OFFICE OF CLASSROOM MANAGEMENT STANDARDS

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Executive Summary: Design Intent

The purpose of the University of Minnesota – Office of Classroom Management Standards are to manage a level of expectation for space functionality and performance within University of Minnesota teaching facilities.

Objectives sought by the Office of Classroom Management:

- maintain exceptional user experience for all patrons
- manage return on investment in its facilities
- provide desirable and reliable environments for student learning
- provide continuity across learning environments and buildings

Maintaining an exceptional user experience enhances academic focus and success while retaining student desire to utilize University facilities.

Managing return on investment exercises appropriate fiscal responsibility in the allocation of University funding to develop and maintain state of the art facilities.

Providing desirable and reliable environments allows for learning and discovery to take place with minimal distraction or hinderance to one’s capabilities.
Guiding Principles

Learning environments are critical to achieving the University’s missions of teaching, learning, research, and engagement.

A thoughtfully planned classroom can improve:

- learning by enhancing intelligibility of information presented
- encouraging student engagement in presented material
- reinforcing student and instructor morale
- facilitating the physical well-being of students and instructors.

Learning environments shall be capable of utilization to all patrons of the University of Minnesota, regardless of their physical abilities.

Learning environments shall follow the most current University building standards for product selections and performance, unless otherwise stated herein.

Implementation of Standards

This document is intended for reference and use by all persons intending to create new physical classroom environments or execute renovations to existing classrooms located within the Twin Cities campuses.

This includes, but is not limited to: Capital Project Management, Facilities Management, University Construction Staff, and contracted consultants. End users looking to make space renovations or alterations must contact these organizations through the project request system to review options for their project.

Available tools and resources for the entities listed above may include:

- Office of Classroom Management - https://classroom.umn.edu
- Room Finish Palette options – https://cpm.umn.edu/sites/cpm.umn.edu/files/2021-12/division9_00_06_0.pdf
- Classroom Technical Services - Classroom Technical Services (CTS) | Office of Classroom Management (umn.edu)
Building Standards
Division 13 00 20 General Purpose Classrooms

Key definitions + abbreviations

Active Learning Classrooms (ALC)
a learning environment designed to foster interactive, flexible, student-centered learning experiences; provided with grouped seating for students and a very high level of technology, this room type is designed to maximize student interaction and engagement. These rooms are often divisible to accommodate different needs from semester to semester. Further information can be found at the following location: https://classroom.umn.edu/space/classroom-types/active-learning-classrooms-alc

Class
a body of students meeting regularly to study the same subject; a course of instruction

Classroom (physical space):
a place where classes meet

Classroom Technical Services (CTS):
internal service organization within the Office of Classroom Management (OCM) that supports the unique needs of educational and research environments by offering design, installation, and maintenance services for audio/video technology.

Departmental Classroom (DCs):
classrooms serve the specialized needs and requirements of a specific department, discipline, or program

General Purpose Classroom (GPCs):
classrooms that are centrally managed, scheduled, and must be flexible and responsive to the varying needs of a wide range of subjects and teaching styles

General Classroom – Movable Furniture:
a horizontally level teaching space with a capacity of 24-90 students, with movable furniture for flexibility of use. Suitable for many purposes, the most common type of classroom.

General Classroom – Fixed Furniture:
a horizontally level teaching space with a capacity of 24-90 students, with fixed tables and/or seating. Various table layouts are employed to suit different types of use.

Seminar Room:
a horizontally level teaching space for small-section courses with a capacity of fewer than 24 students. Most suitable for small-group discussion and highly interactive material.

Lecture Hall:
a tiered or sloped level teaching space with a capacity of 30-200 students. Most suitable for traditional lectures, multimedia presentations, basic distance learning, and demonstrations.

Auditorium:
a tiered-level teaching space with a capacity that exceeds 200 students. Most suitable for traditional lectures, multimedia presentations, distance learning, and demonstrations.

