



# Kansas State University Polytechnic

Salina, KS

**Kansas Board of Regents:**

**Systemwide Space Utilization Study**

13 November 2020



gouldevans

## Executive Summary:

### Kansas State University Polytechnic

#### Purpose & Methodology

Rickes Associates was engaged by Gould Evans and the Kansas Board of Regents to conduct a targeted space needs analysis. This study was prompted by the need to align the utilization of the campuses in a systematic manner through the application of a standardized analysis and associated metrics for comparative purposes.

The scope of the study included all spaces scheduled for instruction, including classrooms and teaching labs across the entirety of campus. Office space distribution and needs were specifically evaluated for the 13 in-scope buildings, and more broadly assessed for the Kansas State University Polytechnic campus.

#### Existing Conditions & Findings

In order to establish a foundation for the analysis of space needs, key strategic drivers related to enrollment, personnel, and course scheduling were analyzed, and the current distribution of campus space by type was reviewed.

##### Enrollment

- The 2019 enrollment was 497 headcount and 452 FTE, undergraduate and graduate, on-campus students only.
- KSU Polytechnic projects a steady decline in on-campus enrollment through 2022, with a slight uptick in 2024.

##### Space Inventory

- There is a total of 214,356 ASF on the campus, overall, including residential.
- When the 21,661 ASF of residential space is excluded to facilitate consistent inter-institutional comparisons, the total campus space inventory includes 20 buildings and 192,695 ASF of space.
- The study focused on 13 buildings containing 155,582 ASF of space.

##### Personnel

- A total of 182 personnel are actively employed on campus.
- Full-time personnel represent 78% of the total.

##### Instructional Space

- The analysis was conducted using standard metrics pertaining to capacity, occupancy, and utilization.
- A total of 16 classrooms and 12,076 ASF were reviewed, including centrally-scheduled and departmentally-dedicated classrooms. KSU Polytechnic requires a minimum of eight classrooms, assuming a single pool of space.
- Specialized instructional spaces, or teaching labs, encompassed 13 spaces, 16,481 ASF, and 291 stations. Current analysis indicates the total number of specialized instructional spaces is adequate to meet the needs of this space category, although more appropriately sized space would be beneficial.

##### Office Space

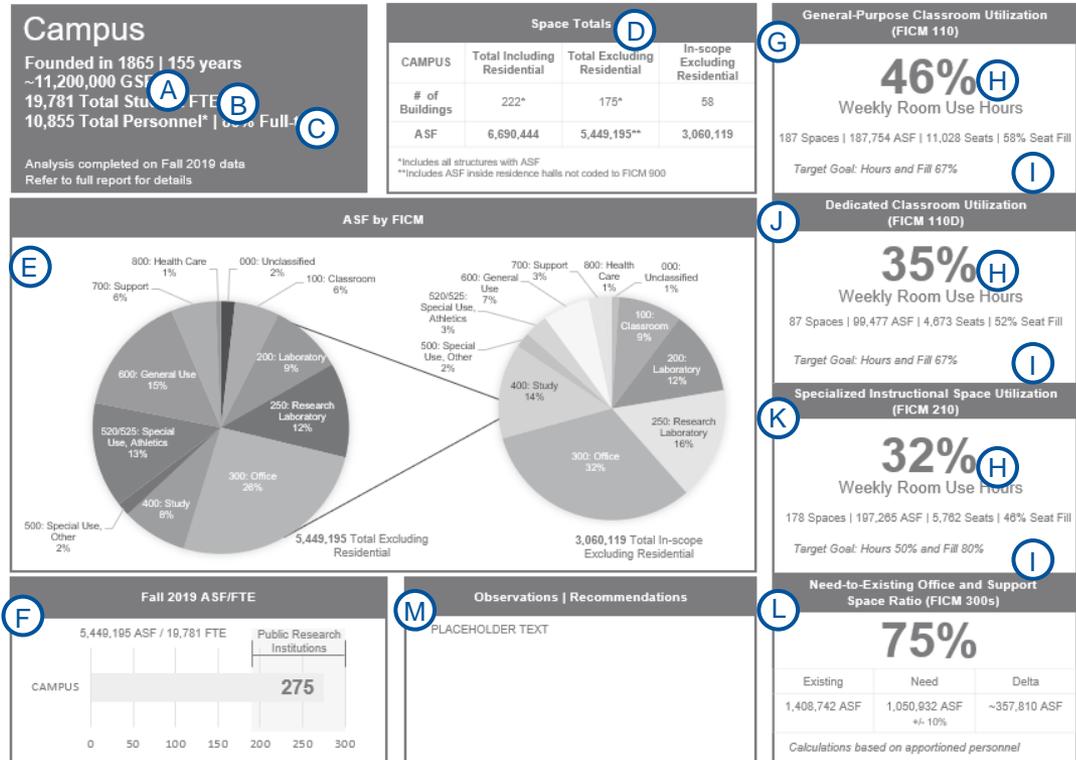
- Ten academic and administrative units occupy office space and have personnel located in 11 of the 13 buildings under review, representing roughly 91% of the total personnel on campus.
- Compared to roughly 36,000 ASF of existing office space reviewed, the calculations identified a need for approximately 25,000 ASF.

##### Summary

In Fall 2015, KSU Polytechnic enrolled 459 FTE on campus in 192,695 ASF (excluding residential), or the equivalent of 420 ASF/FTE. In 2019, the comparable figure was 426 ASF/FTE, as enrollment has declined to 452 FTE.

The study outcomes provide KBOR and Kansas State University Polytechnic opportunities to promote improved utilization of existing spaces and to identify the highest and best use of campus buildings.

# 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 Polytechnic

Founded in 1991 | 29 years  
 ~346,200 GSF  
 452 Total Student FTE  
 182 Total Personnel | 78% Full-time

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

## Space Totals

| KSU Polytechnic | Total Including Residential | Total Excluding Residential | In-scope Excluding Residential |
|-----------------|-----------------------------|-----------------------------|--------------------------------|
| # of Buildings  | 20*                         | 20*                         | 13                             |
| ASF             | 214,356                     | 192,695**                   | 155,582                        |

\*Includes all structures with ASF

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

## General-Purpose Classroom Utilization (FICM 110)

# 32%

### Weekly Room Use Hours

16 Spaces | 12,076 ASF | 548 Seats | 49% Seat Fill

Target Goal: Hours and Fill 67%

## Dedicated Classroom Utilization (FICM 110D)

# N/A

### Weekly Room Use Hours

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

Target Goal: Hours and Fill 67%

## Specialized Instructional Space Utilization (FICM 210)

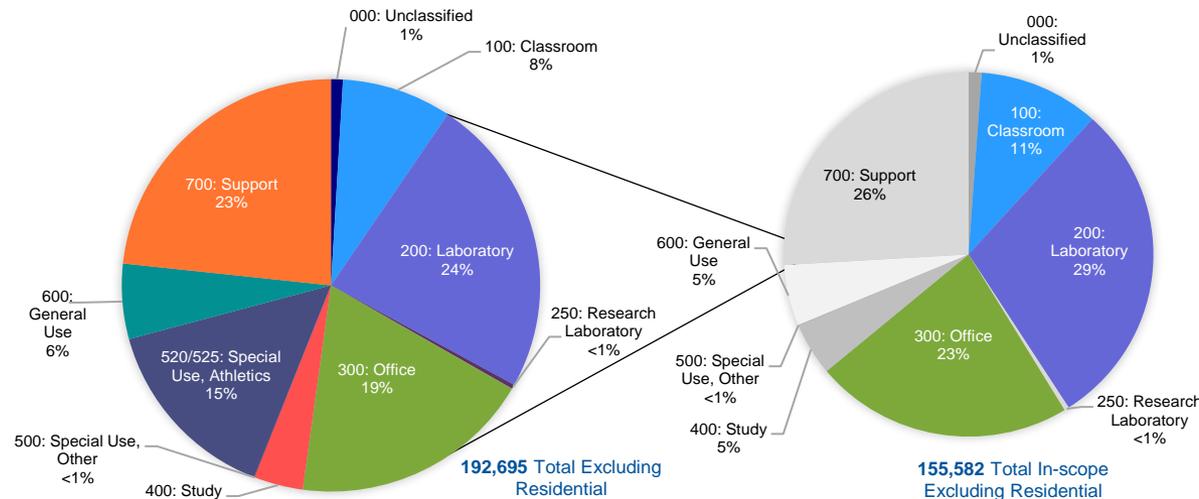
# 22%

### Weekly Room Use Hours

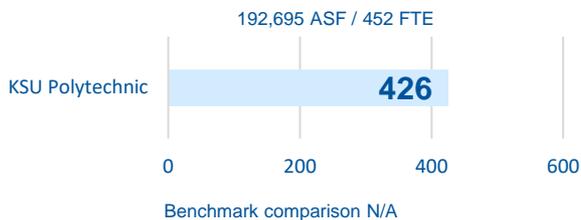
13 Spaces | 16,481 ASF | 291 Seats | 45% Seat Fill

