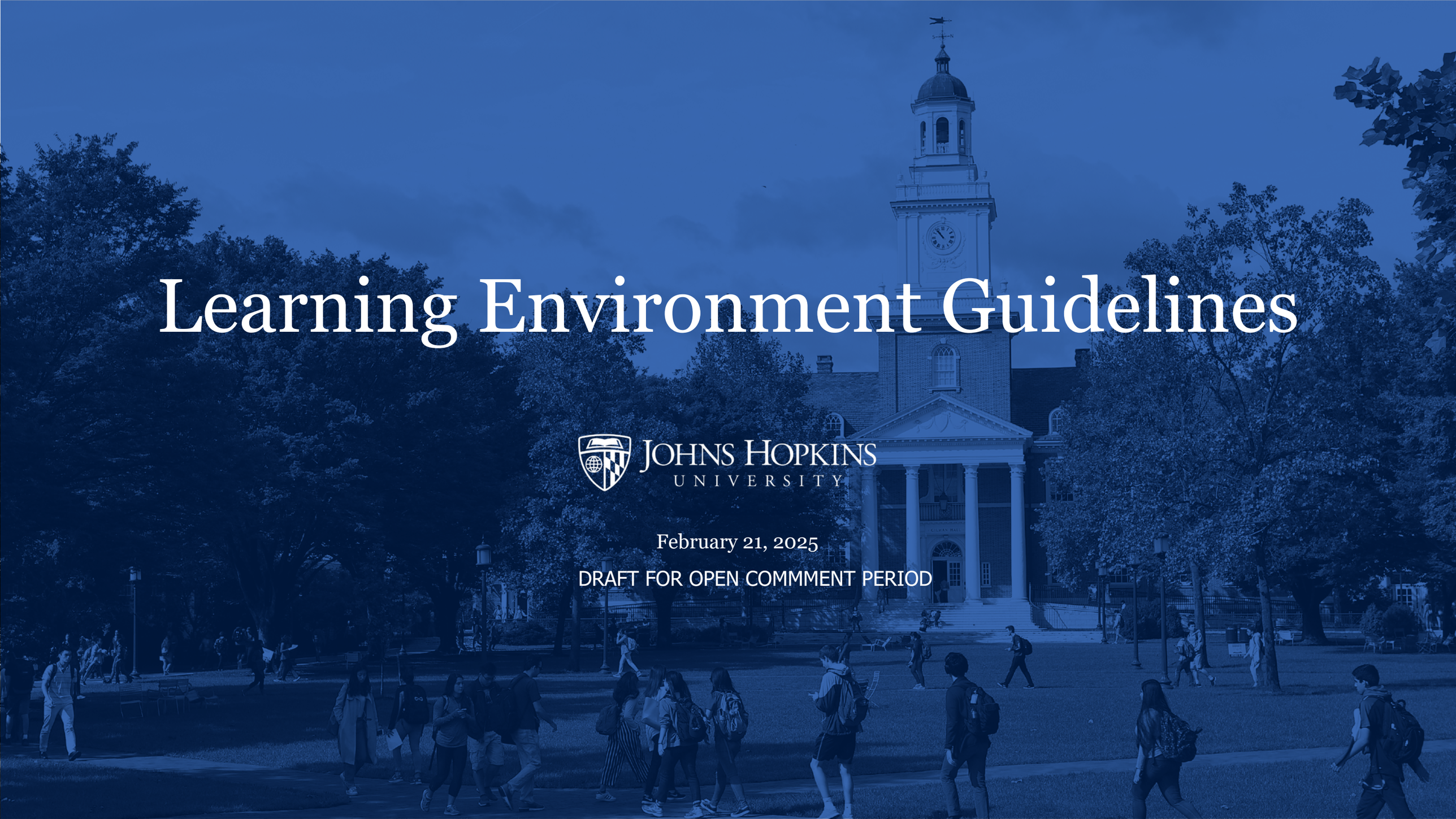
Learning Environment Guidelines



JOHNS HOPKINS UNIVERSITY

February 21, 2025

DRAFT FOR OPEN COMMMENT PERIOD

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01

Introduction

Purpose

Johns Hopkins University (JHU) has a rich portfolio of learning environments across its campuses. The Guidelines apply specifically to Homewood Campus classrooms managed by the Registrar and seek to enable a consistent approach to their design, renovation, or construction. The Guidelines document is also a university-wide resource for classroom design. This endeavor is complex and requires an approach that is adaptable to renovation and new construction opportunities, differing academic priorities and pedagogies, and evolving research and technology. This document addresses this by defining the desired learning outcomes and focusing on the capability and performance criteria of the space to best support these outcomes. The Guidelines are intended for use by both JHU's internal teams and its external partners to aid in the following:

1. Provide a framework for learning environments aligned with JHU's academic reputation, mission, and values
2. Ensure consistency in learning environment planning and design across the campus
3. Enhance faculty and student learning experiences and support student success
4. Create a roadmap to direct future classroom renovation projects and budgets

The Guidelines will be revised periodically to capture new information and direction.

JHU Bloomberg Center

JHU Armstrong Medical Education Building

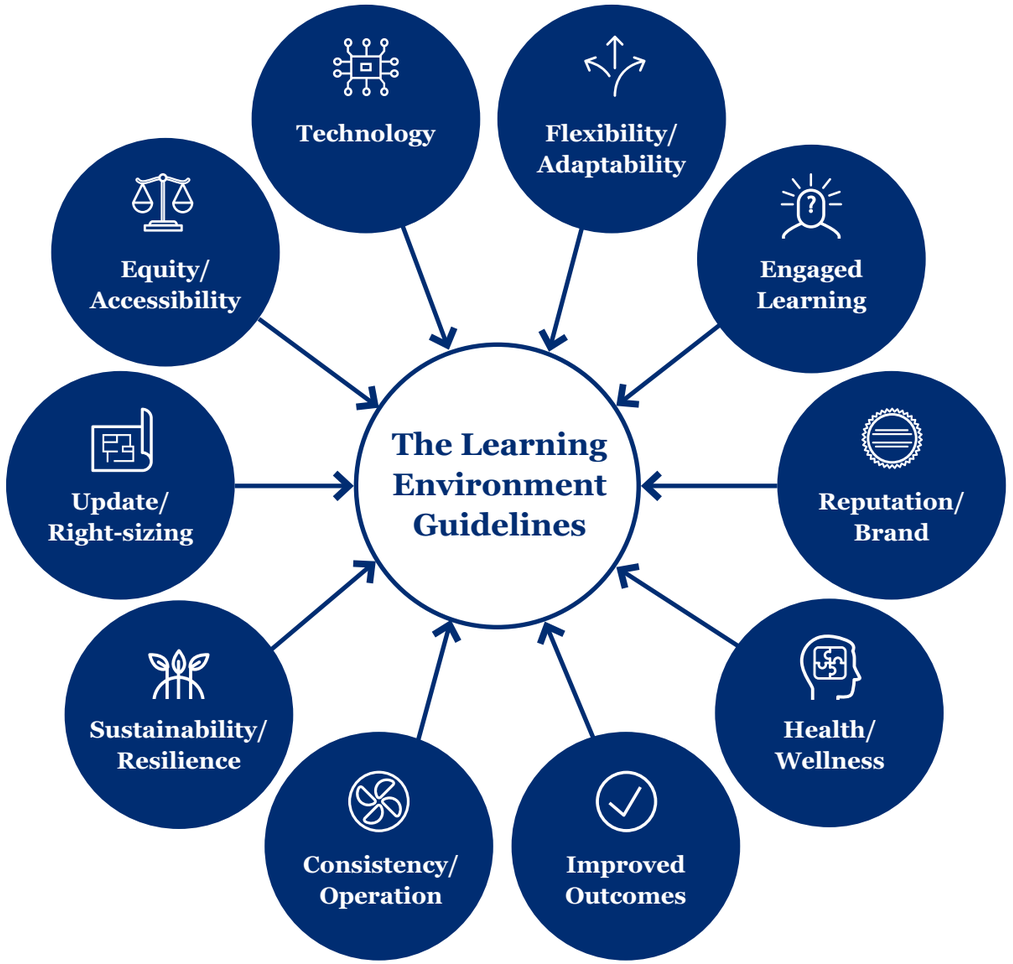
JHU mission statement

"To educate its students and cultivate their capacity for lifelong learning, to foster independent and original research, and to bring the benefits of discovery to the world."

Responding to Evolving Educational Needs

The higher education learning environment is rapidly changing. Key drivers include new and evolving pedagogies, industry expectations, shifting student demographics, hybrid learning, technological advancements, the need to support improved student outcomes, the creation of equitable and inclusive environments, competition among institutions, and deferred maintenance. These drivers are leading to operational, technological, and spatial changes in the design of these environments, encompassing both new construction and much-needed upgrades to outdated learning spaces on campuses.

Many of these issues were highlighted in the JHU 2021 Instructional Space Analysis and the 2023 Classroom Survey. While instructional spaces are well-maintained, many have not been renovated and require upgrades or more comprehensive renovations to support modern instructional practices and updated standards.



Research Methodologies

The Learning Environment Guidelines were developed through a series of meetings and workshops with various stakeholders over six months, as well as using the following resources and references:

Visioning Workshops

Leaders participated in workshops aimed at mapping classroom needs and envisioning the future of JHU classrooms

Classroom Tours

Participated in a tour of a select pool of classrooms at JHU Homewood campus and Bloomberg Center in DC

NSSE, National Benchmarks of Effective Educational Practice

Provides best practices for student engagement based on extensive research

Precedent Reports

Reviewed relevant reports and guidelines from peer institutions for industry standard benchmarking

Second Commission on Undergraduate Education

Establishes goals for re-envisioned JHU undergraduate education

Registrar Learning Environment Assessment

Qualitative conditions and configurations assessment of classrooms at JHU

2023 Classroom Survey

Survey conducted with faculty and students to better understand their experience of JHU classrooms

Instructional Space Analysis

Quantitative assessment of Fall 2021 utilization of classrooms and teaching labs at JHU

Steering Group

The Steering Group included:

Stephen Gange, Executive Vice Provost

Amynah Mithani, Associate Vice Provost and University Registrar

Mary O'Connell, Associate Vice Provost for Finance and Administration, DBO

Mike Reese, Associate Dean and Director, CTEI

Nathan Graham, Assistant Dean, Media & Technology, CMTS

Michael Brian Cole, Senior Software Engineer, CTEI

Bryanna Parish, Associate Director, Office of the Registrar

Coretta Bennett, Senior Director, Operations, Design & Construction

Lee Coyle, Senior Director, Planning & Architecture

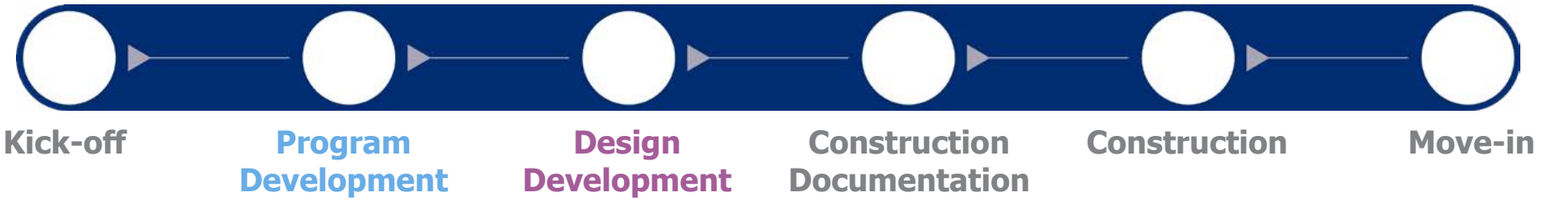
Jay Murphy, Senior Director, Facilities Operations

Lorena Permuy, Associate Director, Planning & Architecture

Sally Chinnis, Senior Planner, Planning & Architecture

Use of the Guidelines

The intent of this document is to streamline the design process and is not meant to be prescriptive or a comprehensive guide. The Guidelines establish a base level of capability and performance expectations to ensure that all learning environments at JHU have a consistent foundation. From that foundation, different priorities may dictate additional overlays in the design that are specific to the space and use. This document should be referenced during program and design development phases as illustrated below:



Identify Use

This document is tailored to general-use classrooms. Some departmental classrooms and teaching labs may have special requirements that are outside the scope of this document and should be identified.

Understand Constraints

Some projects, especially renovations, will require adaptation of the guidelines due to building constraints. Establishing priorities for the project can help identify guideline elements to be employed in full or adapted.

Test Fit

Configure and organize spaces following the guidelines in this document. Refine the design to align with overall project objectives.

