Classroom Design Guidelines

These classroom design guidelines aim to align decisions in space and design of technology with best practices in teaching and the teaching principles of the University. We strive for a consistent, equitable experience for faculty and students across all learning spaces, whether departmental or the central pool, by aligning to design and technology standards. Our classrooms should be designed for all learners with flexibility to support traditional and collaborative, active learning strategies that a are designed to improve student's sense of inclusion and academic success.

Part I: Room Geometrics

	Standard Classrooms	**Lecture Halls**
A. **Aspect Ratio**	Ideal aspect ratio length to width is 1.5:1	Not applicable due to varying room shape. Effective sight lines for viewing entire teaching area and projected images are critical. Adherence to guidelines is mandatory (see PART III-D)
B. Ceiling Height	8' minimum, 9.5' desired. Should accommodate appropriately sized display/projection screens with lower edge no lower than 36" AFF (see PART III-D)	10' minimum at rear wall; front wall viewing area must accommodate appropriately sized display/projection screens while maintaining clear sight lines from each seat (see PART III-D)
C. Teaching Area Depth	Minimum 8'	Depth of teaching area dependent upon stage dimensions and location of any fixed equipment such as demonstration bench or A/V lectern. General minimum 15 feet.
D. Sight Lines from Each Student Seat to Center of Teaching Surfaces	Vertical: ±15° from horizontal sight line of seated person Horizontal: not > 45° from perpendicular line to each teaching surface from student seat	Vertical: ±15° from horizontal sight line of seated person Horizontal: not > 30° from perpendicular line to each teaching surface from student seat
E. Floor Elevation	Rooms with >70 capacity may utilize	Tiered seating should be utilized to

Changes	tiered seating to improve sight lines as needed	improve sight lines as needed
F. Ceiling Elevation Changes, Ceiling Angles with Teaching Wall	Normally flat. In rooms >70 capacity ceiling above teaching area may be angled to better reflect sound to rear of room	Ceilings must be angled properly to provide for sound reflection from teaching area to all portions of room
G. Sidewall Angles with Teaching Walls	Normally perpendicular but may be angled for architectural reasons in smaller rooms (<50 capacity)	Sidewalls must not be parallel. Angle(s) with teaching wall shall be determined from study of acoustics in each room
H. Teaching Area Elevation	ADA accessible teaching area required to be same as seating area. In rooms of >70 capacity, an ADA accessible platform not to exceed 7 inches in height may be provided for the teaching area.	Must be at same elevation as entry corridors to "front" of lecture hall and adjacent classroom service rooms. Stage, front seating, and rear seating areas should be ADA accessible

Part II: Acoustic Conditions & Controls

	Standard Classrooms	**Lecture Halls**
A. **Room Sound Quality**	All rooms must feature a acoustic environment which provides for good aural conditions at every student seat with particular attention to: 1) preventing unwanted sounds outside the room from entering through walls, floor, mechanical ducts or other openings into the room 2) preventing **interfering** sound reverberations within the room Providing for clear transmission of sounds from the teaching area to all student seats	Same as standard classroom
B. Sound Controls	Room enclosures shall have a sound transmission coefficient of at least 45. Sound levels in empty room shall have ambient noise not greater than 35 db measured at average head height (44”) for a seated person. All walls must extend to structure. Doors shall not have louvers	Same as standard classroom
C. Sound Controls: Interiors	Teaching wall must be hard surface. Side and rear walls may have sound dampening material applied as needed. Use sound reduction material with a noise reduction coefficient of 0.6 Rooms of >70 capacity may provide a sound amplification system for both live and recorded presentation and shall have acoustical shaping to insure good sound projection to rear seats	Side walls shall be neither parallel nor of continuous hard surface expanse and have a sound transmission coefficient not less than 45. Teaching wall must be of hard surface materials. Rear wall and side walls shall have sound dampening material applied to "tune" the room so that sound is adequately reflected without interfering reverberations. Designers are strongly encouraged to use the services of an acoustician experienced in lecture hall design
D. Sound Amplification	Rooms must have audio amplification system and volume control accessible to the instructor. Classrooms with >70 to provide speech reinforcement as well; wireless microphone is desired. Audio system required to accommodate current ADA requirements	Same as standard classroom. A wireless microphone is required. Audio system required to accommodate current ADA requirements.