Target Goal: Hours 50% and Fill 80%

## ASF by FICM



## Fall 2019 ASF/FTE



## Observations | Recommendations

- Instructional space analysis indicates a potential surplus of 12 classrooms, or approximately 9,000 ASF.
- Specialized Instructional space analysis indicates reduction in this category is unwarranted.
- Vacant space and unclassified space offer little opportunity for consolidation.
- Overall, there may be a total net opportunity of 19,000 ASF.

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

# 72%

| Existing   | Need                  | Delta       |
|------------|-----------------------|-------------|
| 36,248 ASF | 25,965 ASF<br>+/- 10% | ~10,283 ASF |

Calculations based on apportioned personnel

## 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 13 targeted buildings (Chapter 4) and all scheduled instructional spaces across the entirety of campus, including classrooms and teaching labs (Chapter 2). Office space distribution and needs were evaluated for the 13 in-scope buildings (Chapter 3), as well as for KSU Polytechnic campus as a whole.

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

### Campus Overview

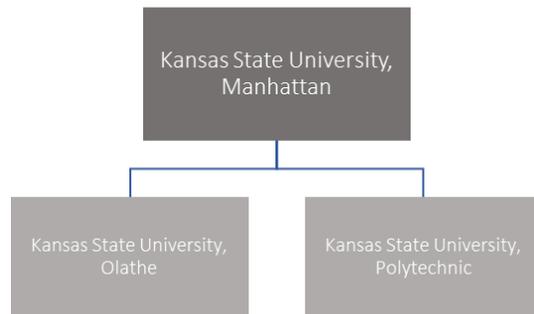
Figure 1: Kansas State University Polytechnic



Kansas State University Polytechnic (KSU Polytechnic) is one of 11 campuses within the Kansas Board of Regents (KBOR) System included in this study. KSU Polytechnic is one of three institutions (excluding K-State Global) in the Kansas State University System, which also includes Kansas State University Manhattan and Kansas State University Olathe.

KSU Polytechnic is a public college founded in 1991 and is home to KSU's College of Technology and Aviation. In 2019, it had a total on-campus enrollment of 452 FTE. The campus is located in Salina, a city which offers the campus access to 600 acres of park land.

**Figure 2: Kansas State University System**



KSU Polytechnic prides itself on its small class sizes, 14:1 faculty-to-student ratio, and focus on hands-on learning. The campus offers 13 degree options, primarily in aviation, business, computers, engineering service and technology.

Campus space inventory data identified a total of 20 buildings, of which 13 are being examined as part of this study. The 13 subject buildings amount to 236,236 gross square feet (GSF), or 155,582 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.

## 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

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 Polytechnic 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).

The following table summarizes overall trends in on-campus and online enrollment from Fall 2015 to Fall 2019 and projects anticipated enrollment, as determined by the institution, through Fall 2024. Examining online and on-campus enrollment jointly provides a global snapshot of enrollment trends across the institution.

## Personnel

According to the personnel counts received from Human Resources at KSU-Polytechnic, there were 182 employed as of Spring 2020. Of this total, 142 are full-time employees, while 40 are identified as part-time. Student workers are excluded from these figures.

The table below presents headcount personnel totals by major employment categories as detailed in KSU-Polytechnic personnel data, exclusive of students.

**Figure 5: Fall 2019 to Spring 2020 Academic Year, Personnel by Type**

| KSU-Polytechnic Personnel    | Full-Time  | Part-Time | Totals     |
|------------------------------|------------|-----------|------------|
| Faculty                      | 34         | 2         | 36         |
| Maintenance/Service/Trades   | 12         | 1         | 13         |
| Non Tenure-Track Faculty     | 10         | 10        | 20         |
| Office/Library Support       | 27         | 5         | 32         |
| Professional Administrative  | 2          |           | 2          |
| Regular Professional Library | 2          |           | 2          |
| Regular Professional Staff   | 27         |           | 27         |
| Safety/Security              | 5          |           | 5          |
| Technical Support            | 23         | 22        | 45         |
| <b>Total</b>                 | <b>142</b> | <b>40</b> | <b>182</b> |

- Excluding students, the single largest employment group at KSU-Polytechnic is Technical Support, accounting for nearly 25% of all those employed on the campus.
- Inclusive of both tenure-track and non-tenure-track positions, faculty account for roughly 30% of all personnel on the KSU Polytechnic campus.

## 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 Polytechnic. The full space inventory includes the complete array of campus space under the aegis of the University. RA sorted, organized, and filtered the inventory in order to focus on the 13 in-scope buildings. 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 6: FICM Space Type**

| Main Space Code   | Functional Space Type                | Description  | Calculation   |
|---|--------------------------------------|--|---|
| <b>100: Classrooms and Support Space</b>                | 110: Classrooms                      | General-purpose instructional spaces                 | Detailed analysis of weekly hours utilized, seat fill, and ASF per seat. Classrooms campuswide, specialized instructional spaces by program/discipline.   |
|   | 210: Instructional Laboratory        | Specialized instructional spaces                     | Calculated as overall campus need at the aggregate level  |
|   | 220: Open Laboratory                 | Drop-in labs / not formally scheduled                |   |
| <b>200: Specialized Instructional and Support Space</b> | 250: Research Laboratory             | Space dedicated to research                          | Calculated at the aggregate level based on faculty counts   |
|   | <b>300: Office and Support Space</b> | 310: Office<br>315: Support<br>350: Conference Rooms | Academic/administrative offices and related spaces<br><br>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 |
| <b>400 to 800 Space</b>                                 | 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                                    |   |

