of Fall 2020 existing 222 classrooms by capacity to the distribution achieved from theoretically right-sizing the rooms to 22 ASF/seat. It should be noted that in those rooms where the ASF/seat was above target, chairs were **not** added to reduce the ASF/seat, which would be counter-productive to the goals of the study



Applying this method shows a calculated deficit in the 1 to 20 capacity rooms when the number of right-sized existing rooms is compared to the number of needed rooms. This need can be met by having smaller classes occupy larger capacity classrooms, albeit at a reduced fill rate.

Smaller seminar rooms could be added, but this hinders flexibility should class sizes change in the future.

The final determination will be based on policy, scheduling blocks, access to departmental general-purpose classrooms, etc. as not all rooms are equally available or accessible on campus based on location. Not all courses may return to the central pool of classrooms.

Regardless of the decision, there is the demonstrated ability to schedule existing courses within a reduced number of spaces, thereby opening other spaces for conversion or repurposing to address other campus needs.

Based on the analysis of Fall 2019 course data, there is a calculated need ranging from 82 to 128 classrooms with a different distribution of capacities when compared to the current existing stock of space, whether centrally scheduled or inclusive of departmental general-purpose classrooms.

The final determination will be based on policy, scheduling blocks, access to departmental general-purpose classrooms, etc. The outcome will likely rest somewhere in the middle of the scenarios. Regardless of the decision, there is the demonstrated ability to schedule existing courses within a reduced number of spaces, thereby opening other spaces for conversion or repurposing to address other campus needs.

Figure 15: Summary Classroom Findings

Classrooms	# Rooms	# Seats	ASF	ASF/ Seat	Seat Occupancy		Hour Utilization (48.83-Hour Window)	
					Metric	Actual	Metric	Actual
	Scheduled (Fall 2019)							
General Purpose: (100 or fewer)	104	4,824	84,113	17.4	67%	56%	67%	43%
General: Lecture (101+ seats)	18	3,892	45,381	11.7		52%		49%
Subtotal, General	122	8,716	129,494	14.9		54%		44%
Departmental: General Purpose Classrooms	82	4,170	76,592	18.4		50%		33%
Departmental: Dedicated Classrooms	42	1,710	36,555	21.4		44%		24%
Subtotal, Departmental	124	5,880	113,147	19.2		48%		30%
Total, All Classrooms	246	14,596	242,641	16.6		52%		37%
Unscheduled General-Purpose	8		5,634					
Unscheduled Departmental General-Purpose	10		5,513					
Unscheduled Departmental Dedicated	13		8,347					
Subtotal, Unscheduled	31		19,494					
Grand Total Space	277	14,596	262,135					

Summary: Classrooms

Under the 48-hour official daytime window, KSU Manhattan has a “tight” ASF/seat coupled with low utilization rates in seat occupancy and weekly hours of use. The following summarizes space use by the key figures and metrics.

ASF/Seat & Occupancy

Seat occupancy, as noted, can be influenced by the ASF/seat metric. It is probable that seats were physically added to rooms to support larger section sizes during the upturn in enrollment in the recent past. As enrollment plateaued and then declined, KSU Manhattan did not “reset” the classrooms to their appropriate capacities, thereby perpetuating the relatively low ASF/seat. This, in turn, has the added effect of depressing seat occupancy rates.

Hour Utilization

With the enrollment decline comes a reduction in the number of courses held, which, in turn, results in fewer room use hours. Additional factors impacting utilization rates may include changes in program requirements and the sunseting of academic programs, among others.

The following provides options for consideration. Recommendations include both capital and non-capital options.

Recommendations

The guidelines used to determine instructional space needs are "ideal" parameters and not prescriptive. The final distribution of instructional spaces should include some additional spaces *over and above the calculated need*. The “extra” rooms support enrollment changes and provide flexibility so that renovations can be undertaken. The release of the dedicated rooms and associated conference and meeting spaces may help address other departmental space needs, as needed.

KSU Manhattan could renovate and provide flexible space — both classrooms and labs — and offer a range of furniture (desks, tables, Node chairs, collaborative arrangements, etc.) to accommodate various teaching styles throughout campus. Rooms may be selectively right-sized – to support programs on a building-by-building basis – as long as care is taken to avoid a significant over-supply.

Address Low-Use Classrooms

- Of the 122 scheduled general-purpose classrooms in 2019, 82 had weekly hour utilization rates of 50% or less (equivalent to 24 hours or fewer per week), which is below guidelines.
- The least-used space is the Gymnasium, followed by Calvin Hall 218 and Thompson Hall 213, both under 20% of the time. Low-hour utilization for some spaces may be due to a more than adequate number of available spaces, geographical location, or adjacency to associated departments.
- Room size, departmental prioritization, or poor room quality can also cause rooms to be underutilized. Inexpensive upgrades or minor aesthetic adjustments could make some underutilized spaces more desirable and more likely to be scheduled.
- Low use rooms could be repurposed for office space or other uses, as needed.

Address Departmental/Dedicated Classrooms

Of the 82 scheduled departmental general-purpose and 42 departmental dedicated classrooms, except for seven rooms across seven buildings, all were scheduled fewer than 60 percent of the time. If the desire is to maintain departmental general classrooms as instructional, these rooms' utilization should be increased. Increased use can be addressed through policy changes requiring a higher percentage of departmental courses to be assigned to those rooms before access to the registrar general instructional pool is granted. Other options would allow the department to schedule their preferred courses in the spaces while permitting scheduling backfill from other departments. The critical component is to identify the reason these spaces are being scheduled. Is it a location? Capacity? Course materials in the room that were not visible during the walkthrough?

Review Scheduling Policies, Practices, and Procedures

Adherence to standard scheduling time blocks for all courses is imperative to ensure optimal classroom use. While it is understood that there are exceptions – such as an expanded course meeting time or

the legitimate needs of a specific faculty member – a large number of exceptions results in inefficient utilization through fractured time blocks that have a ripple effect across the week, making scheduling challenging for students. Do students need to leave a class early or arrive late to another? Are they being blocked from taking a required course because of the overlap in time?

KSU Manhattan scheduled 67 percent of its courses utilizing 16 of the identified 17 standard time blocks -- and nine times as many non-standard time blocks during the same period of Fall 2019. The proliferation of non-standard time blocks can cause scheduling conflicts for both spaces and students. To promote the most effective use of instructional space and optimize students' ability to create desired or needed schedules, the use of non-standard time blocks should be minimized. This would also require the balanced use of rooms across all five days of the week, including morning and late afternoon. The shorter the day in terms of available scheduling blocks, the more classrooms will be needed to meet demand, and the more spaces will sit fallow for the balance of the time.

Conduct Select Right-sizing

This approach is a non-capital option to identify if the existing classrooms (excluding the qualitative issues) can provide the distribution of space by capacity as identified from the analysis. From this exercise, selective right-sizing involves the decanting of existing seats in overcrowded classrooms. This produces more appropriately sized spaces and encourages and supports a variety of furniture and pedagogies, ranging from tablets to tables and chairs, to collaborative studio classrooms.

Within the existing total portfolio of 130 general-purpose classrooms:

- Many of the spaces have extremely tight seating, making rooms less desirable because they feel cramped and crowded.
- Too many seats in a room make it difficult to reconfigure seats for group work, for the instructor to circulate through the room, and for students to enter and exit their seats with minimal disruption to others.

- Changing pedagogy and student preferences for more commodious furniture is increasing the amount of space needed in rooms.

These factors, and the growing desirability of roomier classrooms with movable, reconfigurable furniture, leads to the following recommendations regarding the right-sizing of classrooms:

- Using the list of existing, right-sized, and recommended currently needed classrooms, select those specific rooms that would best produce the required distribution of classroom capacities.
- Target classrooms that would become notably more desirable with the appropriate number of seats. These rooms may already be centrally located or have upgraded technology and amenities.

