THECB TSAC

SPACE ALLOCATION GUIDELINES USER'S MANUAL

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Creating Campus Solutions

DLRGROUP TSW

CONTENTS

NOTES ON THE 2024 REVISION

This THEC Space Allocation Guidelines version has been reviewed by representatives of the locally governed state universities, and UT, the TBR community colleges. Four workshops were conducted to simplify the guidelines and ensure they were appropriate and supportive of Tennessee's institutions of higher education.

The same basic enrollment information is requested: on-ground FTE and headcount, online FTE, and the number of students living on campus.

The guidelines have been simplified by reducing the number of classroom categories.

Many lab disciplines have been added to the five space categories to provide more examples and help the user choose the appropriate category. The list is now provided as a sortable Excel table.

The Guidelines for open labs remain the same.

The Research Lab part of the Guidelines has been updated. However, there are still two methodologies: the first is based on research dollars, and the second is based on the number of researchers. If data is entered for both methods, the spreadsheet will automatically apply the one that generates more space.

The office part has not changed.

The Study section of the Guidelines reflects libraries' movement from a book-centric philosophy to a user-centric one. A new section has been added to reflect institution-wide informal, small group, collaboration, and study spaces.

The section on Physical Education has been eliminated.

INTRODUCTION

This User's Manual accompanies an Excel workbook, THEC—Space Allocation Guidelines—Data Input and Calculation Workbook. This workbook is used by THEC to collect data from each THEC constituent pertinent to THEC's Space Allocation Guidelines.

The manual parallels the structure of the spreadsheet. Each manual part also explains the THEC guideline for that particular space category. There are three spreadsheet templates: Universities, Community Colleges, and TCAT. The Tennessee Colleges of Applied Technology (TCAT) manual is shown in a separate chapter, following the universities and community colleges (see Table of Contents). It has some departures from the space use categories shown above.

The Guidelines pertain to E&G space only. All data you input should be limited to E&G only, so staffing data should represent E&G employees only.

FICM Space Use Categories

The THEC Guidelines categorize space use using the Post Education *Facilities Inventory Classification Manual* (FICM), 2006 edition. THEC uses the FICM taxonomy, which is essential in promoting consistency of space use data across institutions.

Abbreviations:	
TCAT	Tennessee College of Applied Technology
FICM	Facilities Inventory & Classifications Manual
NASF	Net Assignable Square Feet
FTE	Full time Equivalent
GSF	Gross Square Feet
HC	Headcount

The THEC Guidelines address portions of an institution's entire facility inventory. The workbook is divided into six "parts," each part representing a category of space use:

Part	Space Use Category	FICM
I	Classroom	1xx
II	Teaching Laboratory and Studio (scheduled)	210/215
III	Open Laboratory and Studio (unscheduled)	220/225
IV	Research Lab	250/255
V	Office	3xx
VI	Library, Study, and Information Commons	4xx

Classrooms, seminar rooms, and lecture rooms are all classified as FICM 110, and any room that supports these spaces (storage, media, etc.) is classified as FICM 115.

Teaching laboratories and studios are classified as FICM 210, and any room that supports these spaces (storage, prep rooms, balance rooms, environmentally controlled rooms, stockrooms, etc.) is classified as FICM 215.

Open laboratories and studios—those spaces not scheduled by the Registrar but available for student use throughout the day and evening are classified as FICM 220. They usually include open computer labs, music practice rooms, language labs, writing labs, and other discipline-specific unscheduled or informally scheduled spaces. Spaces that support this category are classified as FICM 225.

Codes 230 / 235, Individual-Study Laboratory, are considered to be equivalent to FICM 220 / 225 for purposes of the THEC Guidelines. TBR is phasing out 230 / 235.

Research labs and support are classified as FICM 250 and 255.

Offices are classified as FICM 310, while office support space is categorized as FICM 315. Conference rooms are categorized as FICM 350 and 355.

Library, study, and information commons spaces are all in the FICM 400 category.

Definition of Net Assignable Square Feet (NASF)

All of the square foot data, whether provided by the institution or calculated in the model, are net assignable square feet (NASF). FICM describes NASF as follows:

A. Definition. The sum of all areas on all building floors assigned to, or available for assignment to, an occupant or specific use, excluding building services, circulation, mechanical, and structural space.

B. Basis for Measurement. Net Assignable Area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form the boundaries of the designated areas. Exclude areas having less than a 3-foot clear ceiling height unless the criteria of a separate structure are met. (See section 2.3 of the FICM Manual, "What to Include in a Building Inventory").

C. Description. Although FICM has 10 major space use categories for assignable space—classrooms, labs, offices, study facilities, special use, general use, support, health care, residential, and unclassified—only E&G space should be included in the model.

D. Limitations. Deductions should not be made for necessary building columns and projections. These small areas are excluded as they represent an insignificant percentage of the total area of an average-sized space. Capturing their area would be unduly burdensome relative to the very small contribution they would make toward precision. Building service, circulation, mechanical, and structural areas should not be included.

Circulation Space

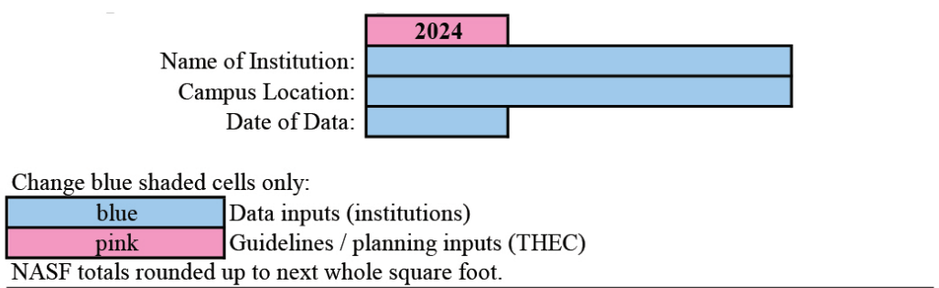
There is confusion in the FICM Manual's description of circulation space and how to count it—whether it should be treated as non-assignable space or whether it should be classified as office support, FICM 315. A better definition of circulation space is: if it serves more than one assignable occupied space and has no purpose other than serving as a conduit to another space, then it is assigned to circulation space and not office support (315) space.

Please see the definitional diagrams in the Appendix.

Using the Data Input and Calculation Spreadsheet

Upon receiving the spreadsheet from THEC, the institution should create a backup of the blank spreadsheet. Make sure the institution name is correct at the top of the spreadsheet. Label the data here if it pertains to a particular campus or satellite.

The spreadsheet uses color-coded cells to indicate where data is to be entered. In all cases, the spreadsheet is arranged with blue cells indicating where institutional data is to be entered and pink cells indicating the THEC guidelines.



Only THEC should change the pink cells when official changes are made to the Space Guidelines. The exception is the inflation factor in Part IV Research, which needs to be updated each year, even if there are no other changes to the guidelines. THEC should update the inflation factor. Institutions enter their data in the blue cells. No changes are possible to other cells since doing so could disrupt calculation formulas. The spreadsheet calculates results automatically as each part's data is entered.

Providing fractions of square feet is unnecessary for space planning purposes. Entries can be rounded to the nearest square foot.

Institutions with satellite campuses should treat these campuses individually. Some considerations for the sharing of resources may need to be applied since most satellite campuses do not operate independently from the main campus. Two resources most commonly affected by satellite campuses are the library and physical education. To what extent should they be present on the satellite campus, and what is their nature?

The THEC Guidelines are established for data input for the current year. They can also inform the campus planning process, which can be rerun using future projections for student enrollment, faculty, and staff. This second run of the Guidelines does not eliminate the need for the detailed analysis that should be included in any campus plan. Still, it does provide a starting point for the space planning portion of the master planning process.

INSTRUCTIONS FOR UNIVERSITIES AND COLLEGES

ENROLLMENT DATA

The spreadsheet begins by collecting enrollment data, which is used in Part III Open Lab and Studio (Unscheduled) and Part V Office and Part VI, Study/Library.

Universities

Enrollment Data		
Students	**FTE**	**Headcount**
On-ground	22,613	
Online	2,513	
Living on campus		1,830

Colleges

Enrollment Data		
Students	**FTE**	**Headcount**
On-ground	1,994	3,604
Online	758	

Data to Use:
Enrollment FTE and headcounts should be consistent with Fall data reported to THEC. The same enrollment figures are used in Parts III, V and VI but need to be entered here only.

PART I - CLASSROOM

This part of the spreadsheet calculates the number of classrooms and their net assignable square footage (NASF) based on data input from the Registrar's course file.

Data to Use:
From the Registrar's course schedule, the institution should select one week that, to the practical extent, represents peak classroom usage. The week should be after drop/add so that enrollments are stable. The data should include any scheduled course, including continuing education. This week does not have to be the same week used for Part II Teaching Laboratory and Studio, although institutions may find it impractical to use different weeks.

For both Parts I and II, the course sections used should meet in rooms with the corresponding FICM codes: 100s for classrooms and FICM 200 for labs, with the exceptions only as noted.

Include:
- Actual classroom usage
- Course sections have schedule meetings in classrooms, seminar and lecture halls (FICM 100s)
- Lecture based courses meeting in auditoria (FICM 610) and conference rooms FICM (350)

Exclude:
- Courses that never met due to cancellation
- Course sections that are not lecture-based and do not meet in a classroom (ex. an acting course that meets in auditorium
- Any course sections that will be included in PART II Teaching Laboratory and Studio

Institutions should also avoid double-counting hours for cross-registered courses or any similar situation where multiple sections are simultaneously scheduled in the same space. However, when calculating enrollments, the sum of the enrollment of all sections meeting in the same space at the same time should be used.