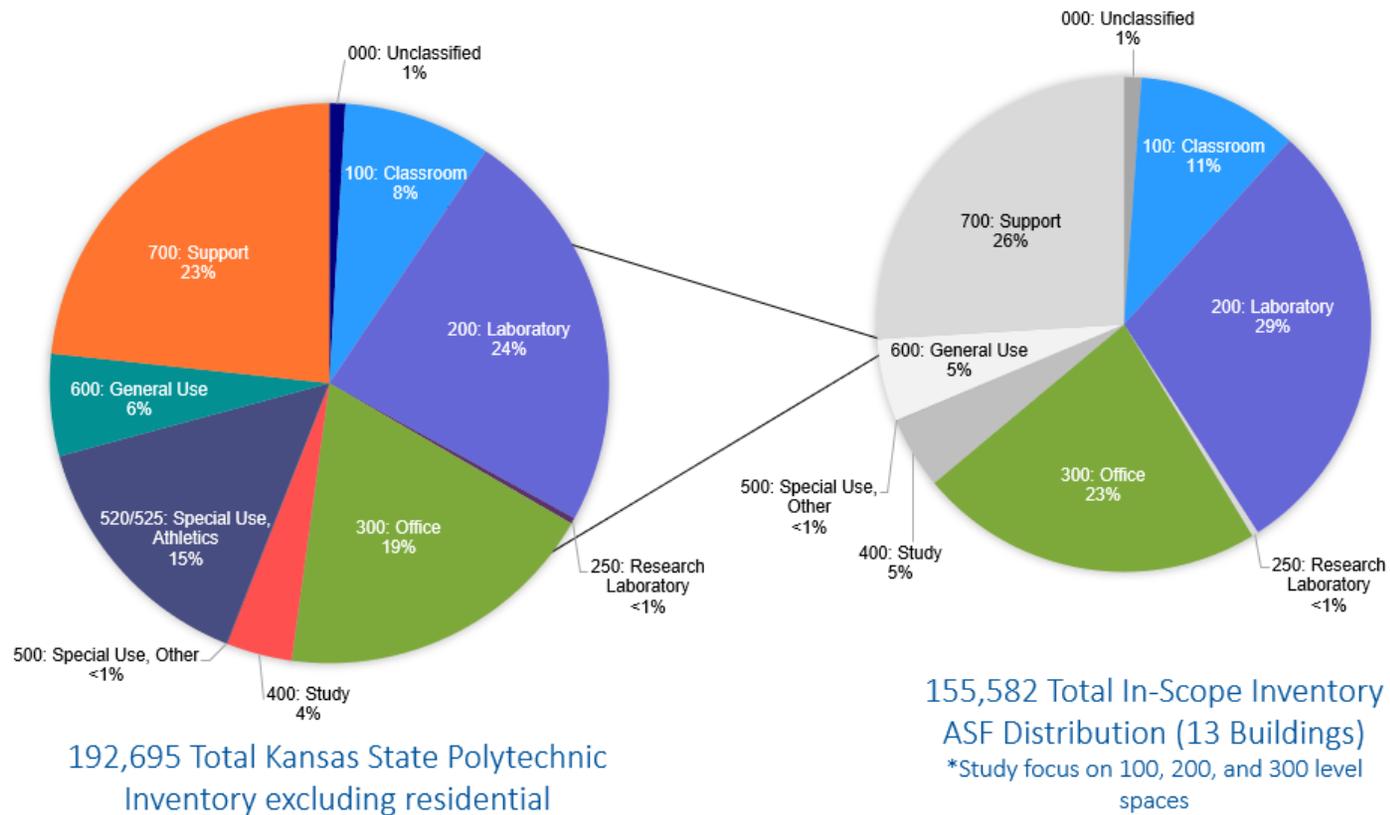
- Order-of-magnitude analysis
- Detailed analysis

### Space Distribution by FICM Space Category

The total campus space inventory identifies 20 buildings and 192,695 ASF of space. Additionally, KSU Polytechnic has 155,582 ASF of Residential space and 18,432 ASF of Vehicle Storage and Parking space, which is excluded in the diagrams below.

This study focuses on 13 buildings occupying 155,582 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 58 in-scope buildings.

Figure 7: Percentage Distribution of Space by FICM Category



**Figure 8: Numerical Distribution of Space by FICM Category**

| Kansas State University Polytechnic |                       |                         |
|-------------------------------------|-----------------------|-------------------------|
|                                     | Total Space Inventory | In-Scope Buildings (13) |
| 000: Unclassified                   | 1,768                 | 1,768                   |
| 100: Classroom                      | 16,404                | 16,404                  |
| 200: Laboratory                     | 45,445                | 45,445                  |
| 250: Research Laboratory            | 652                   | 652                     |
| 300: Office                         | 36,248                | 35,198                  |
| 400: Study                          | 7,268                 | 7,268                   |
| 500: Special Use, Other             | 101                   | 101                     |
| 520/525: Special Use, Athletics     | 28,538                | 0                       |
| 600: General Use                    | 11,362                | 8,404                   |
| 700: Support                        | 44,909                | 40,342                  |
| 800: Health Care                    | 0                     | 0                       |
| <b>Total</b>                        | <b>192,695</b>        | <b>155,582</b>          |

Green= Most space; Red= Least Space

**Total Campus FICM Distribution**

- The largest category of space in the KSU Polytechnic inventory belongs to Laboratory (200) representing 45,445 ASF of assignable space and accounting for 24% of all assignable square footage. This reflects KSU Polytechnic’s focus on hands-on learning.
- The smallest category of space in the KSU Polytechnic inventory is attributed to Special Use, Other (500) occupying only 100 ASF and less than 1% of campus space.
- KSU Polytechnic does not have any space coded to Health Care (800)
- 1% of campus space is Unclassified (000) and there is limited Research Laboratory Space (250).

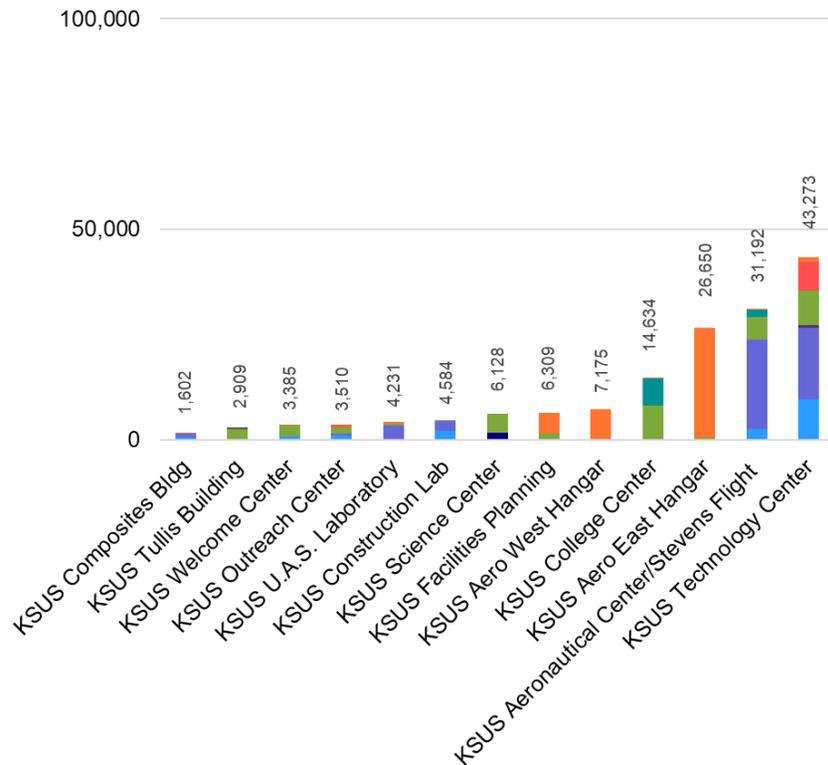
**In-Scope Buildings FICM Distribution**

- 13 buildings on the KSU Polytechnic campus were included in this analysis. Together, they comprise 236,236 GSF, equating to 155,582 ASF. Compared to the overall campus total of 192,695 ASF and 20 buildings, this analysis reviews just under two-thirds of all assignable square footage, and just over half of all buildings.
- Together, space assigned to Classroom Facilities (100) and Laboratory Facilities (200) represents 43% of the reviewed spaces.
- The largest category of space analyzed within the scope of the 13 identified buildings is Laboratory (200) occupying 45,445 ASF. All Laboratory (200) space on campus is included within the scope of this study.
- No Special Use, Athletics Space (520/525) falls within the scope of study.

**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 13 in-scope buildings, refer to Chapter 4 of this analysis.

**Figure 9: Distribution of Space (ASF) by Building and FICM Space Category, 13 Buildings in Scope**



The largest building represented is the KSUS Technology Center, accounting for just under 50,000 ASF (43,273 ASF).

- The smallest building is KSUS Composites Building, with 1,600 ASF.
- Many of the buildings represented in the space inventory extract are comprised of spaces belonging to multiple FICM space categories.
- In total, 28,557 ASF of instructional space was reviewed in 2 buildings included in this study. The detailed utilization of classroom and laboratory spaces is in the Instructional Space Utilization Analysis section of this report.
- Based on review of supplied inventory, 35,198 ASF of office and office support space is distributed throughout 11 of the 13 in-scope buildings. Further information specific to office space distribution is available in the Office Space Analysis section of this report.