Other References

All learning environment designs should comply with applicable local, state, and federal building codes, including accessibility, fire safety, and energy regulations. In addition, the Learning Environment Guidelines should be used in conjunction with other JHU standard documents, including documents posted on the Johns Hopkins Facilities and Real Estate (JHFRE) website (https://jhfre.jhu.edu/capital-projects/working-with-us/), Technology Standards (which should be requested from KIT-CATS for Homewood classrooms) and any other documents provided by JHU representatives at project initiation.

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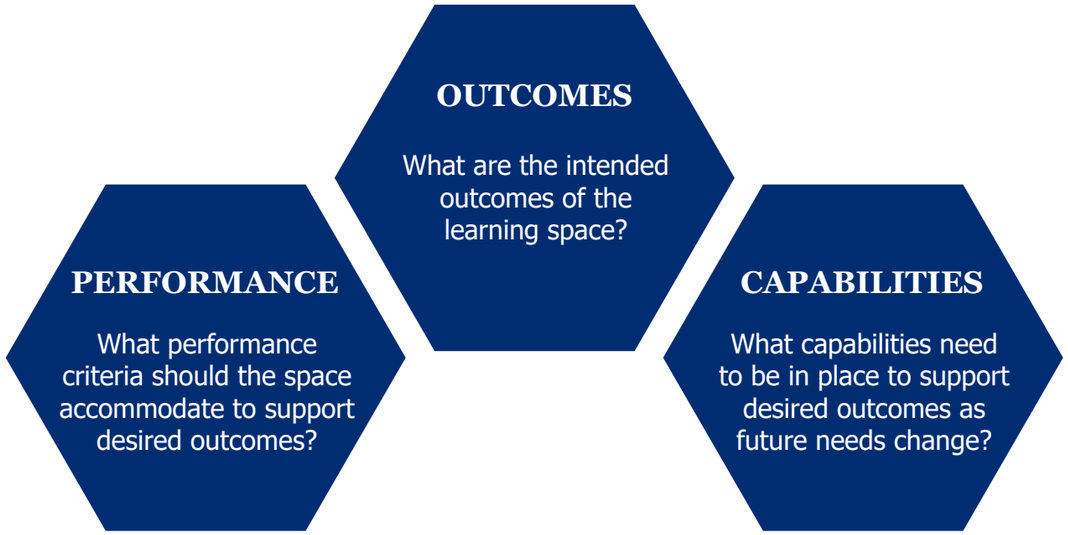
02

Framework

Developing the Guiding Principles

Students learn best when they are actively engaged in their own education, making engagement an important indicator of student performance and improved outcomes. This belief is a core value of Johns Hopkins education as described in the Second Commission of Undergraduate Education.

The National Survey for Student Engagement (NSSE) is a respected index of student engagement that provides benchmarks for effective educational practices. These benchmarks have been adapted in this document as Guiding Principles and serve as an organizational tool to further define design standards specific to the JHU learning environment. By clearly articulating the desired outcomes for the learning space, the design team can establish the optimal criteria for its physical design.



Second Commission on Undergraduate Education

Student engagement to cultivate their capacity for lifelong learning is at the foundation of JHU's mission. The following excerpts from the CUE2 report were important considerations in developing the learning environment design framework:

(1) how to encourage and support student to make their education their own - that is, how to liberate them to explore broadly, take risks, and pursue their own interests and passions.

(2) how to create a holistic curricular, co-curricular, and extra-curricular experience that encourage such exploration and meets the highest aspirations of excellence and distinctiveness.

(3) what pedagogy and infrastructure is needed to support (1) and (2).

The complete CUE2 report can be viewed here: https://provost.jhu.edu/education/second-commission-on-undergraduate-education/

Guiding Principles

The guiding principles below provide the foundation for the learning environment design standards outlined in this document, emphasizing the enhancement of design to support student engagement and success. The following pages expand on these guiding principles, highlighting the desired outcomes and priorities associated with each principle.

Encourage Active and Collaborative Learning

The design contributes to students' active engagement with their peers and the content

Promote Student and Faculty Interaction

The design facilitates exchanges between faculty and students and provides instructors with the flexibility to choose their preferred teaching methods

Create Enriching Educational Experience

The design promotes continuous learning both inside and outside the classroom and infrastructure is in place to support various modes of communication

Provide Supportive Environments

The design supports universal design for learning principles and fosters an equitable and sustainable learning environment

Encourage Active and Collaborative Learning

Encourage Active and Collaborative Learning

The design contributes to students' active engagement with their peers and the content

Key Outcomes and Priorities

- Rooms should be well-proportioned, appropriately sized, and free of obstructions to allow for flexibility in accommodating various learning pedagogies and configurations.
- Furnishings should be appropriate for their intended tasks and be movable and modular for easy reconfiguration.
- Room infrastructure includes features that enable students to share ideas and collaborate effectively, such as ample access to power and internet, writable surfaces, and digital collaboration tools.

Promote Student and Faculty Interaction

Promote Student and Faculty Interaction

The design facilitates exchange between faculty and students and provides instructors with the flexibility to choose their preferred teaching methods

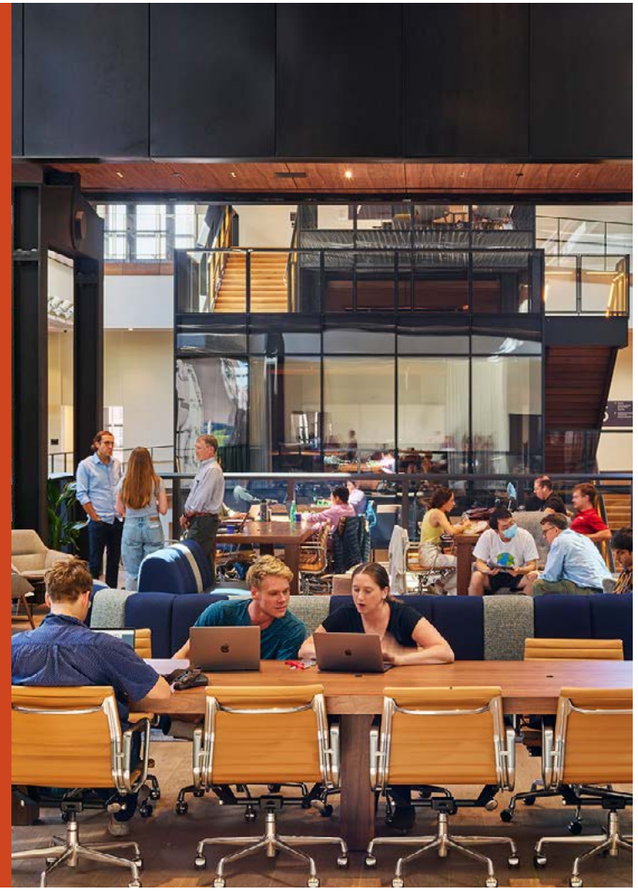
Key Outcomes and Priorities

- The layout promotes good visibility and audibility to the speaker and unobstructed sightlines to writing and projection surfaces.
- The layout provides adequate circulation and eliminates physical barriers, ensuring that the instructor has easy and direct access to all students in the classroom.
- Resources for faculty are readily available, easy to use, and consistently enabled in all learning spaces, with change management strategies to help faculty adapt to new spaces and technologies.
- The room infrastructure and furnishings support various teaching methods and offer multiple locations for instructors to facilitate learning, ensuring they are not limited by the room's capabilities.

Create Enriching Educational Experience

Create Enriching Educational Experience

The design promotes continuous learning both inside and outside the classroom and infrastructure is in place to support various modes of communication



Key Outcomes and Priorities

- Technology enables hybrid participation and provides easy access to high-quality recording capabilities, supporting broader and diverse modes of communication.
- The design and aesthetics are cohesive, on-brand, and long-lasting, fostering a classroom experience that integrates seamlessly with the broader campus environment and creates a holistic educational experience.
- Spaces for informal collaboration are provided both inside and outside of the classroom to cultivate and support continuous learning.

Provide Supportive Environments

Provide Supportive Environments

The design supports universal design for learning principles and fosters an equitable and sustainable learning environment

Key Outcomes and Priorities

- The room infrastructure is sustainable, resilient, and easy to operate and maintain, with a strong emphasis on stewardship through the use of sustainable materials and practices.
- The design prioritizes wellness and healthy environments by focusing on thermal comfort, ergonomics, acoustics, glare reduction, indoor air quality, and natural daylighting.
- Accessibility and equity are integral to the design, with considerations of all learners, including differences in hearing, vision, mobility, and neurodiversity.

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03

Learning Environment Elements

Overview

Learning environment elements are building blocks that collectively shape the classroom experience. The guiding principles detailed in the previous section, along with best practices, industry standards, and JHU standard practices, have informed the baseline and ideal standards for these classroom components. These elements are categorized into four groups, as outlined below.

Right-Sizing the Classroom

Optimizing the classroom's physical space to ensure effective teaching and learning

-Desk Space
-Entry and Access
-Accessibility
-Sightlines and Visibility
-Pedagogy and Flexibility

Infrastructure

Elements to support the teaching and learning process and the overall functionality of the classroom

-Teaching Wall and Station
-Active Walls
-Power and Data
-AV Technology
-Lighting
-Acoustics
-HVAC Systems

Qualitative

Perceptual factors that shape the student experience, particularly motivation and satisfaction

-Branding and Design
-Materials and Furnishing
-Natural Light and Views
-Beyond the Classroom

Operations and Management

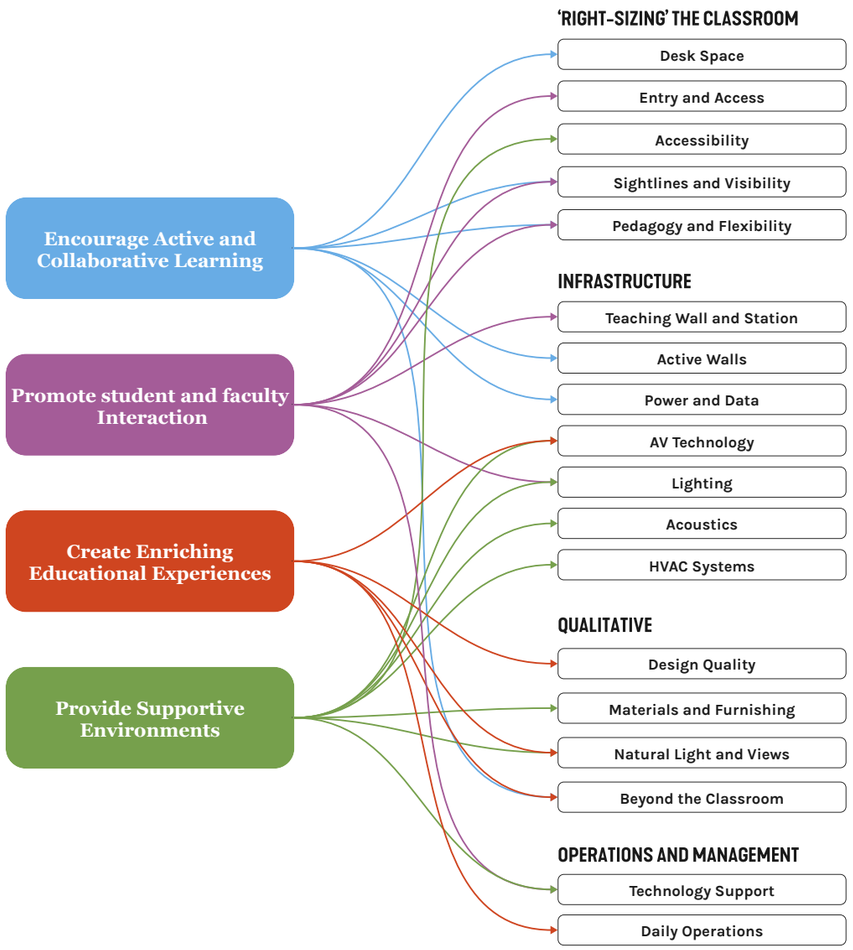
Practical elements that ensure an effective and efficient learning environment

-Technology Support
-Daily Operations

Space Capability and Performance

Element standards, described in the following pages, emphasize spatial capabilities and performance criteria, allowing for flexibility rather than being overly prescriptive. This approach enables the design team to focus on achieving desired outcomes while accommodating adaptations based on varying project priorities and constraints.

Although there are overlaps and mutual influences, the diagram on the right illustrates key relationships between the guiding principles and planning and design elements, helping the team set priorities for implementation based on project goals.



Sustainability and Equity

Sustainable, equitable, and inclusive design in classrooms is crucial for creating environments where all students can thrive. Sustainable design supports healthier learning environments and enhances student well-being. Equitable and inclusive design ensures that all students, regardless of their abilities, have access to the same learning opportunities, helping them thrive and succeed.