Part III: Visual Conditions and Controls

	Standard Classroom	Lecture Halls
A. Light Quality and Intensity	Light levels must be uniform throughout the task area Audience light levels shall be 40-50 foot candles for non-mediated instruction. Audience light levels shall be 2-10 foot-candles for mediated and note taking instruction. Chalkboard illumination shall be 60-70 foot-candles Measurements to be taken at desktop height	Same as standard classroom with the inclusion of appropriate aisle/entrance lighting. Selection of fixtures should consider impact on viewer sight lines.
B. Artificial Light Control	Lighting controls shall be standardized in layout and location as much as possible. All controls must be labeled clearly and adhere to all applicable ADA requirements and building regulations. An entry lighting control shall be located at each room entrance, full room lighting controls shall be located with easy access from the teaching station. Classroom lighting levels should be variable to accommodate different tasks as specified by the Office of Technology and Digital Innovation, Learning and Collaborative Environments team.	Same as standard classroom with these additions: - Optional lectern spots with separate controls may be used. Placement and design of these fixtures must prevent shadowing or bleeding onto the projection screen. Consideration for the ease of lamp replacement must be taken when choosing fixtures.
C. Natural Light Control	All fenestration openings must be equipped with light control devices which will prevent natural light on the projection screen and permit room darkening to 5 foot candles at student stations. (NOTE: this includes interior door glass).	Same as standard classroom. Provide room darkening if needed in entry door vision panels.
D. Projected Images – Angles and Distances	Sight lines from average person's seated eye level (44”) to center of projection screen(s) shall not exceed 45° from perpendicular in the horizontal plane. Student seats shall be no closer than 1.5 times a single image width nor farther than 6 times a single image height. Lowest part of projected image to be 36”- 48” AFF. Top of projection screen shall subtend an angle not > 35° from the horizontal sight line of average seated person.	Same as standard classroom except that student sight line angle shall be reduced to a maximum of 30 degrees from perpendicular in the horizontal plane. Lowest part of projected image based on stage characteristics.
E. Surface Reflectance	Reflectance values of surface finishes shall be within the following ranges: • Ceilings 60-90% • Walls 40-60% • Floors 20-50% • Table or tablet-arm tops 30-50% • Chalkboards 20-30%	(see Part IX-B)

Part IV: Thermal Conditions and Controls

	Standard Classroom	Lecture Halls
A. In-room HVAC Controls	Room HVAC controls shall be part of a building zone or whole building control system with tamper proof thermostats. In-room systems or window units not permitted due to noise generation.	Due to room volume and occupation of multiple building levels, in-room HVAC controls may be used. Install tamper proof thermostats.
B. HVAC Systems	Air conditioning required. Shall be part of a building central system or at minimum a building area system. In- room HVAC systems or window units not permitted due to noise generation. Air flow (supply/return) in room shall not move the projection screen and projector.	Same as standard classroom. Consider separate air handlers for one or groups of similar rooms.
C. Temperature and Humidity Tolerances	Temperature and humidity should be maintained to meet the health and comfort requirements of the occupants.	Same as standard classroom.

Part V: Teaching Surfaces

	Standard Classroom	Lecture Halls
A. Vertical Writing Surfaces	Teaching wall must have whiteboard (chalk board is acceptable) at 4' vertical height mounted 3' above finished floor. Chalk tray required below entire length of the board. Maximize writing surfaces to include back and sidewalls to provide opportunities for group work. To maximize continuous writing surface the teaching wall shall have no projections such as pilasters, columns, chases, etc. Writing surfaces must be properly illuminated (see Part III-A, B).	Chalkboards optional. Size of auditorium and intended use would dictate that chalkboard specifications for each room shall be engineered individually. If multi-tiered boards are preferred, those requiring manual operation are recommended. Installed whiteboards or chalkboards must be properly illuminated (see Part III-A,B).
B. Projection Screens	Required. Screens may be either wall or ceiling mounted per manufacturer instructions. Screens shall be mounted such that the screen surface, if extended below 7' AFF, is a maximum of 4" or the minimum nominal distance required to clear any obstructions of the adjacent wall. Installation must support the weight of the screen and any dynamic loads applied during screen operation. For screens mounted to hollow walls, brackets shall be fastened to a surface-mounted continuous 1x wood board with blocking behind (paint or stain). The center of the extended screen shall meet the viewing angles described in PART I-D and PART III-D. For screen sizing, refer to AVIXA DISCAS (ANSI/INFOCOMM v202.01:2016) Lighting controls should be considered to increase screen visibility.	Screen size, type and placement to be determined by consultation with the Office of Technology and Digital Innovation, Learning and Collaborative Environments team. When an electric screen is utilized the controls shall be placed adjacent to the lighting controls in the teaching area. Adhere to viewing angles described in Part III-D.
C. Instructor Table (movable)	2' x 4' movable table (minimum). A smaller, height adjustable mobile table can be used in Active Learning classrooms to encourage instructor circulation within the space.	Same as standard classroom.
D. Vertical Display Surfaces	Optional. If provided, shall be in the hallway and not classroom.	Same as standard classroom.