Develop a phasing plan for right-sizing classrooms that supports the overall portfolio of classrooms at each juncture.

Benefits

- Right-sizing moves classrooms toward contemporary standards by creating a more collaborative environment for students and instructors.
- Right-sizing offers flexibility in configuration, the ability to comfortably accommodate a suite of technology, and allows for "breathing room."
- Right-sizing offers a non-capital option for meeting a portion of classroom demand with the existing inventory of rooms.

Challenges

- Right-sizing and realignment of spaces must be completed as part of a holistic implementation plan.
- Individual classrooms may contain a certain number of seats to meet critical course enrollments and are not easily right-sized.
- Faculty members are accustomed to teaching in specific classrooms with a certain number of students. Changing the capacity of classrooms may require instructors to change their classrooms or adjust their course capacities.

Costs of Not Right-Sizing

- Cramped classrooms are less desirable, affecting the perception of quality.
- Classrooms do not meet generally accepted guidelines and standards, nor do they support current or future changes in pedagogy.
- The current classroom stock does not meet the need in terms of capacity ranges (right-sizing could alleviate some of these needs).

Summary

The guidelines used to determine instructional space needs are "ideal" parameters and are not prescriptive. The final distribution of spaces will be based on various internal factors, funding, and facilities audit findings.

Unlike a campus with very high utilization rates, KSU Manhattan has a significant opportunity to rethink its entire pool of classrooms. This could include creating a different distribution of capacities, determining the best campus locations for classrooms, and selecting some classrooms to re-purpose to higher priorities while maintaining some swing space to address enrollment upticks. The final distribution of space should fall within a capacity range that will provide the greatest degree of current and future flexibility.

As the campus continues to gather data and overlay findings, more targeted reviews and discussions of classroom realignment, repurposing, and redesign can be explored.

The process applied here provides the guidance needed to chart a responsible and navigable course for a successful realignment of space to support future efficiencies and synergies.

Specialized Instructional Space

Overview

There were 142 specialized instructional (SI) spaces representing 75 academic disciplines and encompassing 200,229 ASF and 5,641 stations at KSU Manhattan during Fall 2019.

On average, scheduled SI spaces were underutilized at 31 percent average hour utilization, below the 50 percent guideline, although utilization varies by room and by discipline. SI spaces were also underfilled at 49 percent average station occupancy, well below the 80 percent guideline.

Hour Utilization

KSU Manhattan's average daytime weekly hour utilization for scheduled SI spaces was 31 percent or just over 14 weekly hours out of the 48-hour daytime scheduling window. Daytime hour utilization by discipline ranged from two percent for Industrial and Manufacturing Systems Engineering - Advanced Topics in Durland/Rathbone/Fiedler/ Engineering Hall 2097 with one course, to 80 percent for Computer Lab instruction in Durland/Rathbone/Fiedler/ Engineering Hall 3056 with 10 courses and almost 40 hours of instruction.

Station Occupancy

The average station occupancy rate was 48 percent, considerably less than the recommended 80 percent guideline. By discipline, station occupancies ranged from 7 percent for the West Stadium 117 with 7 courses to 100 percent in Ackert/Chalmers Hall 228 with one course.

Station Size

While the aggregate average station size was not determined because guidelines are discipline-specific, station sizes were computed for each scheduled SI discipline and space. Station sizes ranged from 12.4 ASF/station in McCain Auditorium 204, a Music Auditorium, to 99.4 ASF/station in Seaton/Regnier Hall 79 an Interior Design Workshop. Individual spaces and their respective average station size are presented in the appendices to this report.

The following table summarizes the utilization rates and associated metrics for each SI space, organized by discipline.

KSU Manhattan has an opportunity to reconsider specialized instructional spaces for future use.

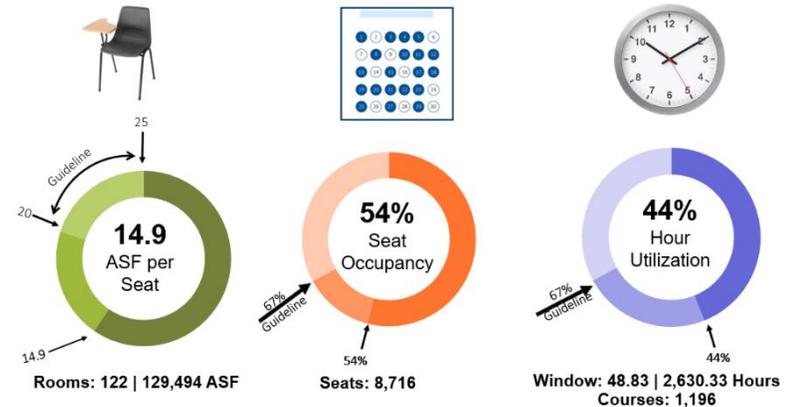
- Specialized instructional spaces can be designed with more flexibility. The lines between spaces dedicated to various disciplines are blurring so that one lab can serve multiple disciplines. For example, Biology and Chemistry may share labs with appropriate design and support spaces. In some institutions, new rooms are being designed to include standard equipment intended to serve multiple disciplines, as programmatic needs expand and contract.
- With the introduction of augmented reality and a shift to more on-line studies, the capital outlay in labs should be considered carefully to provide the best and highest use of physical space.
- With collaborative spaces and interdisciplinary instruction, synergies and opportunities for departments and units to share spaces can be fostered, reducing the overall physical footprint.
- Rooms with low use should be addressed.
- Analyzing existing space-to-program may also be an option to identify favorable synergies and suggest areas for more targeted funding. The result could be a singular model space vs. capital allocations diluted across multiple campus spaces.

Overall Summary: KSU Manhattan

The guidelines used to determine instructional space needs are “ideal” parameters and not intended to be prescriptive. Instead, the information presented in this report provides the quantitative foundation for decision making and should be updated during future projects to reflect evolving campus conditions and thinking.

General-Purpose Classrooms

Figure 22: General-Purpose Classroom Summary



At the time of this analysis, KSU Manhattan had 104 general-purpose classrooms and 18 large lecture rooms, comprising 129,494 ASF and 8,716 seats.

Capacity (average 22 ASF/seat):

- The amount of square footage per student seat ranges from 17.4 in the general-purpose classrooms to 11.7 ASF/seat in the lecture halls. On average, the instructional spaces have 14.9 ASF/seat, indicating rooms are overcrowded with seats for the available square footage of the space.
- There is an opportunity to decant seats from those spaces containing movable furniture, thereby increasing flexibility and comfort levels.

Occupancy (67% fill):

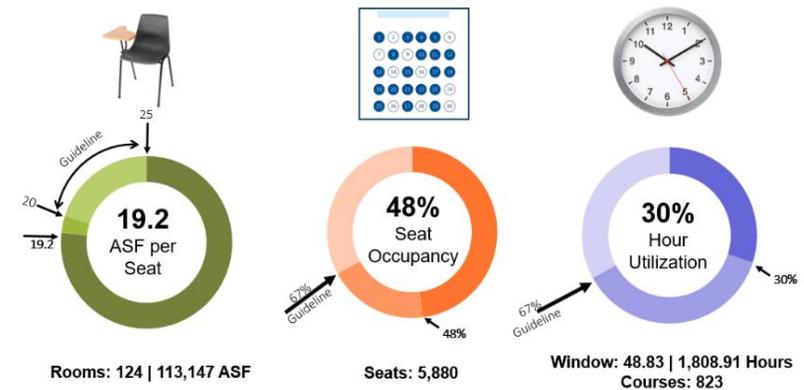
- Based on existing enrollment, 56% of the seats are filled in the general-purpose classrooms when these rooms are scheduled. In contrast, only 52% of the lecture hall seats are occupied, on average.
- Low seat occupancy in the general-purpose classrooms can be partially explained by the excess number of seats, which has the added effect of depressing the average ASF/seat.
- The practice of assigning low enrollment courses to lecture halls should be investigated to determine the rationale, as this may prevent the rooms from being assigned to courses with larger enrollments that genuinely require the spaces.