For both Parts I (Classrooms) and II (Teaching Laboratory & Studio), the data should exclude course sections that meet:

- off-campus (i.e., facilities not owned or leased by the institution)
- outside
- in offices (usually faculty offices)
- informally, such as independent study
- in athletic facilities (FICM 520, 523, and 525)
- institutions should be wary of counting hours for meetings with small enrollments (1-2 students) scheduled to meet in classrooms. These entries are often erroneous or informally moved to the instructor's office.
- computer classrooms are, in fact, laboratories and should be counted as such in both the facilities inventory and the course file.
- any section that begins before 7 AM or after 5 PM should be excluded.
- Saturday and Sunday sections should be excluded.

A typical course file includes the following necessary fields for analysis (the same for both Classroom and Lab guidelines):

The building where the section met	Enrollment after drop/add
Room Number	Subject
Days Scheduled (MTWRF)	Course
Start Time	Section
End Time	Faculty Name
Start Date	CIP Code (Labs only)
End Date	

This information calculates the data entered into the blue cells, as shown in Table 1 below. Essentially, the data required are the number of weekly classroom hours by size. This data automatically calculates the amount of space using THEC's current guidelines:

Classrooms will be scheduled for 30 hours per week on average for the day program or 17 hours per week on average for the evening program. The day program time window is 7 AM to 5 PM, which indicates start times. Any course that starts between 7 AM and 5 PM should be considered for the day program—even if it goes beyond 5 PM. The institution should determine which day or evening session generates the greater need for classroom space. This could be done by using the spreadsheet to enter day and evening data and recording each result. Institutions with limited evening programs can choose to forgo this comparison.

Classroom Space Guidelines

There are three ways to measure how classrooms are used:
1) The number of hours per week that the room is scheduled
2) The proportion of seats that are filled when the room is scheduled
3) The amount of space allocated to each student station

1) Classroom Utilization – Hours per Week

Because they are generic, institutions should be able to schedule classrooms more hours per day than laboratories and studios. Assuming a 7:00 AM to 5:00 PM day session window schedule, 50 hours are available weekly for scheduling.

The Guidelines recognize that not all institutions have the same scheduling window. Some colleges and universities reserve certain times during the day for meetings, special programs, events, or other activities so that fewer than 50 hours are available—typically, it is a 40—to 45-hour period for scheduling.

Using a typical week of 45 hours, the Guidelines recommend a utilization rate of 67 percent—or 30 hours per week.

For those institutions with strong evening programs and a heavy scheduling pattern in the evening, i.e., 5:00 PM until 9:00 PM, a window of 25 hours per week is available for scheduling. The same 67 percent utilization rate would apply; the guideline would be 17 hours weekly.

Sometimes, the evening program generates a greater need for classroom space than the day program. The institution can optionally run the calculations for both scenarios, choosing the session, day, or evening, that indicates the greater amount of space.

2) Classroom Utilization – Percent of Seats Occupied

The second measure for classrooms focuses on the percentage of seats occupied when the room is scheduled. Most states with space guidelines for higher education call for an average of 60 percent occupancy. Since this is an average, some rooms will have less, others more. This rate gives the Registrar some flexibility in scheduling.

On a typical campus, smaller classrooms usually have a higher percentage of seats occupied, while larger spaces, such as large lecture rooms and auditoriums, usually have a lower rate.

3) Classroom Utilization – Space per Seat

The amount of space allocated to a classroom seat depends on the number of seats, the furniture, and the layout of the space. The area per seat in a classroom decreases as the number of seats increases. This is because more seats share the prorated amount of space for circulation and front-of-the-room functions.

Table 1: Classrooms

Part I – Classrooms	
Course Section Size	Weekly Classroom Hours
1-14	900
15-29	1,800
30-49	900
50-129	200
130+	150

Station utilization = 60% **Hrs per week:** 30

Classroom Stations	NASF / Sta	NASF per Classroom	Number of Classrooms	Total NASF
16	31	496	30	14,880
35	25	875	60	52,500
65	21	1,365	30	40,950
125	17	2,125	7	14,875
275	15	4,125	5	20,625
		Total Classroom NASF:		**143,830**

Institutions enter 30 hrs for Day session or 17 for ev session.

In the example above in Table 1, sections with 1 to 14 students were scheduled for a total of 900 hours during the day. These sections will require a room of 16 seats at an average seat utilization of 60%The spreadsheet will automatically choose a square foot multiplier depending on the number of seats. It will divide the number of hours scheduled (900) by the THEC target of 30 hours per week and then calculate the number of classrooms and total NASF for that section size range.

PART II – TEACHING LABORATORY AND STUDIO (SCHEDULED)

This part of the workbook calculates the number of scheduled labs and studios and studios and their NASF. The method for deriving the required space is similar to the Part I - classroom model but different in detail. This part of the spreadsheet also uses data from the Registrar's course file. In this case, there are three columns of data to enter:

1) The number of sections by discipline (disciplines are grouped into five different categories that vary by the amount of NASF per station)[1]
2) The number of weekly lab and studio hours
3) The Total enrollment for these sections

1 The laboratory courses listed in the five categories are examples to help the institution decide which category is the best fit. Choose the higher category if a course could be in more than one category.

Data to Use:
From the Registrar's course schedule, the institution should select one week that represents peak lab and studio usage to the extent that is practical. This week does not have to be the same week used for Part I Classroom, although institutions may find it impractical to use different weeks.

The data should represent actual usage in labs and studios; e.g., it should not include courses that never met due to cancellation.

The data should include course sections with scheduled meetings in laboratories and studios (any FICM 200 spaces). Computer classrooms are, in fact, laboratories and should be counted as such in both the facilities inventory and the course file. Open labs and studios space (FICM 220/230) is treated separately. However, any sections scheduled therein should be included in Part II.

The data should not double-count course sections already included in Part I Classroom.

Institutions should also avoid double-counting hours for cross-registered courses or any similar situation where multiple sections are simultaneously scheduled in the same space. However, when calculating enrollments, the sum of the enrollment of all sections meeting in the same space at the same time should be used.

- The data should exclude course sections that meet:
- off-campus (i.e. facilities not owned or leased by the institution)
- outside
- in offices (usually faculty offices)
- informally, such as independent study
- in athletic facilities (FICM 520, 523, and 525)
- any section that begins before 7 AM or after 5 PM should be excluded
- Saturday and Sunday sections should be excluded

When multiple sections meet in the same space simultaneously, and the registration information spans course level or discipline type, the meeting should be attributed to the more space-intensive category. For example, if it incorporates Category B and C sections, assume it is Category B. Do not double-count. Use the larger multiplier if a CIP code falls into two lab categories.

This information is inserted into the appropriate blue cell, and the amount of space is automatically calculated.

The guideline for the day program is that labs and studios are scheduled, on average, for 20 hours per week, assuming a 45-hour scheduling window. The difference from classrooms is that set-up and take-down time for experiments is considered, leaving experiments up for long periods of time, the complexity of instrumentation and equipment is increased, and students are required to work within the lab beyond the scheduled timeframe.

The guideline for the average percentage of stations occupied is 80%.

The example for Discipline A in Table 2 below has 24 sections with a total enrollment of 528 students. The model automatically divides 528 by 24 to derive the average section size of 22 students. Twenty-two students represent an average of 80% capacity, so the lab or studio is sized for 28 stations (22/80%).

Table 2: Scheduled Labs and Studios

Part II - Scheduled Labs and Studios			
Discipline	# of sections	Weekly Lab Hours	Total Enrollment
A	24	60	528
B	30	159	360
C	29	128	772
D	24	118	345
E	66	132	2,046

Station utilization: 80% Hrs per week: 20

Mean Section Size	Stations per Lab	NASF / Sta	NASF per Lab	Number of Labs	Lab+Studio NASF	Support Allocation	Support NASF	Total NASF
22.0	28	150	4,200	3	12,600	40%	5,040	17,640
12.0	15	100	1,500	8	12,000	35%	4,200	16,200
27.0	34	75	2,550	7	17,850	30%	5,355	23,205
14.0	18	60	1,080	6	6,480	25%	1,620	8,100
31.0	39	40	1,560	7	10,920	20%	2,184	13,104
				Total NASF:	59,850	Total NASF:	18,399	
						Total Scheduled Lab and Studio NASF:		78,249

Table 2 – Scheduled labs and studios
The lab size is calculated by multiplying the number of stations (in this case, 28) by a square-foot-per-station factor determined by the discipline category. The number of labs is determined by dividing the weekly lab/studio hours by 20 hours, which is then multiplied by the lab size to obtain the NASF allocation for that discipline category.

Laboratory and Studio Support
Laboratory and studio support space (storage areas, prep rooms, instrumentation spaces, autoclave rooms, stockrooms, cold rooms, etc.) varies from an additional 20% to 40%, depending on the labs' discipline category.

Teaching Lab and Studio Space Guidelines
Like classrooms, the same measures apply. Laboratory and studio utilization is a measure of time that a room is scheduled during a typical week. Station utilization is the proportion of laboratory stations that are occupied when the lab is scheduled. Square feet per station is the amount of space allocated to a student's work area. However, laboratory and studio utilization guidelines significantly differ from classroom utilization guidelines.

The percentage of occupied stations can be higher for labs than classrooms because lab space is expensive, and more efficient utilization is important.