Part VI: Movable Equipment

	Standard Classroom	Lecture Halls
A. Audio-Visual Equipment	Each room shall permit the use of all current educational technologies. All projects shall be coordinated with the Office of Technology and Digital Innovation, Learning and Collaborative Environments team.	Same as standard classroom.
B. Storage Units	Optional (See Part XIII-A).	Optional (See Part XIII-A).

Part VII: Fixed Equipment

	Standard Classroom	Lecture Halls
A. Sound Reproduction and Reinforcement	In-room system required. Project designer shall consult with the Office of Technology and Digital Innovation, Learning and Collaborative Environments team. (see PART II-D)	In-room system required. Project designer shall consult with the Office of Technology and Digital Innovation, Learning and Collaborative Environments team. (see PART II-D)
B. Audio-Visual Equipment Controls	All AV devices controllable from teaching area.	Same as standard classroom.
C. Video/Data Projection	Fixed video/data projection or displays and related equipment to be installed in all rooms. To be coordinated with the Office of Technology and Digital Innovation, Learning and Collaborative Environments team.	Same as standard classroom.
D. Clock	Rear of room	Rear of room
E. Demonstration Bench	Optional	Optional in rooms where natural sciences are taught. Where specified, provide an instructor's fixed demonstration bench with acid resistant top and 120v power outlets.

Part VIII: Furniture

	Standard Classroom	Lecture Halls
A. Student Seats	Student seats shall be selected to provide comfort for all size students. Provide sturdy armless chairs for classroom capacity with rear legs that project further than top of seat back. Chairs shall be on casters to promote flexible learning. Option 1: sturdy tablet-arm chairs with usable writing surface >180 sq. in. with a minimum 12 in. in one dimension. 10% of all chair stations shall have left-hand tablet arms. Option 2: Tables and chairs. Tables shall be minimum 24 inches deep and afford at least 30 inch width work space per student station. All: aisle width per code and ADA regulation.	Option 1: fixed theater type seat with fold-up tablet arm having usable writing surface >180 sq. in. with a minimum 12 in. in one dimension. 10% of all tablet-arm stations shall be left-hand. Fixed seating shall be back-mounted to risers if possible. Seat fabric should be coated fabric, such as a vinyl, for cleanability. Option 2: loose armless chairs with fixed, continuous strip tables. All: provide stations for wheelchair at 5% of room capacity in multiple areas of the room, not just the front of the space. Seating shall be selected to provide comfort for all size students. If not fixed, seating should be on casters to promote flexible learning.
B. Student Tables	Provide tables with at least 24 inch depth and 30 inch width work space per seat to afford minimum 5 sq. ft. of table space per student station. Tables shall be on casters to promote flexible learning. 5% of student tables shall be height adjustable to provide seating for wheelchair users. Typical size of table is 24 inches deep by 72 inches wide.	Same as standard classroom. No height adjustable tables required.
C. Seating for People with Disabilities	Leave clear space in front. Do not block aisles. Location and number of seats per ADA guidelines	Leave clear space in front. Do not block aisles. Location and number of seats per ADA guidelines
D. Instructor Table	Provide instructor table at least 24 inches deep by 48 inches wide and one armless chair. If A/V lectern exists in space, consider adding a stool in addition to a chair. (In addition, see Part VI-B). A smaller, height adjustable mobile table can also be used in Active Learning classrooms to encourage instructor circulation within the space.	Same as standard classroom.

E. Writing Surface at Student Seats	Very durable, hard finish plastic laminate or equivalent required whether table top or tablet arm.	Same as standard classroom.
F. Waste and Recycling Receptacles	One located near room entrance(s)	Same as standard classroom.

Part IX: Room Surfaces

	Standard Classroom	Lecture Halls
A. Floor Finishes	Carpet tile is preferred to promote better acoustics. Vinyl tile (sheet vinyl not permitted), rubber tile, or resilient tile may be considered.	Resilient tile or finished concrete required in seating areas, carpet in main aisles for sound control.
B. Ceiling Finishes	Light color materials preferred. Acoustical drop surface preferred; painted plaster or gypsum board acceptable. Unfinished structure not usually acceptable unless acoustic solution is provided. In rooms > 50 capacity, acoustical properties must be carefully planned to insure sound reflectance to rear of room and control of reverberations.	Shall be light colored non-reflective materials. Acoustical properties shall be the over-riding factor in selection and application of ceiling finish materials.
C. Teaching Wall Finishes	If a teaching area is established, sound and light reflectance are the most critical factors. Wall finishes or coverings below chalkboards must be of easily cleanable material. Teaching walls shall be free of projections such as pilasters, columns, chases, etc. Front teaching wall shall not contain windows.	Same as standard classroom.

