PART 1 - PRINCIPLES FOR THE DESIGN OF LEARNING SPACES AT DARTMOUTH

These Principles for the Design of Learning Spaces have been established by Dartmouth to ensure that all standards for learning space design are created with student-centered learning at their core. They were developed based on the National Survey for Student Engagement (NSSE), grounded in extensive educational research. The NSSE indicators and practices list five principles to be considered when designing or renovating learning spaces:

A. CAMPUS CLIMATE AND CULTURE
   Learning spaces should be consistent with the college’s culture and priorities as reflected in the campus master plan, follow college design standards, and be designed with future flexibility in mind.

B. HIGH-IMPACT PRACTICES (HIPs)
   Learning spaces exist within a larger campus context; there should be an ease of transition between spaces so as to better support high-impact practices inside and outside the classroom.

C. ACADEMIC CHALLENGES
   Learning spaces should allow students to actively engage with content and include a range of technologies that support multiple modes of teaching and learning.

D. LEARNING WITH PEERS
   Learning spaces should provide features that permit students to work both individually and in collaboration with one another.

E. INTERACTIONS WITH INSTRUCTORS
   Learning spaces should facilitate communication and interaction between students and faculty.

1.1 CAMPUS CLIMATE AND CULTURE:

Dartmouth provides opportunities for supporting students’ learning through consistently high-quality learning spaces through the application of standards and design principles. For example:

- College standards applied, e.g., classroom guidelines (acoustics, lighting, infrastructure, etc), classroom AV standards; accessibility guidelines; sustainability practices, materials and furniture; building environmental (e.g., temperature and ventilation).
- Design classrooms for flexible future use where possible.
- Design classrooms consistent with the principles of Universal Design to meet the needs of and be used by all populations using these spaces (e.g., natural light, sufficient storage, and control panels to simplify instructors’ use of equipment in classrooms across campus).
- Design surrounding spaces (informal spaces, etc.) to integrate with classrooms and student classroom experience (e.g. beyond the threshold of the door).
- All classrooms are strategically considered within the campus master plan.
HIGH-IMPACT PRACTICES (HIPs)

Multiple types of campus physical environments are needed to support a variety of HIPs. Ensure availability of, and support for, a diverse range of affordances (both physical and virtual) to maximize HIPs for student learning. See summary of HIPs here: http://nsse.indiana.edu/pdf/EIs_and_HIPs_2015.pdf

1.2 ACADEMIC CHALLENGE

Promote individual, active engagement with content

A. LAYOUT
   o Ample work surface for multiple devices/resources (e.g. laptop and notebook)
   o Adequate circulation space for students to move about without affecting others
   o Unobstructed sightlines to writing and projection surfaces

B. FURNITURE
   • Comfortable furniture (for different body types)
   • Conveniently available furniture to accommodate different positions, (sit, stand, wheelchair, etc.)
   • Storage for bags, coats, and belongings

C. LEARNING AND PRESENTATION TECHNOLOGIES
   • Access to infrastructure (e.g., power for student laptops and devices, wireless network)
   • Robust access to network/internet
   • Multiple options for simultaneous display of different learning materials (e.g. screen & board)

D. ACOUSTICS
   • Acoustic design to avoid distraction from outside and inside sources
   • Reduce background noise to enhance quality of speech within the room

E. LIGHTING/ROOM COLOR
   • Appropriate lighting for individual work
   • Consistent lighting temperature (hue)
   • Access to and control of natural light
   • Intentional use of room color to promote focus

A. HVAC
   • Heating, cooling, and ventilation adequate to provide environmental comfort in all seasons and parts of the day
   • HVAC agile and responsive to various demand
1.3 LEARNING WITH PEERS

Promote active engagement with one another

B. LAYOUT
- Promote face-to-face communication (chair movement, adequate space to move)
- Unobstructed sightlines from person to person and group to group
- Adequate circulation space for students to move about easily to engage one another

C. FURNITURE
- Flexible seating to support different types of tasks and preferences (e.g., fixed chairs that rotate, movable tables and chairs, tablet chairs on wheels)

D. LEARNING AND PRESENTATION TECHNOLOGIES
- Shared workspaces (e.g., writable walls, projection capability)

E. ACOUSTICS
- Appropriate amplification available
- Acoustic design supports multiple simultaneous conversations (e.g. reduce interior noise)