The number of students in a lab section should be determined by discipline and several factors, including pedagogy, safety, the complexity of the activities, and whether the students will work in small groups or individually. Some courses may enroll relatively few students because of the nature of the course and the discipline, while introductory courses may be relatively large. Research has shown that labs with more than 24 stations have more accidents than those with fewer stations.

The recommended NASF per station varies by discipline as shown on Table 3.

Teaching Laboratory Utilization – Hours per Week
For a typical week, the Guidelines recommend a utilization rate of 20 hours per week.

Teaching Laboratory Utilization – Percent of Seats Occupied (station utilization)
The second measure for instructional labs focuses on the percentage of occupied stations when the lab is scheduled. Many states with space guidelines call for 80 percent station utilization.

Teaching Laboratory Utilization – Space per Seat (NASF/station)
The space allocated to a laboratory or studio station varies according to discipline category. See Table 3 on page 9.

TABLE 3 IS NOT AN ALL-INCLUSIVE LIST! There will be instances where a course is not included or has a different name. The institution could look for a similar course, seek the faculty's advice, or simply choose Category D.

The categories indicate the number of square feet per station for the disciplines listed. So, categories C and D, for instance, include courses that are typically STEM-related. The more specialized, space-intensive courses are in categories A and B.

Table 3 shows multipliers by the five discipline categories that apply to universities and community colleges. It is also provided as a sortable Excel spreadsheet along with the Guidelines.

Table 3:

Category	Discipline	Category NASF/Sta	CIP
Agriculture / Vet Med	Agriculture	B	01 & 02
Agriculture / Vet Med	Agriculture Soil Science	B	
Agriculture / Vet Med	Agriculture, General	E	
Agriculture / Vet Med	Agriculture, Large Animal	B	
Agriculture / Vet Med	Animal Science	C	
Agriculture / Vet Med	Fisheries	B	
Agriculture / Vet Med	General Agriculture	E	
Agriculture / Vet Med	Large Animal Agriculture	B	
Agriculture / Vet Med	Soil Science	B	
Agriculture / Vet Med	Veterinary Medicine	A	
Agriculture / Vet Med	Veterinary Medicine, Large Animals	B	
Agriculture / Vet Med	Veterinary Medicine, Pathology	E	
Art Music Theater	Animation	E	
Art Music Theater	Applied Music	C	
Art Music Theater	Art	E	
Art Music Theater	Art History and Appreciation	E	50.07
Art Music Theater	Art, 2-D / Photography	D	
Art Music Theater	Art, 3-D	C	
Art Music Theater	Audio Production	E	
Art Music Theater	Broadcasting	C	
Art Music Theater	Ceramics	B	
Art Music Theater	Communication	D	09.01
Art Music Theater	Communications, Visual	D	
Art Music Theater	Computer Arts Graphic Design	D	
Art Music Theater	Dance	B	50.03
Art Music Theater	Digital Media	E	
Art Music Theater	Dramatic Arts / Theater	B	50.05
Art Music Theater	Drawing	D	50.07
Art Music Theater	Entertainment Technology	B	
Art Music Theater	Film Technology	B	
Art Music Theater	Graphic Arts	D	
Art Music Theater	Graphic Design	D	
Art Music Theater	Interior Design	C	
Art Music Theater	Lithography	C	
Art Music Theater	Metalworking	C	
Art Music Theater	Music - Audio Production	E	
Art Music Theater	Music History and Appreciation	E	50.09
Art Music Theater	Music Performance	C	
Art Music Theater	Music Technology	C	
Art Music Theater	Music, Applied	C	
Art Music Theater	Music, Studio	C	
Art Music Theater	Painting	C	50.07
Art Music Theater	Photography	D	
Art Music Theater	Printing	C	
Art Music Theater	Radio Production	C	
Art Music Theater	Sculpture	C	
Art Music Theater	Studio Art	C	
Art Music Theater	Studio Music	C	
Art Music Theater	Television Technology	B	
Art Music Theater	Textiles	C	
Art Music Theater	Theater Arts	B	
Art Music Theater	TV / Film Production	B	
Art Music Theater	Visual Art and Design	D	
Art Music Theater	Visual Communications	D	
Art Music Theater	Web Design	E	

Table 3 *(continued)*:

Category	Discipline	Category NASF/Sta	CIP
Business	Accounting	E	52.03
Business	Administrative Professional	E	
Business	Business	E	
Business	Computer Applications	E	
Business	Construction Management	E	
Business	Finance	E	52.08
Business	Hospitality Management	C	
Business	Management	E	
Business	Sports and Leisure Management Exclude	X	
Cosmetology	Aesthetics	B	
Cosmetology	Barbering	B	
Cosmetology	Cosmetology	B	
Education	Audiology	E	
Education	Early Childhood Education	E	
Education	Education	E	13, 13.06
Education	Education Stats and Research	E	13, 13.06
Education	Reading	E	
Education	Special Education	E	
Education	Speech Pathology	E	
Engineering	Aeronautical, Aviation & Aerospace	A	
Engineering	Aerospace	A	
Engineering	Agricultural Engineering	B	
Engineering	Aviation	A	
Engineering	Chemical Engineering	C	
Engineering	Civil Engineering	C	14.05
Engineering	Computer Engineering	D	
Engineering	Electrical Engineering	C	
Engineering	Engineering, Agricultural	B	
Engineering	Engineering, Chemical	C	
Engineering	Engineering, Civil	C	14.05
Engineering	Engineering, Computer	D	
Engineering	Engineering, Electrical	C	
Engineering	Engineering, General	C	14.01
Engineering	Engineering, Industrial	C	
Engineering	Engineering, Mechanical	A	14.19
Engineering	General Engineering	C	14.01
Engineering	Industrial Engineering	C	
Engineering	Mechanical Engineering	A	14.19
Health Sci	Allied Health Science	D	
Health Sci	Cardiovascular Technology –Invasive & Non-Invasive	D	
Health Sci	Central Processing	E	
Health Sci	CMA (Certified Medical Assistant)	D	
Health Sci	CNA	C	
Health Sci	Dental Hygiene	C	51.06
Health Sci	Dentistry	B	
Health Sci	Diagnostic Medical Sonography	D	
Health Sci	EKG	D	
Health Sci	EMS	C	
Health Sci	EMSA and EMSP	C	
Health Sci	EMT	C	
Health Sci	Exercise Science Exclude	X	
Health Sci	Healthcare Information Management	E	
Health Sci	Healthcare Technician	D	
Health Sci	Histology	C	
Health Sci	Kinesiology Exclude	X	

Table 3 *(continued)*:

Category	Discipline	Category NASF/Sta	CIP
Health Sci	Massage Therapy	B	
Health Sci	Medical Assisting	D	
Health Sci	Medical Lab Technology	D	
Health Sci	Medical Surgery	B	
Health Sci	Medical Transcription	D	
Health Sci	Nuclear Medicine	C	
Health Sci	Nursing	C	
Health Sci	Occupational Therapy	B	51.2306
Health Sci	Optometry	B	
Health Sci	Paramedic	C	
Health Sci	Pharmacy	C	
Health Sci	Phlebotomy	D	
Health Sci	Physical Education Exclude	X	
Health Sci	Physical Therapy	B	
Health Sci	Polysomnography	D	
Health Sci	Public Health	D	51.22
Health Sci	Radiation Therapy	C	
Health Sci	Radiography Technology	C	
Health Sci	Radiology	C	
Health Sci	Respiratory Care	B	
Health Sci	Sonography	D	
Health Sci	Surgical Technology	D	
Health Sci	Vision Care (Opticianry)	B	
Humanities & Soc Sci	Afro-American Studies	E	05.01
Humanities & Soc Sci	Anthropology (lab-based)	D	45.02
Humanities & Soc Sci	Archaeology (lab-based)	D	45.02
Humanities & Soc Sci	Architecture	C	04
Humanities & Soc Sci	Architecture, Landscape	C	
Humanities & Soc Sci	Classics	E	
Humanities & Soc Sci	Consumer Sciences	C	
Humanities & Soc Sci	Correctional Officer	E	
Humanities & Soc Sci	Criminal Justice	E	
Humanities & Soc Sci	Economics	E	45.06
Humanities & Soc Sci	English	E	
Humanities & Soc Sci	Family and Consumer Sciences	C	
Humanities & Soc Sci	Foreign Languages	D	
Humanities & Soc Sci	Geography	E	
Humanities & Soc Sci	Government	E	45.1
Humanities & Soc Sci	History	E	54
Humanities & Soc Sci	Humanities	E	23
Humanities & Soc Sci	Journalism	D	09.04
Humanities & Soc Sci	Landscape Architecture	C	
Humanities & Soc Sci	Law / Law Enforcement	E	22
Humanities & Soc Sci	Legal and/or Paralegal Studies	E	
Humanities & Soc Sci	Mass Communication	D	
Humanities & Soc Sci	Military Science	D	
Humanities & Soc Sci	Political Science	E	45.1
Humanities & Soc Sci	Psychology (lecture-based program)	E	42
Humanities & Soc Sci	ROTC	E	
Humanities & Soc Sci	Social Sciences	E	45
Humanities & Soc Sci	Social Work	E	
Humanities & Soc Sci	Sociology	E	45.11
Humanities & Soc Sci	Urban Studies	E	45.12
Science	Analytical Chemistry	C	40.0502
Science	Anatomy and Physiology	C	
Science	Anatomy, Gross	C	26.04

Table 3 *(continued)*:

