

FOUR CAMPUSES UNITED
ALL FOUR: COLORADO

Campus Classroom and Instruction Laboratory Utilization

Fall 2019

Regent Finance Committee
August 28, 2019



University of Colorado

Boulder | Colorado Springs | Denver | Anschutz Medical Campus

University of Colorado / Fall 2019

Campus Classroom and Instructional Laboratory Utilization

Purpose and Context

Campus reporting on classroom and instructional laboratory utilization is a tool used to determine space needs by the Board of Regents, the Department of Higher Education (CDHE), and the Office of State Planning and Budgeting. The data are used to aid the university in strategic planning, cost effective management of its facilities and in the development of master planning for each campus. Effective building utilization is important to delivering high quality education programs. The facilities of the University of Colorado's four campuses encompass over 20 million gross square feet of building space. Approximately 10.8 million square feet was at least partially funded with state General Funds. Within these buildings the university serves more than 67,000 degree seeking students and an additional 8,000 taking courses for credit. Sponsored research space is not examined in this report. However, CU researchers received more than \$1.053 Billion in sponsored research funding in fiscal year 2018-19.ⁱ

Background — The CDHE former guidelines for classroom and laboratory utilization were based upon hours used per week and student occupancy. These guidelines have been rescinded. In recent facilities master plan updates, the campuses have measured utilization against peer data or other national averages. The Boulder, Colorado Springs, and Anschutz Medical Campuses are currently working on master plan updates in the coming year. The Denver campus master plan update was approved by the Board of Regents in 2017 and updated and approved by the Board of Regents in 2019.

Data limitations — The Fall 2019 report provides an examination of classroom and instructional laboratories hours of use and student occupancy (number of student seats filled). The background material for this report is more detailed than previous reports as campuses have refined their individual reporting capabilities. Fall 2016 data cannot be directly compared to Fall 2013, or Fall 2007 data due to changes in methodology. Data from the Fall 2019 analysis are not directly comparable to those reported in prior space analyses due to:

- Changes in rooms included in analysis – Current reporting includes rooms with at least one hour of scheduled instruction per week, rather than rooms with 20 or more hours of scheduled instruction per week.
- A change in source data systems – the current reporting uses the new student information system (ISIS) whereas prior reports may have relied on a student database that has since been retired (SIS).
- Changes in methodology – Earlier reporting used indicators based on DHE/CCHE classroom space utilization guidelines. DHE/CCHE has since repealed the utilization standard. All credit-bearing instruction is now included, whereas only state funded instruction was included previously.

Additionally, these data by themselves do not encompass the complete classroom and laboratory utilization of each campus. The Fall 2019 data have the following limitations:

- Academic uses of these rooms other than scheduled classes are not captured here (e.g., research group meetings, conferences, mid-term exams, student presentations, and informal study sessions). In some rooms, particularly those scheduled directly by the schools and colleges, these other activities may account for most of total room usage. Additionally, non-credit instruction is not included.
- Second, the data cannot be compared between CU campuses. Different data sets were included and reflect the respective campus scheduling policies.
- Third, these data contain information on scheduled classroom and instructional laboratory use only. They do not include information on faculty offices, or research laboratories.

Campus Data — Classroom and laboratory utilization data based upon hours used per week and student occupancy are provided. As with previous years' data, it is important to know that room capacity and course capacity are often different. A course section restricted to 30 students for teaching reasons may be housed in a room with 50 seats because a smaller room was not available. Therefore the campuses have reported the maximum scheduled enrollment as percentage of seats and the actual enrollment as percentage of maximum scheduled enrollment.

The data submitted by each campus include a list of individual rooms, by type and utilization. Relevant information regarding campus course scheduling, operations, and limitations of campus data is also included. Each campus had distinct factors that impacted classroom and instructional laboratory usage during this time period. For example, the Denver campus shares space on the Auraria campus with two other institutions. Policies relating to room scheduling are unique to each campus mission and existing infrastructure.

ⁱ University of Colorado System, Essential Facts 2018-19: University of Colorado Office of the Vice President for Budget and Finance; Square footage data from the Office of the State Architect.