Hour Utilization (67% time):

- Research universities typically report a daytime scheduling window in the vicinity of 50 hours. KSU Manhattan uses a 48-hour scheduling window – although the actual **practiced** window is lower, at a 35-hour week, more consistent with a small private liberal arts institution.
- While the window size is in keeping with expectations, only 44% of the scheduling window hours are scheduled. This is in contrast to the goal of 67%, indicating there is significant additional capacity available.

Departmental Classrooms

Figure 19: Departmental Classroom Summary



- The 124 rooms identified as departmentally controlled have a higher ASF/seat than those centrally scheduled, putting them close to the desired target.
- In contrast, the average seat **occupancy** rate is 48%, which is not only below the target of 67% but below the rate for general-purpose classrooms as a whole.
- Where **hour utilization** is concerned, these rooms are scheduled for formal instruction just over one-third of the scheduling window. While it is not unusual for departmental classrooms to be used less, e.g., 50% as they support other departmental needs, this is a notably low rate of use.

Summary

Given the current number of "excess" classrooms, KSU Manhattan has an opportunity to create an appropriate distribution of room capacities, realign classroom locations with student concentrations, and potentially repurpose select classrooms to other uses -- all while maintaining sufficient capacity to support potential upticks in enrollment or course capacities.

The figure below presents the existing classroom distribution and calculated need, assuming a 67 percent average weekly daytime hour utilization and a 67 percent average seat occupancy rate. It also presumes that all spaces identified as GPCR are appropriately sized in seat counts and are available for use.

Figure 20: Summary Classroom Count and Need

Classroom Type	Existing			GPCR Needed vs. Available		
	# of Rooms	# of Hours	# of Courses	# of Rooms	# of Courses	# of Rooms Needed
GPCR*	130	2,630.33	1,196			
Dept. Dedicated GPCR	92	1,322.83	603	222	1,798	128
Subtotal	222	3,953.16	1,798	222	1,798	128
Dept. Dedicated CR	56	468.09	221			
Grand Total	278	4,439.25	2,019			

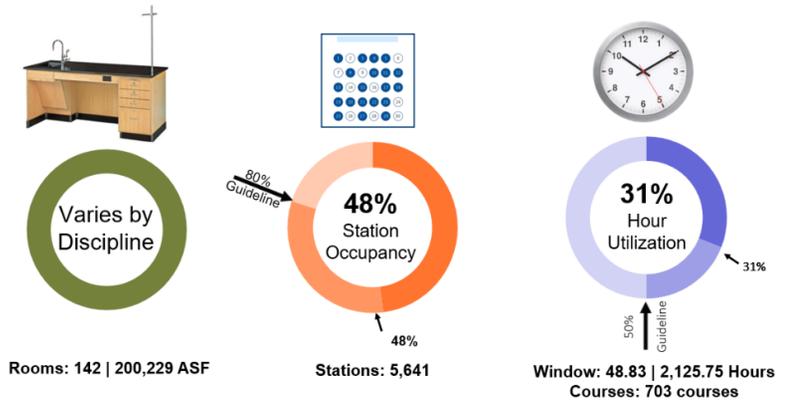
- KSU Manhattan has 222 spaces and 217,233 ASF available across campus for scheduling. In contrast, there is a calculated need for 128 rooms and 143,710 ASF using the existing scheduling
- By decanting seats, the selective right-sizing of rooms should be carried out to create more flexible and comfortable teaching environments. Of the almost 1,200 courses scheduled in the 122 general-purpose classrooms and lecture halls, an estimated 3% (40 courses) would need to relocate to a

different classroom on campus when the rooms are theoretically right-sized.

- If rooms are appropriately right-sized, KSU Manhattan can still adequately accommodate their courses and associated enrollments.

Specialized Instructional Spaces

Figure 21: Specialized Instructional Space Summary



There were 142 specialized instructional (SI) spaces representing 70 academic disciplines and encompassing 200,229 ASF and 5,641 stations at KSU Manhattan during Fall 2019.

Capacity (varies):

- The ASF/station for a specialized instructional space varies according to discipline and may range from 40 ASF/station in a computer lab to 100+ in a dance studio.

Occupancy (80% fill)

- On average, in the 142 specialized instructional spaces, less than 50% of the stations were occupied when the room was scheduled.
- Occupancy rates ranged from 7% in one space to 100% in another.

Hour Utilization (50% time)

- The average utilization was 31% of the 48-hour daytime schedule. This equates to just under 15 weekly hours.
- The utilization of individual rooms ranged from 2% (1 course and 1 hour) to 80% (38 hours).

Summary

The need for specialized instructional spaces is predicated upon the number of hours of instruction by discipline, as individual courses and programs are clearly unable to share highly specialized spaces. That said, there are opportunities to realign select existing lab spaces and create more shared teaching environments, consistent with contemporary trends. This provides the ability to respond quickly as programs expand and contract vs. highly specialized and dedicated teaching labs that are also high-cost spaces.

Areas on which to focus include:

- Conduct a more detailed review of the 19 low-use spaces.
- Address the incremental need for Art, Architecture, and Mac computer lab (estimated 4,500 ASF). This need may potentially be met through the re-purposing of available low-use labs.
- Review those labs identified as potential surplus.
- Review opportunities to expand and appropriately size specialized instructional spaces.

The final distribution of spaces should be flexible, appropriately sized, and designed to optimize scheduling and use.

Overall Summary: KSU Olathe

The KSU Olathe campus supports local industry and local area schools in Greater Kansas City. With a target population of graduate-level students and returning students, the programs are offered in the evening to accommodate working schedules.

The campus houses four general-purpose classrooms encompassing 6,091 ASF and 188 seats.

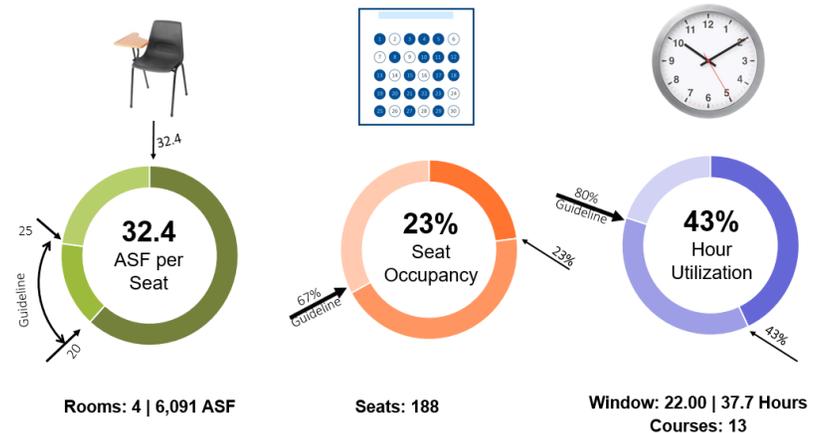
- Building A 221A,
- Building A 221B,
- Building A: 222A/222B and
- Building A 223A/223B

For 222A/222B and 223A/223B, they are considered 'one' room based on use. These spaces do have the option of being divided based on the existence of an accordion wall

Detailed room-by-room results can be found in the *Instructional Appendices*.