Category	Discipline	Category NASF/Sta	CIP
Science	Astronomy	D	40.0201
Science	Astrophysics	C	40.0202
Science	Biochemistry	C	26.02
Science	Biology, Cell	C	
Science	Biology, General	D	26.01
Science	Biology, Marine	C	
Science	Biology, Molecular	C	
Science	Biophysics	C	26.02
Science	Biotechnology	C	
Science	Botany	D	
Science	Cell Biology	C	
Science	Chemistry, Analytical	C	40.0502
Science	Chemistry, General	D	40.05
Science	Chemistry, Organic	C	
Science	Cloud Computing	D	
Science	Computer Information Technology	E	
Science	Computer Science	D	11.07
Science	Cyber Security	D	
Science	Ecology	D	26.13
Science	Enviro Science	D	26.13
Science	Food Sci and Tec	C	01.10
Science	General Biology	D	26.01
Science	General Chemistry	D	40.05
Science	General Physics	D	40.08
Science	Genetics (lab-based program)	C	
Science	Genetics (lecture-based program)	D	26.08
Science	Geology	D	40.06
Science	Geophysics	C	
Science	Gross Anatomy	C	26.04
Science	Ichthyology	B	
Science	Marine Biology	C	
Science	Materials Science	A	14.31
Science	Mathematics	E	27
Science	Mechatronics	C	
Science	Meteorology	D	26.13
Science	Microbiology	C	
Science	Molecular Biology	C	
Science	Neurosciences	C	
Science	Nutrition	C	01.10
Science	Organic Chemistry	C	
Science	Pathology	D	26.07
Science	Physical Sciences	D	
Science	Physics, General	D	40.08
Science	Physiology	C	
Science	Psychology (lab-based)	C	
Science	Seismology	C	
Science	Zoology	D	
Tech Ed	Auto Body Repair	A	
Tech Ed	Automotive	A	
Tech Ed	Aviation Technology	A	
Tech Ed	CAD/CADD Tech	C	15.13
Tech Ed	Chemical Process Operations	C	
Tech Ed	Collision Repair	A	
Tech Ed	Commercial Truck Driving	D	
Tech Ed	Computer Support Tech	D	
Tech Ed	Construction	A	46

Table 3 *(continued)*:

Category	Discipline	Category NASF/Sta	CIP
Tech Ed	Construction Electricity	D	
Tech Ed	Culinary Arts	C	01.10
Tech Ed	Diesel	E	
Tech Ed	Electrical Engineering Technology	D	
Tech Ed	Electromechanical	C	
Tech Ed	Engineering Systems Technology	C	
Tech Ed	Engineering, Structural	B	
Tech Ed	Fleet Maintenance and Light Repair	A	
Tech Ed	Funeral Services Education	D	
Tech Ed	GIS	C	15.13
Tech Ed	Heating, Ventilation, and Air Conditioning (HVAC)	A	
Tech Ed	Industrial Arts	C	
Tech Ed	Industrial Electricity	D	
Tech Ed	Industrial Machinery and Equipment	A	
Tech Ed	Industrial Maintenance Mechatronics / Automation & Robotics	B	
Tech Ed	Industrial Process Control Technology	D	
Tech Ed	Landscape and Turf Management	A	
Tech Ed	Machine Tool Operations	A	
Tech Ed	Machinery and Equipment	A	
Tech Ed	Marine	A	
Tech Ed	Metal, Shop, & Welding	A	15.0611
Tech Ed	Motorcycle	A	
Tech Ed	Nuclear Technology	C	
Tech Ed	Power and Energy	A	
Tech Ed	Robotics	B	
Tech Ed	Structural Engineering	B	
Tech Ed	Tech Ed	C	
Tech Ed	Truck Driving	D	
Tech Ed	Welding	A	
	Computational _[anything]_	E	
	General / Unspecified Computer Labs	E	
	Learning Support (TN)	E	

PART III - OPEN LAB AND STUDIO (UNSCHEDULED)

Each university and college has a variety of open labs and studios. These spaces are unscheduled or informally scheduled, contain discipline-specific equipment and/or furnishings, and are typically available for use throughout the day and evening.

Included in this category are: computer labs, writing labs, language labs, art studios, music practice studios, etc.

These spaces are usually coded as FICM 220/225 and 230/235 in facilities inventories. They are allocated on a simple enrollment FTE basis. Currently, there is no open lab allocation for online students. See Table 4 below.

Table 4: Open Labs and Open Studios

Part III - Open Labs and Studios		NASF / FTE	Total NASF
Student enrollment, on-ground (FTE)	22,613	5	113,065
Student enrollment, online (FTE)	2,513	0	0
		Grand Total Open Lab and Studio NASF:	113,065

Data to Use:
The enrollment data inputted at the beginning of the workbook will automatically be inserted into Table 4 and calculate the amount of NASF for this type of space.

PART IVA – RESEARCH SPACE BY RESEARCH EXPENDITURE

The THEC Model uses two methods for determining the amount of research space. One is based on research expenditure, while the other is based on the number of people actually doing research. The method that results in a greater amount of space will be used.

In the example below, Table 5 demonstrates the research expenditure method.

Table 5: Research Space by Research Expenditure

Part IVa Research – by Res Expenditure			Inflation since 2024:	0.00%	NASF		
	3-year Average Research Expenditure $			Adjusted	On-campus Factor	Off-campus Factor	
Discipline	On-campus	Off-campus	NASF / $1M	NASF / $1M	100%	25%	Total NASF
A	$37,700,000		4,190	4,190	157,963	0	157,963
B	$26,300,000		3,465	3,465	91,130	0	91,130
C	$16,000,000		2,275	2,275	36,400	0	36,400
					Total Research Lab NASF by Res$:		285,493
D	$6,400,000		1,715	1,715	10,976	0	10,976

Data to Use:
The institution should assemble research expenditures for the previous 3 years.

For each year, breakdown expenditures into 4 categories: A) highly space-intensive, B) space-intensive, C) moderately space-intensive, or D) office-based, as per Table 6 located on the following page. Further, data can be broken down into on-campus and off-campus expenditures."

Find the 3-year average for each of these 6 categories and enter data in the spreadsheet as shown in Table 5 above.

The workbook automatically calculates the amount of space by using square-foot multipliers for each category.

The template allows THEC to insert an inflation factor over time. The base year for inflation is 2024 (2024 = 0%). Each year, THEC should update the cumulative amount of inflation since 2024 each year.

Table 6: Research Space Use Categories

Space-Use Intensity	Discipline		
A Highly Space-Intensive	Aero Engineering Bioengineering Chemical Engineering Chemistry	Civil Engineering Electrical Engineering (Industrial Engineering) Materials	Materials Science Mechanical, Medical Veterinary Science
B Space-Intensive	Agriculture Anatomy Animal Science Anthropology (lab-based) Astronomy Biology Biochemistry Biomedical	Chemistry Computer Engineering Crop Science Dentistry Electrical Engineering Food Science Geology	Mechanical Engineering Microbiology Neuroscience Physics Plant Pathology Psychology (lab-based)
C Moderately Space-Intensive	Accounting Architecture, Art Fine & Performing Arts Computer Science Earth Sciencew	History Humanities Law Math Music	Nursing Pharmacy Political Science Social Science
D Office-based	Anthropology (office-based) Business Computer Science (office-based) Education Law Foreign Languages	Math Psychology (office-based) Social Sciences & Humanities Social Work Statistics	

PART IVB – RESEARCH SPACE BY RESEARCH PERSONNEL

This part of the spreadsheet calculates the amount of research space by allocating space per researcher, depending on the personnel category of researcher and discipline. See Table 7 below. The source for this information could be the Vice President for research, Grants office, or institutional research.

Disciplines are grouped into four categories as indicated in Table 8 on page 17. Each category has a specific set of space multipliers, as shown in Table 9 on page 18.

Data to Use:
The headcount number of faculty (tenure/tenure track), PhDs, Post-docs, non-faculty, graduate students, undergrads, visiting faculty, and adjuncts engaged in research. GRA's are graduate students doing research under a principle investigator.

The quantity is entered into the blue cells by personnel category and by discipline group.

Table 7: Research Space by Research Personnel

Part IVb Research – by Lab Based Researcher HC Tenure / Tenure Track Faculty				
Personnel Category	Discipline Group – HC			
	A	B	C	D
Faculty	9	119	61	33
PhD, Post Doc	306	60	57	3
Non-Faculty	22	349	163	280
GRA	11	188	119	20
Undergrad	504	197	95	40
Visitor/Adjunct	0	3	1	15

Research Lab						Research Office			
Research Lab NASF / HC			Research Lab NASF	Lab Support NASF	Total Lab + Support NASF	Res Office NASF / HC	Research Office NASF	Office Support NASF	Total Office + Support NASF
A	B	C				D			
600	450	300	77,250	26,393	103,643	50	1,650	330	1,980
300	225	150	113,850	44,010	157,860	50	150	30	180
300	225	150	109,575	37,459	147,034	50	14,000	2,800	16,800
100	75	75	24,125	8,053	32,178	50	1,000	200	1,200
50	50	50	39,800	14,953	54,753	50	2,000	400	2,400
300	225	150	825	281	1,107	50	750	150	900
Support Allocations: 40%	35%	30%				20%			

Total Research Lab NASF by Research Personnel FTE: 496,575

Tot Research Office NASF by Res Personnel FTE: 23,460

The workbook automatically calculates the amount of research space. The pink cells show the square foot multipliers by category and discipline group, as shown in Table on page 16. The Personnel headcount (HC) times the multiplier yields the research lab NASF. This number is multiplied by percentages to derive the quantity of additional support space. The two numbers, lab and support, are then totaled.

The multipliers for the six Research Personnel categories are shown in Table 8.