### Summary

Overall, in Fall 2019, KSU Polytechnic enrolled 452 FTE and supported almost 182 personnel. Within the purview of this scope, there is more than 230,000 GSF, equating to just over 150,000 ASF. 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.

### 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 specific academic discipline. Additional classroom-type spaces are also analyzed, including dedicated/departmental general-purpose classrooms or associated conference and meeting rooms, to understand the breadth of spaces used for campus instruction.

Specialized Instructional spaces, however, are configured and equipped for a particular discipline and used primarily for regularly-scheduled courses. Teaching labs are a compilation of traditional science labs, art studios, culinary kitchens, nursing/allied health, computer/language labs, etc.

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

### Instructional Course Data

Kansas State University Polytechnic (KSU Polytechnic) 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 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)

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 spaces), and
3. Hour utilization: percent of hours scheduled relative to the scheduling window.

The three 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 2019 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 within a specific 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 maintain (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 the window's hours and the division between day and evening courses.

The analysis is predicated on the day window of 36 hours, Monday through Friday.

**Figure 1: Daytime Scheduling Window**

| Days                             | Day Start | Day End | Daily Hours | Weekly Hours |
|----------------------------------|-----------|---------|-------------|--------------|
| MF                               | 8:30 AM   | 3:20 PM | 6.83        | 13.66        |
| W                                | 8:30 AM   | 3:20 PM | 6.83        | 6.83         |
| TR                               | 8:05 AM   | 3:45 PM | 7.66        | 15.32        |
| <b>Daytime Scheduling Window</b> |           |         |             | <b>35.81</b> |

This 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 hours available for scheduling, the more instructional spaces are 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 Polytechnic, with a 36-hour weekday schedule, falls somewhere between a community college (30 hours) and a public comprehensive university (40 hours). This seems appropriate, given the academic programs offered in Aviation and Engineering Technology that require hands-on instructional facilities combined with didactic instruction.

## 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 24 hours of the 36-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 SI spaces is 50 percent of the defined scheduling window. This allows for:

- Set up and break down of experiments, material, and/or equipment.
- Student access for 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 Polytechnic to realign instructional space needs on campus, as necessary.

## Summary

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

A total of 20 general-purpose classrooms were available for scheduling in Fall 2019 based on the course data, inventory, and walkthrough distributed across five buildings. However, only 16 general-purpose classrooms were scheduled. These 16 spaces encompassed 12,076 ASF and contained 548 seats in two buildings.

The following table summarizes the distribution of the 20 classrooms by capacity range.

**Figure 2: Classrooms and ASF per Seat**

| Capacity Range                   | Rooms     | ASF           | Seats      | Average ASF/Seat |
|----------------------------------|-----------|---------------|------------|------------------|
| 1 to 20                          | 1         | 347           | 12         | 28.9             |
| 21 to 30                         | 2         | 1,140         | 54         | 21.1             |
| 31 to 40                         | 11        | 8,580         | 391        | 21.9             |
| 41 to 50                         | 2         | 2,009         | 91         | 22.1             |
| <b>Scheduled, Total</b>          | <b>16</b> | <b>12,076</b> | <b>548</b> | <b>22.0</b>      |
| <b>Unscheduled but Available</b> |           |               |            |                  |
| 21 to 30                         | 2         | 1,396         | 48         | 29.0             |
| 31 to 40                         | 2         | 1,456         | 73         | 19.9             |
| <b>Grand Total</b>               | <b>20</b> | <b>14,928</b> | <b>669</b> | <b>22.3</b>      |

The overall average ASF/seat for these rooms is 22.3. This is on target as compared to the desired range of 22 to 25 ASF/seat.

## Hour Utilization

KSU Polytechnic's average weekly hour utilization for the general-purpose classrooms is 32 percent of the 36-hour day scheduling window, or 11.5 hours per week. This is less than half of the 67 percent target, indicating significant additional instructional capacity.

- Of the scheduled rooms, hour utilization ranged from a low of 7% in Technology Center 169 and 172 (1 course each) to a high of 71% in Technology Center 118 (12 courses, 25 hours).
- Average building hour utilization was 31% for the Technology Center and 35% for the Aeronautical Center.

## Scheduling & Time Blocks

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 or sometimes based on scheduling policy.

**Figure 3: Standard Scheduling Grid (12 standard blocks)**

| MWF          |          |           | TR       |          |           |
|--------------|----------|-----------|----------|----------|-----------|
| Start        | End      | Courses   | Start    | End      | Courses   |
| 8:30 AM      | 9:20 AM  | 2         | 8:05 AM  | 9:20 AM  | 6         |
| 9:30 AM      | 10:20 AM | 6         | 9:30 AM  | 10:45 AM | 5         |
| 10:30 AM     | 11:20 AM | 4         | 11:30 AM | 12:45 PM | 6         |
| 11:30 AM     | 12:20 PM | 4         | 1:05 PM  | 2:20 PM  | 8         |
| 12:30 PM     | 1:20 PM  | 2         | 2:30 PM  | 3:45 PM  | 2         |
| 1:30 PM      | 2:20 PM  | 4         |          |          |           |
| 2:30 PM      | 3:20 PM  | 4         |          |          |           |
| <b>Total</b> |          | <b>26</b> |          |          | <b>27</b> |

- Of the 78 total courses, 68% (53 courses) were assigned to the 12 standard blocks.
- The remaining 25 courses were scheduled in 10 non-standard blocks.

### Courses by Day

At KSU Polytechnic, the 78 courses were scheduled for 182.4 hours during the weekly day window. The following identifies the distribution of courses by meeting combinations.

**Figure 4A: Courses by Meeting Day Combinations**

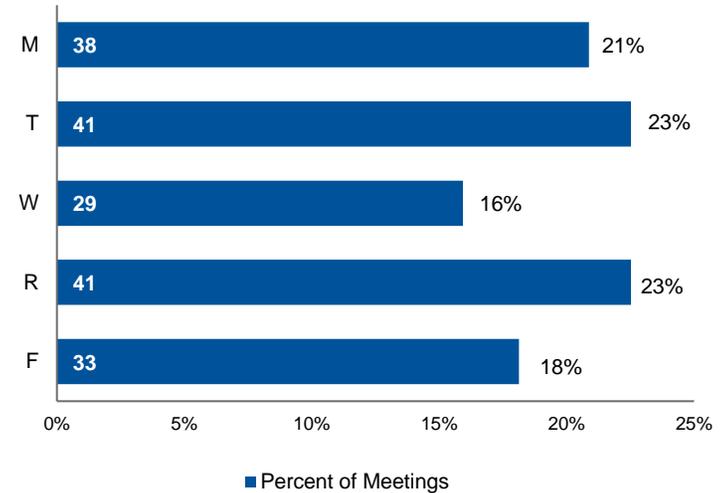
| Day Combinations   | Daytime Courses | Percent of Day-time Courses |
|--------------------|-----------------|-----------------------------|
| TR                 | 40              | 51.3%                       |
| MWF                | 27              | 34.6%                       |
| MF                 | 5               | 6.4%                        |
| M                  | 3               | 3.9%                        |
| MW                 | 2               | 2.6%                        |
| MTRF               | 1               | 1.3%                        |
| <b>Grand Total</b> | <b>78</b>       | <b>100.0%</b>               |

6 combinations

Overall, six meeting day combinations were used ranging from the traditional Monday/Wednesday/Friday combination with 27 courses and Tuesday/Thursday with 40 courses, to both single day and multi-day meetings over the course of the week

When instruction is viewed by day of the week, it would be anticipated that each day would show a 20 percent utilization rate. KSU Polytechnic makes good use of each individual day, and this is illustrated below.