The findings are summarized below:

Figure: 22 General-Purpose Classroom Summary



- The overall average ASF/seat for these rooms is 32.4.
- The four rooms have a capacity of 60 seats each.
- When occupied, just 23% of the seats are filled, indicative of low enrollments – or oversized instructional rooms.
- Rooms are scheduled in the evening, Monday through Thursday. A total of 22.0 hours is available to support instruction.
- In total, only 37.7 hours are scheduled across the four spaces, an average rate of use of 43%.

There appears to be ample opportunity to increase utilization and outreach to the local areas, although it is unknown *how* these spaces may be used outside the formal schedule provided.

Chapter 3

Office Space Analysis

3.0 Office Space Analysis`

Overview

As part of its review and analysis of space needs at Kansas State University Manhattan and Kansas State University Olathe, Rickes Associates examined the distribution of office and office-related space in those buildings included in the purview of this study.

The Office Facilities (300) FICM space category typically encompasses both academic and administrative office space, as well as reception areas, conference rooms, workrooms, storage, and dedicated lounges.

To compare current supply and calculated demand, needs for spaces in this category are calculated based on a multiplier per full- or part-time faculty and staff FTE, delineated by employment type. This can be determined for both KSU campuses as a whole and for the individual buildings within the purview of this analysis.

Per Spring 2020 personnel figures, there was a total of 5,623 headcount employees across multiple employee categories at KSU Manhattan, and 42 headcount employees at KSU Olathe. The University's personnel data were analyzed to isolate those academic and staff groups resident in the 67 buildings included in the scope of this analysis at KSU Manhattan and KSU Olathe's single facility.

General trends impacting needs for office space on campuses include:

- The transformation of the corporate workplace to a substantially open office environment, coupled with the dramatic shift to working from home during the pandemic, will likely translate into a gradual reconsideration of faculty and staff workspaces on campus. For example, many faculty members rely on their office space to meet with students, securely store resources, and conduct research, and as such, a transition to an open-office culture may not be desirable or beneficial.
- Further, faculty agreements may inhibit the sharing of office spaces; institutional history and attitudes may further reinforce a culture of private space.

- Shrinking the size of offices to achieve space efficiencies also has its limitations. Practically, decreasing the size of a faculty or staff office requires an increase in the square footage and numbers of various types of meeting spaces. Activities that previously occurred in an office are now held in shared spaces. Space "savings" are realized only when this is undertaken on a large scale so that the use of shared space is optimized.
- Adopting "hoteling" or "hot-desking" policies may be most appropriate for some groups of staff and faculty, such as adjunct faculty who require a place to land while on campus, but typically work most of the time remotely.

Any effort to reconsider workspace design must be approached with an understanding of institutional and departmental culture, workflow, and strategic directions. Care must also be taken when introducing alternative work environments to avoid creating a perception of "haves" and "have nots" on campus.

The following sections are comprised of multiple elements specific to KSU Manhattan and KSU Olathe, respectively:

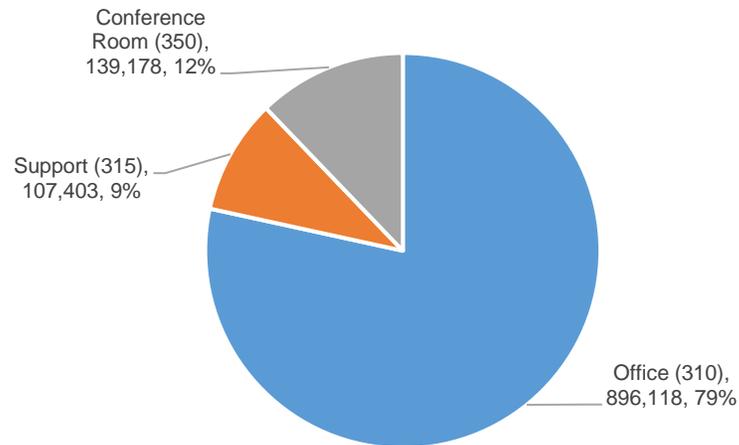
- Distribution of current office space allocations by type and building based on space information provided by the campuses
- Personnel data
- Planning-level space needs calculations for office and office-related space, using space multipliers that reflect current best practices, both for the subject buildings and both KSU campuses as a whole.

KSU Manhattan

Current Space

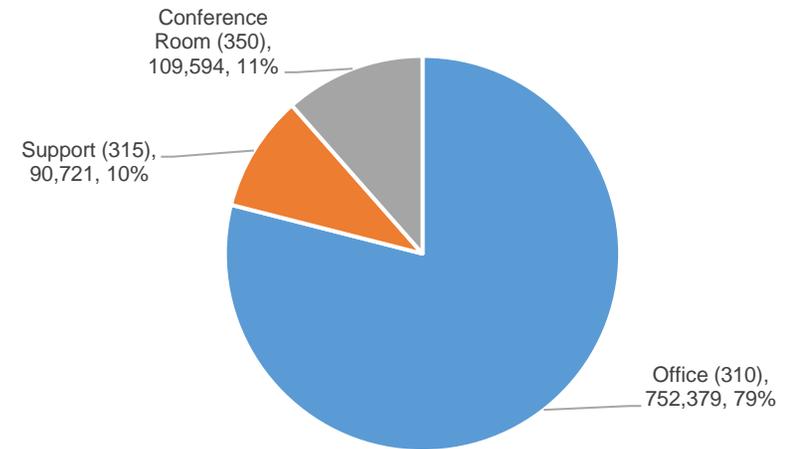
The following figures identify the amount of assignable Office Facilities (300) square footage identified in the space inventory, both for the KSU Manhattan campus as a whole as well as specifically within each of the 67 target buildings in this analysis.

Figure 1A: Overall Distribution of Office Facilities (300) Space, by Type, KSU Manhattan



- Overall, there is 1,142,699 ASF of Office Facilities (300) space on the KSU Manhattan campus, per inventory data.
- FICM 310 categorization denotes both private and shared office spaces. Nearly 80% of all space in the FICM 300 category is coded as 310 space.
- FICM 315 refers to Office Service, including spaces such as copy rooms and workrooms. This category accounts for 9% of all Office Facilities (300) space.

Figure 1B: Distribution of Office Facilities (300) Space, by Type, Subject Buildings



- Within the subject buildings of this analysis there is 952,694 ASF of Office Facilities (300) space, equating to 83% of all Office Facilities (300) space at KSU Manhattan.
- Proportions of Office (310), Office Support (315), Conference Room (350), and Conference Room Support (355) space mirror allocations of office and office-related space on the KSU Manhattan campus as a whole.

The following figure compares the distribution of all Office Facilities (300) assignable square footage against total square footage for each building within the purview of this analysis. This square footage encompasses all office spaces, as well as all support and all conference room space. Total building ASF is also included for comparative purposes, as is FTE personnel for the building. Out of the 67 buildings within the scope of this analysis, 64 contain office space.

Personnel data provided by the University indicated office assignments, allowing the determination of FTE personnel by building.