Office of Classroom Management (OCM):
the central point of contact for all GPCs within the Twin Cities campus region. Responsible for the planning, specification, operation, scheduling, and coordination of maintenance of these GPCs.

Projection Capable Classroom (PCC):
classrooms capable of attaining the six (6) criteria developed by CTS that deliver the ease-of-use and reliability necessary for presentation technology provided by CTS. Further information can be found at the following location: https://classroom.umn.edu/space/classroom-types/general-purpose-classrooms/projection-capable-classrooms

Reverberation:
the overall effect of reflected sound

Reverberation Time (RT):
the time required for reflected sound to become inaudible is called reverberation time.

Per ANSI Standard S12.60 for Classroom Acoustics:
the maximum reverberation time in an unoccupied, furnished classroom with a volume under 10,000 cubic feet is 0.6 seconds, and 0.7 seconds for a classroom between 10,000 and 20,000 cubic feet. The maximum level of background noise allowed in the same classroom is 35 decibels (dBA).

Sound Transmission Class (STC):
the ability of a wall partition or assemblance of materials to prevent sound from traveling the wall partition.

Per ANSI Standard S12.60 for Classroom Acoustics:
the minimum Sound Transmission Class or STC of a wall separating two adjacent classrooms is 50.

Ceiling Attenuation Class (CAC):
a measure for rating the efficiency of a ceiling system as a barrier to airborne sound transmission between adjacent closed spaces that share a common air plenum.

Noise Reduction Coefficient (NRC):
is a measure for rating the overall sound absorption of a material installed inside a building where sound is reflected at many angles of incidence.
01 General Guidelines for GPCs

Maintain consistency with University goals – Design and construction of classrooms shall reference University Standard Program Requirements and Information. https://cpm.umn.edu/sites/cpm.umn.edu/files/2021-02/programinformation_0_0_1.pdf

Minimize sources of noise and distraction - Classrooms should be isolated from external and internal sources of noise, such as loading docks, parking lots, streets, mechanical and equipment rooms, vending areas, elevators, and dining facilities.

Account for large volume of patron movement during class transitions - Corridor design should take into account that students arrive and depart in large groups (see section 4.2). Classroom doors should not be located directly across from each other, but rather near exterior doors to improve the flow of traffic.

Provide opportunities for flexible learning - ALCs must include room proportioning to allow for sufficient wall space for monitors and planning table layouts.

Seek beneficial use of space - Informal learning spaces, also known as study spaces or Waypoints, are also important learning environments for students, as they promote interaction and collaborative thought. These spaces are discussed in section 11 of this document.

Provide associated storage - Service spaces shall be incorporated with the design of classrooms in buildings, in order to store supporting devices and allow OCM staff adequate area to stage furniture moves and repairs. A minimum of 100 SF or sufficient space to store 2% of the student furniture utilized, whichever is larger, is preferred. No space shall be less than 40 square feet in area. Door widths should be at least 36 inches wide, with preference to 42 inches wide (where space allows) to accommodate for movement of large items. Audio/visual equipment accommodations (e.g. media booths/control rooms) are additional spaces to those noted above.

Improve overall spatial performance – New classrooms shall meet the minimum requirements set forth by the following institutions:
   - ANSI Standard S12.60 for Classroom Acoustics

Design Approvals - OCM shall receive a physical or electronic copy of all review documents throughout the design & construction phases of projects. OCM shall also receive and approve samples of all proposed finishes and/or furniture prior to issuance of purchase order.

Owners Manuals, Documentation, & Training – Operation and maintenance manuals (O&Ms) and as-built drawings shall be provided to OCM upon completion of any project, along with all documented design changes.
OCM’s guidelines for minimum seating area per student are listed in the following table:

<table>
<thead>
<tr>
<th>Furniture type</th>
<th>Minimum Area (in sq. ft. per person)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed drop-arm seating</td>
<td>15</td>
</tr>
<tr>
<td>Fixed linear bench table</td>
<td>16</td>
</tr>
<tr>
<td>Tablet-arm chairs</td>
<td>18</td>
</tr>
<tr>
<td>*Movable tables and chairs</td>
<td>22</td>
</tr>
<tr>
<td>Seminar/conference table</td>
<td>24</td>
</tr>
</tbody>
</table>

*Active Learning Classrooms are designed to maximize interaction and engagement. These rooms are often divisible to accommodate different needs from semester to semester.