F. LIGHTING/ROOM COLOR
- Different lighting zones and light levels to support different activities (e.g. lighting pattern suggests grouping)
- Using color in surfaces to define groups’ use of space
- Access to and control of natural light

G. HVAC
- Heating, cooling, and ventilation adequate to provide environmental comfort in all seasons and parts of the day
- HVAC agile and responsive to various demand

1.4 INSTRUCTOR INTERACTIONS WITH STUDENTS

Promote interaction and communication

A. LAYOUT
- Adequate circulation space for faculty to move about easily to engage any student (e.g., multiple aisles, unobstructed sightlines)

B. FURNITURE
- Podium doesn’t interfere with sightlines, movement and interaction, while being large enough for instructional materials.
- Flexible furniture to support different teaching strategies (e.g., movable, variable heights)

C. LEARNING AND PRESENTATION TECHNOLOGIES
- Allows students to share content to projection (facilitated by instructor)
- Ability to present content anywhere in the room (e.g. wireless projection)
D. ACOUSTICS
   • Appropriate amplification available (for students)

E. LIGHTING/ROOM COLOR
   • Different lighting to support multiple types of teaching tasks
   • Access to and control of natural light

F. HVAC
   • Heating, cooling, and ventilation adequate to provide environmental comfort in all
     seasons and parts of the day
   • HVAC agile and responsive to various demand

1.5 PRACTICAL SUPPORTS

A. LAYOUT
   • default layouts with flexible rooms
   • layout transition plans (class to class)
   • visual cues for various layouts

B. FURNITURE
   • adequate storage in or near room

C. LEARNING AND PRESENTATION TECHNOLOGIES
   • Outreach on microphone use and benefit
   • Mowing, facilities, and delivery schedules

D. HVAC
   • AC (as opposed to open a window)
   • HVAC introduces noise into a room. Must be designed to reduce additional noise.

PART 2 - ROOM TYPES

2.1 FLEXIBLE

Flexible classrooms support a variety of pedagogies. They can be easily reconfigured by
their users and returned to a default state within a class period. Typically furnished with
two-person caster base tables and chairs or tablet arm chairs, marker surface around the
entire perimeter, and wireless display to support student on the room's single front
projection screen. May include power in the floor to supplement power around the
perimeter.

2.2 PRESENTATION

Presentation classrooms support spoken, written, and digital presentation by the faculty
member. Traditional design places all presentation aids (screen, board) at the front of the
room for the faculty member's use. Well suited to lecturing. Not expressly designed for
flexibility or group work. Highest density of student seating.
2.3 GROUP-LEARNING

Group-Learning classrooms are furnished and equipped expressly to support learning in groups. Flexibility is common in smaller rooms (< 35) but impractical in larger group-learning rooms. Typically furnished to support groups of five with a projector and board for each group. Designed to support: (1) faculty presenting to all groups, (2) groups working independently, and (3) group reports to the full class. Lowest density of student seating optimizes faculty circulation around the room.

PART 3 - ROOM LAYOUTS

A. EXAMPLE FLEXIBLE WITH CRE DENZA
B. EXAMPLE FLEXIBLE WITH LECTERN
PART 4 – MEETING ROOM TYPES

4.1 HUDDLE SPACE

A huddle space features a lightweight technology solution that includes a direct view display with a hardwired connection and wireless display gateway for user provided devices. An occupancy sensor controls the power status of the display and volume control is manipulated on the user provided devices. Huddle spaces will typically seat 4-6 occupants.

4.2 MEETING ROOM

A meeting room space features a direct view display, all-in-one microphone/camera/speaker device, hardwired connection, and wireless gateway for user provided devices. The system is controlled through a button pack on the wall or fixed table and provides volume, power, and source switching capabilities. A meeting room will typically seat 6-10 occupants.

4.3 PRESENTATION/EXECUTIVE ROOM

A presentation or executive conference room features a screen and projector with distributed audio. Users can connect their devices through a hardwired or wireless gateway. A dedicated camera and ceiling microphone(s) provide conferencing capabilities to user provided devices. The system is controlled through a button pack available on the fixed table or wall. A presentation/executive room will typically seat 10+ occupants.
A. HUDDLE SPACE LAYOUT

- Hardwired Connection
- Direct View Display
B. MEETING ROOM LAYOUT
C. PRESENTATION/EXECUTIVE ROOM

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CLASSROOM & MEETING ROOM
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