These principles are especially important in the current higher education context and should be considered in all aspects of classroom design. Accordingly, discussions on sustainable and inclusive design are embedded in the following design standards. For elements that most directly pertain to sustainable and inclusive design, follow the green arrow on the graphic on the left to identify these elements.

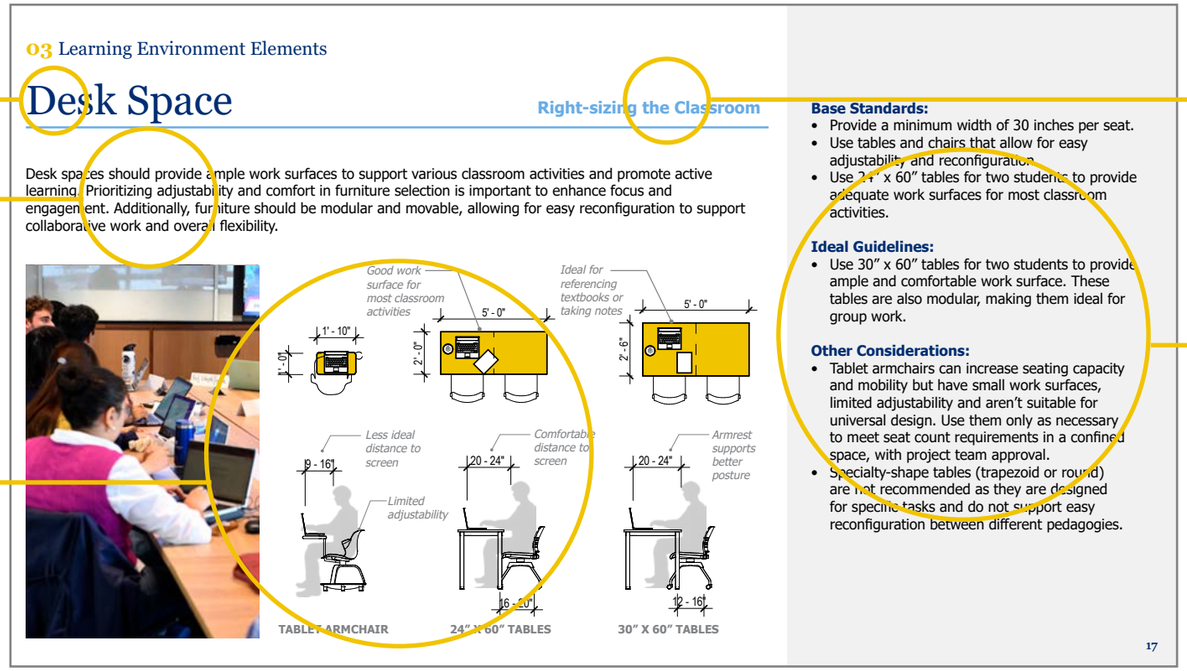
Element Page Orientation

Each element page provides a brief description, base and ideal standards, and additional considerations regarding the design and application of the element. The base standard outlines the minimum requirements for all classroom designs to ensure an effective learning environment. The ideal guidelines exceed these requirements, and design teams should aim to achieve these ideals wherever practical. The page also includes relevant illustrations and graphics depicting dimensions, specific criteria, layouts, and/or applications.

Element Name

Overview of capability and performance criteria

Illustrations and graphic examples for reference



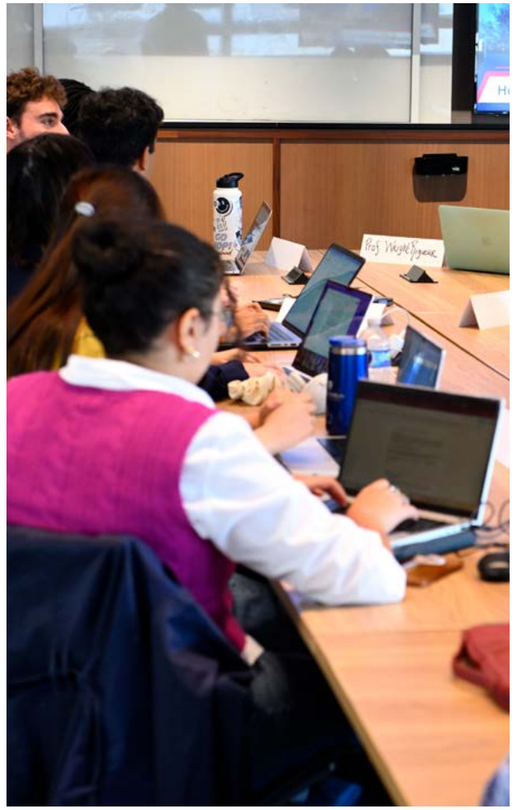
Element Category

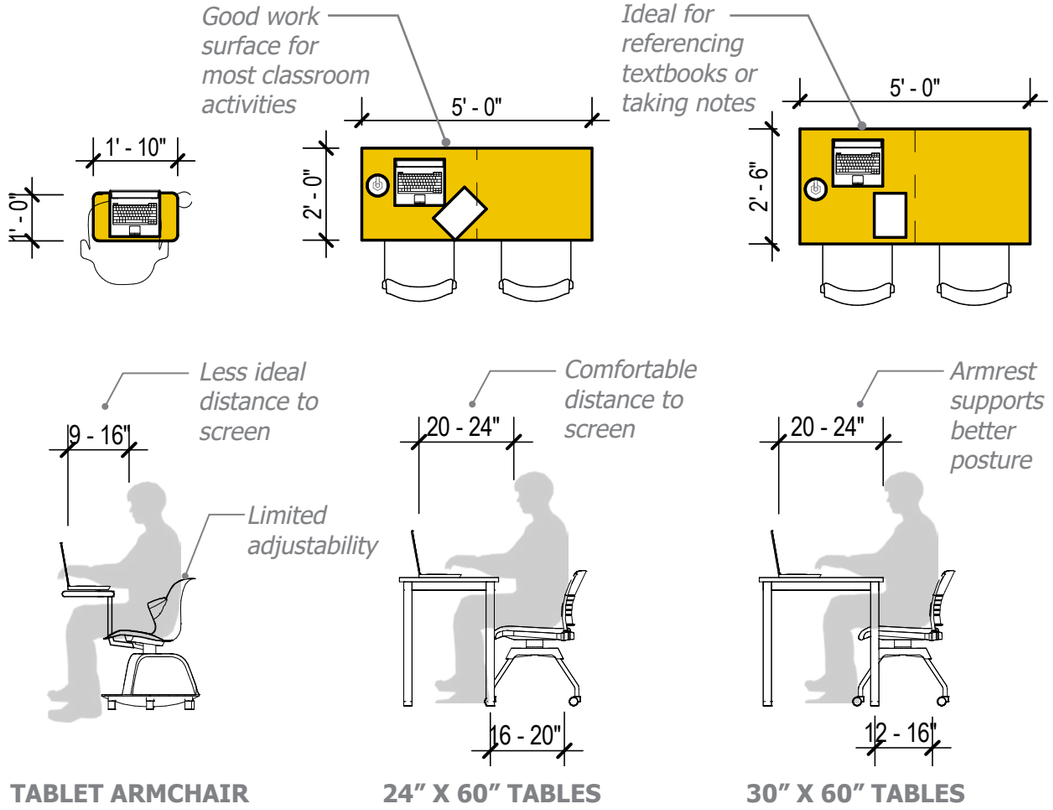
Key features and characteristics that should be included and/or considered

Desk Space

Right-sizing the Classroom

Desk spaces should provide ample work surfaces to support various classroom activities and material and devices for all types of learning. Prioritizing adjustability and comfort in furniture selection is important to enhance focus and engagement. Additionally, furniture should be modular and movable, allowing for easy reconfiguration to support collaborative work and overall flexibility.





Base Standards:

- Provide a minimum width of 30 inches per seat.
- Use tables and chairs that allow for easy adjustability and reconfiguration.
- Use 24" x 60" tables for two students to provide adequate work surfaces for most classroom activities.

Ideal Guidelines:

- Use 30" x 60" tables for two students to provide ample and comfortable work surface. These tables are also modular, making them ideal for group work.

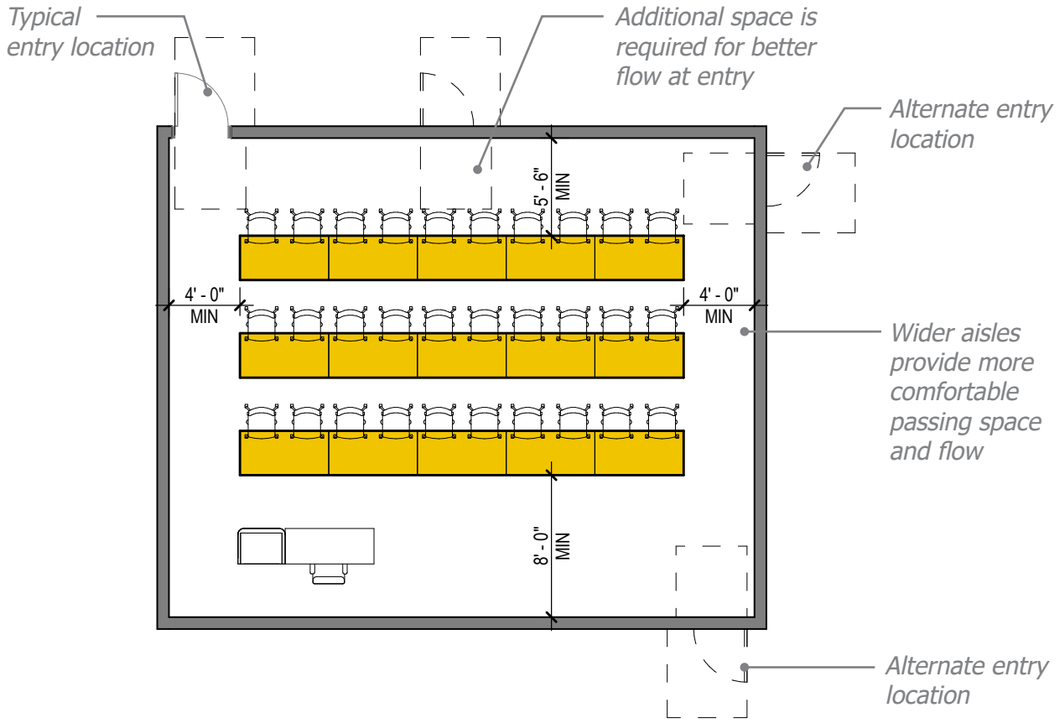
Other Considerations:

- Tablet armchairs can increase seating capacity and mobility but have small work surfaces, limited adjustability, and aren't suitable for universal design. Use them only as necessary to meet seat count requirements in a confined space, with project team approval.
- Specialty-shaped tables (trapezoid or round) are not recommended as they are designed for specific tasks and do not support easy reconfiguration between different pedagogies.

Entry and Access

Right-sizing the Classroom

Providing adequate circulation space is important for both instructors and students to move comfortably and engage effectively. The design should ensure smooth flow and sufficient passing space, allowing instructors to easily access all students as needed to facilitate learning and engagement.



Base Standards:

- All classrooms should comply with the applicable building code requirements for egress.
- Locate entries at aisles to optimize flow and circulation.

Ideal Guidelines:

- A minimum aisle width of 48 inches is recommended for a typical classroom.
- Provide a center aisle in larger classrooms for better access. Refer to guideplates in the next section for reference.
- Locate entries near the corners of the rooms to maximize continuous wall surfaces to support classroom activities.

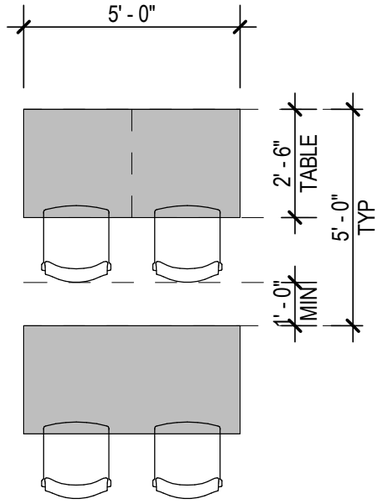
Other Considerations:

- It is recommended that large classrooms be designed with flat floors instead of tiered floors to allow for flexible use and better student and faculty interaction, accommodating instructional activities from various locations in the room.