University of Colorado Boulder

REGENT FINANCE COMMITTEE
AUGUST 28, 2019

Be Boulder.
 University of Colorado Boulder

At A Glance

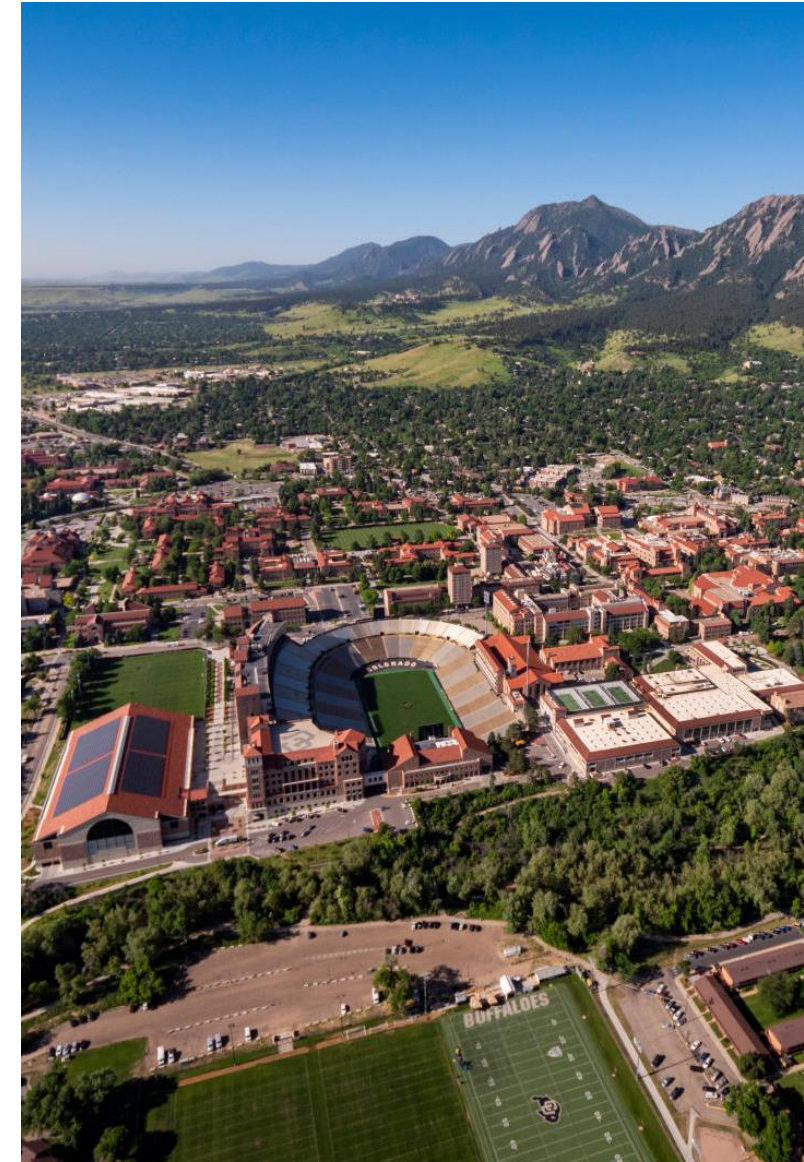
374 Occupied Buildings

- **108 General Fund Buildings**
 - 48 Classroom/Admin
 - 29 Research/Laboratory
 - 31 Other
- **237 Auxiliary Buildings**
 - 176 Residential
 - 27 Special/General Use
 - 4 Research/Laboratory
 - 30 Other
- **29 Research Property Service/Leased/Other**
 - 12 Classroom/Admin
 - 6 Residential
 - 5 Research/Laboratory
 - 6 Other

575 Scheduled Instructional Spaces

- 343 Classrooms
- 139 Classroom Laboratories
- 93 Other

*note: "other" includes library, museum, archive, hospital, clinic, parking garage, special use, general use and other types of facilities



Space Utilization: Classroom Data

Fall 2018 Data:

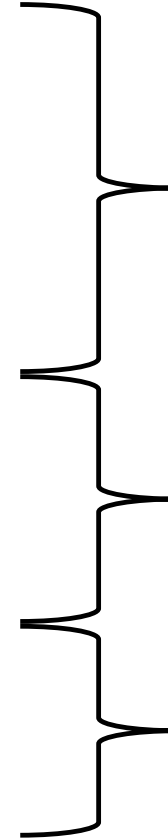
- 545 rooms with instructional activity
- 38 rooms in auxiliary fund buildings
- 507 rooms in general fund buildings
 - 183 rooms were centrally scheduled
 - 324 rooms were scheduled by departments

Summary of Utilization by Room Group and Scheduling Control

Room Group	Number	Sections	Credit Hours	Seats/100 SF	Scheduled Hours/week	Percent Occupancy
Classrooms	461	4,857	370,320	5.6	30	62%
Laboratories	84	782	12,380	3.3	24	67%
Grand Total	545	5,639	382,701	5.3	28	63%

Strategic Facilities Planning

- 1) **Understand:** Space, Utilization and Requirements
- 2) **Analyze:** Options, Impact, Cost
- 3) **Plan:** Campus Master Plan & Capital Investment Plan
- 4) **Act:** Funding & Execution



Strategic Facilities Visioning:

- What do we need?
- When do we need it?
- What do we have?
- Gap Analysis
- What are our options?

Planning:

- Where do we renovate/build it?
- When do we renovate/build it?
- How do we fund it?

Execution:

- How do we renovate/build it?

Space Utilization Fundamental Principles



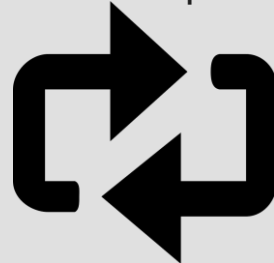
Space Optimization

Changing the way we use our space presents opportunities to significantly improve the student experience.



Redirect Resources

By managing our space to maximize utilization, we can create efficiencies that allow us to save money and direct more resources toward areas of transformation for the campus.



Campus Priorities

Rather than building new facilities, resources can be applied to fundamental campus priorities that improve teaching, research, and learning.

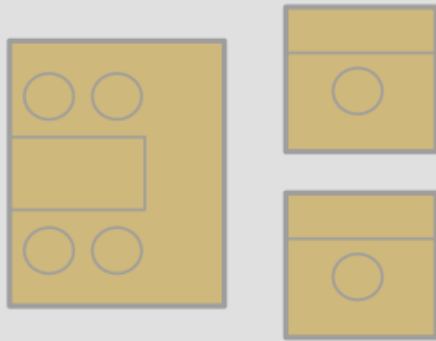


Space Allocation Guidelines

1) Qualitative guidance

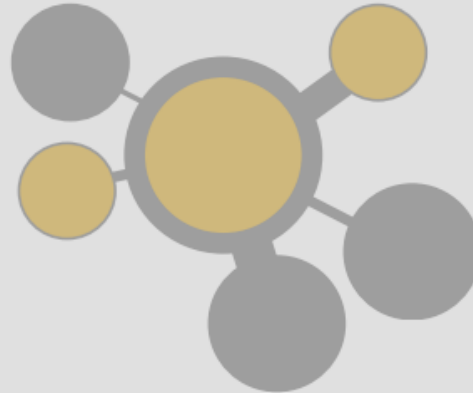
A. Increase Collaboration Space

More collaboration space is necessary with increased workstation ratios. Additional solution and focus rooms provide privacy for workstation occupants when desired.



B. Formalize the Informal

Purposeful creation of informal gathering or hub spaces provide for impromptu meetings, community building, and an extension of individual workspaces.