**Figure 4B: Number and Percent of Course Meetings by Day of Week**



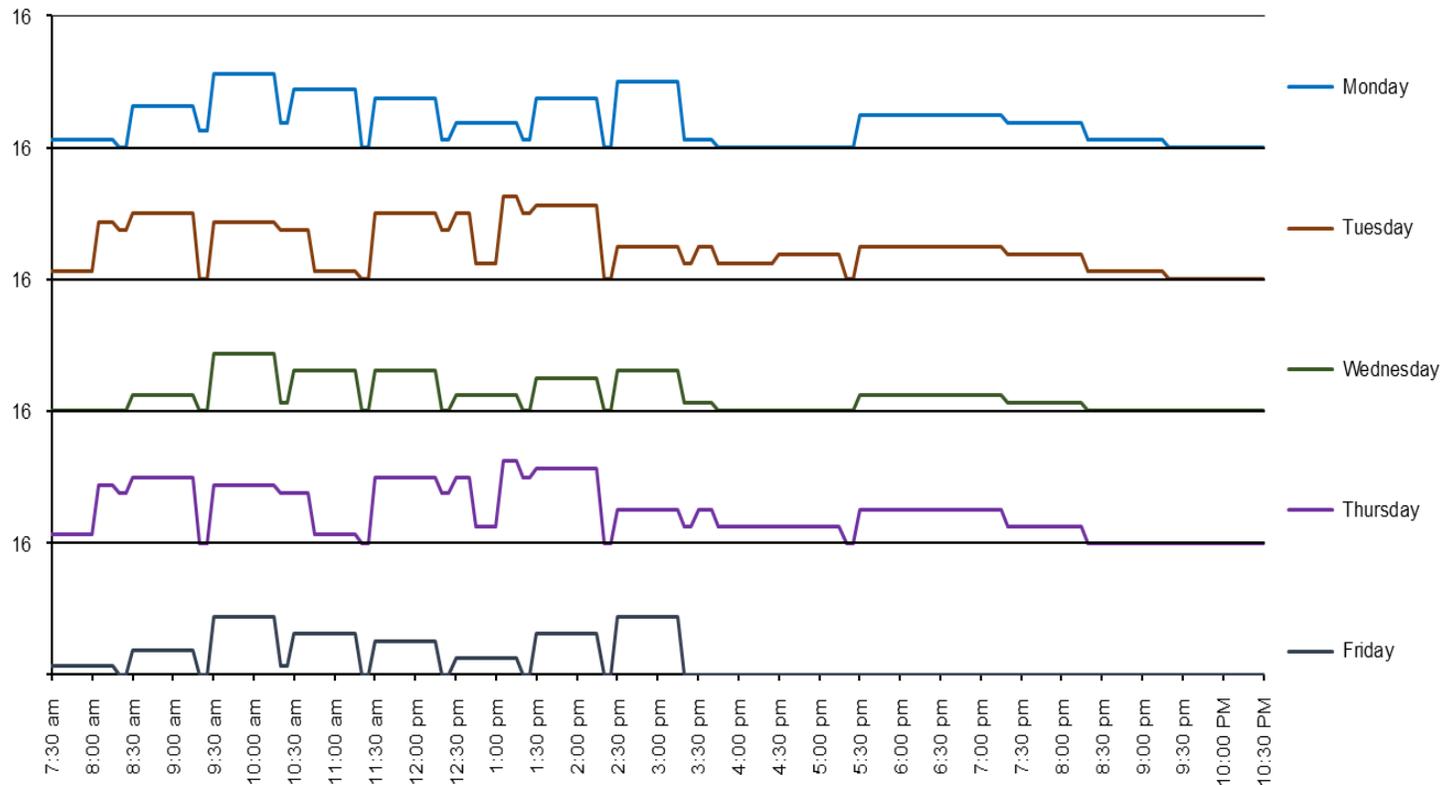
## Classroom Utilization by Day and Time

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.

**Figure 5: Number of Classrooms in Use Monday through Friday by Five-minute Intervals**



- The highest number of rooms in simultaneous use was between 1:00 p.m. and 2:15 p.m. when eight to 10 of the 36 total available classrooms were scheduled on a Tuesday and Thursday.
- Overall, Wednesday and Friday have fewer course meetings.

## Occupancy and Hour Utilization

The following table summarizes the distribution of the 16 classrooms by building and capacity, and indicates average hour utilization, seat occupancy, and ASF per seat. Guidelines for average hour utilization and average seat occupancy are provided at the top of their respective columns. Findings that are above or below guidelines are indicated.

**Figure 6: Summary Findings by Building and Capacity Category**

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

| Seat Range       | KSUS Aeronautical Center/ Stevens Flight Center | KSUS Technology Center | Rooms        | 67%              | 67%            | 20-25        |
|------------------|---|------------------------|--------------|------------------|----------------|--------------|
|                  |   |                        |              | Hour Utilization | Seat Occupancy | ASF per Seat |
| 1 to 20          | 1   |                        | 1            | 9%               | 58%            | 28.9         |
| 21 to 30         |   | 2                      | 2            | 30%              | 34%            | 21.1         |
| 31 to 40         | 3   | 8                      | 11           | 32%              | 52%            | 21.9         |
| 41 to 50         |   | 2                      | 2            | 45%              | 47%            | 22.1         |
| Rooms            | 4   | 12                     | 16           | Overall Avg.     | Overall Avg.   | Overall Avg. |
| Hour Utilization | 35%   | 31%                    | Overall Avg. | 32%              | Overall Avg.   |              |
| Seat Occupancy   | 54%   | 48%                    | Overall Avg. | 49%              | Overall Avg.   |              |
| ASF per Seat     | 21.1  | 22.3                   | Overall Avg. | Overall Avg.     | 22.0           |              |

- The classrooms had an overall average of 49% of their seats filled and were scheduled only 32% of the available time.
- Only one room, located in Aeronautical Center, has an occupancy within 10% of the guideline, although the room is only scheduled for approximately three hours.
- This is below the target guideline of 67% fill and hour utilization.

These findings indicate that KSU Polytechnic has available capacity to house additional courses, enrollment, or programs, or, conversely, to consolidate and schedule instructional spaces more efficiently, overall.

## Current Classroom Need

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

## What do we have?

A total of 20 spaces were codified as instructional in Fall 2019 by using the space inventory, course schedule, and walkthrough information. Of these, 16 rooms were scheduled for instruction, while four remained available but unscheduled. One additional room was identified as a Dedicated Departmental Professional room as unscheduled and is included here for completeness.

**Figure 7: Summary Classroom Count**

| Space Type                 | Scheduled | Unscheduled | Total     |
|----------------------------|-----------|-------------|-----------|
| GPCR                       | 16        | 4           | 20        |
| Dept. Dedicated GPCR       | 0         | 0           | 0         |
| Dept Dedicated.CR          | 0         | 1           | 1         |
| <b>Subtotal: Dedicated</b> | <b>16</b> | <b>1</b>    | <b>1</b>  |
| <b>Total</b>               | <b>16</b> | <b>5</b>    | <b>21</b> |

**Figure 8: Classrooms – Fall 2019**

| Building and Room            | Type   | Rooms     | ASF           | Seats      |
|------------------------------|--|-----------|---------------|------------|
| <b>Scheduled</b>             |  |           |               |            |
| GPCR Scheduled               | General-Purpose                                | 16        | 12,076        | 548        |
| <b>Unscheduled/Available</b> |  |           |               |            |
| KSUS Composites Bldg 106     | General-Purpose                                | 1         | 583           | 24         |
| KSUS Construction Lab 101    | General-Purpose                                | 1         | 673           | 33         |
| KSUS Outreach Center 115     | General-Purpose                                | 1         | 813           | 24         |
| KSUS Welcome Center 122      | General-Purpose                                | 1         | 783           | 40         |
| <b>Subtotal, General</b>     |  | <b>20</b> | <b>14,928</b> | <b>669</b> |
| KSUS Construction Lab 107    | Dedicated: Professional Education and Outreach | 1         | 1,329         | 24         |
| <b>Subtotal, Dedicated</b>   |  | <b>1</b>  | <b>1,329</b>  | <b>24</b>  |
| <b>Grand Total</b>           |  | <b>21</b> | <b>16,257</b> | <b>693</b> |

**What do we need?**

Using the Fall 2019 data and associated metrics, the calculated classroom need was for eight rooms and 5,800 ASF, presuming all spaces were scheduled equally

**Specialized Instructional Space**

There were 13 specialized instructional (SI) spaces scheduled, encompassing 16,481 ASF and 291 stations at KSU Polytechnic during Fall 2019. Due to the specialty of the space, the Aviation Maintenance space was analyzed separately.