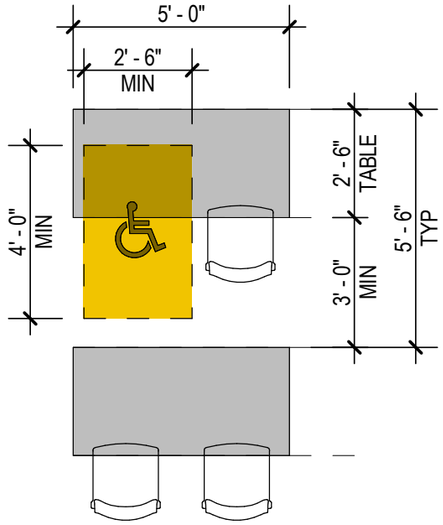
Accessibility

Right-sizing the Classroom

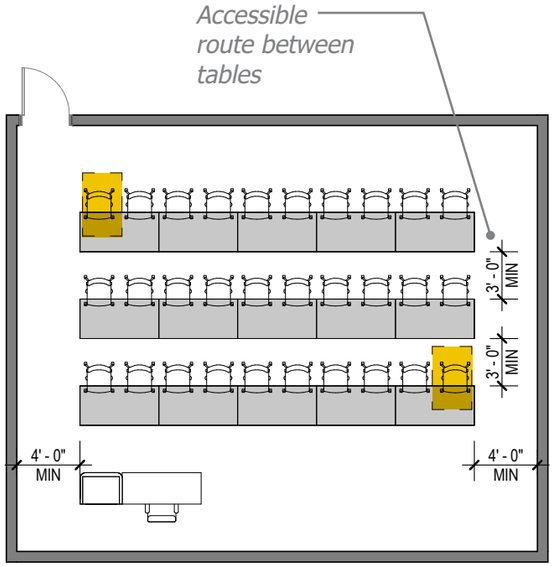
The design should create an accessible learning environment to ensure all students, regardless of their mobility, can participate fully and effectively. The goal is to go beyond code requirements for accessibility, striving for equity in choices and an inclusive learning experience for students with varying mobility needs.



MIN. DIMENSIONS
TYPICAL SEAT



MIN. DIMENSIONS
ACCESSIBLE SEAT



30-SEAT CLASSROOM (900 SF)
WITH DISTRIBUTED
ACCESSIBLE SEATING

Base Standards:

- Classrooms should meet all relevant accessibility requirements, including those for door clearance, accessible routes, passing space, turnaround space, clear floor space, and the required number of accessible seats as outlined in the ADA guidelines.

Ideal Guidelines:

- A minimum aisle width of 48 inches is recommended for a typical classroom to ensure users with different mobility needs can navigate spaces comfortably and safely.
- Provide a minimum of 3 feet between tables in a typical classroom to allow for distributed accessible seating and better maneuverability within the classroom.
- Use movable tables and chairs over fixed furnishings to provide equity in choices in the learning environment in different pedagogical settings.

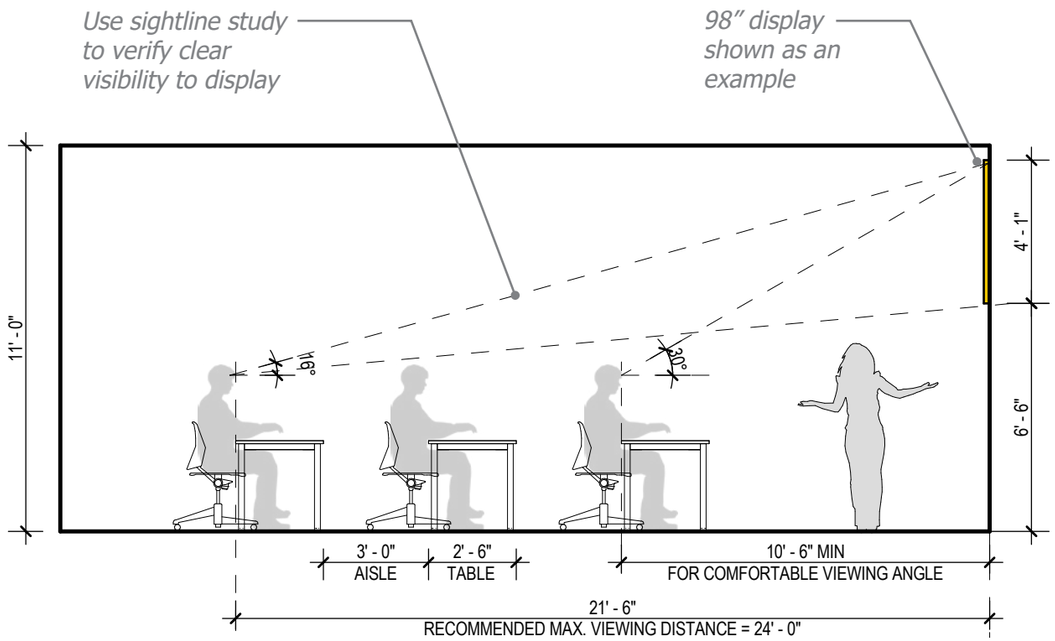
Other Considerations:

- Tablet armchairs are not conducive to universal design. Their use should be carefully considered and discussed with the project team.

Sightlines and Visibility

Right-sizing the Classroom

Clear sightlines and good visibility to the speaker, writing surfaces, and content displays are crucial for students' active engagement with the instructor and learning material. The layout, size, and proportion of the room are important factors to consider for optimal sightlines and visibility.



30-SEAT CLASSROOM
SIGHTLINE STUDY EXAMPLE

Base Standards:

- Rooms should be well-proportioned and free of obstructions to ensure that all student seating falls within the appropriate viewing angle of the content display.
- Rooms should be appropriately sized to ensure proper viewing distances to the speaker and content.
    a. Maximum viewing distance:
        6 times the display height.
    b. Minimum viewing distance:
        1.5 times the display height.
    c. Comfortable viewing angle:
        30 degrees to the top of the display.
- The bottom of the display should not be lower than 48" AFF.

Ideal Guidelines:

- Provide long-wall orientation to maximize teaching wall space and provide a more engaging distance to the speaker and content.

Other Considerations:

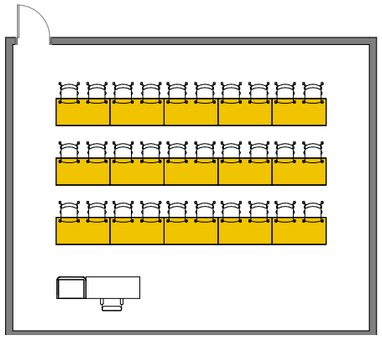
- It is recommended to conduct a sightline study in each new and renovated classroom, both in plan and section. Ceiling heights, display sizes, and appropriate viewing distances are interrelated and can vary for each project, with a major impact on sightlines and visibility.
- Be mindful of any suspended ceiling fixtures that could obstruct sightlines.

Pedagogy and Flexibility

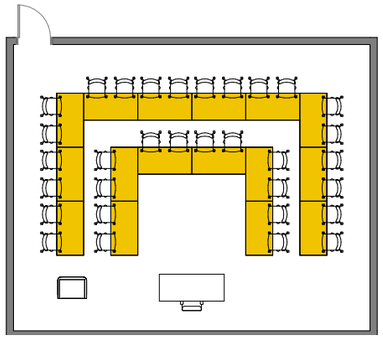
Right-sizing the Classroom

Creating a flexible space to support various teaching pedagogies is critical for today's learning environment. It allows instructors to choose their teaching methods to maximize student engagement with the material and their peers. The assignable square feet (ASF) per seat provides a high-level evaluation of whether the room can meet varying pedagogical needs. A higher ASF per seat also enhances the room's adaptability for any future changes.

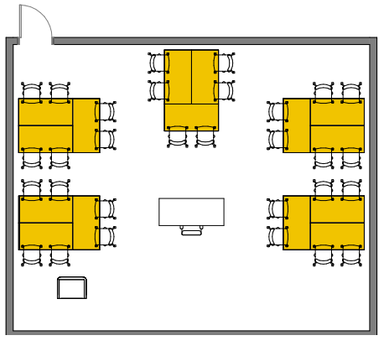
Example image from Oakland University



30-SEAT CLASSROOM (900 SF)
LECTURE



30-SEAT CLASSROOM (900 SF)
SEMINAR



30-SEAT CLASSROOM (900 SF)
ACTIVE LEARNING

Base Standards:

- Calculate ASF per seat by dividing the room's size by the number of student seats provided.
- Provide 25 ASF per seat to support flexibility in teaching pedagogies for a typical classroom.

Ideal Guidelines:

- Aim for 30 ASF per seat for a typical classroom to support a wider range and ease of reconfiguration.

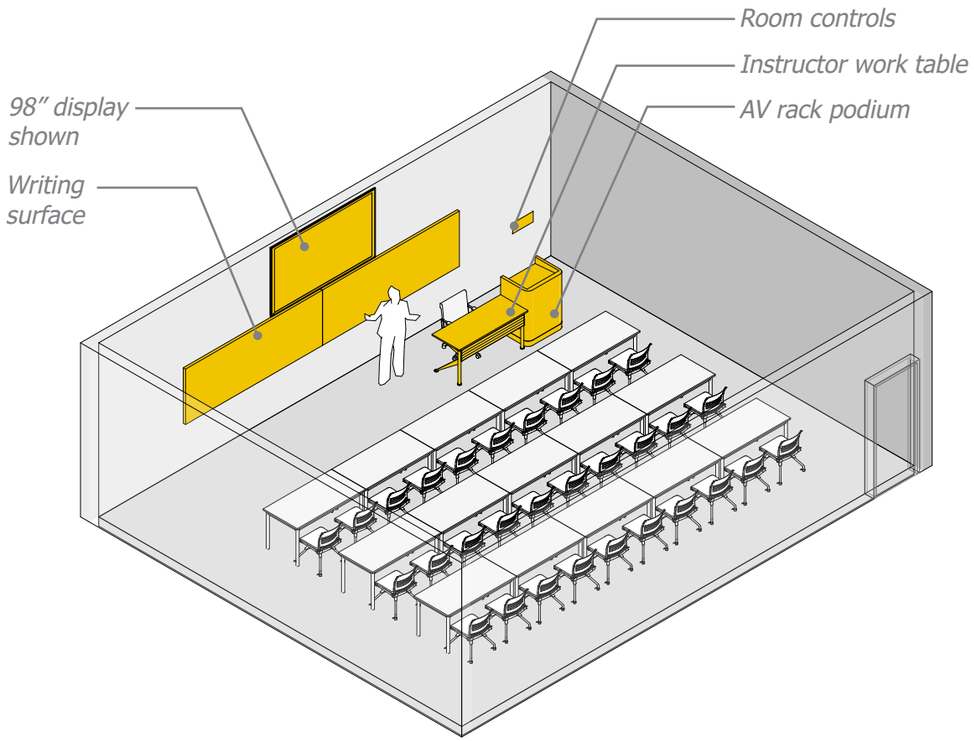
Other Considerations:

- In some cases, 20 ASF per seat may be acceptable, considering existing room constraints.
- Refer to guideplates for the suggested range of ASF per seat for auditoriums with fixed tables and chairs.
- Consider future adaptability when planning overall room sizes and designing infrastructural support.

Teaching Wall and Station

Infrastructure

The design of the teaching wall and station should support a variety of instructional methods, giving instructors the flexibility to choose their preferred teaching style. These resources should be readily available, user-friendly, and consistently enabled in all learning environments to streamline the teaching process.



Base Standards:

- Adhere to JHU Technology guidelines.
- Provide a front-of-room writing surface (whiteboards are typically preferred; blackboards can be selected in consultation with the project team).
- Provide a front-of-room display, sized and located for optimal sightlines.
- Ensure room controls are accessible from the typical teaching position, including lighting.
- Provide a two-section lectern:
    a. A stationary AV rack podium with a dedicated computer and floor power/data.
    b. A height-adjustable, movable instructor worktable for various teaching positions.
- Provide a user-friendly instructor touch panel control for managing AV equipment.
- Ensure instructors can display content from both personal devices and the classroom computer, with both HDMI and USB connections.

Ideal Guidelines:

- Maximize the potential for writing surfaces and content displays to be viewed simultaneously. Avoid ceiling-mounted projection screens that cover most of the writing surface.