C. Share Common Areas

Availability of collaboration spaces for multiple building tenants or university entities allows for higher utilization and reduction in overall need.



Space Allocation Guidelines

2) Quantitative guideline

<i>Conference Rooms</i>	<i>Amount</i>	<i>ASF/ Person</i>	<i>Capacity</i>	<i>Size</i>
Conference Room- Large	1:60 or 1:Floor	25	24	600
Conference Room- Medium	1:20	25	12	300
Conference Room- Small	1:30	25	6	150

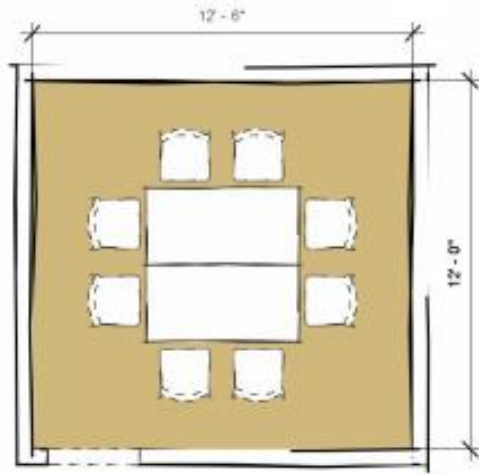
<i>Collaboration Spaces</i>	<i>Amount</i>	<i>ASF/ Person</i>	<i>Capacity</i>	<i>Size</i>
Solution Room	1:20 Wkstn	20	4	80
Focus Room	1:10 Wkstn	20	2	40

<i>Community Spaces</i>	<i>Amount</i>	<i>ASF/ Person</i>
Social, Lounge, Hub	1:1	10

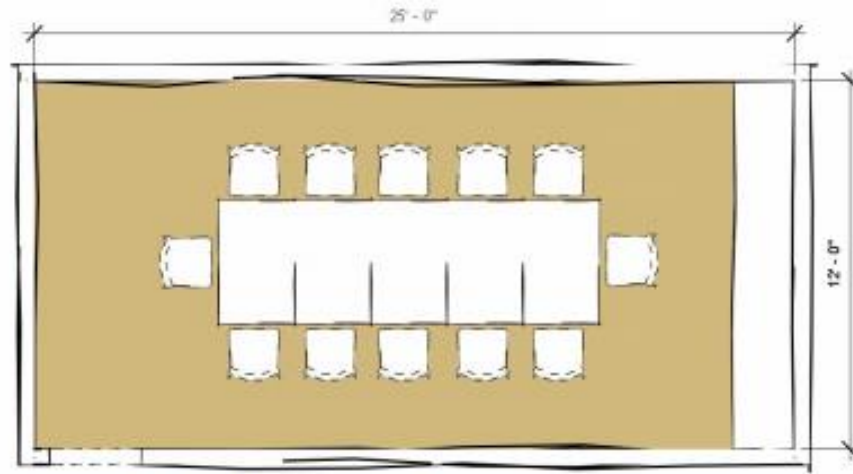
<i>Support Spaces</i>	<i>Amount</i>	<i>ASF/ Person</i>
Pantry, Copy, Storage	1:1	10