Table 8: Research Personnel Multipliers

Personnel Category	A	B	C	D
Faculty	600	450	300	50
PhD	300	225	150	50
Non-Faculty	300	225	150	50
GRA/GTA	100	75	75	50
UGs	50	50	50	50
Visitor/Adjunct	300	225	150	50

Support space, such as Instrumentation rooms, storage rooms, and specialized equipment rooms is calculated based on the amount of modeled research space. The amount of additional space for support by category is:
A - 40%
B - 35%
C - 25%
D - 20%

PART V – OFFICE

Part V Office calculates the amount of office and office-related space by assigning a per-FTE or per-headcount multiplier by personnel category. The multiplier ranges from 350 NASF per FTE for President and Chancellor to 40 NASF per Graduate Research Associate (GRA). A factor of 30% is added for office support, including workrooms, conference rooms, file rooms, office storage, etc. (usually FICM 315 space in facilities inventories). See Table 10 for a listing by personnel description.

Data to Use:
Count only staff requiring office space. Institutions will probably want to define "requiring office space" by category. For example, many ground maintenance staff do not require offices.

Most staffing categories use FTE, but three categories, GRA, GTA, and other students, use headcount.

Use E&G and Restricted staffing numbers only. Do not count Auxiliary employees. If an individual employee is split between E&G and Auxiliary, use only the E&G portion of that employee's FTE.

Do not count volunteers. Include paid staff and students only.

Employee data should correspond to the point in time used for other staffing data submissions to THEC.

For student employees, the number should represent the typical peak headcount number for this type of employee at any one time, not the cumulative total over the course of a year.

Table 9: Offices – by Personnel Category

Part V - Personnel Requiring Office Space		NASF / FTE	Total NASF
Personnel Category	**Total FTE**		
President, Chancellor	1.0	350	350
Provosts, Vice President	14.7	240	3,528
Dean	15.7	180	2,826
Assoc. Dean, Dept. Chair	185.4	150	27,810
Professor, Assoc, Asst	1,035.0	150	155,250
Other Faculty	302.9	100	30,290
Professional Staff	1,095.7	130	142,441
Clerical	1,404.4	120	168,528
Staff, Technician	517.2	100	51,720
GTA (Headcount)	464.4	60	27,864
GRA (Headcount)	29.5	40	1,180
Other Students (Headcount)	911.4	10	9,114
Other: Auditor, etc.	0.0	100	0
		Subtotal NASF:	620,901
		Support Allocation: 30%	186,271
		Total Office NASF by FTE:	**807,172**

Academic and Administrative Office Space Guidelines

The guidelines will base the amount of office space on the actual number of faculty and staff. It will be important for the campuses to be able to deflate the long list of titles to a smaller, more manageable list.

The following space multipliers are indicated in Table 10.

Table 10: Office Multipliers

Personnel Category	UT & Universities	Community Colleges
President	350	240
Provost, Vice President	240	200
Dean	180	180
Assoc. Dean, Department Chair	150	140
Faculty: Professor, Associate, Assistant, Emeriti	150	120
Other Faculty: Adjuncts, Visitors, Lecturers, Post Docs	100	90
Professional Staff	130	120
Clerical / Reception	120	120
Staff, Technician	100	90
GTA (Headcount)	60	60
GRA (Headcount)	40	40
Other Student (Headcount)	10	10
Other: vendors, auditors, accreditation teams, etc.	100	100
Allocation for office support: workrooms, file, conference, reception, storage	30%	30%

PART VI – LIBRARY AND STUDY

The Library and Study part of the spreadsheet uses five institutional data items:

- total volume equivalents
- total volumes in compact shelving
- cartographic items
- student enrollment (previously entered in Enrollment Data)
- number of students living on campus (previously entered in Enrollment Data)

Data for specialized libraries for art, music, science, engineering, education, etc. should all be calculated within this category. Space in the specialized libraries should have a FICM number in the 400s and should be totaled with the main library. Volumes housed at these libraries should also be totaled with the main library.

The spreadsheet automatically calculates the square footage for the four major study space components:

- space for library volumes (and volume equivalents such as CDs, DVDs, etc.)
- space for library readers (which can be individual/quiet or group/active—carrels, table and chairs, study rooms, with or without technology)
- space for library operations—the technical services and administration
- institution-wide informal, small group, collaboration, study space. This is a new section for 2024 but does not require any input, as the enrollment number is taken from the Enrollment Data section.

Data to Use:

Student enrollment and number of students living on campus do not need to be re-entered.

Volume equivalent calculation: using the ARL definition for volume counts (except cartographic items—see below) is suggested. Most items are counted on a simple 1-to-1 basis. Microforms are counted 10 microforms equal one volume. See Table 13 on page 20.

The Total Volumes and Volume Equivalents line should include the number from Total Volumes in Compact Shelving.

The Total Volumes and Volume Equivalents line should exclude the number from Cartographic Items.

Include volumes and items housed in all libraries (FICM 400) campus-wide.

Note: The community college spreadsheet differs from the above in that there is no NASF allocation for students living on campus.

Table 11: Library – by Collections and Enrollment

Part VI - Library and Study	
Total volumes and volume-equivalents	4,030,912
Tot volumes in compact shelving	377,099
Cartographic collection	378,400
Students living on campus (HC)	1,830
Student enrollment, on-ground (HC)	26,005
Student enrollment, online (FTE)	2,513

	Volumes	NASF per Volume	Total NASF
First 150,000 Volumes:	150,000	0.10	15,000
Next 150,000 Volumes:	150,000	0.09	13,500
Next 300,000 Volumes:	300,000	0.08	24,000
Next 600,000 Volumes:	600,000	0.07	42,000
Next 1,200,000 Volumes:	1,200,000	0.06	72,000
Next 2,400,000 Volumes:	1,253,813	0.05	62,691
Above 4,800,000 Volumes:	0	0.04	0
Compact Shelving	377,099	0.03	11,313
Cartographic Collection	378,400	0.02	7,568
		NASF for Volumes:	248,072

Number of Library Tables, Carrels, and Groups

	% of FTE Enrollment	Number of T, C, & Gs
Living on-campus:	25.0%	458
On ground, off-campus:	5.0%	1,209
Online:	5.0%	126
Total T, C, & Gs:		1,793

NASF for Library Tables, Carrels, Groups

	% of T, C, & Gs	Number of T, C, & Gs	NASF per Station	Total NASF
% Standard:	45%	807	25	20,172
% Enhanced / Group:	25%	448	35	15,689
% Reserved / Assignable:	20%	359	35	12,551
% Group Study:	10%	179	35	6,276
			NASF for Readers:	54,688

Space for Library Technical Services

Sub-total Volumes and Reader NASF:		302,760
Add'l NASF, % of Sub-total for Technical Services:	12.5%	37,845

Institution-wide Informal, Small Group, Collaboration, Study Space

NASF per Student On-ground HC:	2.5	65,013

Total Library and Study NASF: 405,618

Library Space Guidelines

The amount of net assignable square feet per volume depends on the number of volumes—and the NASF per volume declines as the volume count increases. See Table 12 below. Table 13 can be used to determine volume equivalents.

Table 12: Library Multipliers

Volumes	NASF per Volume
First 150,000 Volumes	0.10
Next 150,000 Volumes	0.09
Next 300,000 Volumes	0.08
Next 600,000 Volumes	0.07
Next 1,200,000 Volumes	0.06
Next 2,400,000 Volumes	0.05
Above 4,800,000 Volumes	0.04
Compact Shelving	0.03
Cartographic	0.02
Tables, Carrels, Group Study	**NASF per Volume**
Standard (assumes a wireless)	25
Enhanced, Group	35
Reserved/Assignable	35
Group Study	35
Technical Services	
12.5% of Volumes NASF + Reader NASF	

Table 13: Volume Equivalents

Volume Equivalents	Quantity	VUE (Volume Equivalent)
Volume (definition: physical unit of work which has been printed or otherwise reproduced, typewritten, or handwritten, contained in one binding or portfolio, hardbound or paperbound, which has been cataloged, classified, or otherwise prepared for use)	1	1
Microfilm	3 reels	1
Microform - other	80	1
Audiovisual (cassettes, films, disks)	5 items	1
Sound recordings, filmstrips, loops, slide-tape sets, graphic materials including maps and computer software packages	1 item	1
Other, flat library materials	8 items	1
CDs DVDs	3 items	1

The number and character of reader spaces in libraries have changed dramatically over the past decade as libraries have transformed from warehousing books to technology-enhanced group collaboration spaces and a melding of IT and Library Science. As the number of computers in libraries increased, the size of the workstation increased as well.

The number of reader stations for the universities is established by assigning a seat for 25% of the on-campus student population, 5% for off-campus students, and 5% for online students.

For community colleges, 10% of on-ground enrollment plus 5% of online students calculates the reader quantity.

An amount of space is then applied for each seating category: standard, data capable, and reserved/assignable. THEC's guideline is 45% standard seating, 25% enhanced group, 20% reserved/assignable, and 10% for group study spaces.

Technical services also includes offices and workspaces for library administration and technical services. The required amount is proportionate to the space allocated for volumes and readers.

A new guideline has been added to address institution-wide, informal, small-group collaboration and study space. This guideline provides the equivalent of a 25-square-foot station for 10% of the campus enrollment.

SUMMARY NASF

At the bottom of the spreadsheet is a table summarizing the model's results for each space category and comparing those results with existing approved and funded space.