Incorporate & Communicate GPS Waypoints –

Study spaces are marked with Waypoints signage and OCM’s website has information on where to find these spaces and what amenities are available in each one. All new and renovated study spaces should accommodate this signage, which OCM will provide to the project.

Waypoints cannot be grouped into standard types. Each one must be addressed individually, based on the size, shape, and placement of the space.
They should be located in buildings with clusters of classrooms, near food or vending locations, or in high-traffic zones. They should be attractive, easy to maintain, and make students feel welcome and valued.

Furnishings are expected to have a 5-8 year life cycle, with continuous heavy use.
Fabric and carpet patterns and colors should hide stains and soil well and have durable surfaces. Power outlets should be abundant.

To support collaborative work, additional equipment may be required. These items could include markerboards (wall-mounted, mobile, or “smart” boards with recording capabilities), display monitors with laptop connections, flexible lighting, etc.

Targeted Standards for Performance:

The following sections are a summary breakdown of areas, categorized and classified accordingly with their respective divisions under the Masterspec formatting system created by the Construction Specifications Institute. The designer and/or contractor shall refer specifically to these guidelines when either constructing new or renovating an existing GPC. In addition, they shall reference other current University building standards that relate to the work taking place during construction.
08 10 00 Doors and Frames

1. Refer to Division 08 – Openings — of the University Building Standards for requirements of product performance guidelines. 
   https://cpm.umn.edu/sites/cpm.umn.edu/files/2021-12/division8_00_00.pdf

2. Visibility: Any entrance into new or newly renovated classrooms shall contain a vision kit (window) within the door panel to allow for viewing status of classroom activity from exterior of classroom. Vision Kit shall be minimum four (4) inches wide with bottom edge of viewing glass installed at maximum height of forty-two (42) inches above finished floor elevation.

08 70 00 Hardware

1. Refer to Division 08 – Openings — of the University Building Standards for requirements of product performance guidelines. 
   https://cpm.umn.edu/sites/cpm.umn.edu/files/2021-12/division8_00_00.pdf

2. Security: All new or newly renovated classrooms shall be provided with at least one (1) card access reader connected to the University’s centrally monitored and managed access control system.
   a. Where multiple entrances/exits exist for a GPC, the entrance along the ADA accessible pathway shall be designated for installation of card reader access control integration.
   b. Ensure the main lighting control switches are located nearest to the interior of the card reader controlled door entrance.
   c. Where multiple entrances/exits exist for a GPC, those not designated to receive card reader access control shall receive remote electronic locking and monitoring at minimum, via the installation of electrified mortise locksets and integral request-to-exit switching.
   d. Externally mounted request-to-exit sensors are PROHIBITED, unless technically infeasible to install otherwise.

3. All operable products shall be manufactured and installed to meet current accessibility standards per the Americans with Disabilities Act (ADA) and/or ADA Accessibility Guidelines (ADAAG)

09 21 00 Plaster & Gypsum Board Assemblies

1. It is preferred that all perimeter wall assemblies of GPCs be constructed full height from building structural floor to underside of building structural floor above.

2. Wall partition shall be designed to achieve a minimum STC of 50+.

3. It is preferred that the designated ‘front’ or ‘presentation’ wall have no protrusions. Plan accordingly to minimize number of protrusions where existing conditions do not allow for recessed elements.

4. A chair rail or wall protection shall be installed on side and rear walls whenever movable furniture may contact the wall surface.
09 51 13 Acoustical Panel Ceilings

1. When constructing new or renovating a classroom within an existing building, effort should be made to identify a predominant manufacturer, product line, and style of existing acoustical panel ceiling systems throughout that building. Preference would be to maintain consistency with attic stock material within the immediate building operations storage area(s).