**Hour Utilization**

The average daytime weekly hour utilization for scheduled SI spaces was 22 percent or just eight weekly hours out of the 36-hour daytime scheduling window. The utilization of individual rooms ranged from 5 percent (2 hours) to 52 percent (19 hours).

**Station Occupancy**

The average station occupancy rate was 45 percent, considerably less than the recommended 80 percent guideline. Fill rate by room ranged from 14 percent in KSUS UAS Laboratory 105 to 71 percent in KSUS Technology Center 108.

**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 21.0 ASF/station in KSUS UAS Laboratory 105A for Unmanned Aircraft System to 145.6 ASF/station in KSUS Technology Center for Mechanical Engineering. The following table summarizes the utilization rates and associated metrics for each SI space, organized by discipline.

**Figure 9: SI Utilization Summary by Discipline**

| Discipline   | Rooms     | ASF           | Stations   | ASF/Station | Courses   | Weekly Hours  | Hour Utilization | Station Occupancy |
|--|-----------|---------------|------------|-------------|-----------|---------------|------------------|-------------------|
| Computer Lab: PC - Multipurpose  | 3         | 2,235         | 70         | 31.9        | 16        | 35.21         | 33%              | 57%               |
| Computer Systems Technology  | 1         | 730           | 16         | 45.6        | 4         | 9.11          | 25%              | 45%               |
| Digital Media  | 1         | 687           | 14         | 49.1        | 2         | 5.46          | 15%              | 54%               |
| Electrical Engineering Technology - Digital Circuits and Signals and Systems | 1         | 491           | 8          | 61.4        | 3         | 6.72          | 19%              | 71%               |
| Electrical Engineering Technology - General                                  | 1         | 481           | 14         | 34.4        | 5         | 7.13          | 20%              | 67%               |
| Electrical Engineering Technology - Power and Device                         | 1         | 1,162         | 16         | 72.6        | 2         | 2.82          | 8%               | 41%               |
| Mechanical Engineering Technology - Fluid Power                              | 1         | 789           | 15         | 52.6        | 1         | 1.83          | 5%               | 67%               |
| Mechanical Engineering Technology - Manufacturing Methods                    | 1         | 5,243         | 36         | 145.6       | 2         | 7.32          | 20%              | 25%               |
| Physics - Computer Lab   | 1         | 1,524         | 28         | 54.4        | 6         | 10.69         | 30%              | 55%               |
| Unmanned Aircraft Systems - Flight and Field Operations                      | 1         | 2,383         | 38         | 62.7        | 5         | 9.8           | 27%              | 14%               |
| Unmanned Aircraft Systems - General  | 1         | 756           | 36         | 21.0        | 3         | 8.62          | 24%              | 26%               |
| <b>Grand Total</b>   | <b>13</b> | <b>16,481</b> | <b>291</b> | <b>56.6</b> | <b>49</b> | <b>104.71</b> | <b>22%</b>       | <b>45%</b>        |

Hour Utilization and Station Occupancy: Numbers in red are 10% or more below guideline. Numbers in blue are 10% or more above guidelines. (50 percent-hour utilization, 80 percent station occupancy)

Some very specialized spaces, such as Unmanned Aircraft Systems, may not achieve the proposed 50 percent time utilization guideline. However, the space remains necessary to support the associated academic program. The challenge arises when potential high-use spaces, such as introductory labs, are clearly underutilized.

### SI Calculated Need

#### Need & Observation

Because of the lab space's specialty needed to support the existing programs, no adjustments have been identified. Calculations indicate a possible reduction in the number of computer labs, although the space savings would be minimal. There are no identified drivers for additional lab space for instruction, particularly as existing rooms show low utilization. The one change identified is that KSUS Technology Center 115 is being converted into a Chemistry lab to replace KSUS Science Center 106.

The following table summarizes the available information on the Aviation Labs.

**Figure 10: Dedicated Teaching Lab Use: Aviation Maintenance Space**

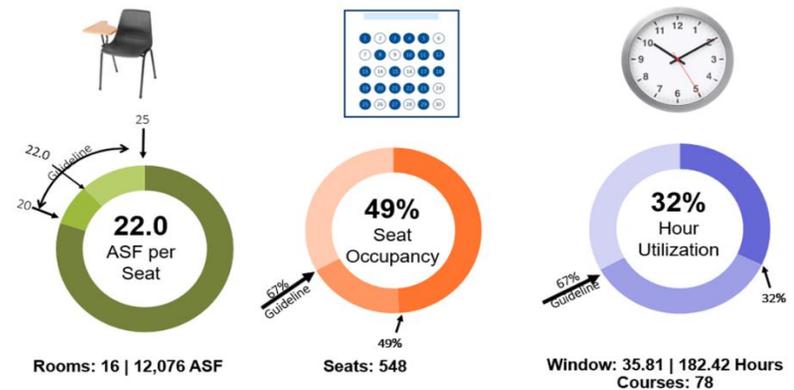
| Building  | Room | ASF           | Courses  | Wkly Hours   | Min Enroll. | Max Enroll. | Avg. Enroll. |
|---|------|---------------|----------|--------------|-------------|-------------|--------------|
| KSUS Aeronautical   | 149  | 599           |          |              |             |             |              |
|   | 150  | 1,219         |          |              |             |             |              |
|   | 157  | 11,381        |          |              |             |             |              |
|   | 158  | 1,125         |          |              |             |             |              |
|   | 159  | 1,125         |          |              |             |             |              |
|   | 160  | 383           |          |              |             |             |              |
|   | 161  | 383           |          |              |             |             |              |
|   | 162  | 484           |          |              |             |             |              |
|   | 163  | 728           |          |              |             |             |              |
|   | 164  | 709           |          |              |             |             |              |
|   | 165  | 397           |          |              |             |             |              |
| 166   | 481  |               |          |              |             |             |              |
| <b>Subtotal, Aviation Hangar Bay and Surrounding Labs</b> |      | <b>19,014</b> | <b>8</b> | <b>25.18</b> | <b>5</b>    | <b>19</b>   | <b>12</b>    |
| KSUS Composites   | 101  | 877           | 1        | 3.66         | 7           | 7           | 7            |
| <b>Subtotal, Aviation Composites</b>                      |      | <b>877</b>    | <b>1</b> | <b>3.66</b>  | <b>7</b>    | <b>7</b>    | <b>7</b>     |
| <b>Grand Total</b>  |      | <b>19,891</b> | <b>9</b> | <b>28.84</b> | <b>5</b>    | <b>19</b>   | <b>11</b>    |

Because courses were assigned to the “Center,” the presumption is the spaces were all used collectively for each class and, as such, individual rooms were not analyzed. In general, the data shows nine courses and almost 30 hours of instruction distributed within the 19,891 ASF Aviation space.

## Summary: Classrooms

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.