Other Considerations:

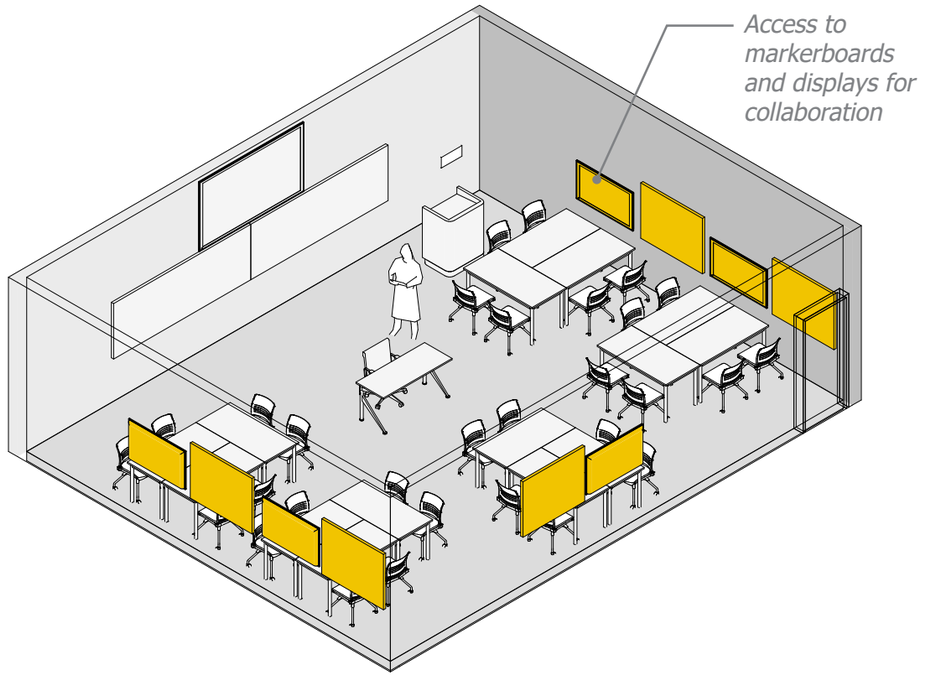
- Provide an additional location for the lectern with a floor box for future adaptability.

Active Walls

Infrastructure

Active walls provide features that enable students to share ideas and collaborate effectively, enhancing their engagement with content and peers. These walls increase the room's flexibility to support different teaching methods and expand its use for programs outside of class hours.

Example image from American University



Base Standards:

- Provide markerboards in all typical classrooms. Determine the number, size, and location based on room capacity to support group work.
- Ensure that all active wall features are accessible to all students, promoting an inclusive learning environment.

Ideal Guidelines:

- Provide group displays for student collaboration and content sharing as required to meet project goals.

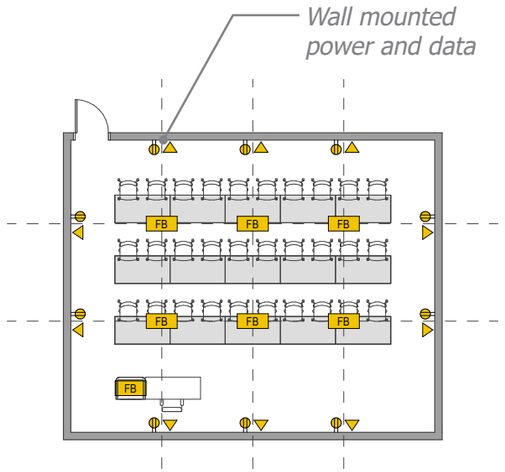
Other Considerations:

- In rooms where only markerboards are provided, consider adding additional power and data capacity to allow for the future addition of student collaboration screens.

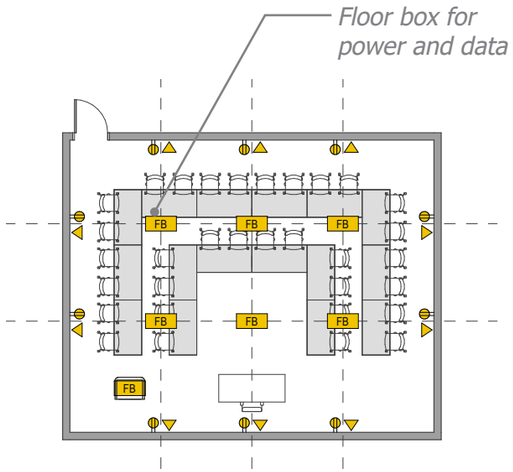
Power and Data

Infrastructure

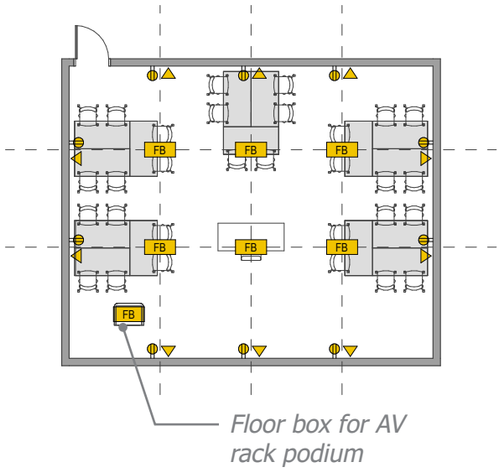
Effective design for power and data is essential to support student collaboration and various teaching methods. Ensure that power and data outlets are appropriately spaced throughout the room and strategically placed based on how the room is used. This approach promotes flexible use of the room and avoids the need to provide power to every seat, which is often unnecessary.



30-SEAT CLASSROOM (900 SF)
LECTURE



30-SEAT CLASSROOM (900 SF)
SEMINAR



30-SEAT CLASSROOM (900 SF)
ACTIVE LEARNING

Base Standards:

- Access to power should be appropriately spaced. Consider the use of the room (e.g. a 3-hour seminar course vs. a 60-minute lecture). when determining quantity and location.
- Both wired and wireless networks should be provided for optimum performance and use. Ensure wireless access in classrooms and surrounding areas for informal collaboration.
- In new construction, provide floor boxes in addition to wall outlets for optimum flexibility and future adaptability.

Ideal Guidelines:

- Provide wireless capabilities for the instructor to share content.

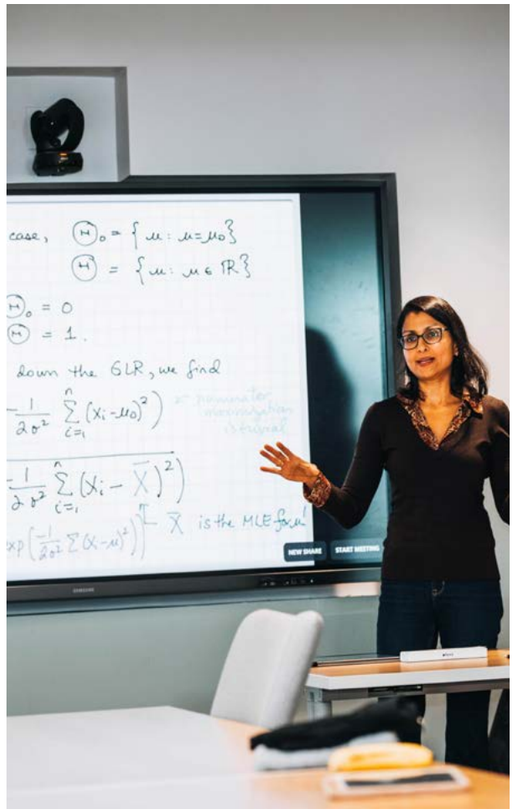
Other Considerations:

- In renovations where installing floor boxes might not be possible, consider using portable power solutions to enhance the flexible use of the space. Undercarpet raceways can be suitable in some cases, but ensure that any potential tripping hazards are avoided.
- Avoid powering tables directly to maintain flexibility in typical classrooms. Discuss with the project team whether it is appropriate in some rooms, such as seminar rooms or auditoriums.
- Ensure adequate capacity is in place to allow for future adaptations.

AV Technology

Infrastructure

Effective technology implementation fosters collaboration and engages students through diverse modes of communication. As learning extends beyond traditional classrooms, technology should support hybrid participation and high-quality recording capabilities to facilitate effective information sharing between instructors and students. Additionally, technology should be utilized to expand accessibility and support all learning types.



Base Standards:

- Adhere to JHU Technology Standards (link).
- All classrooms should include the following to support distance learning:
    a. Instructor auto-tracking camera.
    b. Instructor microphone.
    c. Lecture recording capabilities.
    d. Speakers to amplify lecture content.
- All classrooms should include the following as appropriate to enhance accessibility:
    a. Assistive listening devices.
    b. Secondary displays to support varying visual acuity.
    c. Lecture recordings with captions.

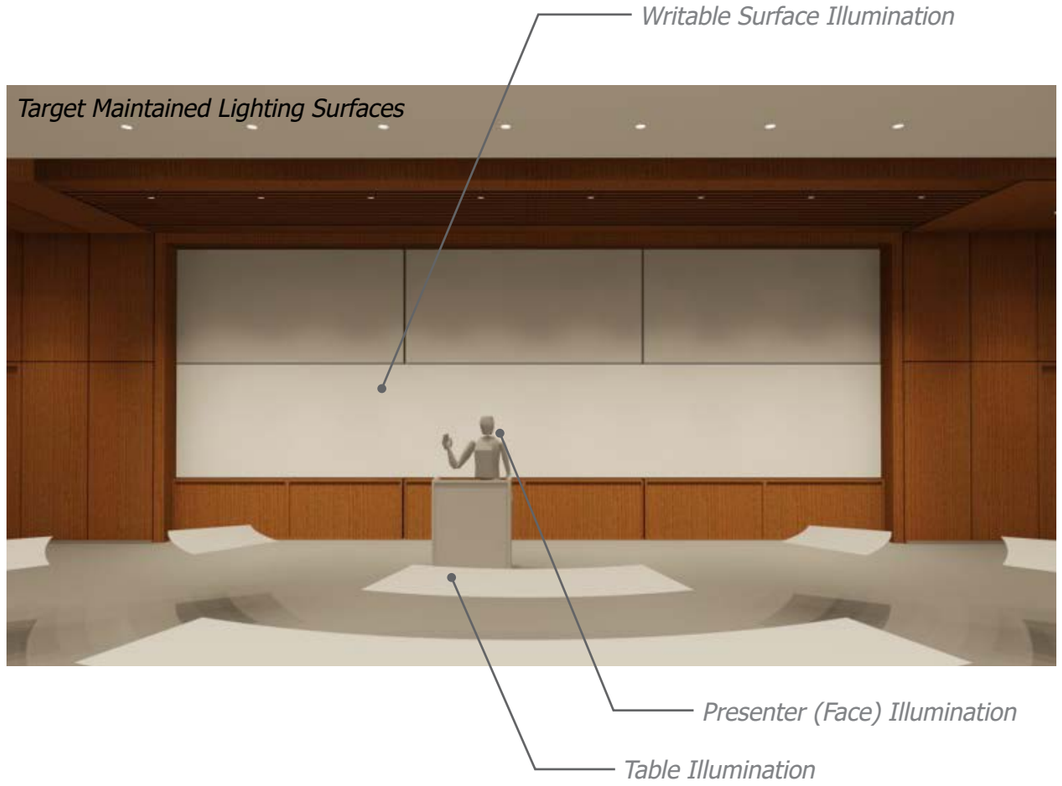
Ideal Guidelines:

- Provide technology to support equitable participation in distance learning:
    a. Student microphones for student questions
    b. Multiple cameras to capture students in addition to the instructor.
    c. Speakers to hear remote participants.
    d. Document capture technology for written content to be viewed by both in-person and remote participants.
- Provide student microphones in large lecture halls at tables.
- Provide confidence monitors.

Lighting

Infrastructure

Proper lighting is essential for supporting various classroom activities, from presentations to interactive discussions. Good lighting design can significantly impact students' ability to focus and maintain alertness for effective learning and overall well-being. Lighting considerations are particularly important for neurodivergent students, as appropriate lighting can help create a more calming and less distracting environment.



Base Standards:

- Minimum requirements for light sources:
  a. CRI of 90+ for all light sources.
  b. Long Life LED: minimum L70 50,000 hrs.
  c. 3500K CCT unless noted otherwise.
- Provide dimmable lighting to a minimum of 10%
- Provide desk, whiteboard and presenter illuminance per IES recommendations.
- Minimize illumination on teaching wall displays.
- Minimize veiling reflection of light sources on monitors and specular whiteboards.

Ideal Guidelines:

- Light Source: TM 30 Equivalent of CRI 90.
- Provide multi-zone lighting control with a minimum of three zones: dedicated whiteboard lighting, presenter lighting, and general space.
- Achieve a Unified Glare Rating (UGR) of 16 or lower for glare control.

Other Considerations:

- Flickering lights can cause sensory discomfort and eye strain. Provide light fixtures with minimal flicker rating per IES TM-39 guidelines.
- Conceal light sources and avoid high contrast in light intensity to enhance visual comfort, especially for students with visual sensitivity.
- Balance perimeter brightness especially on writable surfaces with other lighting.
- Coordinate video technology and vertical illuminance for remote learning.

Acoustics

Infrastructure

Acoustics in classrooms are influenced by various design factors, including finishes, walls, doors, glazing, floor-ceiling assemblies, and MEP systems. High noise levels can degrade speech intelligibility and compromise audiovisual functions, affecting students' concentration, particularly those with hearing loss or neurodiversity. Effective acoustic design ensures audibility and minimizes distractions, supporting diverse modes of communication.