Table 14: Summary NASF

Summary NASF						
Part	Modeled	Exist E&G	Approved & Funded E&G	Existing + Approved	Difference	Equiv FICM
I - Classrooms	143,830			0	-143,830	1xx
II - Lab / Studio	78,249			0	-78,249	210, 215
III - Open Lab	113,065			0	-113,065	220, 225
IV - Research	496,575			0	-496,575	250, 255
V - Office	830,632			0	-830,632	3xx
VI - Library / Study	405,618			0	-405,618	4xx
Totals:	2,067,969	0	0	0	-2,067,969	

The user should fill in the two blue columns. The first column is the existing E&G NASF data from the institution's most recent physical facilities inventory (PFI). The second blue column is the Approved and Funded E&G NASF. Both columns will automatically be totaled in the Existing and Approved columns.

Data to Use:
Enter data corresponding to the input data used for all of the parts in the model. If the model input data was for a particular campus or satellite, the existing NASF entered should correspond to that campus or satellite.

Enter E&G NASF only. In PFIs, this corresponds to Revenue Producing = 0.
The righthand column instructs the user on the corresponding FICM categories. For example, "1xx" means all spaces in the FICM 100 series.

INSTRUCTIONS FOR TENNESSEE COLLEGES OF APPLIED TECHNOLOGY (TCATS)

PARTS I AND II - CLASSROOMS AND LABS/SHOPS

The calculation spreadsheets for TCAT classrooms and TCAT labs/shops have been combined to provide a more discipline-specific approach to space modeling and planning.

Calculation Spreadsheet

For the TCATs, the modeled amount of NASF is the same for each classroom calculation regardless of discipline. However, some academic programs use a combined classroom and lab where all teaching occurs in a single space. For these programs, the spreadsheet assumes a need of zero square feet of classroom space, and the needs for instructional space are captured under the calculations for lab space. For the Truck Driving program, "lab" space consists of a truck and outdoor driving area without the need for any indoor space, so only classroom space needs are shown.

The minimum classroom size for each program except for Dental Assistant is assumed to be 480 square feet. For programs with 20 or fewer full-time equivalent (FTE) students, the need for classroom space will therefore be 480 square feet. This number will be higher for enrollments above 20 FTE students. Needs for the Dental Assistant program are smaller due to the pedagogy of this program and the lack of a need for a classroom to accommodate all students at once.

The spreadsheet uses a different model from the universities and community colleges based on an allocation that differs by program. See Table 16. The amount of lab or shop space needed is shown as a range. This is due to the fact that different teaching methodologies, equipment sizes, and regional variations in curriculum make it difficult to determine a single space factor. The amount of needed space for each program is between the minimum and maximum, but should be evaluated based on the particulars of the program and discussions with the instructor.

In this part, enter the combined total of annual full-time preparatory, part-time preparatory, and non-preparatory secondary student contact hours over the full academic year for each program, not including any hours at other TCAT sites beyond the campus being considered. Then enter the total existing NASF of classroom (total of all spaces with FICM codes 110 and 115, as well as any spaces classified as 210 or 215 but commonly referred to in the TCAT system as classrooms and which serve a less technical function than the lab/shop space) and lab/shop space (total of all spaces with FICM codes 210 and 215) for each program. These numbers should be entered in the blue cells as shown in Table 15 on the following page.

Space factors are not shown for some programs that are very uncommon in the TCAT system, or have large variations in space needs between campuses based on teaching methodologies, equipment sizes, and/or regional variations in curriculum. For each program not already listed, enter the name of the program where "[other program]" is noted and enter the annual student contact hours for that program. Then, enter a minimum and maximum NASF per student based on the metrics for similar programs and an understanding of the particulars of this program.

This information is inserted into the appropriate blue cells and the amount of space needed is automatically calculated.

Table 15: TCAT Classrooms and Labs/Shops Space

Parts I and II - Classrooms and Labs / Shops											
	Enrollment		Classrooms			Labs / Shops					
Program	Annual Student Contact Hours	Calculated FTE Enrollment	NASF / Student	NASF per Classroom	Existing NASF	Min. NASF / Student	Max. NASF / Student	Min. NASF per Lab/Shop	Max. NASF per Lab/Shop	Existing NASF
Administrative Office Technology		0	0	0		50	60	0	0	
Auto Body / Collision Repair		0	24	0		400	480	0	0	
Automotive Technology		0	24	0		280	340	0	0	
Building Construction Technology		0	24	0		300	360	0	0	
CAD Technology		0	0	0		80	90	0	0	
Computer Information Technology		0	24	0		80	90	0	0	
Cosmetology		0	24	0		90	110	0	0	
Dental Assistant		0	24	0		120	145	0	0	
Early Childhood Education		0	24	0		50	60	0	0	
Electronics Technology / Mechatronics		0	24	0		150	180	0	0	
Graphic Design		0	0	0		70	80	0	0	
Health IT / Medical Office Assistant		0	0	0		80	90	0	0	
HVACR		0	24	0		175	250	0	0	
Industrial Electricity		0	24	0		100	200	0	0	
Industrial Maintenance		0	24	0		150	250	0	0	
Machine Tool Technology		0	24	0		300	360	0	0	
Nursing Assistant (CNA)		0	24	0		60	90	0	0	
Pharmacy Technician		0	24	0		100	120	0	0	
Power Sports		0	24	0		200	240	0	0	
Practical Nursing (LPN)		0	24	0		60	90	0	0	
Surgical Technology		0	24	0		100	110	0	0	
Truck Driving		0	24	0		0	0	0	0	
Welding Technology		0	24	0		250	300	0	0	
[other program]		0	24	0				0	0	
[other program]		0	24	0				0	0	
[other program]		0	24	0				0	0	
[other program]		0	24	0				0	0	
[other program]		0	24	0				0	0	
[other program]		0	24	0				0	0	
[other program]		0	24	0				0	0	
[other program]		0	24	0				0	0	
Total Classroom NASF:				0	0	Total Lab/Shop NASF:		0	0	0

TCAT Labs/Shops Space Guideline

Table 16 shows multipliers by program for the Tennessee Colleges of Applied Technology.

Table 16: Lab/Shop Multipliers - TCATs

Discipline with CIP Code		Min. NASF/FTE Per Student	Max. NASF/FTE Per Student
52.04	Administrative Office Technology	50	60
47.0603	Auto Body/Collision Repair	400	480
47.0604	Automotive Technology	280	340
46.04	Building Construction Technology	300	360
15.13	CAD Technology	80	90
11	Computer Information Technology	80	90
12.04	Cosmetology	90	110
51.06	Dental Assistant	120	145
19.07	Early Childhood Education	50	60
47.01	Electronics Technology/Mechatronics	150	180
50.04	Graphic Design	70	80
51.07	Health IT/Medical Office Assistant	80	90
47.02	HVACR	175	250
Varies	Industrial Electricity	100	200
47.03	Industrial Maintenance	150	250
48.05	Machine Tool Technology	300	360
51.3902	Nursing Asst (CNA)	60	90
51.08	Pharmacy Technician	100	120
47.06	Power Sports	200	240
51.3901	Practical Nursing (LPN)	60	90
51.09	Surgical Technology	100	110
49.02	Truck Driving	0	0
48.05	Welding Technology	250	300

PART III - SUPPORT SPACE

This part of the spreadsheet generates the amount of several different types of space beyond instructional and office spaces. See Table 17 below. This part of the spreadsheet uses two additional data items:
Total annual training hours.
Total existing gross square feet except central service storage space.

Table 17: Support Space

Part III - Support Space				
	Calculated FTE Enrollment	NASF / Student	Total NASF	Existing NASF
Open Computer Lab (Tech. Foundations)	20	4	720	
Student Commons	20	5	1,000	
Multipurpose Meeting Space	20	10	1,500	
	Total Annual Training Hours	Space Factor	Total NASF	Existing NASF
Industry Training Space		0.065	0	
	Total Existing Gross Sq. Ft. Except Central Service / Storage	Space Factor	Total NASF	Existing NASF
Central Service/Storage		0.05	0	
		Total Other NASF:	3,220	338

Calculation Spreadsheet: Open Computer Lab (Tech. Foundations)

Technology Foundations is not a separate certificate program, but rather a support program for students who need assistance with math or other remedial skills. On most TCAT campuses, the Tech. Foundations program meets in a single room where students from multiple disciplines share space, computers, and an instructor. This space also serves as an open computer lab for all students to use for general computer and Internet access.

The space calculation for this type of space is based on the total full-time equivalent enrollment, which is calculated automatically from the total annual student contact hours entered for all programs in Parts I and II above. The total annual contact hours are divided by 1,296 hours per student, given that this is the number of hours that most students spend on campus in a year for each program, even though the TCATs commonly use a different denominator for calculating FTE enrollment.

Enter the total existing NASF of this type of space (typically those spaces with FICM codes 220 and 225) for the campus as a whole. This number should be entered in the blue cells as shown in Table 17.

The minimum amount of this space is assumed to be 720 square feet. For TCATs with 180 or fewer full-time equivalent (FTE) students, the need for Open Computer Lab (Tech. Foundations) space will therefore be 720 square feet. This number will be higher for campuses with enrollments above 180 FTE students.

Calculation Spreadsheet: Student Commons

Most TCATs are small campuses without cafeterias or student centers, but there is still a need for student gathering space to be used during break times, on social occasions, and for eating (whether or not food is provided). This space serves all students at the TCAT and therefore the factor is based on the total FTE enrollment.

Enter the total existing NASF of this type of space (typically those spaces with FICM codes 650 and 655) for the campus as a whole. This number should be entered in the blue cell as shown in Table 17.