**Figure 11: General-Purpose Classroom Summary**



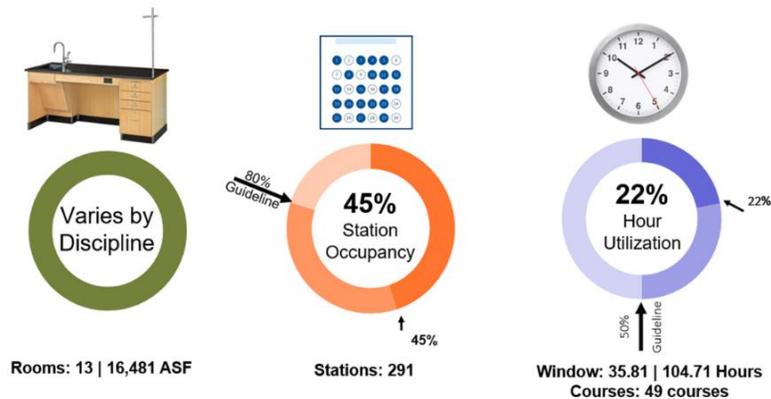
At the time of this analysis, KSU Polytechnic had 16 general-purpose classrooms and four unscheduled classrooms, comprising 20 general-purpose classrooms, 14,928 ASF, and 669 seats. For the 16 scheduled classrooms:

- The amount of square footage per student seat was on target, with an average of 22.0 ASF/seat.
- Based on existing enrollment, 49% of the seats are filled in the general-purpose classrooms when these rooms are scheduled, less than the target of 67% occupancy.
- In terms of hours, only 32% of the scheduling window hours are scheduled. This contrasts with the goal of 67%, indicating there is significant additional capacity available.

Using the Fall 2019 data and associated metrics, the calculated classroom need to support identified enrollment and courses could be as few as eight. Overall, the existing rooms are not crowded, and some of the “surplus” spaces may lend themselves to other uses.

### Summary: Specialized Instructional Spaces

Figure 12: Specialized Instructional Space Summary



There were 13 scheduled specialized instructional (SI) spaces encompassing 16,481 ASF and 291 stations during Fall 2019, excluding Aviation Maintenance Space, which exhibits a different scheduling pattern.

- Based on existing enrollment, 45% of the stations are filled when these rooms are scheduled, less than the target of 80% occupancy.
- In terms of hours, only 22% of the scheduling window hours are scheduled. This contrasts with the goal of 50%, indicating there is additional capacity available.

The process applied here provides the guidance needed to chart a responsible and navigable course for a successful realignment of all instructional space.

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-Polytechnic (KSU-Polytechnic), 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 the KSU-Polytechnic campus as a whole and for the individual buildings within the purview of this analysis.

Per Spring 2020 personnel figures, there was a total of roughly 160 FTE employees at KSU Polytechnic across multiple employee categories, excluding student workers. The University's personnel data were analyzed to isolate those academic and staff groups resident in the 13 buildings included in the scope of this analysis.

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 the majority of the time remotely.

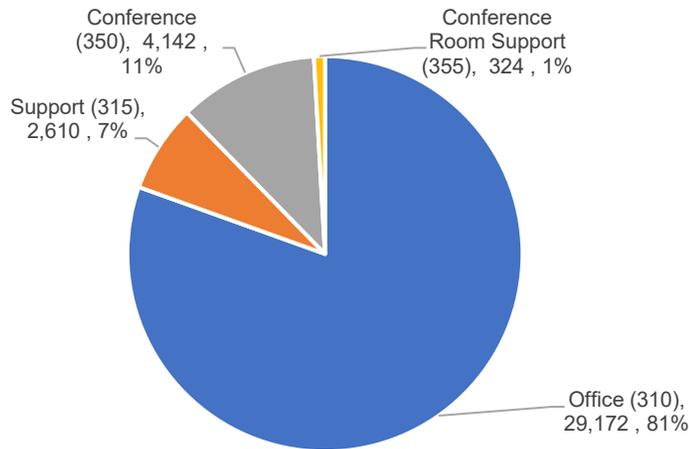
Any effort to reconsider workspace design must be approached with an understanding of institutional and departmental culture, workflow, and strategic directions. Care must also be taken when introducing alternative work environments to avoid creating a perception of “haves” and “have nots” on campus.

In the following sections, current office space allocations are first reviewed by type and building based on space information provided by the institution. This is followed by a review of personnel data, and the development of planning-level space needs calculations for office and office-related space. These calculations rely upon space multipliers that reflect current best practices, both for the subject buildings and the KSU Polytechnic campus.

### Current Space

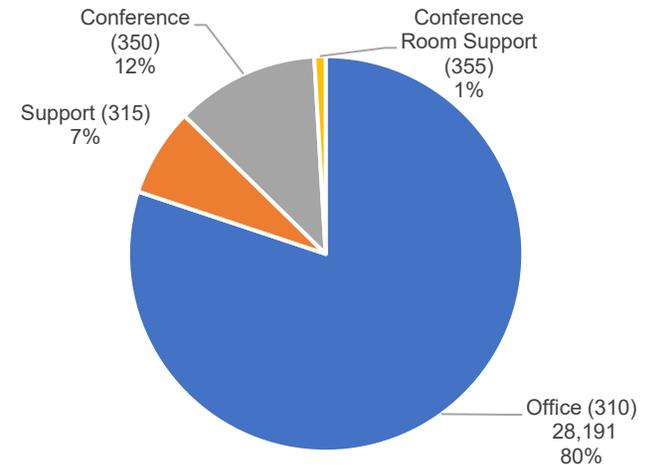
The following figures identify the amount of assignable Office Facilities (300) square footage identified in the space inventory, both for the KSU-Polytechnic campus as a whole and specifically within the 13 target buildings in this analysis.

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



- Overall, there is 36,248 ASF of Office Facilities (300) space on the KSU Polytechnic campus, per inventory data.
- FICM 310 categorization denotes both private and shared office spaces. Roughly 81% 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 7% 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 just over 35,198 ASF of Office Facilities (300) space, equating to 97% of all Office Facilities (300) space at KSU Polytechnic.
- 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-Polytechnic 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 spaces. Total building ASF is also included for comparative purposes, as is FTE personnel for the building. At KSU Polytechnic, 11 out of 13 buildings within the scope of this analysis contain office space.

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

## Personnel

It is important to understand the quantities and types of personnel across departments, programs, units, and their current campus locations. A significant effort was made to align personnel data with space inventory data to understand that naming conventions differ between the two in some instances.

There are 10 academic and administrative groups occupying space within the 11 buildings within the purview of this analysis.

The following table summarizes headcount and FTE personnel by department and employment type, as well as full- and part-time status. In lieu of detailed information, FTE totals are estimated using a 2:1 headcount/FTE conversion factor. Student workers are not included in the figures, with the understanding that they do not typically generate demand for dedicated office space. Instead, their space is encompassed within existing ASF to accommodate the flux of student workers.

Figure 4: Personnel Totals by Type and Status

| Department/Employee Type                    | FT        | PT        | Total     | Estimated FTE |
|---|-----------|-----------|-----------|---------------|
| <b>Div Communications and Mktg</b>          | <b>1</b>  |           | <b>1</b>  | <b>1.0</b>    |
| Regular Professional Staff                  | 1         |           | 1         | 1.0           |
| <b>Poly Auxiliary Services</b>              | <b>3</b>  | <b>2</b>  | <b>5</b>  | <b>4.0</b>    |
| Maintenance/Service/Trades                  |           | 1         | 1         | 0.5           |
| Office/Library Support                      | 2         | 1         | 3         | 2.5           |
| Regular Professional Staff                  | 1         |           | 1         | 1.0           |
| <b>Poly Enrollment Mgmt &amp; Mktg Svcs</b> | <b>12</b> |           | <b>12</b> | <b>12.0</b>   |
| Office/Library Support                      | 8         |           | 8         | 8.0           |
| Professional Administrative                 | 1         |           | 1         | 1.0           |
| Regular Professional Staff                  | 3         |           | 3         | 3.0           |
| <b>Poly Facilities</b>                      | <b>15</b> |           | <b>15</b> | <b>15.0</b>   |
| Maintenance/Service/Trades                  | 11        |           | 11        | 11.0          |
| Office/Library Support                      | 3         |           | 3         | 3.0           |
| Technical Support                           | 1         |           | 1         | 1.0           |
| <b>Poly Finance</b>                         | <b>7</b>  |           | <b>7</b>  | <b>7.0</b>    |
| Office/Library Support                      | 2         |           | 2         | 2.0           |
| Regular Professional Staff                  | 5         |           | 5         | 5.0           |
| <b>Poly Flight Operations</b>               | <b>16</b> | <b>22</b> | <b>38</b> | <b>27.0</b>   |
| Maintenance/Service/Trades                  | 1         |           | 1         | 1.0           |
| Office/Library Support                      |           | 1         | 1         | 0.5           |
| Regular Professional Staff                  | 4         |           | 4         | 4.0           |
| Technical Support                           | 11        | 21        | 32        | 21.5          |