2. The following minimum criteria for suspended acoustical panel ceiling systems are listed as follows:
   i. Minimum Noise Reduction Coefficient (NRC): 0.90
   ii. Minimum Ceiling Attenuation Class (CAC): 30
   iii. Minimum light reflectance: 0.80
   iv. Minimum percentage of recycled content inclusion: 50%
   v. ASTM E84: Class A – fire rating
   vi. Greenguard UL 2818 Gold Standard Certified: Yes
   vii. Shall be sag-resistant
   viii. Shall be mold/mildew resistant

3. Tile edges are preferred to be beveled, when able. If existing suspension systems are being reused, use a compatible profile for such system in place.

4. New suspension systems shall come with a minimum 10 year limited warranty.

5. At minimum, suspension systems shall be classified and installed as an ‘intermediate-duty system’ in accordance with per ASTM C635.

09 60 00 Flooring

1. Carpet tile is preferred over broadloom carpet or vinyl tile.

2. Classrooms with demonstration areas for chemical or other experiments shall have an epoxy or other resilient floor finish around the instructor area.

3. Floor finishes should be medium to dark in color, with some form of subdued pattern or fleck to minimize appearance of dirt.

4. Refer to University Standard Finishes for further guidance, product examples, and inspiration - [https://cpm.umn.edu/sites/cpm.umn.edu/files/2021-12/division9_00_06_0.pdf](https://cpm.umn.edu/sites/cpm.umn.edu/files/2021-12/division9_00_06_0.pdf)

09 80 00 Acoustic Treatment

1. Acoustic treatments may be required to reduce reverberation and absorb sound emissions. When incorporated into the classroom environment, they should be supplied with durable surfaces – fabric or baffles.

2. Panel fabrics shall be chosen to minimize the visibility of wear and soil.

3. The bottom edge of the acoustical treatment shall be installed not lower than 36 inches AFF.
09 90 00 Painting and Coating

1. Refer to Section 09-91-23 Interior Paint Product Quality
2. Wall surfaces shall be washable.

10 11 00 Visual Display Units

1. Refer to Classroom Technical Services for any assistance in planning, purchase, and/or installation of new visual technologies for all classrooms:
https://classroom.umn.edu/technology/classroom-technical-services-cts
2. Products shall be manufactured and installed to meet current accessibility standards per the Americans with Disabilities Act (ADA) and/or ADA Accessibility Guidelines (ADAAG)

10 11 16 Markerboard

1. Refer to Division 10 – Specialties— of the University Building Standards for requirements of product performance guidelines:
https://cpm.umn.edu/sites/cpm.umn.edu/files/2021-12/division10_00_00_0.pdf
2. Resinous, porcelain steel or glass dry-erase magnetic markerboards shall be installed across as much of the designated front wall as possible.
   a. Resinous Markerboards: Glass free, magnetic, non-staining, resinous panel, frameless with polished and beveled edges, shatterproof and optically clear
      ▪ Basis of Design: Deko Markerboards
   b. Porcelain Markerboards: Projection friendly, magnetic, non-staining, non-ghosting, low reflectivity, bacteria resistant, zero-VOC, lifetime warranty, GREENGUARD certified, Cradle-to-Cradle Certified
      ▪ Basis of Design: Claridge Series 500 (confirm color & tray options with OCM prior to order)
   c. Glassboards: minimum 1/4” tempered safety glass, Magnetic, non-staining, concealed mounting hardware/anchors or stainless steel standoff mounting,
      ▪ Basis of Design: Clarus Float™ + Depth (confirm color & tray options with OCM prior to order)
3. Products shall be manufactured and installed to meet current accessibility standards per the Americans with Disabilities Act (ADA) and/or ADA Accessibility Guidelines (ADAAG)
4. Large classrooms may require layered, sliding markerboard panels to increase available writing surface.
5. Additional markerboards may be required on secondary classroom surfaces; consult with OCM.
6. Markerboards shall be provided with accessory trays at a minimum ratio of four (4) lineal feet of tray per eight (8) lineal feet of markerboard. [4:8]
7. Markerboard seams shall be flush.
8. A cleaning supply towel dispenser system shall be mounted near one end of each markerboard.
9. Refer to the lighting requirements of markerboards.