Figure 2: Distribution of Office Facilities (300) Space, by Building

Building	Office (310)		Office Support (315)		Conference Room (350)		Conference Room Service (355)		Totals		
	ASF	# of Spaces	ASF	# of Spaces	ASF	# of Spaces	ASF	# of Spaces	Total ASF, 300 (Office Facilities)	Total Building ASF	FTE Personnel
Ackert/Chalmers Hall	21,251	135	785	4	4,601	10	171	1	26,808	121,487	122
Anderson Hall	32,002	109	5,147	49	2,236	9	57	2	39,442	51,169	195
ASI Sheep & Meat Goat - Main Office/Training Facility	126	1	45	1					171	14,826	2
Berney Family Welcome Center	9,573	35	2,313	6	3,062	27			14,948	17,118	38.5
Bluemont Hall	27,872	206	2,178	14	5,892	17			35,942	77,242	200.5
Burt Hall	2,455	15			521	1			2,976	25,504	7
Bushnell Annex	753	1							753	1,806	6.5
Bushnell Hall	5,615	26	29	3	284	1			5,928	14,569	8.5
Call Hall	9,637	37	550	5	819	2			11,006	43,159	46
Calvin Hall	15,263	87	1,362	12	1,351	3			17,976	32,275	76
Campus Creek Complex	3,794	23	255	5	596	2			4,645	17,602	16
Cardwell Hall	26,797	123	1,208	17	1,116	4	13	1	29,134	100,565	115.5
Chem-Biochem Building	11,029	54	863	6	1,167	6			13,059	53,000	42.5
Civil Infrastructure Testing Lab	75	1							75	4,963	7
CMG - Research Building	105	1							105	14,283	15.5
Coles Hall	9,342	56	145	1	980	2			10,467	59,003	56.5
College of Business Building	26,200	167	3,959	27	6,066	12			36,225	86,737	113.5
Dickens Hall	9,136	45	1,299	8	285	1			10,720	17,685	30.5
Dole Hall	7,057	41	953	10	639	2			8,649	20,177	38
Durland/Rathbone/Fiedler/Engineering Hall	47,435	244	3,939	24	6,228	16	100	1	57,702	213,709	160.5
Dykstra Hall	11,340	50	1,765	14	2,182	3	40	1	15,327	29,404	260.5
Edwards Hall	20,181	91	3,176	173	4,208	9	158	10	27,723	32,532	115.5
Eisenhower Hall	8,962	57	3,375	33	2,284	8			14,621	29,421	38
English/Counseling Services	14,463	75	1,064	9	434	2			15,961	19,673	59
Environmental Research Lab	1,229	4			255	1			1,484	4,828	2.5
Facilities Grounds	88	1							88	3,909	10
Fairchild Hall	20,188	70	5,558	22	1,814	8	194	1	27,754	34,208	104.5
Feed Technology	378	3			831	1			1,209	13,236	1
General Richard B. Meyer Hall	5,199	14	203	6					5,402	26,788	2
Grain Science Center - BIVAP	2,573	15	272	2	965	3			3,810	16,660	4.5
Grain Science Center - International Grains Program	2,306	8	687	3	1,904	2	835	3	5,732	11,110	4
Hale-Farrell Library	8,559	16	679	5	300	2			9,538	96,671	112.5
Hoeflin Stone House	1,405	8							1,405	8,994	9.5
Holton Hall	9,778	48	394	5	1,281	5			11,453	12,005	38
Holtz Hall	558	5							558	3,610	1
International Student Center	1,135	6	168	2	1,757	3	109	1	3,169	3,844	6.5
Justin Hall	25,275	136	4,898	26	1,442	6			31,615	87,212	196.5

	Office (310)		Office Support (315)		Conference Room (350)		Conference Room Service (355)		Totals		
Kedzie Hall	7,650	36	913	9	319	1			8,882	24,762	32.5
King Hall	2,779	13			789	3			3,568	27,244	1
Lafene Student Health at Mercy Health Center	17,917	100	3,302	24	2,861	8			24,080	52,005	104
Leadership Studies & Programs Building	4,321	26			3,748	10	33	1	8,102	20,373	19.5
Leasure Hall	9,401	44	846	6	1,193	4			11,440	19,660	15.5
Manufacturing Learning Center (AMI)	6,811	18	309	2	445	1	7	1	7,572	19,148	15.0
Mary & Carl Ice Hall	3,796	22	501	4	292	1			4,589	14,460	12.5
McCain Auditorium	11,175	62	522	4	570	2			12,267	64,616	69
Mechanical Engineering Lab	252	2	69	1	294	1			615	12,309	4.5
Mosier Hall	25,979	149	2,815	14	7,087	21	42	2	35,923	152,458	379.5
National Gas Machine Lab	2,251	1							2,251	10,296	3.5
Nichols Hall	14,261	76	812	6	572	2			15,645	39,114	18.5
Pat Roberts Hall	5,929	26	1,089	3	1,449	4			8,467	41,424	32.5
Seaton/Regnier Hall	43,330	186	8,590	44	6,352	15	415	4	58,687	222,112	148.5
Shellenberger Hall	4,305	19	582	3	686	1			5,573	32,194	32
Stanley Stout Center	744	4			948	1			1,692	9,665	4
Thompson Hall	3,584	18	645	7	466	1	20	1	4,715	15,409	16
Throckmorton Hall	37,808	257	4,971	33	6,498	15	379	1	49,656	265,086	255.5
Trotter Hall	14,358	63	1,878	11	3,452	7	185	3	19,873	68,764	75.5
Umberger Hall	14,622	62	2,046	17	976	4			17,644	32,414	85
Unger Complex	44,666	171	8,646	32	4,088	12	82	1	57,482	77,677	116
Ward Hall	4,207	25	121	3	669	2	30	3	5,027	30,212	9
Waters Hall	47,589	224	3,446	37	5,068	12			56,103	100,884	447.5
Waters Hall Annex	2,234	12			348	2			2,582	11,199	3
Weber Hall	10,236	47	655	5	1,468	4	149	1	12,508	95,373	62.5
West Stadium	128	1	49	1					177	24,119	1
Willard Hall	12,912	53	645	8	437	1			13,994	56,768	24.5
Grand Total	752,379	3,731	90,721	766	106,575	303	3,019	39	952,694	2,960,729	4,250.5

- Of the buildings in the analysis containing office space, proportions vary widely. Please refer to the Overview and Strategic Drivers section of this report for additional detail about the space inventory.
- A number of buildings contain significant proportions of office space, such as Anderson Hall, Fairchild Hall, and the Unger Complex.

Space Needs Calculations, KSU Manhattan

A variety of approaches can be used to calculate needed office space. These include:

- Application of an overall ASF multiplier on a per-FTE personnel basis dependent on the *institutional type* (e.g., doctoral, comprehensive, community college, etc.), reflecting industry best practices.
- An evaluation of need wherein calculations are determined by applying multipliers specific to *employee type* (faculty or staff), again on a per-FTE basis. This approach can be further broken down to identify multipliers specific to various subcategories within these two groups, such as adjunct faculty, researchers, support staff, and others.
- Both approaches address the need for office support and conference spaces as proportions of the multipliers proposed, rather than calculating these elements separately. This acknowledges that the relative distribution of such spaces can vary significantly from one building to the next while remaining comparable in the aggregate.

A survey of several recent state university system studies reveals that both approaches have been utilized to generate an overall picture of office space needs. For example, the state university systems of both Utah (2013) and Kentucky (2009) employ the first method described above, prescribing multipliers of 195, 170, and 150 ASF per FTE to calculate office space at doctoral universities, comprehensive universities, and community colleges, respectively. In this approach, there is no differentiation between faculty and staff FTE and their respective needs.

In contrast, the state systems of North Carolina (2008), Texas (2006), and Pennsylvania (2008) identify broad multipliers to be applied based on employment type (faculty/professional and staff). The table below summarizes these metrics. Additionally, the 1972 KBOR space guidelines prescribe multipliers based on employment type and are referenced in the following figure for comparative purposes.

With both approaches, it is essential to understand that the multipliers proposed do not represent a specific office space to be provided to a single faculty or staff member. Instead, it is a composite space allowance, allocated on a per-FTE basis, that allows for appropriate accommodation for faculty and staff in the aggregate, and includes both office and support space.