| Department/Employee Type                   | FT         | PT        | Total      | Estimated FTE |
|--|------------|-----------|------------|---------------|
| <b>Poly Information Systems</b>            | <b>5</b>   |           | <b>5</b>   | <b>5.0</b>    |
| Regular Professional Staff                 | 2          |           | 2          | 2.0           |
| Technical Support                          | 3          |           | 3          | 3.0           |
| <b>Poly Operations</b>                     | <b>5</b>   |           | <b>5</b>   | <b>5.0</b>    |
| Safety/Security                            | 5          |           | 5          | 5.0           |
| <b>Poly Professional Ed &amp; Outreach</b> | <b>5</b>   | <b>2</b>  | <b>7</b>   | <b>6.0</b>    |
| Office/Library Support                     | 3          | 1         | 4          | 3.5           |
| Regular Professional Staff                 | 2          |           | 2          | 2.0           |
| Technical Support                          |            | 1         | 1          | 0.5           |
| <b>Poly Research &amp; Engagement</b>      | <b>11</b>  |           | <b>11</b>  | <b>11.0</b>   |
| Faculty                                    | 2          |           | 2          | 2.0           |
| Office/Library Support                     | 2          |           | 2          | 2.0           |
| Professional Administrative                | 1          |           | 1          | 1.0           |
| Regular Professional Staff                 | 1          |           | 1          | 1.0           |
| Technical Support                          | 5          |           | 5          | 5.0           |
| <b>Poly School of Integrated Studies</b>   | <b>47</b>  | <b>12</b> | <b>59</b>  | <b>53.0</b>   |
| Faculty                                    | 31         | 2         | 33         | 32.0          |
| Non-Tenure-Track Faculty                   | 10         | 10        | 20         | 15.0          |
| Office/Library Support                     | 3          |           | 3          | 3.0           |
| Technical Support                          | 3          |           | 3          | 3.0           |
| <b>Poly Technology &amp; Aviation Dean</b> | <b>2</b>   |           | <b>2</b>   | <b>2.0</b>    |
| Office/Library Support                     | 1          |           | 1          | 1.0           |
| Regular Professional Staff                 | 1          |           | 1          | 1.0           |
| <b>Poly Undergraduate Services</b>         | <b>13</b>  | <b>2</b>  | <b>15</b>  | <b>14.0</b>   |
| Faculty                                    | 1          |           | 1          | 1.0           |
| Office/Library Support                     | 3          | 2         | 5          | 4.0           |
| Regular Professional Library               | 2          |           | 2          | 2.0           |
| Regular Professional Staff                 | 7          |           | 7          | 7.0           |
| <b>Grand Total</b>                         | <b>142</b> | <b>40</b> | <b>182</b> | <b>162.0</b>  |

- Per analysis of data supplied, 78% of personnel are full-time employees.
- The 182 headcount personnel convert to approximately 162 FTE, using a typical headcount/FTE conversion rate of 2:1 for the purposes of this analysis. Personnel data provided did not include FTE information.

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

## Space Needs Calculations

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               |

RA 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.
- RA 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 employee types at KSU-Polytechnic, disaggregating them to show allowances for office, office support, and conference space.

**Figure 6: Overall Space Needs by Employment Level, KSU-Polytechnic**

| Employee Category            | Current FTE | Office     |                  | Support    |                  | Conference Room |                  | Totals        |
|------------------------------|-------------|------------|------------------|------------|------------------|-----------------|------------------|---------------|
|                              |             | Multiplier | Current ASF Need | Multiplier | Current ASF Need | Multiplier      | Current ASF Need |               |
| Faculty                      | 35          | 150        | 5,250            | 20         | 700              | 20              | 700              | 6,650         |
| Maintenance/Service/Trades   | 12.5        | 40         | 500              | 0          | 0                | 0               | 0                | 500           |
| Non Tenure-Track Faculty     | 15          | 140        | 2,100            | 20         | 300              | 10              | 150              | 2,550         |
| Office/Library Support       | 29.5        | 140        | 4,130            | 20         | 590              | 10              | 295              | 5,015         |
| Professional Administrative  | 2           | 140        | 280              | 20         | 40               | 10              | 20               | 340           |
| Regular Professional Library | 2           | 140        | 280              | 20         | 40               | 10              | 20               | 340           |
| Regular Professional Staff   | 27          | 140        | 3,780            | 20         | 540              | 10              | 270              | 4,590         |
| Safety/Security              | 5           | 40         | 200              | 0          | 0                | 0               | 0                | 200           |
| Technical Support            | 34          | 140        | 4,760            | 20         | 680              | 10              | 340              | 5,780         |
| <b>Grand Total</b>           | <b>162</b>  |            | <b>21,280</b>    |            | <b>2,890</b>     |                 | <b>1,795</b>     | <b>25,965</b> |

- Compared to just over 36,000 ASF of existing space, the calculations identified an overall need for approximately 26,000 ASF, disaggregated by the employee level.
- 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.

## Summary

- There appears to be a calculated aggregate need for less Office Facilities (300) space at KSU Polytechnic than currently exists. This is true both for the buildings in the analysis and the KSU Polytechnic 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 just over 10,000 ASF.
  - On a by-building basis, when comparing demand for space generated by allocated FTE personnel data, there appears to be a similar delta of roughly 10,000 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 Polytechnic 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.

The table below summarizes key findings from the analyses presented in this chapter.

**Figure 8: Calculations Summary**

| Office Facilities (300) | Current ASF | Calculated ASF Needs | Difference |
|-------------------------|-------------|----------------------|------------|
| Subject Buildings       | 35,198      | 24,820               | -10,378    |
| Overall Campus          | 36,248      | 25,965               | -10,283    |

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 at the end of this chapter, presenting pertinent information about building metrics, occupants, and utilization rates.

In Fall 2015, KSU Polytechnic enrolled 459 FTE on campus in 193,000 ASF (excluding residential), or the equivalent of 420 ASF/FTE. In 2019, the comparable figure was 426 ASF/FTE, as enrollment has declined to 452 FTE.

Our analysis of instructional space utilization and office need indicate some potential for space consolidation in these areas.

### Instructional Space

Instructional space needs were quantified using Fall 2019 course data in conjunction with campus student FTE. Overall, 33 spaces containing 31,489 ASF in 13 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.

In the FICM 100 space category, there are 16 general-purpose classrooms and four unscheduled classrooms, equaling 14,928 ASF. KSU Polytechnic has the opportunity to meet current and imminent classroom space needs through strategic modifications of existing room capacities. This right-sizing effort brings the total potential number of available general-purpose classrooms to 20. In contrast, the RA utilization analysis indicates a need for eight classrooms. This provides a buffer of 12 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 two buildings within the scope of this study, encompassing 16,481 ASF in 13 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 3,278 ASF in four of the target buildings.

### Office Space

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.

### Findings:

For the targeted buildings, personnel data provided by the University indicated office assignments, thereby allowing the determination of FTE personnel by building.

- Personnel data indicates 148 FTE personnel in the targeted buildings.
- There was 35,198 ASF of office and support space identified in the targeted building inventory.
- Using contemporary guidelines, there is a calculated need for 24,820 ASF of office and support space.
- The metrics used indicate current office space in the targeted buildings is around 40% 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 Polytechnic 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.