10 14 00 Signage

1. Refer to Interior Signage System 2021 at the following location:

11 52 00 Audio-Visual Equipment

1. All new and renovated classrooms must meet the current Projection Capable Classroom (PCC) standard. This standard includes, at a minimum, the following capabilities:
   i. Large-scale, high-quality image, such as from a video/data projector
   ii. Wired internet connectivity at the instructor’s station
   iii. Networked control system for remote monitoring and access
   iv. Document camera, and/or other input device
   v. User-friendly laptop/input device interface
   vi. Assistive listening system in rooms with amplification with 50+ seats
   vii. Capacity for additional modular features
   viii. VOIP compatibility for minimum one telephone (any A/V booth space shall separately have VOIP compatibility)
   ix. Wireless internet access in accordance with U of M Office of Information Technology (OIT) current capacity standard. (See Div. 27 - Communications)

2. Projection screens will be provided by CTS for contractor installation. Screen details will be determined according to the following guidelines:
   i. Screen dimensions shall allow for a 16x10 projected image ratio.
   ii. Screen sizes 10 feet wide and larger shall be electrically operated.
   iii. Screen controls shall be located at switch height adjacent to lighting controls in the instructor area.
   iv. In classrooms with high ceilings, it may be desirable to use the wall above the presentation writing surface as the projection surface. This option eliminates the necessity of raising and lowering a screen, and the associated control system costs. In this case, a matte paint with a high Titanium oxide content should be used.

3. All classrooms must be provided with a clock; the University utilizes the Primex GPS clock system. The clock shall be located off of the front (teaching) wall, and must be visible from every seat in the room. Large classrooms may require multiple clocks.
12 20 00 Window Treatments

1. Classrooms with exterior perimeter fenestration shall be provided with a woven mesh – mechanically operated roller shading devices capable of allowing maximum 5% of light transparency.
2. In addition to shading, a secondary, fully opaque, blackout shade shall be incorporated.
3. All treatments shall be flame retardant and fade resistant.
4. All treatments shall be actively tested and certified as low-VOC containing products in compliance to emission limits on UL 2818.

12 56 33 Classroom Furniture

1. Movable student tables shall provide a minimum of 26 linear inches of writing space per student and a minimum depth of 20 inches.
2. In tablet-arm chair rooms, one or more 20 by 36 inch adjustable height tables will be provided to accommodate students with disabilities. In rooms with movable tables, specification preference will be given to tables that meet ADA requirements.
3. Continuous fixed student tables shall provide a minimum of 26 linear inches of clear knee space per student and a minimum depth of 18 inches.
4. Rows of tables will be spaced at a minimum of 30 inches apart, with 36 inches preferred.

12 56 39 Lecterns

1. All aspects must be approved by OCM, in conjunction with CTS’s technology requirements.
2. Classrooms with demonstration areas shall have instructor stations with resilient top surfaces, to protect them from water, chemicals, and other liquids.
3. Shall be fully accessible and operable per the Americans with Disabilities Act.
4. Shall contain lockable cabinets/enclosures for security of presentation equipment.

12 60 00 Multiple Seating

Several seating types are used in classrooms at the University. All classroom furniture must carry a minimum 10-year warranty, and non-obsolescence provisions must be in place for all materials chosen. Additional furniture comprising 2% of the installed quantity shall be ordered as attic stock. (Refer to Division 12: Furnishings)

Movable Seating

1. Student chairs may be tablet-arm chairs, side chairs (post legs or sled base, armless) or task chairs (5-point caster base, armless).
2. Side chairs should stack for storage. Task chairs shall have minimal adjustments, preferably height adjustment only.
3. Tablet-arm chairs shall have a minimum writing surface area of 144 square inches.
4. Ten percent of tablet-arm chairs in a classroom shall be left-handed.
Fixed Drop-Arm Seating
1. Fixed seating tablet arms shall have a minimum writing surface area of 130 square inches.
2. Tablet arms shall be retractable and shall close with a single user motion.
3. Ten percent of tablet arms shall be left-handed.