Ideal Guidelines - Minimum Acoustic Performance

Small Classrooms (Active Learning, Lecture, Seminar) Volume < 10,000 ft³					
Reverberation Time (RT)	Airborne Sound Isolation (STC)		Impact Sound isolation (IIC)	Background Noise Level (NC)	Building Envelope OITC
0.6 seconds	Occupied Space	STC-50	IIC-50	NC-25	Per Noise Study
	Corridor	STC-45			
	Doors	STC-30 to 35			
	Mechanical	STC-60+			

Medium Classrooms Volume > 10,000 ft³ and < 20,000 ft³					
Reverberation Time (RT)	Airborne Sound Isolation (STC)		Impact Sound isolation (IIC)	Background Noise Level (NC)	Building Envelope OITC
0.7 seconds	Occupied Space	STC-50	IIC-50	NC-25	Per Noise Study
	Corridor	STC-45			
	Doors	STC-30 to 35			
	Mechanical	STC-60+			

Large Classrooms (Flat Floor) Volume > 20,000 ft³					
Reverberation Time (RT)	Airborne Sound Isolation (STC)		Impact Sound isolation (IIC)	Background Noise Level (NC)	Building Envelope OITC
0.7 seconds	Occupied Space	STC-55	IIC-50	NC-25	Per Noise Study
	Corridor	STC-50			
	Doors	STC-35			
	Mechanical	STC-60+			

Tiered Lecture Auditorium					
Reverberation Time (RT)	Airborne Sound Isolation (STC)		Impact Sound isolation (IIC)	Background Noise Level (NC)	Building Envelope OITC
0.8 seconds	Occupied Space	STC-60	IIC-65+	NC-25	Per Noise Study
	Corridor	STC-60			
	Door Vestibule	STC-35 (x2)			
	Mechanical	STC-60+			

Base Standards:

- Reverberation time: Adhere to ANSI/ASA S12.60-2010 standards for the selection and placement of interior finishes in classrooms to control noise buildup, enhance speech intelligibility, and support audiovisual functions.
- Sound Transmission Class (STC): Ensure walls, doors, glazing and floor-ceiling assemblies meet ANSI/ASA S12.60 2010 standards to control sound transmission from one space to another.
- Impact Insulation Class (IIC): Use appropriate materials in floor-ceiling assemblies to minimize disruptions from footfall activity in spaces located above classrooms.
- MEP Noise Control: Adhere to ANSI/ASA S12.60-2020 standards to meet the required interior background noise levels. Follow the ASHRAE Handbook's Noise & Vibration Chapter to control noise and vibration from MEP systems.

Ideal Guidelines:

- Additional criteria beyond ANSI requirements may be necessary for an optimal acoustic environment for learning; this is outlined on the left chart.

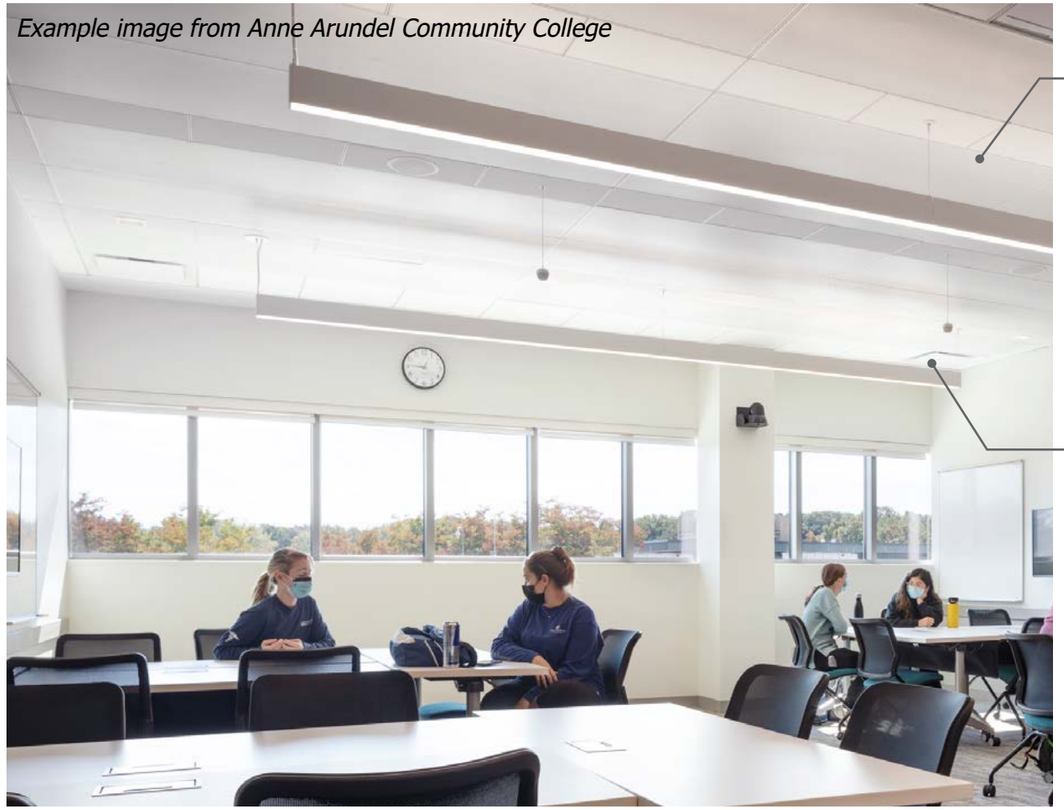
Other Considerations:

- Conduct an environmental noise assessment to determine required OITC (outdoor-indoor transmission class) ratings for sites near noise-generating sources. Adhere to ANSI/ASA S12.60-2010 standards to meet the required interior noise levels due to exterior noise.

HVAC Systems

Infrastructure

Effective HVAC design ensures optimal thermal comfort and indoor air quality (IAQ) in classrooms, enhancing the learning experience. Comfortable temperatures and good air quality help students focus and prevent health issues like headaches, fatigue, and respiratory problems. It also fosters a positive and inclusive educational setting for all students, including neurodivergent students who may be particularly sensitive to thermal discomfort.



Base Standards:

- Design HVAC systems to meet ASHRAE Standard 55-2023 for thermal comfort.
- Use a minimum of MERV 13 filters for superior air quality for all outdoor and recirculation air flow.

Ideal Guidelines:

- Use decoupled systems that separately handle temperature control and ventilation to enhance thermal comfort, including, but not limited to, radiant heating and cooling strategies.
- Provide local thermal comfort controls. At least one of the following should be adjustable by occupants: air/radiant temperature, air speed or humidity.
- Install CO2 monitors in each classroom and other densely occupied learning environments.

Other Considerations:

- Consider operable windows to provide occupant control and autonomy.
- Control glare to maintain a consistent temperature throughout the classroom.
- Consider the following strategies for improving thermal comfort and IAQ in existing buildings:
    a. Pre-TAB, temporary monitoring, or re-commissioning to verify system performance.
    b. Check and improve sensor integration.
    c. Retrofit dampers and controls on AHUs to better deliver outside air to spaces.
- HVAC interventions to specific classrooms should be coordinated with current HVAC performance in the building and planned MIP improvements.

Branding and Design

Qualitative

A well-designed learning environment enhances student engagement, comfort, and overall satisfaction, significantly impacting the educational experience. Qualitative factors can also enhance the consistency and brand of a Johns Hopkins University learning environment, contributing to a holistic campus experience and a sense of community, aligning with JHU's academic program goals.

Base Standards:

- Ensure all design elements align with and complement JHU's brand guidelines.
- Consider video conferencing applications. Use neutral tones and non-reflective surfaces to provide a suitable background for hybrid learning.

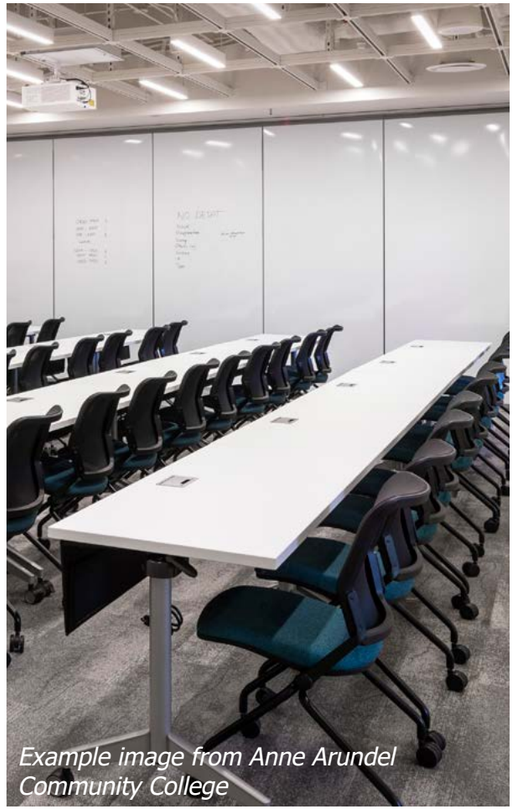
Other Considerations:

- Strive for a timeless design that remains appealing and relevant over time, reducing the need for frequent updates. Avoid incorporating elements that are overly trend-specific, such as certain wall patterns or excessive use of colors.
- Consider the overall campus aesthetic. Classroom design should complement the overall building and campus experience, while incorporating varied aesthetic styles based on use and capacity.
- Create visually legible and straightforward designs to accommodate people with visual, proprioceptive (body's ability to sense its position and movement), or vestibular (body's sense of balance and spatial orientation) differences.

Materials and Furnishing

Qualitative

Creating an optimal classroom environment involves selecting materials and furnishings that are durable, sustainable, and adaptable to various student needs. This ensures that material and furnishing considerations support a comfortable, inclusive, and effective learning space.



Example image from Anne Arundel Community College

Base Standards:

- Choose furniture and finishes that can withstand student wear and tear.
- Opt for materials from reputable manufacturers that offer readily available replacement options.
- Use materials and finishes that are free from toxins and do not emit volatile organic compounds (VOCs).

Ideal Guidelines:

- Use modular, adjustable furniture that can adapt to individual preferences and provide autonomy for optimal comfort.
- Avoid excessive visual contrast, busy patterns, clutter, and reflective surfaces to support varying sensory needs.
- Utilize natural building materials to incorporate biophilic design elements.

Other Considerations:

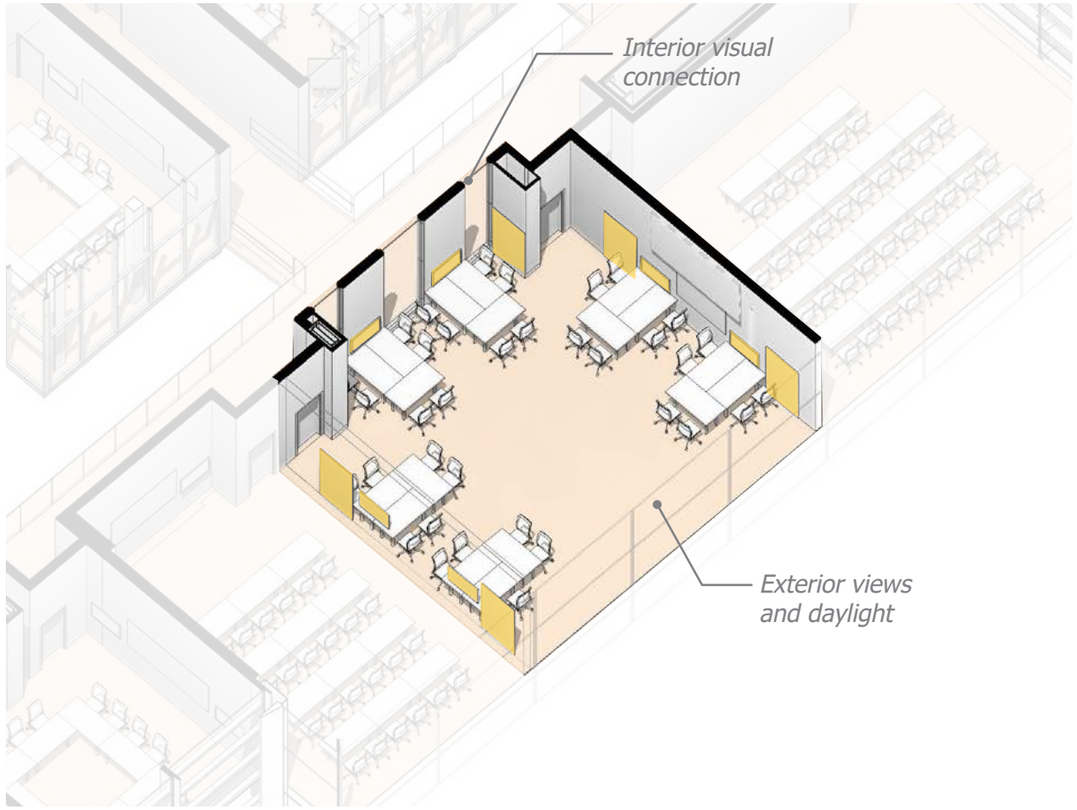
- Consider height-adjustable desks and chairs with armrests and footrests for use in long class sessions, such as seminars and computer labs, to ensure comfort and ergonomic support.
- Use soft and tactile textures in seating to encourage relaxation and manage acoustics.
- Use similar materials and furnishings. throughout the project to ensure predictability and familiarity, creating a supportive learning environment for neurodivergent students.