Figure 5: ASF per FTE Multipliers, Select State University Systems

Employment Type	N. Carolina, 2008	Pennsylvania, 2008	Texas, 2006	Kansas, 1972	Rickes Associates
Faculty/ Professional	190	190	190	165	190
Staff	140	150	170	150	170

R.A. metrics for determining space need draw from these and other precedents, ensuring that the calculations reflect contemporary needs and trends for office space. These metrics can be disaggregated further by employment type using University categories, allowing for a more fine-grained assessment of need at the departmental level.

Space Needs by Employment Level

The following tables summarize the calculated space needs for office space by *employment type*. Please note:

- The University provided headcount personnel totals for the institution as a whole, found in the Overview and Strategic Drivers section of this report. Those groups residing in the subject buildings were disaggregated; these personnel (roughly 4,400) account for roughly 80% of all academic and administrative staff at the University.
- R.A. proposes using the following multipliers aligned with employment types:
 - 190 ASF per FTE for faculty, researchers, visiting scholars
 - 170 ASF per FTE for academic and professional staff

- 40 ASF per FTE for adjunct faculty, which recognizes that while a larger physical workspace may be available, it is likely to be shared among multiple individuals

The following section applies these multipliers to the various KSU employee types found in the subject buildings, disaggregating them to show allowances for office, office support, and conference space.

Figure 6: Overall Space Needs by Employment Level, KSU Manhattan

Employee Category	Current FTE	Office		Support		Conference Room		Totals
		Multiplier	Current ASF Need	Multiplier	Current ASF Need	Multiplier	Current ASF Need	
Coaches	69	40	2,760	0	0	0	0	2,760
Faculty	1,160	150	174,000	20	23,200	20	23,200	220,400
Maintenance/Service/Trades	589	40	23,560	0	0	0	0	23,560
Non-Tenure-Track Faculty	354	140	49,560	20	7,080	10	3,540	60,180
Office/Library Support	924	140	129,360	20	18,480	10	9,240	157,080
Professional Administrative	158	140	22,120	20	3,160	10	1,580	26,860
Regular Professional Library	22	140	3,080	20	440	10	220	3,740
Regular Professional Staff	1,030	140	144,200	20	20,600	10	10,300	175,100
Safety / Security	74	40	2,960	0	0	0	0	2,960
Technical Support	814	140	113,960	20	16,280	10	8,140	138,380
Grand Total	5,191		665,560		89,240		56,220	811,020

- Compared to the 1,142,699 ASF of existing space, the calculations identified an overall need for approximately 811,020 ASF.
- These calculations reflect the application of broad planning multipliers, as previously detailed, to overall personnel totals, and should not be construed as detailed programming of office space needs.
- The distribution of space displayed here is only for illustrative purposes, as the proposed ASF is more “correct” in the aggregate.

Space Needs by Building

As a complement to campuswide office space needs, R.A. calculated office space needs for each of the 64 buildings containing office space within the analysis. This approach was intended to surface issues of office-related crowding and/or inefficiency on a building-by-building basis.

To determine office space needs by building, space ownership and personnel data were reviewed, and total FTE per building was compiled. Appropriate faculty or staff multipliers of 190 ASF and 170 ASF, respectively, were then applied to resulting totals to determine calculated ASF need for the building, which was then compared back to existing ASF totals.

As with other conclusions drawn in the Office Space Analysis section of this report, it is important to understand that this represents the application of overarching *space planning* multipliers for comparative purposes and should not be construed as *space programming*. As indicated at the beginning of this chapter, the intent of this comparison is to identify those buildings where there are significant discrepancies between office space supply and office space demand, to inform discussion about the suitability of campus buildings for their current purposes.

The following table summarizes FTE totals and departments by building, according to personnel and inventory data, and displays the resulting calculated office ASF needs versus existing Office Facilities (300) square footage.

The relationship between current and calculated square footage totals is expressed as a “need-to-existing office space ratio,” which can be broadly understood as representing the relative surplus or deficit of office space for a given building. Buildings whose need-to-existing office space ratio exceeds 100% -- thereby indicating a calculated shortage of space, per available data -- are highlighted in red. In contrast, those buildings with ratios below 100% are highlighted in green, indicating that they appear to have sufficient square footage to accommodate current FTE personnel.

Figure 7: FTE Personnel Totals, Current ASF, and Calculated ASF Office Need by Building

Building	FTE Personnel	Calculated Office ASF Needs	Current Office ASF	Need-to-Existing Office Facilities Ratio
Ackert/Chalmers Hall	122	21,680	26,808	80.9%
Anderson Hall	195	33,150	39,442	84.0%
ASI Sheep & Meat Goat - Main Office/Training Facility	2	380	171	222.2%
Berney Family Welcome Center	38.5	6,545	14,948	43.8%
Bluemont Hall	200.5	35,585	35,942	99.0%
Burt Hall	7	1,190	2,976	40.0%
Bushnell Annex	6.5	1,105	753	146.7%
Bushnell Hall	8.5	1,595	5,928	26.9%
Call Hall	46	8,050	11,006	73.1%
Calvin Hall	76	13,600	17,976	75.7%
Campus Creek Complex	16	3,000	4,645	64.6%
Cardwell Hall	115.5	20,965	29,134	72.0%
Chem-Biochem Building	42.5	7,615	13,059	58.3%
Civil Infrastructure Testing Lab	7	1,230	75	1,640.0%
CMG - Research Building	15.5	2,635	105	2,509.5%
Coles Hall	56.5	6,645	10,467	63.5%
College of Business Building	113.5	20,175	36,225	55.7%
Dickens Hall	30.5	5,635	10,720	52.6%
Dole Hall	38	5,940	8,649	68.7%
Durland/Rathbone/Fiedler/Engineering Hall	160.5	28,675	57,702	49.7%
Dykstra Hall	260.5	18,415	15,327	120.1%
Edwards Hall	115.5	10,990	27,723	39.6%
Eisenhower Hall	38	6,760	14,621	46.2%
English/Counseling Services	59	10,690	15,961	67.0%
Environmental Research Lab	2.5	445	1,484	30.0%
Facilities Grounds	10	1,700	88	1,931.8%
Fairchild Hall	104.5	17,765	27,754	64.0%
Feed Technology	1	190	1,209	15.7%
General Richard B. Meyer Hall	2	340	5,402	6.3%
Grain Science Center - BIVAP	4.5	765	3,810	20.1%
Grain Science Center - International Grains	4	680	5,732	11.9%
Hale-Farrell Library	112.5	19,745	9,538	207.0%
Hoeflin Stone House	9.5	1,675	1,405	119.2%
Holton Hall	38	6,460	11,453	56.4%
Holtz Hall	1	170	558	30.5%
International Student Center	6.5	1,105	3,169	34.9%
Justin Hall	196.5	34,495	31,615	109.1%

Building	FTE Personnel	Calculated Office ASF Needs	Current Office ASF	Need-to-Existing Office Facilities Ratio
Kedzie Hall	32.5	5,835	8,882	65.7%
King Hall	1	170	3,568	4.8%
Lafene Student Health at Mercy Health Center	104	17,225	24,080	71.5%
Leadership Studies & Programs Building	19.5	3,475	8,102	42.9%
Leasure Hall	15.5	2,815	11,440	24.6%
Manufacturing Learning Center (AMI)	15.0	2,790	7,572	36.8%
Mary & Carl Ice Hall	12.5	2,185	4,589	47.6%
McCain Auditorium	69	12,450	12,267	101.5%
Mechanical Engineering Lab	4.5	785	615	127.6%
Mosier Hall	379.5	66,695	35,923	185.7%
National Gas Machine Lab	3.5	595	2,251	26.4%
Nichols Hall	18.5	3,285	15,645	21.0%
Pat Roberts Hall	32.5	4,875	8,467	57.6%
Seaton/Regnier Hall	148.5	27,295	58,687	46.5%
Shellenberger Hall	32	5,740	5,573	103.0%
Stanley Stout Center	4	680	1,692	40.2%
Thompson Hall	16	2,980	4,715	63.2%
Throckmorton Hall	255.5	44,715	49,656	90.0%
Trotter Hall	75.5	12,935	19,873	65.1%
Umberger Hall	85	14,650	17,644	83.0%
Unger Complex	116	19,720	57,482	34.3%
Ward Hall	9	1,650	5,027	32.8%
Waters Hall	447.5	77,815	56,103	138.7%
Waters Hall Annex	3	570	2,582	22.1%
Weber Hall	62.5	11,120	12,508	88.9%
West Stadium	1	170	177	96.0%
Willard Hall	24.5	4,495	13,994	32.1%
Total	4,250.	705,500	952,694	74.1%