Instructor Seating
1. There shall be seating available at the instructor station capable of adjusting from table-height to counter-height for use with a podium.

23 00 00 HVAC Systems/Components
1. All components of mechanical systems should be designed to minimize transmission of noise between classrooms, from corridors, and from exterior sources. Additionally, mechanical components and access paths should not interfere with classroom technology:
   2. Air ducts should be separated from projection screens to reduce movement.
   3. Lighting and HVAC layouts must take projectors, speakers, etc. into consideration.
   4. It is preferred that mechanical systems be accessed from outside the classroom to minimize disruption to courses.

26 50 00 Interior Lighting
1. Refer to Division 26: Electrical, Section 26 50 00 Interior Lighting.
2. It is highly encouraged to employ a means of design and confirmation of achieved minimum recommended light levels located within the Illuminating Engineers Society of North America (IESNA) Lighting Handbook, current edition.
3. Lighting needs to be uniform and flexible to allow for multiple teaching zones. See Appendix H for examples.
Appendix A | Dimensional guidelines

**Figure 1** - Front wall elevation with standard measurements

**Figure 2** - Flat floor room section with standard measurements

**Figure 3** - Tiered floor room section with retractable screen, with standard measurements

**Figure 4** - Tiered floor room section with wall projection, with standard measurements
**Figure 5** - Ideal projection viewing area for single projection.

**Figure 6** - Ideal projection viewing area for dual projection.
Appendix B | Movable Furniture Examples

**Appleby Hall 319**
- 44 capacity, 940 square feet
- Movable chairs and tables

**Ford Hall 150**
- 48 capacity, 900 square feet
- Tablet-arm chairs
Appendix C | Fixed Furniture Examples

**Mondale Hall 30**
- 110 capacity, 1970 square feet
- Fixed tables and attached chairs

**Humphrey SPA 25**
- 60 capacity, 1184 square feet
- Fixed tables and movable chairs
Appendix D | Lecture Halls and Auditoriums

Bruininks Hall 30
- 236 capacity, 2917 square feet
- Fixed seating lecture hall
- Dual projection

Tate Hall B50
- 252 capacity, 3331 square feet
- Drop-arm fixed seating
- Triple Projection

Appendix E | Active Learning Classrooms

Bruininks Hall 312
Building Standards
Division 13 00 20 General Purpose Classrooms

- 126 capacity, 2859 square feet
- Movable tables and chairs with fixed technology pedestals
- Advanced technology capability
- Divisible with movable partition

LES 230
- 56 capacity, 1224 square feet
- Movable tables and chairs
Appendix F | General Purpose Classroom Signage

**Figure 7** -
GPC custom signage with insert window - AGPC

**Figure 8** -
Study Space Signage Package (Shown for reference only)
OCM provided signs.
Appendix G | Waypoint Examples (Student Study Space)

Nicholson Hall 1
- 16 capacity, 417 square feet
- Tablet lounge chairs, movable chairs and table, cafe seating

Bruininks 101A
- 28 capacity, 510 square feet
- 6 study spaces in building
- Lounge seating, cafe tables
- Open to corridor
Waypoint Examples (continued)

**Biological Sciences Center 15**
- 45 capacity, 1392 square feet
- 1 study space in building
- Mobile tablet-arm chairs, cafe tables, lounge seating
- Fully enclosed

**Willey Hall Atrium**
- 139 capacity, 4883 square feet
- 1 study space in building
- Cafe tables, lounge seating
- Open to corridor
Appendix H | General Purpose Classroom Lighting

Figure 9 -
Lighting zones
General classrooms
And small group rooms

Figure 10 -
Lighting zones
In lecture halls
And auditoriums