Space Allocation Guidelines

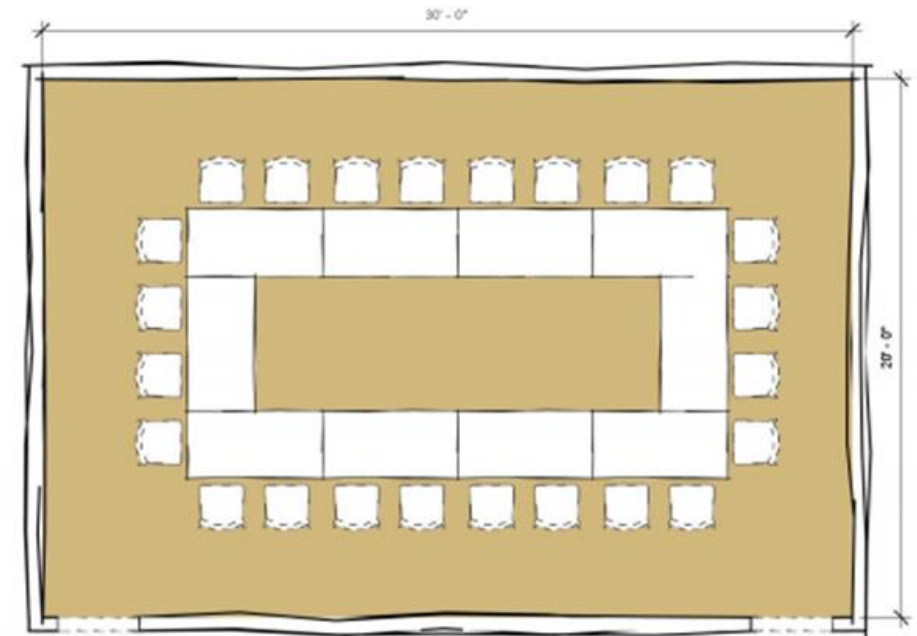
3) Graphical representations



Small Conference



Medium Conference



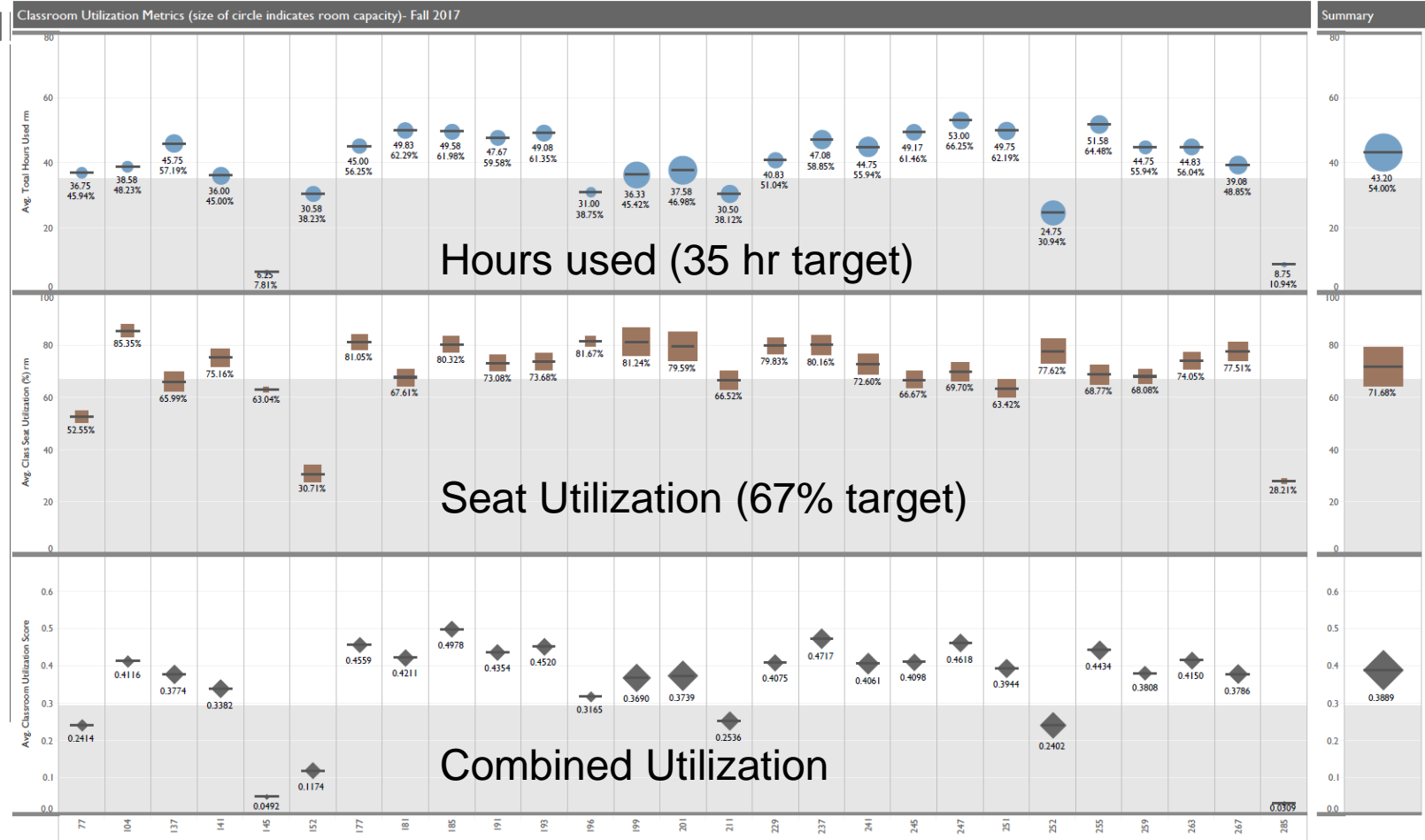
Large Conference

Analysis: Hellems Classroom Utilization

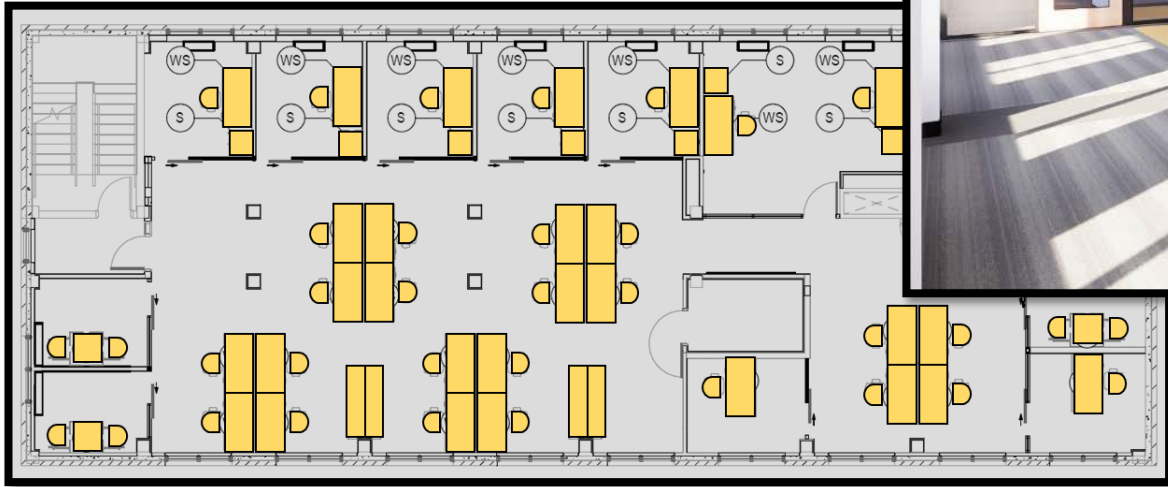
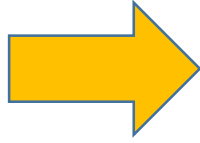
Bldg Code
HLMS

Bldg Code HLMS

Dept Desc (gr... All



Space Optimization Example



Renovations to the Fleming Building will double the occupancy from 14 private offices to 29 work spaces and associated break out rooms