Natural Light and Views

Qualitative

Natural light and views are important for enhancing student wellness and fostering a sense of community. Daylighting has been shown to improve concentration and increase student alertness. Integrating natural views and creating strategic visual connections, both exterior and interior, helps students feel more connected to their campus environment, enhancing their overall educational experience.

Example image from Auburn University



Base Standards:

- Use appropriate window coverings to control solar gain and glare. Ensure even, diffused natural light to minimize harsh contrasts and reduce eye strain.
- Use glazing at entry points to increase visibility to support safe and comfortable circulation.

Ideal Guidelines:

- Incorporate daylighting strategies as much as possible. Locate student workstations within 25 feet of the exterior envelope to maximize access to natural light.
- Provide views to the exterior campus environment, including views of nature.
- Create visual connections between classrooms and support spaces beyond to foster a sense of openness and transparency. Provide appropriate measures to control distractions.

Other Considerations:

- Balance the amount of glazing with teaching and active wall design requirements. It is recommended that continuous glazing be limited to one wall for flexibility in typical classrooms.
    a. Consider the use of movable writing boards and displays as needed.

Beyond the Classroom

Qualitative

Learning extends beyond the classroom, and to create enriching educational experiences, it is important to support learning outside of the formal instruction space. Providing spaces for informal collaboration, such as dedicated lounges, study nooks, and break-out areas, enhances student engagement and fosters a sense of community. Additionally, offering spaces that allow for casual recharge and calm supports student well-being and can reduce stress.

Base Standards:

- Provide wide hallways and strategically locate doors to minimize congestion, reduce disruptions, and ensure smooth circulation.
- Provide break-out areas for informal interactions.
- Ensure all spaces beyond the classroom are accessible to promote an inclusive environment.

Ideal Guidelines:

- Provide flexible lounge areas outside classrooms with comfortable seating, writable surfaces, and power access for various activities, from individual study to group meetings.
- Provide a range of furniture options, including furniture that allows users to be cocooned.
- Incorporate sensory-sensitive wayfinding strategies to prevent overwhelm and confusion, creating a supportive and inclusive environment:
    a. Clear, graphic signage with high contrast, large fonts, and uncluttered layouts.
    b. Combine color and shape within signage for better recognition.
    c. Avoid long, narrow corridors to prevent feelings of confinement.
    d. Create smooth transitions between spaces to reduce sensory overload and anxiety.

Other Considerations:

- Locate classrooms close together to foster informal interactions and ensure efficient design of support spaces beyond the classrooms.

Technology Support

Operations and Management

Effective technology support strategies are important to ensure convenient and seamless use for effective teaching. Change management strategies are equally important to help faculty adapt to new spaces and technologies. In addition, as technology continues to evolve, it should be agile and scalable, maintaining a sustainable infrastructure that can adapt to evolving pedagogies.

Base Standards:

- Understand and integrate JHU's technology support framework. The Classroom/Audiovisual Technology Support (KIT-CATS) team provides technology support for general-use classrooms on the Homewood Campus. Other teams provide support at other locations.
- Ensure that appropriate personnel are trained with new project equipment. This training should encompass both the technical aspects and teaching applications to maximize its impact on teaching and learning.
- Implement technology systems that are adaptable for future changes. This includes modular and upgradeable components that can evolve with technological advancements.

Other Considerations:

- Limit the quantity of equipment in the teaching lectern to reduce the number of cables requiring disconnection/reconnection when reconfiguring rooms.

Daily Operations

Operations and Management

Effective classroom operations are essential for enhancing the overall educational experience, and classroom design should support efficient maintenance and operational strategies. Key considerations include daily upkeep, storage, access control, and after-hours use, all of which contribute to a well-functioning learning environment.

Example image from Auburn Univ.

Base Standards:

- Provide proper storage solutions to facilitate daily maintenance.
- Confirm access control measures on a project-specific basis.
- Consider trash and recycling locations in the design.
- Specify materials and furnishings from reputable manufacturers for easy replacement.
- Ceiling finishes should be easily removable and serviceable.

Ideal Guidelines:

- Provide dedicated classroom storage on the same floor as the classrooms to support maintenance and flexible use.

Other Considerations:

- Confirm any after-hours use of the space to support expanded use in the design.
- Select furniture that is lightweight and stackable to facilitate easy maintenance.
- Maintaining clear aisles ensures better accessibility for all students. Implement design strategies to help maintain unobstructed aisles and ensure furniture is appropriately located.
- Consider strategies to help operations staff easily identify which room furniture should be returned to in the event that it is removed from the room.

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04

Learning Environment Planning

Overview

The following guideplates illustrate the optimal spatial arrangements and dimension for learning environments of different sizes. Developed with consideration of the ideal learning environment elements outlined in the previous section, guideplates provide visual and dimensional references to ensure classrooms are appropriately sized, conducive to effective learning, and adaptable to evolving pedagogies. While guideplates serve as a foundational reference for design teams, they should be adapted to meet the unique needs and constraints of each project.

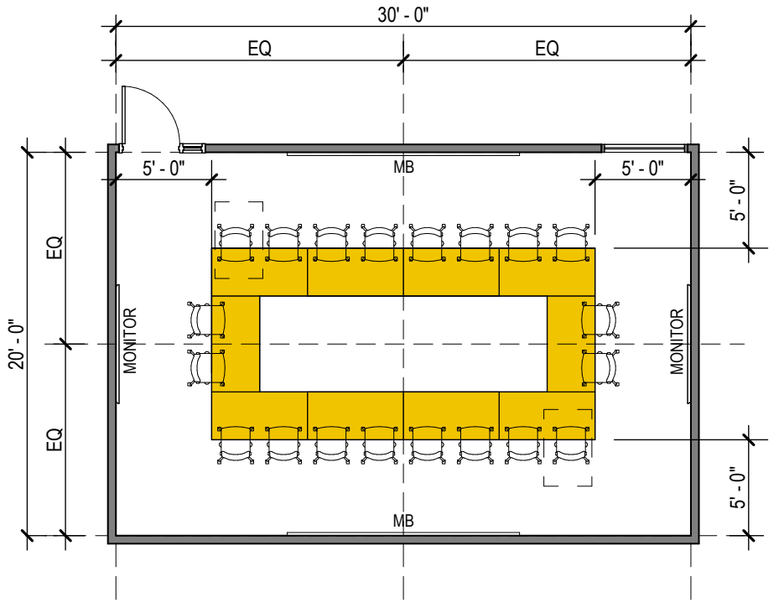
Classroom Sizes

This section covers five classroom sizes:

1. Seminar: Designed for small group discussions, prioritizing direct engagement between faculty and students.
2. Small Classroom (30-seat): Ideal for interactive learning, encouraging active participation and collaboration.
3. Medium Classroom (60-seat): Versatile spaces balancing traditional lectures and interactive learning.
4. Large Classroom (96-seat): Designed to accommodate larger groups of students while maintaining flexibility for different uses.
5. Auditorium (96-seat): Optimized for presentations and lectures, with tiered seating for optimal visibility of the speaker and content.

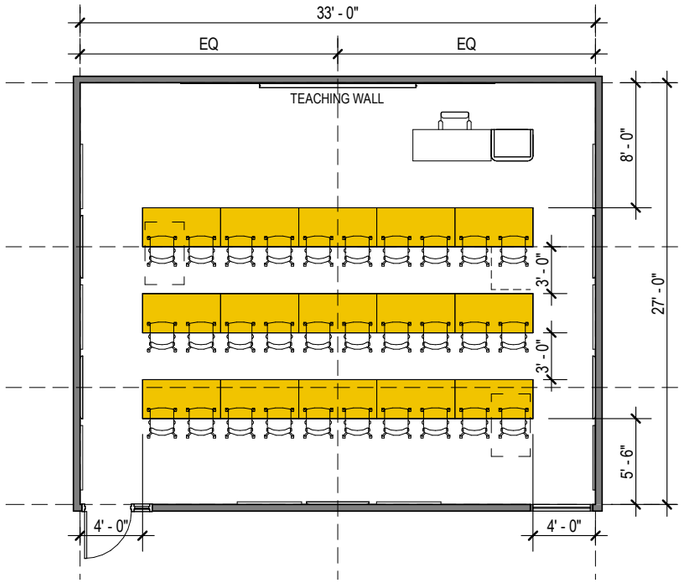
Seminar

Size: 600 SF
Capacity: 20 seats (30 ASF per student)
Notes: 30” x 5’ movable student tables and chairs.
Large monitor wall and multiple walls with markerboards; supplemental monitor for easier viewing from all seats.

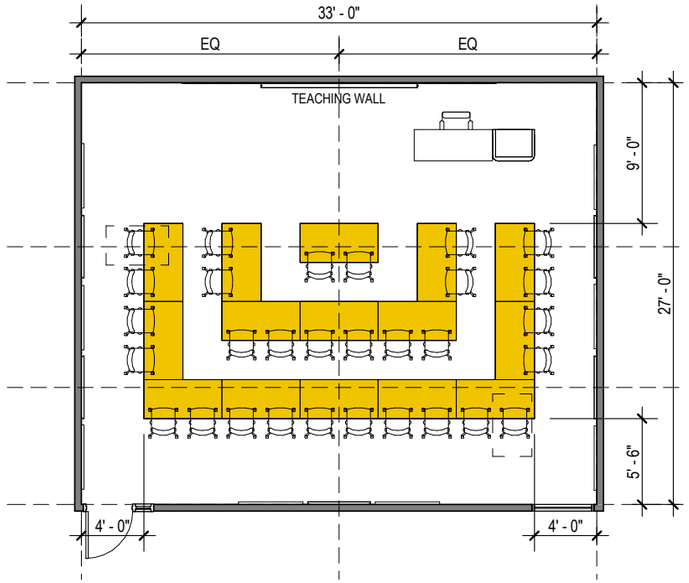


Small Classroom

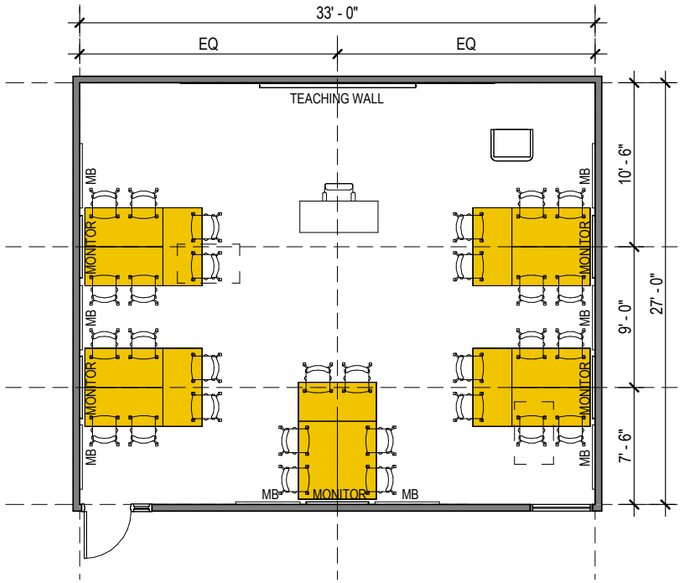
Size: 900 SF
Capacity: 30 seats (30 ASF per student)
Notes: 30” x 5’ movable student tables and chairs.
Movable furniture supports various arrangements to support different teaching pedagogies.
Teaching wall (display and writing surface) and multiple walls with student monitors and markerboards.