- Overall, there is a calculated need for 705,500 ASF of office space across the 64 buildings within this analysis. This is roughly 26% less than the 952,694 ASF of Office Facilities (300) spaces currently in these buildings.
- FTE data is drawn from personnel data provided, including full- and part-time positions, as noted previously. Student workers are excluded from this exercise.
- Numerous buildings in the comparison appear to have an excess of Office Facilities (300) assignable square footage

compared to the calculated number of personnel identified as occupying the building. Meanwhile, a second set of buildings appears to needs significantly more office space to accommodate current FTE personnel. An effort was made to reconcile personnel information with building locations and in/out-of-scope-status to approximate FTE personnel by building. These findings should be reviewed to align with any “lived experience” findings in the buildings themselves regarding perceptions of excess space, legacy configurations, ownership and control, cramped conditions, etc.

Summary, KSU Manhattan

- There appears to be a calculated aggregate need for less Office Facilities (300) space at KSU Manhattan than currently exists. This is true both for the buildings in the analysis as well as the KSU Manhattan campus as a whole.
 - Through the use of multipliers specific to employment type across the University as a whole, there appears to be a potential space surplus of roughly 289,000 ASF.
 - On a by-building basis, when comparing demand for space generated by allocated FTE personnel data, there appears to be approximately 247,000 ASF of surplus space.
- This effort is intended to highlight areas for further investigation and provide a foundation for future space planning and programming efforts on the KSU Manhattan campus. The calculations here reflect the application of higher-order planning multipliers informed by contemporary best practices.
- It is important to emphasize that numerous factors may limit the potential to recoup and/or reassign space, including legacy, configuration, special functions and adjacencies, etc., and that some facilities may lend themselves to reconfiguration more readily than others. Further, given that existing office square footage is spread widely across nearly all buildings in the analysis, the potential to recapture significant amounts of square footage may be limited.

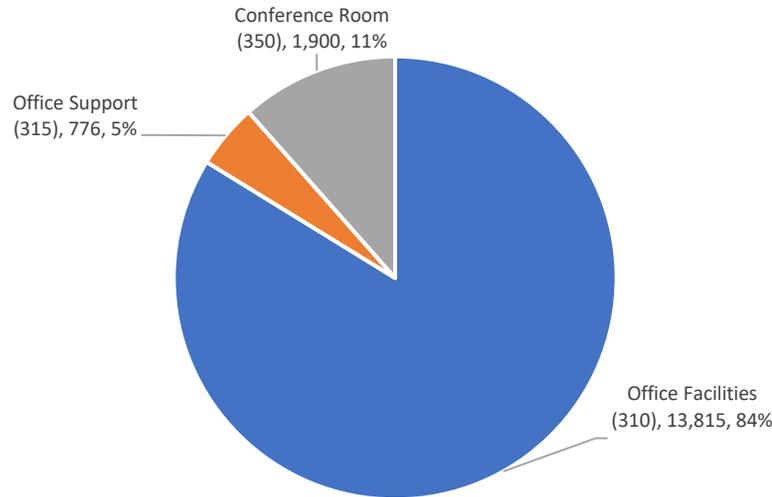
- Existing space inventory and personnel data should be reviewed for accuracy and concordance. The alignment of these two data sets will allow the University to identify pressure points and areas of opportunity with greater accuracy.
- As office space needs for specific units are reviewed in the future, it is important to approach the process with an awareness of shifts in work practice and understanding of institutional and departmental culture, workflow, and strategic directions. Care must also be taken when introducing alternative work environments to ensure equity between and across units.

KSU Olathe

Current Space

The following figures identify the amount of assignable Office Facilities (300) square footage identified in the KSU Olathe space inventory.

Figure 8: Overall Distribution of Office Facilities (300) Space, by Type, KSU Olathe



- Overall, there is just over 16,000 ASF of Office Facilities (300) space on the KSU Olathe campus, per inventory data.
- FICM 310 categorization denotes both private and shared office spaces. 84% of all space in the FICM 300 category is coded as 310 space.
- FICM 315 refers to Office Service, including spaces such as copy rooms and workrooms. This category accounts for 5% of all Office Facilities (300) space.

The following figure compares the distribution of all Office Facilities (300) assignable square footage against total square footage. This square footage encompasses all office spaces, as well as all support and all conference room space. Personnel FTE is also included.

Figure 9: Distribution of Office Facilities (300) Space

Building	Office (310)		Office Support (315)		Conference Room (350)		Totals		
	ASF	# of Spaces	ASF	# of Spaces	ASF	# of Spaces	Total ASF, 300 (Office Facilities)	Total Building ASF	FTE Personnel
KSU Olathe Building A	13,815	58	776	4	1,900	6	16,491	63,121	34.5
Grand Total	13,815	58	776	4	1,900	6	16,491	63,121	34.5

- The KSU-Olathe space inventory does not provide detail regarding departmental ownership. However, the entirety of the campus is contained within a single building.
- Office and office-related spaces comprise 26% of all assignable space at KSU Olathe.

Personnel, KSU Olathe

The following table summarizes headcount and FTE personnel by department and R.A. employee type, as well as full- and part-time status.

Figure 10: Personnel Totals by Type, KSU Olathe

Employee Type	Full Time	Part-Time	Grand Total
Faculty	4		4
Office/Library Support	8	5	13
Professional Administrative	9	1	10
Regular Professional Staff	3	1	4
Technical Support	3	8	11
Grand Total	27	15	42

- Just over 60% of the personnel in the subject buildings are full-time employees.
- Assuming a typical 2:1 headcount/FTE conversion rate for the sake of this analysis, 42 headcount personnel convert to 34.5 FTE. FTE information was not included in the data provided by KSU Olathe.

Further details regarding the alignment of this data with space inventory data are discussed in the following section.

Space Needs Calculations, KSU Olathe

The following tables summarize calculated space needs for office space by *employment type*, using the same methodology applied to KSU Manhattan calculations. Please note:

- R.A. proposes using the following multipliers aligned with employment types:
 - 190 ASF per FTE for faculty, researchers, visiting scholars
 - 170 ASF per FTE for academic and professional staff
 - 40 ASF per FTE for adjunct faculty, which recognizes that while a larger physical workspace may be available, it is likely to be shared among multiple individuals

The following section applies these multipliers to KSU Olathe personnel figures, disaggregating them to show allowances for office, office support, and conference space.

Figure 11: Overall Space Needs by Employment Level, Subject Buildings

Employee Category	Current FTE	Office		Support		Conference Room		Totals
		Multiplier	Current ASF Need	Multiplier	Current ASF Need	Multiplier	Current ASF Need	
Faculty	4	150	600	20	80	20	80	760
Office/Library Support	11	140	1,470	20	210	10	105	1,785
Professional Administrative	10	140	1,330	20	190	10	95	1,615
Regular Professional Staff	4	140	490	20	70	10	35	595
Technical Support	7	140	980	20	140	10	70	1,190
Grand Total	35		4,870		690		385	5,945

- Compared to more than 16,000 ASF of existing space, the calculations identified an overall need for just under 6,000 ASF.
- These calculations reflect the application of broad planning multipliers, as previously detailed, to overall personnel totals, and should not be construed as detailed programming of office space needs.