D. Other Wall Finishes	Gypsum board or concrete block, (painted or textured) are preferred, as well as light colors. In rooms with movable table and chair furniture, chair rails are required. Sound reflectance is more critical in rooms with > 50 capacity. (see Part II-C)	Same as standard classroom except that acoustical properties become more critical, especially rear wall and rear portions of side walls. Chair rail not required with fixed seating.

Part X: Electrical Services

	Standard Classroom	Lecture Halls
A. Electrical Service	Each classroom shall have multiple circuits on breakers not shared with other spaces. Number and location per Building Design Standards	Same as standard classrooms with special consideration given to AV Systems. Consult with the Office of Technology and Digital Innovation, Learning and Collaborative Environments team.
B. Communication and Data Transmission	Refer to OSU wiring standards.	Refer to OSU wiring standards.

Part XI: Room Access and Circulation

	Standard Classroom	Lecture Halls
A. Room Location in Building	Location away from other high student access rooms is encouraged (e.g. libraries, computer labs, departmental offices). Shall not be located adjacent to, above, or below toilet rooms, mechanical rooms or elevator shafts. Shall not be located more than three levels above grade. Rooms > 50 capacity shall be located on lower floors. Access from secondary building corridors is discouraged. Clustering classrooms for ease of support services is strongly encouraged.	Grade or ground floor access is required with preference for exterior ingress to a lobby area outside the Lecture Hall.
B. Room Internal Circulation	Unobstructed access to all student seats with a minimum 36" passageway is required. Capacities up to 50 require at least one distribution aisle perpendicular to the teaching wall with two cross aisles row or two distribution aisles with one cross aisle. Rooms > 50 capacity require at least two distribution aisles and two cross aisles directed at doorways. For fixed seating, aisles between rows must allow minimum 12 inches between rear of seat and raised writing tablet or other furthest protrusion.	Unobstructed access to all student stations with adequate passage aisles to meet all ADA and Building codes. Multiple distribution aisles required.
C. Doors	One access door with a clear glass view panel of 2-1/2" x 17-1/2" required. Door located at rear (opposite end of room from teaching wall). All other door characteristics per ADA and Building guidelines. > 49 capacity require two access doors, one at rear and another near center of corridor wall.	Exit openings as required to meet ADA and Building codes for room capacity. Student access shall be at rear of room for normal ingress/egress pattern. View panel of 2-1/2" x 17-1/2" required in all exit doors.
D. Associated Rooms and Spaces	Classrooms in buildings create demands for nearby waiting space and toilet rooms, however, vending areas shall not be located near classrooms. Waiting	Same as standard classroom.

	spaces shall be designed to reduce need for students to sit on floor which interferes with emergency egress.	
E. Room Identification	Provide room number per University signage system	Same as standard classroom.

Part XII: Space Allocations

	Standard Classroom	Lecture Halls
A. Teaching Area	If a teaching area is defined, the minimum depth shall be 8 feet. Size of teaching area will vary with room dimensions: teaching area = (depth as specified in Part I-C) x (room width).	Depth of teaching area dependent on stage dimensions and location of any fixed equipment such as demonstration bench or electronic lectern; general minimum = (15 feet) x (stage width)
B. Area per Student Station	Seating area per student station will vary with seating type and arrangement. Area of 25 square feet per student recommended. Adhere to all ADA and Building Design Standards.	Seating area per student station will vary with seating type and arrangement. Typical range from 9-13 sq .ft. per station for fixed tab-arm chairs, 14-17 sq. ft. per station for fixed tables and moveable chairs. Adhere to all ADA and Building design standards for number and width of aisles.

Part XIII: Classroom Service Rooms

	Standard Classroom	Lecture Halls
A. Audio-Visual and Computer Equipment Storage Room	Provide one 10' x 10' lockable closet with hallway access for up to 10 classrooms in a building. in buildings with more than 10 classrooms provide one additional storage closet for each additional lot or fraction of 10 classrooms	Separate lockable room, accessible from front of classroom and located adjacent to teaching area as specified per the Office of Technology and Digital Innovation, Learning and Collaborative Environments team.
B. Projection Booth	Optional	Optional
C. Preparation Room	Optional. Per special departmental requests and not as a general requirement.	Optional. Per special departmental requests and not as a general requirement.