The minimum amount of this space is assumed to be 1,000 square feet. For TCATs with 200 or fewer full-time equivalent (FTE) students, the need for Student Commons space will therefore be 1,000 square feet. This number will be higher for campuses with enrollments above 200 FTE students.

Calculation Spreadsheet: Multipurpose Meeting Space

A crucial function of each TCAT is providing space for community meetings, especially those related to local partners and the functioning of the TCAT. For this reason, a space factor is provided to ensure that each campus has adequate space for a large meeting room that can also be used for gatherings and functions of various sizes. While this space serves the community as well as students, employers, and other partners, its size is based on the total FTE enrollment as a measure of the general size and need.

Enter the total existing NASF of this type of space (typically those spaces with FICM codes 680 and 685) for the campus as a whole. This number should be entered in the blue cell as shown in Table 17.

The minimum amount of this space is assumed to be 1,500 square feet. For TCATs with 150 or fewer full-time equivalent (FTE) students, the need for Multipurpose Meeting Space will therefore be 1,500 square feet. This number will be higher for campuses with enrollments above 150 FTE students.

Calculation Spreadsheet: Industry Training Space

Each TCAT must also provide space to train (or allow local employers to train) employees already in the workforce. This flexible space may accommodate one or more industry partner and may be set up as a classroom or with special equipment. Industry training space is intended for instruction that is not related to a certificate for a full-time student. For this reason, its size is based on the total training hours provided on the campus.

Enter the total annual number of preparatory, supplemental hours over the full academic year for all disciplines combined, not including any hours at other TCAT sites beyond the campus being considered. Then enter the total existing NASF of this type of space (typically those spaces with FICM codes 110, 115, 210, and 215 specifically designated for industry training rather than program instruction) for the campus as a whole. This number should be entered in the blue cell as shown in Table 17.

The minimum amount of this space is assumed to be 1,500 square feet. For TCATs with 150 or fewer full-time equivalent (FTE) students, the need for Multipurpose Meeting Space will therefore be 1,500 square feet. This number will be higher for campuses with enrollments above 150 FTE students.

Calculation Spreadsheet: Central Service/Storage Space

While most TCAT campuses are small and do not have a large central maintenance or facilities building, there is still a need for space for central storage, shipping/receiving, maintenance shop, and other service functions. This space factor is multiplied by the total gross square footage of the campus, not including any existing Central Service/Storage space.

Enter the total existing NASF of this type of space (any space classified in FICM category 700) for the campus as a whole. This number should be entered in the blue cell as shown in Table 17.

PART IV – OFFICE

Calculation Spreadsheet: TCAT Office Space

The Office part of the spreadsheet generates the amount of office and related space by assigning a per-FTE multiplier by personnel category. A factor of 30% is added for office support, which includes workrooms, conference rooms, file rooms, office storage, etc. (usually FICM 300 space in facilities inventories).

Data to Use:

1. Count only staff requiring office space.
2. This data should correspond to the point in time used for other staffing data submissions to THEC.

Table 18: Personnel Requiring Office Space

Part V - Personnel Requiring Office Space			
Personnel Category	**Total FTE**	**NASF / FTE**	**Total NASF**
President		180	0
Vice President		140	0
Instructor		120	0
Staff		100	0
		Subtotal NASF:	0
		Support Allocation: 30%	0
		Total Office NASF by FTE:	**0**

TCAT Academic and Administrative Office Space Guidelines

The following space multipliers shown in Table 19 are recommended:

Table 19: TCAT Office Multipliers

Personnel Category	TCAT's (NASF per FTE)
President	180
Vice President	140
Instructor	120
Staff	100
Allocation for workrooms, files, storage, conference, reception	30%

SUMMARY NASF

At the bottom of the spreadsheet is a table that summarizes the results of the model for each category of space, and compares those results with existing space. The results for Labs/Shops space are for all programs combined, but the detailed results by program in Part II may be more useful for understanding individual program space needs.

Table 20: Summary NASF

Summary NASF						
Part	Modeled (min.)	Modeled (max.)	Exist E&G	Difference (min.)	Difference (max.)	Equivalent FICM
I - Classrooms	0		0	0		1xx
II - Labs / Shops	0	0	0	0	0	210, 215
III - Support	0		0	0		220, 650, 680, 7xx
V - Office	0			0		3xx
Totals:	0	0	0	0	0	

Enter the total existing NASF of all office and office support space (any space classified in FICM category 300) for the campus as a whole in the blue cell as shown in Table 20 above.

APPENDIX

Definition of Space Types

Gross Area (Gross Square Feet—GSF) (see Gross Area Drawing)

A. Definition. 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.

B. Basis for Measurement. Gross Area is computed by physically measuring or scaling measurements from the outside faces of exterior walls, disregarding cornices, pilasters, buttresses, etc., that extend beyond the wall faces. Exclude areas having less than a 3-foot clear ceiling height unless the criteria of a separate structure are met.

Measured in terms of Gross Square Feet (GSF) -

GSF = Net Usable Area + Structural Space

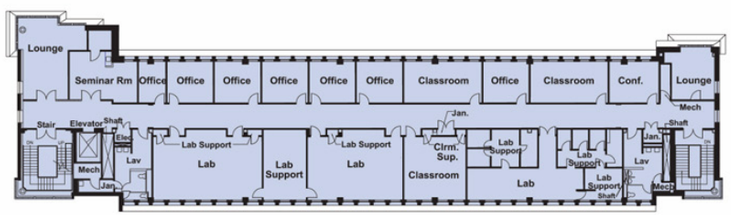
C. Description. In addition to all the internal floored spaces obviously covered above, Gross Area should include the following: excavated basement areas; interstitial space (i.e., mechanical floor or walkways), mezzanines, penthouses, and attics; garages; covered porches, whether walled or not; inner or outer balconies to the extent of a drip line from a roof or balcony immediately above, whether walled or not, if they are utilized for operational functions; and corridors or walkways, whether walled or not, provided they are either within the outside face lines of the building to the extent of the roof drip line or, if covered, to the extent of their cover's drip line. The footprints of stairways, elevator shafts, and vertical duct shafts are to be counted as gross area on each floor through which they pass.

D. Limitations. Exclude open areas such as parking lots, playing fields, pools, courts, light wells, and portions of upper floors eliminated by spaces or lobbies that rise above single-floor ceiling height. Exclude unexcavated basement areas.

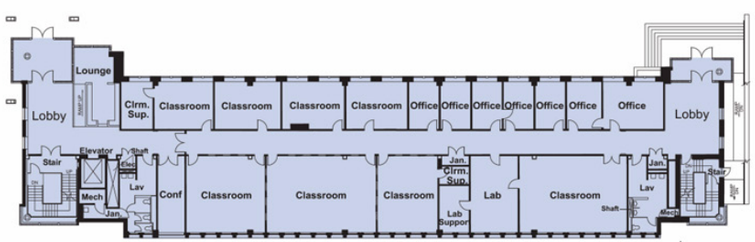
E. Exception. Include top, unroofed floor of parking structures where parking is available.

Gross Area of a building by floor

THIRD FLOOR



SECOND FLOOR



Net Assignable Area (Net Assignable Square Feet—NASF) (see Net Assignable Area Drawing)

A. Definition. The sum of all areas on all floors of a building assigned to, or available for assignment to, an occupant or specific use.

B. Basis for Measurement. Net Assignable Area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form the boundaries of the designated areas. Exclude areas having less than a 3-foot clear ceiling height unless the criteria of a separate structure are met.

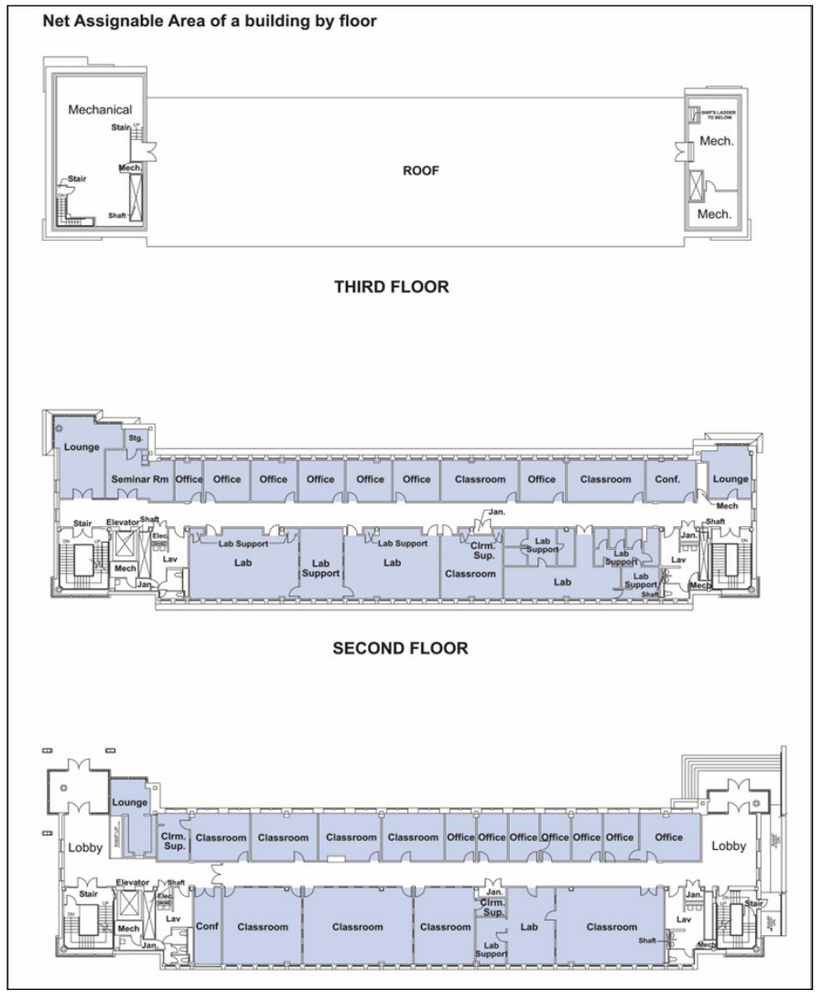
Measured in terms of Net Assignable Square Feet (NASF) -

NASF = Sum of Areas Designated by the 7 Assignable Major Space Use Categories

C. Description. Included should be space subdivisions of the 7 major space use categories for assignable space.

Classrooms
Teaching Lab and Studio (scheduled)
Open Lab and Studio (unscheduled)
Research Lab
Office
Library and Information Commons
Physical Education and Recreation Space

D. Limitations. Deductions should not be made for necessary building columns and projections. These small areas are excluded as they represent an insignificant percentage of the total area of an average-sized space. Capturing their area would be unduly burdensome relative to the very small contribution they would make toward precision. Areas defined as building service, circulation, mechanical, and structural should not be included.