Summary, KSU Olathe

- There appears to be a calculated need for less Office Facilities (300) space in the subject buildings than currently exists.
- It is important to emphasize that numerous factors may limit the potential to recoup and/or reassign space, including legacy, configuration, special functions and adjacencies, etc., and that some facilities may lend themselves to reconfiguration more readily than others.
- Existing space inventory and personnel data should be reviewed for accuracy and concordance. The alignment of these two data sets will allow the University to identify pressure points and areas of opportunity with greater accuracy.

Summary, KSU Manhattan and KSU Olathe

The table below summarizes key findings from the analyses presented in this chapter. Please note that while KSU Olathe is wholly contained within one facility its calculated need for office space, therefore, also reflects campus-wide need. KSU Manhattan figures below reflect current supply and calculated demands for office space for the campus as a whole as well as in-scope buildings alone.

Figure 12: KSU Manhattan and KSU Olathe Calculations Summary

Office Facilities (300)	Current ASF	Calculated ASF Needs	Difference
KSU Manhattan (campuswide)	1,142,699	811,020	-331,679
KSU Manhattan (In scope only)	953,000	706,000	-247,000
KSU Olathe	16,000	6,000	-10,000

Chapter 4

Space Utilization Summary

4.0 Space Utilization Summary

Overview

Previous chapters have presented the methodology and associated utilization analysis for both instructional space and office space contained within the targeted buildings. The approach and findings are summarized in this chapter, with comments on individual buildings. In addition, individual building “snapshot” pages are included in Chapter 5, presenting pertinent information about building metrics, occupants, and utilization rates.

In Fall 2015, KSU Manhattan enrolled 19,026 FTE on campus in 4.7 million ASF (excluding residential), or the equivalent of 247 ASF/FTE. In 2019, the comparable figure was 284 ASF/FTE, as enrollment has declined to 16,578 FTE. Public research institutions typically fall within the 200 to 300 ASF/FTE range, indicating that the university is generously sized for its current enrollment.

With respect to this study, our analysis of instructional space and office space suggests potential opportunities for space consolidation in these categories.

Instructional Space – KSU Manhattan

Instructional space needs were quantified using Fall 2019 course data in conjunction with campus student FTE. Overall, 388 spaces containing 442,870 ASF in 41 buildings were reviewed for capacity, seat occupancy, and hourly utilization metrics. These spaces included general-purpose classrooms, dedicated and departmentally-controlled classrooms, and specialized instructional spaces.

Of these 41 buildings, three are not within the scope of the study (Gymnasium, Kremer Food Center, Natatorium). The instructional spaces located in these buildings are probably not of help when looking at potential re-alignment of instructional space, as these rooms tend to be specialized and therefore dedicated to certain classes/departments.

In the FICM 100 space category, there are 122 general-purpose classrooms in 24 buildings, equaling 129,494 ASF, and another 124 dedicated classrooms equaling 113,147 ASF. In addition, there are eight unscheduled general-purpose classrooms (5,632 ASF) and 23

unscheduled dedicated classrooms (13,850 ASF). In total, 277 rooms and 262,135 ASF of space is coded to classroom.

KSU Manhattan has the opportunity to meet current and imminent classroom space needs through strategic modifications of existing room capacities. This right-sizing effort, coupled with reclassifying dedicated classrooms as general-purpose classrooms where appropriate (analysis indicates 92 candidates), brings the total potential number of available general-purpose classrooms to 222. In contrast, the RA utilization analysis indicates a need for 128 classrooms. This provides a buffer of 94 classrooms to be reviewed in conjunction with other space categories for potential re-purposing to address other campus space needs.

The FICM 210 space category of specialized instructional space is contained in 21 buildings within the scope of this study, encompassing 200,229 ASF in 142 scheduled rooms and an additional 27 unscheduled rooms and 23,469 ASF. In addition, there are two buildings outside the scope of this study (Gymnasium, Natatorium) with specialized instruction space equaling 9,857 ASF in six rooms. Open lab space and research lab space (FICM 220 and FICM 250) are being held constant per campus inventory records for the purposes of this study, as these spaces were not included in field surveys. This space category encompasses 761,366 ASF in 55 of the target buildings.

One thing to consider moving forward is the amount of unscheduled instructional space contained within the target buildings. In total, there is over 37,000 ASF of space in 47 unscheduled rooms. These rooms are located in 21 different buildings, and may provide opportunity space upon further review. These unscheduled rooms are included in the general-purpose classroom and specialized instructional overall totals noted above, so this space is not in addition to those numbers.

Instructional Space – KSU Olathe

As was the case for KSU Manhattan, instructional space needs for KSU Olathe were quantified using Fall 2019 course data. Overall, four spaces containing 6,091 ASF in Olathe’s single building were reviewed for capacity, seat occupancy, and hourly utilization metrics. These spaces are all general-purpose classrooms.

These rooms are used primarily for nighttime scheduling. There appears to be ample opportunity to increase utilization -- and presumably outreach to the surrounding area. What is not known is how these spaces may be currently used outside the formal schedule provided.

Open lab space and research lab space (FICM 220 and FICM 250) are being held constant per campus inventory records for the purposes of this study. This space category encompasses 18,462 ASF in Olathe's single building.

Office Space – KSU Manhattan

Office space is the FICM 300 series that encompasses both academic and administrative office space clusters, including support space such as reception areas, conference rooms, workrooms, storage, and dedicated lounges. For the purposes of this study, we have provided analysis of office space based on multipliers as detailed in Section 3 Office Space.

Current personnel figures were collected from the campus and converted to FTE. The FTE by department/area was then multiplied by the appropriate ASF multiplier to provide the base need for offices and associated support spaces, thereby defining a general pool of office space for the target buildings.

Findings:

- For the targeted buildings, a total 4,250 FTE personnel was calculated from supplied data.
- There was 952,694 ASF of office and support space identified in the targeted building inventory.
- Using contemporary guidelines, there is a calculated need for 705,500 ASF of office and support space in the targeted buildings.
- The metrics used indicate current office space in the targeted buildings is around 35% higher than the calculated need. This suggests that a more detailed review of office space need, by building, should be undertaken to determine if consolidations are possible. This would have the added benefit of making fragmented units "whole" while also providing opportunities to collocate related units for greater efficiencies.

- KSU faces multiple challenges related to the distribution of office space.
 - *Legacy Space*: These are spaces often associated with historic buildings or repurposed houses. These offices tend to be either larger or smaller than current office space planning guidelines would dictate and are inefficient.
 - *Department Assignment*: In some instances, office space may be miscoded.
 - *Personnel vs. Inventory*: There is not a clear relationship between personnel data and inventory data to confirm actual locations for faculty and staff.

Office Space – KSU Olathe

As was the case for KSU Manhattan, current personnel figures were converted to FTE and then multiplied by the appropriate ASF multiplier.

Findings:

- The total personnel headcount of 42 was converted to 34.5 FTE.
- There was 16,491 ASF of office and support space.
- Using contemporary guidelines, there is a calculated need for 5,945 ASF of office and support space.

Individual Building Analysis – Manhattan Campus Summaries

The 67 buildings in this study have been placed into five general categories, based upon the preponderance of space assignments within each:

- Classroom/Office
- Classroom/Office/Research
- Office
- Research
- Other

Grouping the buildings in this way allows for a more direct comparison of targeted analytics, and therefore a more focused determination of potential consolidation strategies.