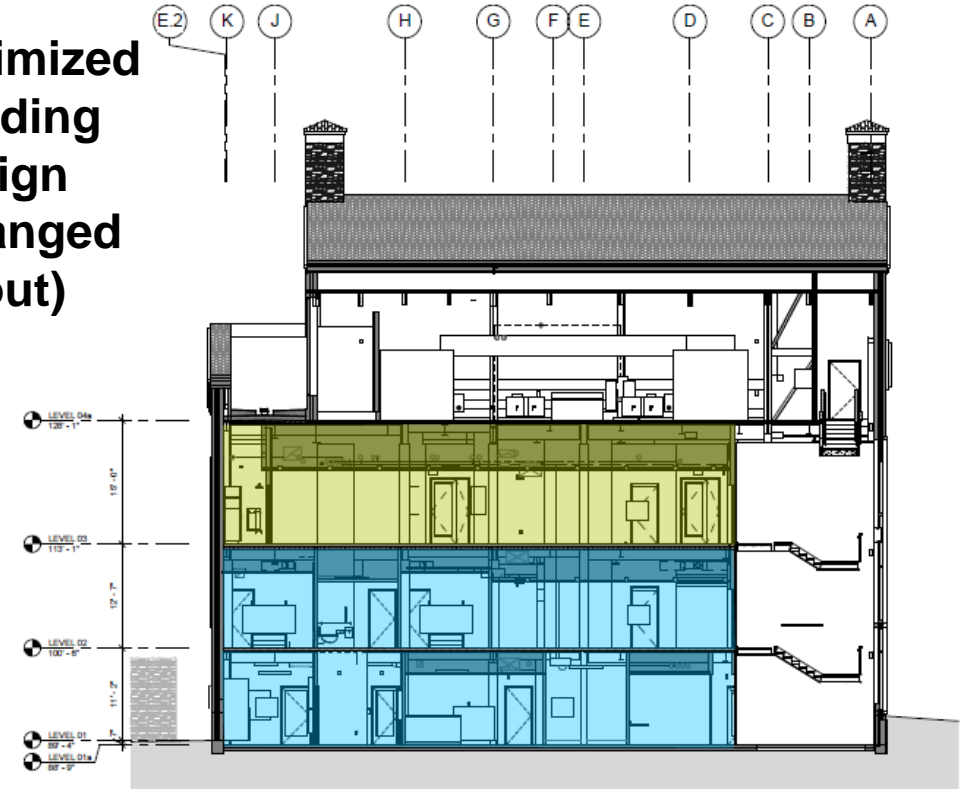
Design / Life Cycle Cost Example

Original Building Design



1 NORTH/SOUTH SECTION
1/8" = 1'-0"

Optimized Building Design (changed layout)



NORTH / SOUTH BUILDING SECTION

STRATEGIC FACILITIES VISIONING

Purpose & Goals

Strategic Facilities Visioning is a comprehensive planning effort that will inform and prioritize campus-wide infrastructure and facilities investments.

01

ARTICULATE
A Strategic Campus-
Wide Facilities Vision
For An Evolving
Educational And
Research Landscape

02

ALIGN
The Vision Across All
University Executive
Leadership, Academics,
Research,
Administration And
Other Key Stakeholders

03

IDENTIFY
Infrastructure Initiatives
And Investments To
Support The Vision Over
The Next 30 Years

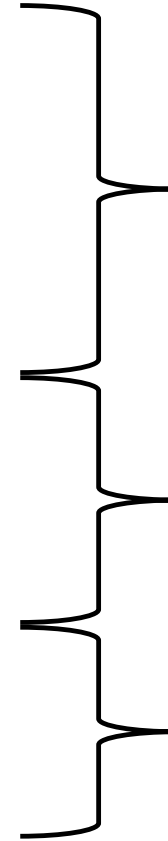
STRATEGIC FACILITIES VISIONING

Process Overview



Strategic Facilities Planning

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- When do we renovate/build it?
- How do we fund it?

Execution:

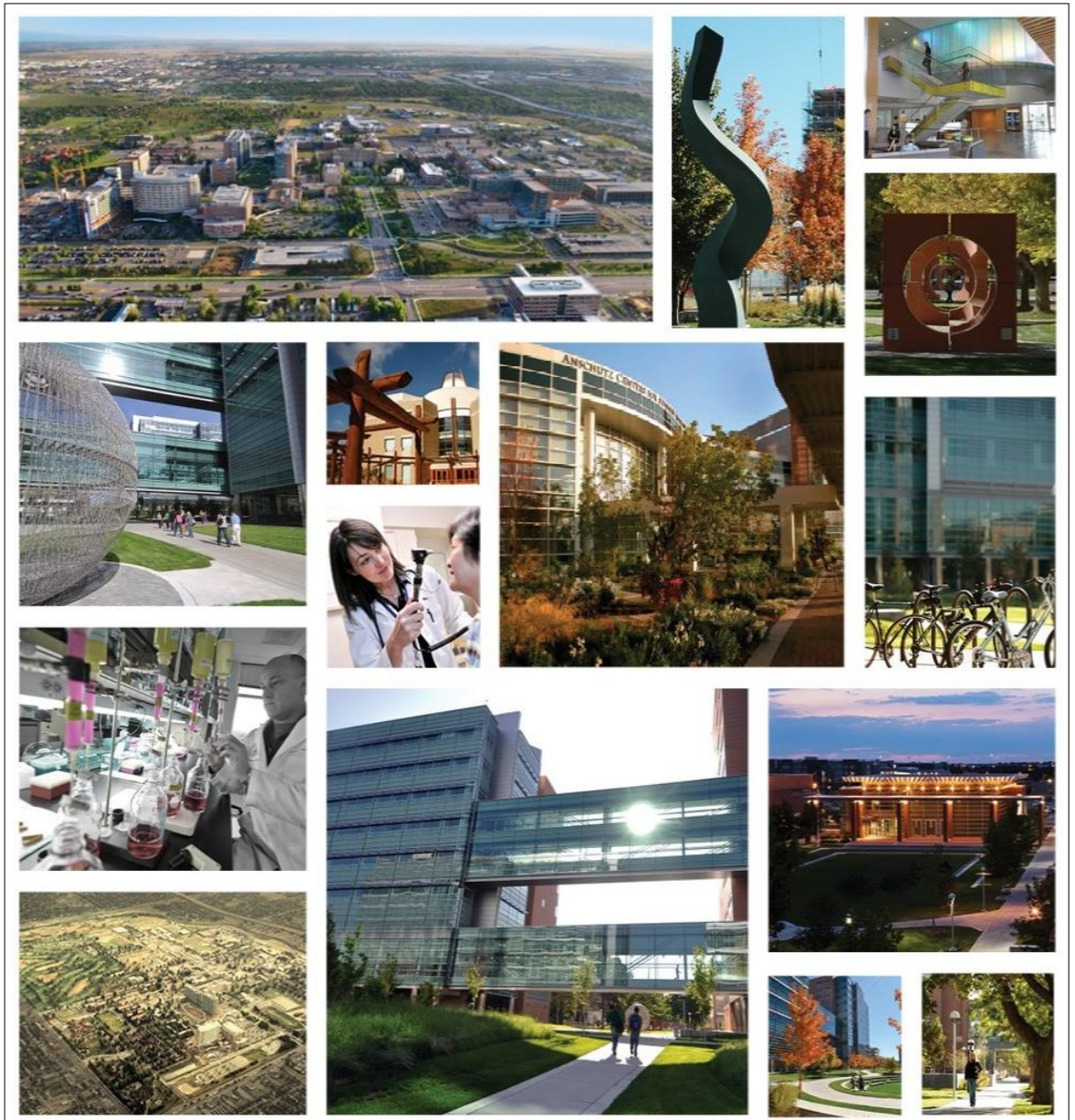
- How do we renovate/build it?