LECTURE



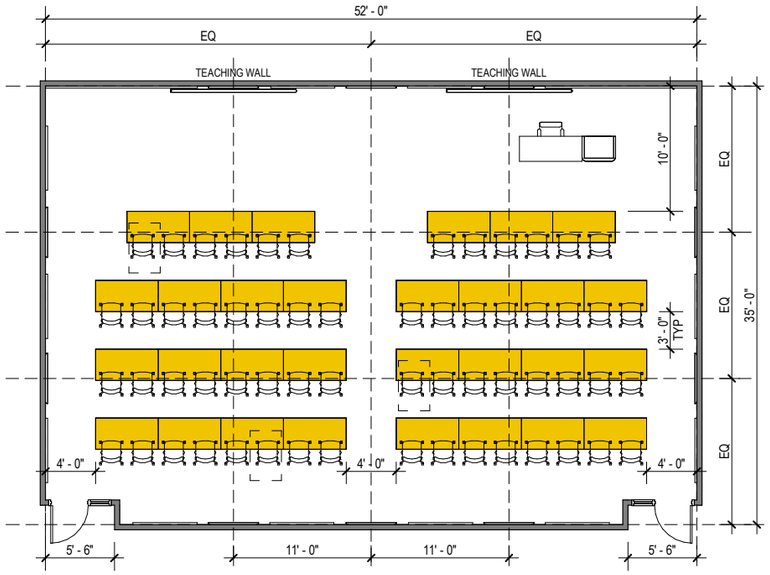
SEMINAR



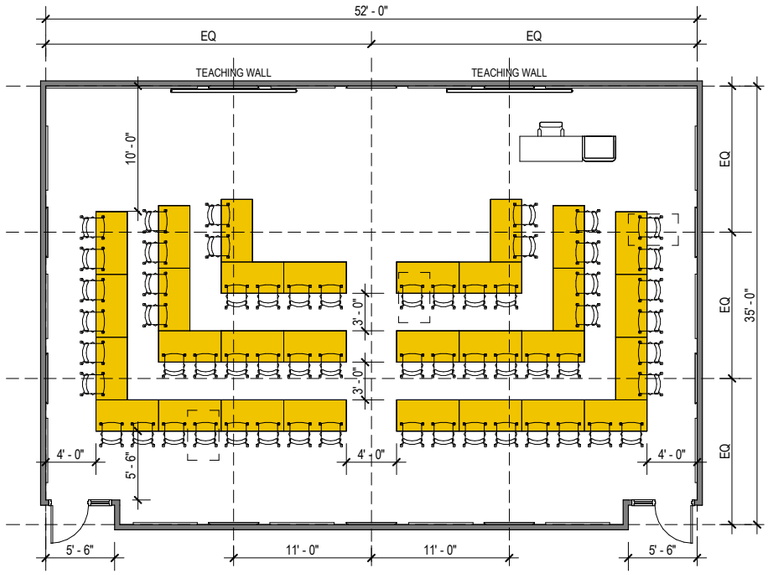
ACTIVE LEARNING

Medium Classroom

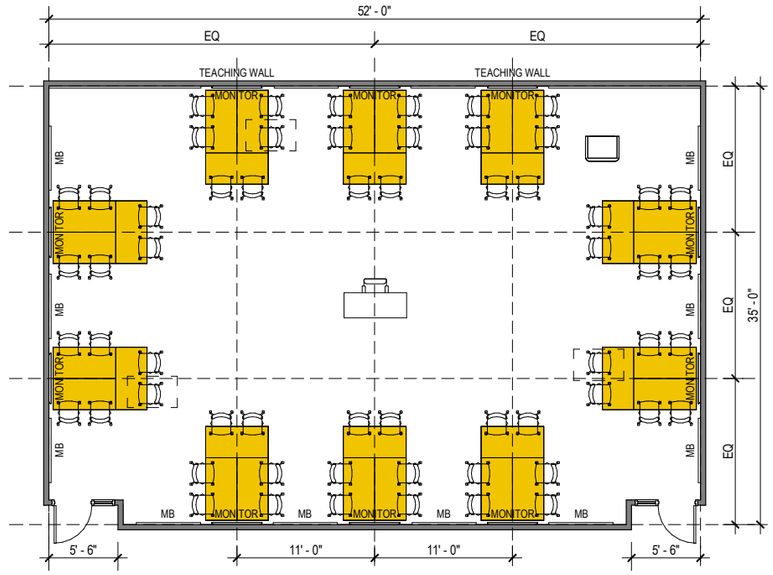
Size: 1,800 SF
Capacity: 60 seats (30 ASF per student)
Notes: 30” x 5’ movable student tables and chairs.
Movable furniture supports various arrangements to support different teaching pedagogies.
Teaching wall (display and writing surface) and multiple walls with student monitors and markerboards.



LECTURE



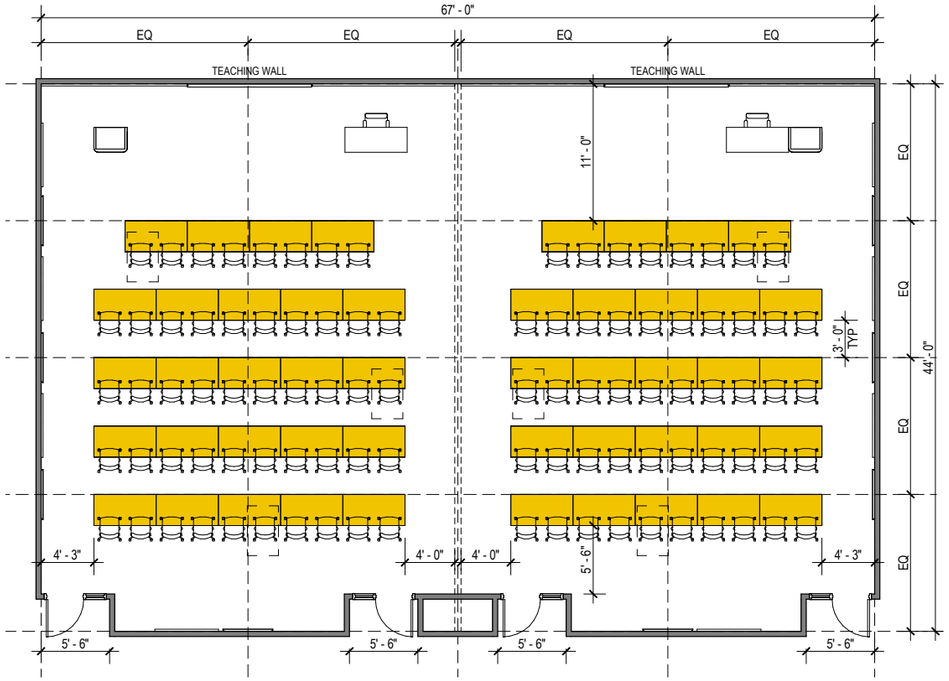
SEMINAR



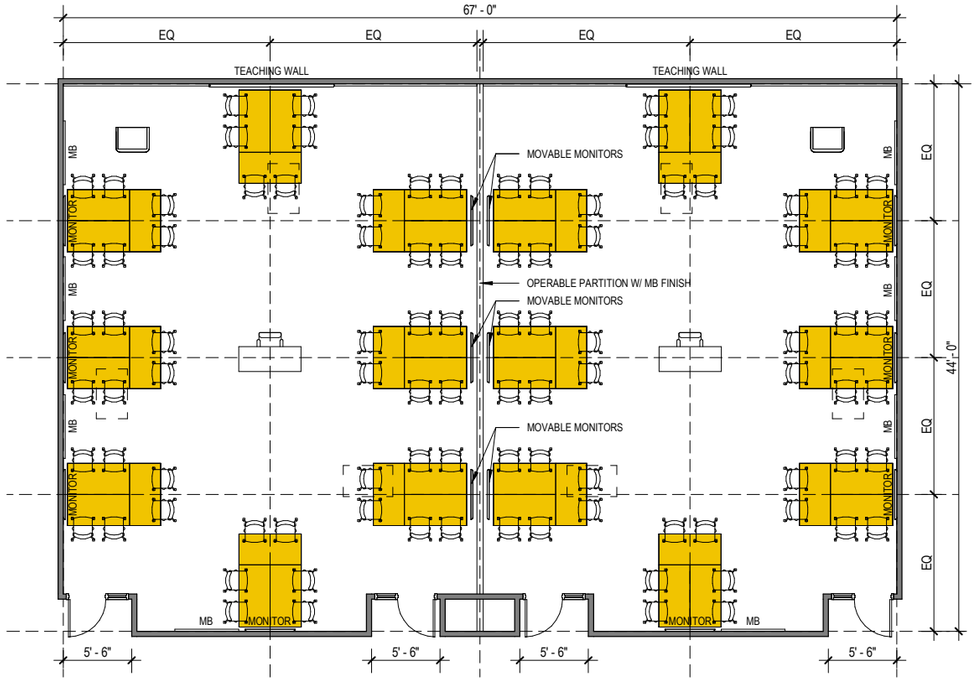
ACTIVE LEARNING

Large Classroom (Flat Floor)

Size: 2,850 SF
Capacity: 96 seats (30 ASF per student)
Notes: 30” x 5’ movable student tables and chairs.
Flat floor and movable furniture allow the room to be used as a large multi-purpose space, supporting flexible use.
Teaching wall (display and writing surface) and multiple walls with student monitors and markerboards, as well as movable monitors and boards as needed.
Operable partition allows flexibility to divide into two 48-seat classrooms.



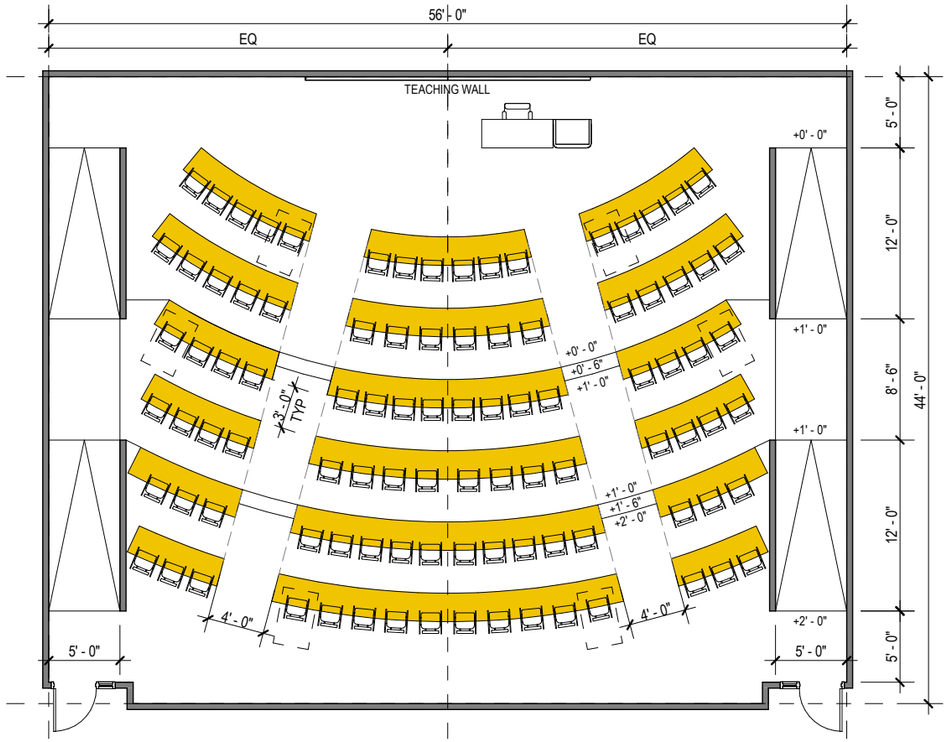
LECTURE



ACTIVE LEARNING

Auditorium (Tiered)

Size: 2,450 SF
Capacity: 96 seats (suggested range is 24 to 27 ASF per student)
Notes: Two rows of fixed tables per tier to allow for group discussions; movable chairs are preferred to accommodate all students comfortably.
Teaching wall (display and writing surface); conduct a sightline study to ensure optimal visibility to the speaker and content from all seats.
Special attention needed for lighting and sound distribution.
Consider supplemental screens at side walls for varying visual needs, as well as student microphones at table (one per two students).



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05
Conclusion

Learning Environment Guidelines Afterword

The Learning Environment Guidelines for John Hopkins University provide a comprehensive framework to ensure consistency and excellence in the design, renovation, and construction of educational spaces. In doing so, the Guidelines ensure that all learning environments support the university's commitment to lifelong learning, independent study, and the dissemination of knowledge.

The Guidelines focus on supporting active and collaborative learning, fostering faculty-student interaction, enriching educational experiences and providing a sustainable and inclusive environment. Furthermore, the Guidelines ensure that learning environments remain flexible, resilient, and adaptable, keeping JHU at the forefront of educational innovation, where students can thrive and succeed.

To continually improve these spaces, it is recommended to incorporate a feedback loop or post-occupancy survey, allowing for regular updates based on user experiences and evolving educational needs. This feedback mechanism would involve collecting input from both students and faculty after they have used the newly designed or renovated classrooms. By analyzing this data, JHU can identify areas for improvement and make necessary adjustments to the Guidelines. This iterative process ensures that the learning environments remain responsive to the changing demands of education, fostering spaces that are continually optimized for the best possible educational outcomes.