Circulation Area (see Circulation Area Drawings 1 and 2)

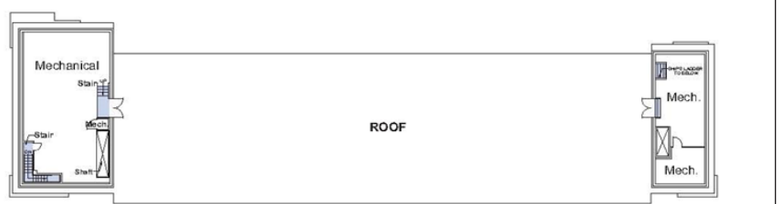
A. Definition. The sum of all areas on all floors of a building required for physical access to some subdivision of space, whether physically bounded by partitions or not.

B. Basis for Measurement. Circulation Area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form the boundaries of the designated areas. Exclude areas having less than a 3-foot clear ceiling height unless the criteria of a separate structure are met.

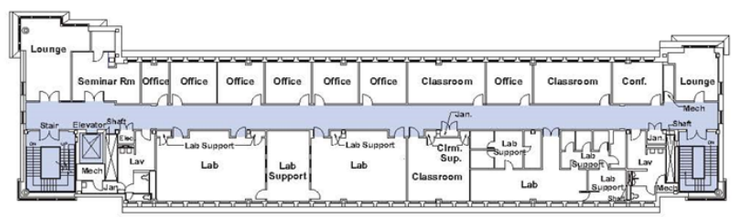
C. Description. Included should be fire towers, elevator lobbies, tunnels, bridges, and each floor's footprint of elevator shafts, escalators, and stairways. Also included are public corridors or walkways, whether walled or not, provided they are either within the outside face lines of the buildings to the extent of the roof drip line or, if covered, to the extent of their cover's drip line. Receiving areas, such as loading docks, should be treated as circulation space. Any part of a loading dock that is not covered is to be excluded from both the Circulation Area and Gross Area.

D. Limitations. Deductions should not be made for necessary building columns and minor projections. These small areas are excluded as they represent an insignificant percentage of the total area of an average-sized space. Capturing their area would be unduly burdensome relative to the very small contribution they would make toward precision. When determining corridor areas, spaces required for public access should be included. Also, if the circulation space serves more than one assignable occupied space, and has no other purpose than to serve as a conduit to another space, then it is circulation and not office support (see Circulation Drawing 2). A loading dock, or portions thereof, that are also used for central storage should be regarded as assignable area and coded as Central Storage (730).

Drawing 1 - Circulation Area of a building by floor



THIRD FLOOR



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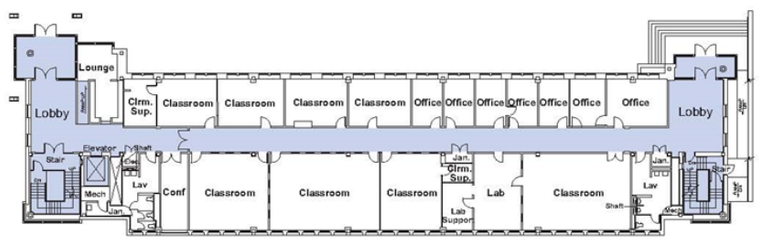
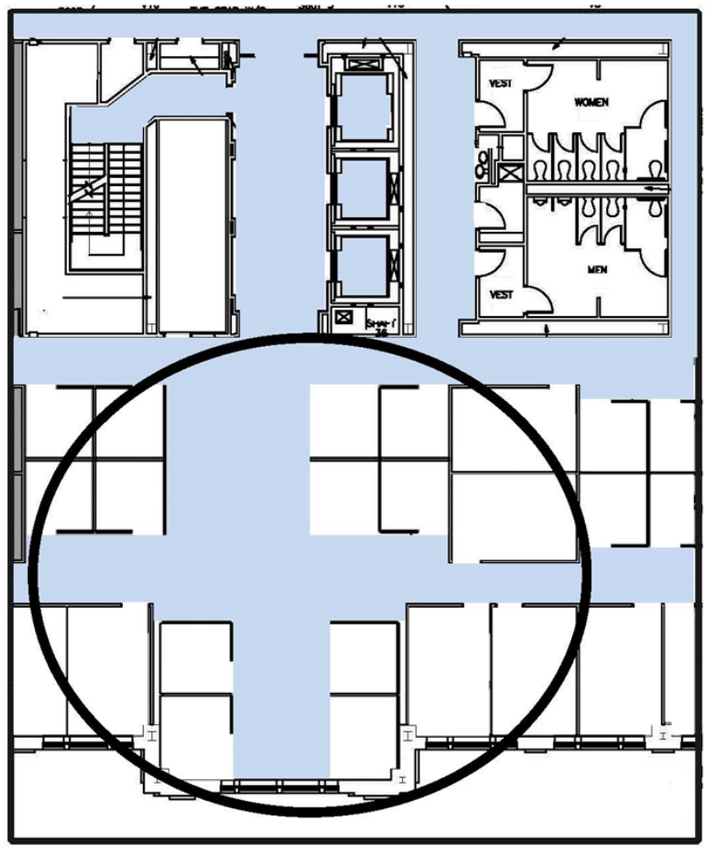


Drawing 2 – Circulation Area within a cubicle office area



Building Service Area (see Building Service Area Drawing)

A. Definition. The sum of all areas on all floors of a building used for custodial supplies, janitorial sink rooms, janitorial closets, and public rest rooms.

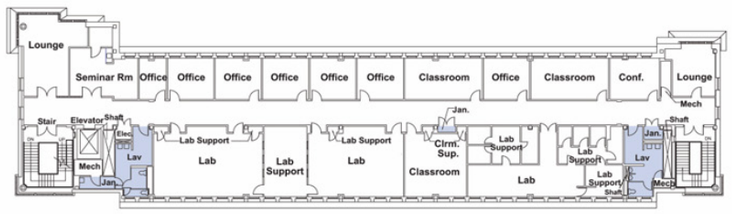
B. Basis for Measurement. Building Service Area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form boundaries of the designated areas. Exclude areas having less than a 3-foot clear ceiling height unless the criteria of a separate structure are met.

C. Description. Included should be janitor closets or similarly small custodial spaces, maintenance material storage areas, trash rooms exclusively devoted to the storage of non-hazardous waste created by the building occupants as a whole, and public rest rooms.

D. Limitations. Deductions should not be made for necessary building columns and minor projections. These small areas are excluded as they represent an insignificant percentage of the total area of an average-sized space. Capturing their area would be unduly burdensome relative to the very small contribution they would make toward precision. Assignable areas classified as Shop (720), Central Storage (730), Central Supplies (870), or special purpose storage or maintenance rooms such as linen closets and housekeeping rooms in residence halls should not be included. Do not include private rest rooms that should be classified as Office Service (315).

Buidling Service Area of a building by floor

THIRD FLOOR



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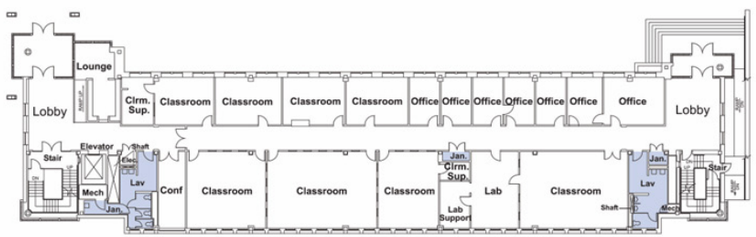

Mechanical Area (see Mechanical Area Drawing)

A. Definition. The sum of all areas on all floors of a building designed to house mechanical equipment, utility services, and shaft areas.

B. Basis for Measurement. Mechanical Area is computed by physically measuring or scaling measurements from the inside faces of surfaces that form the boundaries of the designated areas. Exclude areas having less than a 3-foot ceiling height unless the criteria of a separate structure are met.

C. Description. Mechanical areas such as central utility plants, boiler rooms, mechanical and electrical equipment rooms, fuel rooms, meter, and telecommunications closets, and each floor's footprint of air ducts, pipe shafts, mechanical service shafts, service chutes, and stacks should be included.

D. Limitations. Deductions should not be made for necessary building columns and projections. These small areas are excluded as they represent an insignificant percentage of the total area of an average-sized space. Capturing their area would be unduly burdensome relative to the very small contribution they would make toward precision. Areas designated as public toilets are not included in this category but are included under the Building Service Area.