2019 Classroom Utilization Report

CU Board of Regents Finance Committee

University of Colorado
Anschutz Medical Campus

August 28th, 2019



At A Glance

Buildings

- 31 General Fund Buildings
 - 16 Academic/Educational
- 3 Auxiliary Buildings

Classroom and Educational Lab Space Used for Classes

- 45 Classrooms
- 34 Educational Laboratories
- * 65 Conference Rooms
- * 61 Small Group Learning Spaces
- 4 Auditoriums

* Health sciences education utilizes small group discussion of medical case studies. Room inventories reflect and support this pattern of instruction (conference rooms & small group learning spaces)

General Fund Buildings

Bldg 260: Perinatal	Lab/Education
Perinatal Modular East	Lab/Education
Perinatal Modular West	Lab/Education
Bldg 400	Office/Lab
Bldg 401	Office
Bldg 402	Office
Bldg 406	Office
Bldg 407	Office
Fitzimons Bldg.	Office/Education
Bldg 531	Office
Bldg 533	Office
Bldg 534	Office
Academic Office 1	Office
Barbara Davis Center	Lab/Education
Education 1	Lab/Education
Education 2 North	Lab/Education
Education 2 South	Lab/Education
EH&S	Lab/Office
Fulginiti Bioethics	Conference
Health & Wellness Center	Ed/Off/Lab/Gym
Health Sciences Library	Library
Nighthorse Campbell	Education/Office
PASCAL	Storage
Pharmacy Bldg.	Lab/Education
Research 1 North	Lab/Education
Research 1 South	Lab/Education
Research 2	Lab/Education
Fisher House	Education/Office

Auxiliary Buildings

Central Utility Plant	Physical Plant
Henderson Prking Structure	Parking
Biosciences II	Lab/Education

Space Utilization: Classroom Data

Fall 2018 Data:

- 211 rooms with instructional activity
- 7 rooms in auxiliary fund buildings
- 204 rooms in general fund buildings
 - All rooms scheduled by departments

Summary of Utilization by Room Group and Scheduling Control *

Room Group	Number	Avg. Seats	Seats/100 SF	Scheduled Hours/week	Scheduled Hours/Term	Class Hours/Term
Classrooms	45	60	4.3	41	19,256	14,232
Educational Laboratories	34	20	3.2	24	4,719	3,145
Other	132	10	4.3	25	29,360	7,713
Grand Total	211	16	4.0	27	53,334	25,090

* Due to unique health sciences usage pattern and scheduling process, measures shown may vary from general education campuses.

Master Planning Strategy

- **Our 2012 Facilities Master Plan concluded there to be no immediate need to add shared general-use classroom space.**

Current and Projected Utilization of Shared General-Use Classrooms
 University of Colorado Anschutz Medical Campus
 Fall 2012

Classroom Type	Current Utilization (1)		5-Year Utilization (2)		10-Year Utilization (3)	
	Academic	Total	Academic	Total	Academic	Total
200-Seat Lecture Hall	45%	54%	52%	63%	59%	71%
75–80-Seat Lecture Hall	44%	59%	51%	69%	57%	77%
60-Seat Classroom	54%	72%	62%	83%	70%	94%
30-Seat Classroom	49%	55%	56%	63%	64%	71%
All Classroom Types	48%	61%	55%	71%	62%	80%

- (1) Current Usage Based on Spring 2012 Data
- (2) 5-Year Enrollment Growth Assumed at 15.3%
- (3) 10-Year Enrollment Growth Assumed at 31.8%

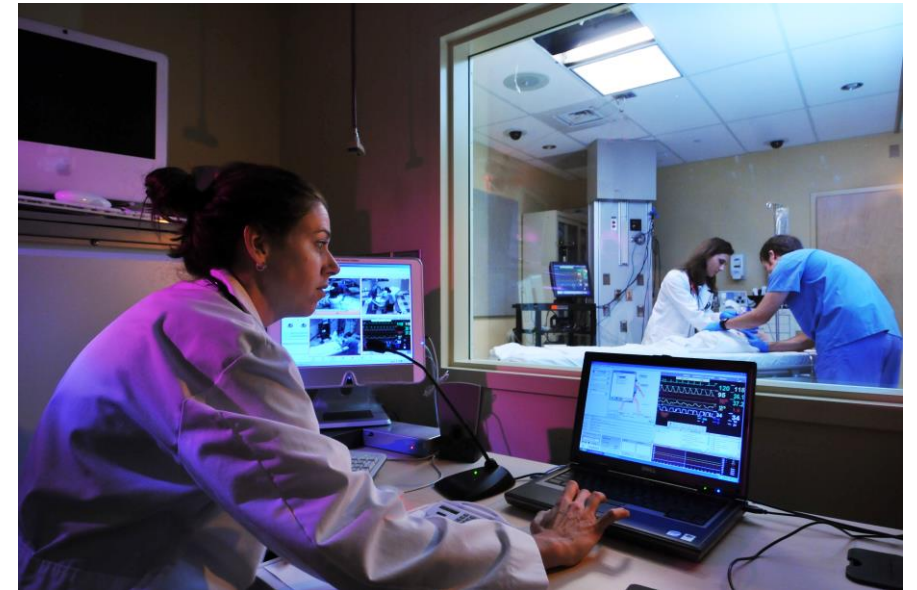
- **Our 2022 Facilities Master Plan will investigate ways in which new pedagogies may be implemented**



General Summary

Graduate Level Health Sciences Education is Unique

- Growth in class size is capped by accreditation organization
- First year curriculum offers opportunities for large classes prior to area specialization
- Student often transition in and out of large and small spaces as part of the same class period
- Instruction includes off-site clinical rotations
- Overall use of teaching spaces on campus are three times that of formal classwork (i.e. grand rounds, seminars, thesis presentations, etc.)



Appendix: Classroom Building Utilization Rate

Percent of available hours used -- Monday through Friday from 8:00 AM to 5:00 PM

Building	Classrooms
Bioscience 2	44%
Education 1	64%
Education 2 North	68%
Education 2 South	71%
Fitzsimons Building	100%
Research 1 North	65%
Grand Total	67%

University of Colorado Denver

CU Board of Regents Finance Committee



August 28th, 2019

At A Glance

Buildings

- 17 General Fund Buildings
 - 16 Academic/Educational
- 1 Auxiliary Building

Classroom and Educational Lab Space Used for Classes

- 121 Classrooms
- 89 Educational Laboratories
- 18 Seminar Rooms*

* Includes office, conference rooms, etc.

General Fund Buildings

CU Denver Owned:

Business School	Education
Lawrence Street Center	Education/Office
Student Commons	Education/Office
University of Colorado Denver Building	Education

CU Denver Occupied (Owned by Auraria):

5 th Street Hub	Lab/Education
9 th Street Park	Education
Arts Building	Studio/Education
Auraria Library	Education
Auraria Science Building	Lab/Education
Boulder Creek	Lab/Education
Central Classroom	Education
Emmanuel Gallery	Gallery/Education
King Performing Arts Center	Performance/Education
North Classroom	Education/Office
Plaza Building	Education
Tivoli Student Union	Office
West Classroom	Education

Auxiliary Buildings

CU Denver Owned:

Lola and Rob Salazar Student Wellness Center

Space Utilization: Classroom Data

Fall 2018 Data:

- 228 rooms with instructional activity
- All in general fund buildings
 - 89 rooms were centrally scheduled (all classrooms)
 - 139 rooms were scheduled by departments (32 classrooms, 107 others)

Summary of Utilization by Room Group and Scheduling Control

Room Group	Number	Sections	Credit Hours	Seats/ 100 SF	Scheduled Hours/week	Percent Occupancy
Classrooms	121	1,182	107,670	4.2	35	65%
Educational Laboratories	89	524	21,753	2.8	20	67%
Seminar/Other	18	56	2,076	4.3	8	67%
Grand Total	228	1,762	131,499	4.0	27	65%

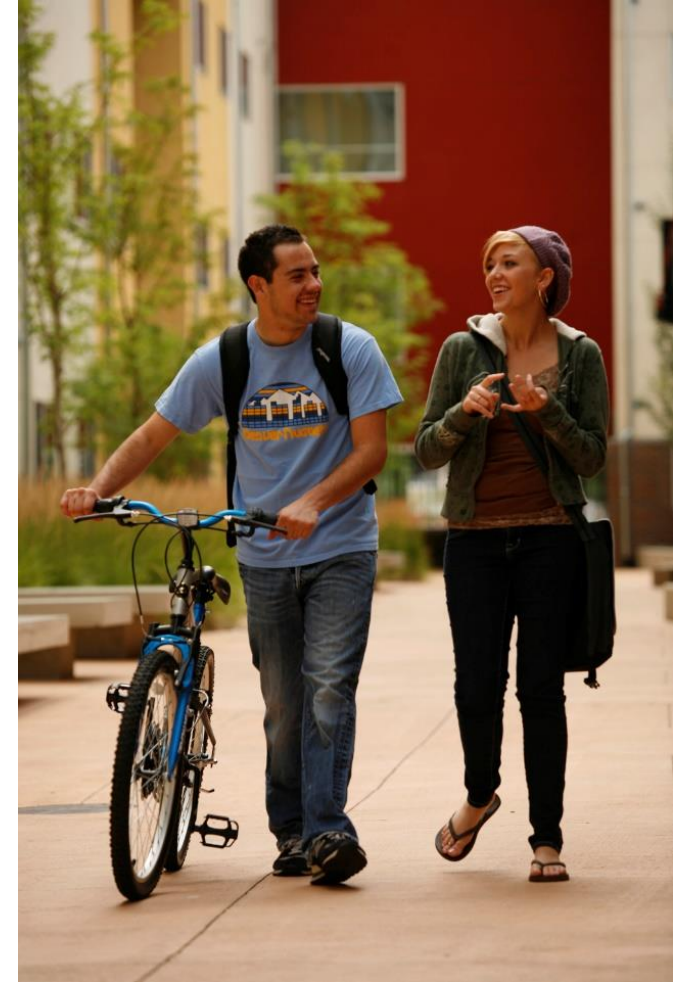
Master Planning Strategy

- The 2015 master plan utilization study calculated classroom need in two ways:
 - Using a 30 Weekly Room Hour (WRH) Goal, the ten year need is 45,038 assignable square feet (ASF).
 - Using 35 WRH (CU Denver's current utilization rate), the need drops to 20,763 ASF- a savings of nearly 25,000 ASF.
- The 2015 master plan utilization study calculated office need in two ways:
 - Using the historical office space standards applied in recent projects such as Student Commons, the ten year need was projected to be 82,213 ASF.
 - Using Anschutz office space standards, which require the use of smaller offices and more open workspace, the ten year need decreased to 29,823 ASF.
- The space needs derived in the master plan were then translated into the 0-5 year and 6-10 year project recommendations contained within the master plan.



General Summary

- **Seat utilization has increased from 2016 to 2018, from 56% to 65%.** Weekly room hours have stayed more or less the same, showing a slight decrease from 36 to 35.
- **The ASF per student station also rose from 2016 to 2018 from 20 to 24.** This reflects CU Denver's goal to design classrooms that allow for more flexibility and active learning pedagogies.
- CU Denver continues to seek opportunities to **improve Friday classroom activity**. Adding on-campus housing may allow for more Monday-Wednesday-Friday class cohorts.
- CU Denver is studying the different classroom scheduling models (general assignment, general assignment priority and proprietary) to see which is the most efficient.
- CU Denver will be creating official campus space guidelines and a space policy in FY 19-20
- Quality of instructional/research space and the geographic misalignment of school and college instructional/research spaces are still a concern



Appendix: Utilization Rate by Building

Building	Classrooms	Educational Laboratories
Arts Building	64%	58%
Auraria Library *	7%	
Boulder Creek		37%
Business School Building **	60%	23%
CU-Denver Building	36%	28%
Central Classroom Building *	8%	
King Center	59%	40%
Lawrence Street Center **	38%	27%
North Classroom Building **	64%	27%
Plaza Building	66%	49%
Science Building **	60%	63%
St. Cajetan's Center *	14%	
Student Commons Building	54%	
Tivoli-Arts & Media	43%	56%
West Classroom Building	56%	
Grand Total	60%	40%

Shows percent of available hours used Monday through Friday from 8:00 AM to 5:00 PM.

* Represents only one room - not part of core inventory and also used for non-class activities.

** Building has substantial after hours use not included in utilization percentage.



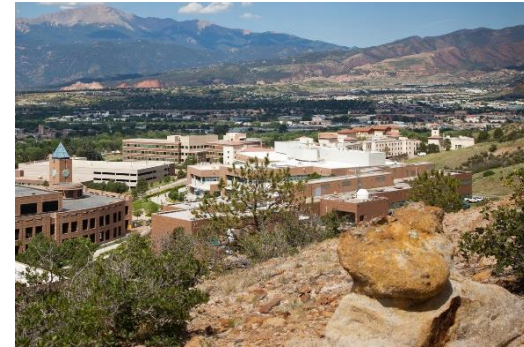
University of Colorado

Boulder | Colorado Springs | Denver | Anschutz Medical Campus

University of Colorado Colorado Springs

CU Board of Regents Finance Committee

August 28th, 2019



At A Glance

Buildings

- 9 General Fund Buildings
- 4 Auxiliary Building

Classroom and Educational Lab Space Used for Classes

- 75 Classrooms
- 37 Educational Laboratories
- 22 Other*

* Includes studio and seminar rooms

General Fund Buildings

Centennial	Education
Columbine	Education
Dwire	Education
EAS	Education
Osborne Center	Education
University Hall	Education
Lane	Education
Fine Arts	Education
Academic Office Building	Education/Office

Auxiliary Buildings

Breckenridge	Residence Hall
Cucharas	Residence Hall
Ent Center	Education/Performance
EL Pomar Center	Recreation Center

Space Utilization: Classroom Data

Fall 2018 Data:

- 134 rooms with instructional activity
- 13 rooms in auxiliary fund buildings
- 121 rooms in general fund buildings
 - 114 rooms were centrally scheduled (Ent, Lane, & University Hall not located in central campus)
 - All rooms were scheduled by departments

Summary of Utilization by Room Group and Scheduling Control

Room Group	Number	Sections	Credit Hours	Seats/ 100 SF	Scheduled Hours/week	Percent Occupancy
Classrooms	75	1,462	Too follow	4.6	54	76%
Educational Laboratories	37	317	Too follow	2.1	21	79%
Studio & Seminar	22	127	Too follow	3.4	17	74%
Grand Total	134	1,906	Too follow	3.4	31	76%

Master Planning Strategy

- **Improve Utilization Through Better Space Management**
 - Confirm size, occupancy, available seating & “ownership” of classrooms & labs across campus
 - Analyze existing space against current and future space needs, considering recent advances in technology and changing pedagogy
 - Update 2012 Master Plan to incorporate knowledge gained in prior 2 steps to ensure conformance with the 7 strategic themes, and to maximize the use of existing funds



Appendix

Classrooms

- Centennial Hall – 77% (69%-95%)
- Columbine Hall – 81% (62%-95%)
- Dwire – 71% (52%-88%)
- EAS – 77% (60%-85%)
- Osborne – 71% (42%-90%)
- University Hall – 75% (56%-92%)
- Breckenridge – 88% (One Classroom)
- Cucharas – 92% (One Classroom)
- Ent – 58% (One Classroom)
- Lane – 73% (One Classroom)

Labs

- Centennial Hall – 75% (52%-95%)
- EAS – 78% (50%-100%)
- Osborne – 87% (65%-99%)
- University Hall – 23% (20%-26%)
- El Pomar – 98% (112%-83%)

Other *

- Columbine– 82% (39%-107%)
- Ent – 82% (66%-100%)
- Fine Arts – 80%
- AOB – 55% (50%-60%)
- EAS – 50%
- Osborne – 39% (19%-58%)
- University Hall 75% (67%-83%)

** Includes studio and seminar rooms*