



## OFFICE FOR CAPITAL PROGRAMS

The University of Illinois at Chicago

### UIC CLASSROOM DESIGN GUIDELINES - August 2007

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#### Campus context

The classroom, the lecture hall, the laboratory, and the studio are the primary spaces of teaching and learning, and these rooms constitute the essential fabric of the university experience for students and their instructors. Their fundamentals are universal; everyone must be able to get in and out safely and easily, everyone must be able to see and to hear clearly and without undue strain, and everyone must have adequate equipment for their tasks. Their realization, though, is highly variable and has become increasingly complex with the introduction of digital technologies for instruction. Further, in addition to a well-functioning room, UIC aspires to provide learning environments capable of remembering and being remembered, rooms which respect the past and yet are innovative and speak of the future to all who enter.

A large proportion of UIC's learning spaces were constructed all at once when the campus was founded in the mid-60's. The scheme for providing instructional space was clear and logical. The largest lecture rooms were located at the core of the campus between the student union and the library in a series of lecture centers (A through F). These are fixed-seat rooms with tiered or raked floors to provide auditorium-style sight lines to a well-defined instructional area. In a ring around the lecture centers, buildings with three stories of smaller orthogonal classrooms with level floors and multiple instructional surfaces and (mostly) flexible seating are arrayed (e.g., Taft, Burnham, Lincoln, etc.) Finally, at the outer edges of the original campus plan, specialized laboratory and studio spaces were placed in more unique structures (A&A, SEL, SES). A significant number of classrooms in a variety of sizes and types and following the logic of a complex geometry were added with the construction in the 70's of BSB. The later merger of "Circle Campus" and the medical colleges to form UIC brought with it the college-based classrooms in Medicine, Nursing, Dentistry, Pharmacy, Allied Health Sciences, and Public Health.

The actual condition of the classrooms varies with these historical circumstances and with sporadic renovations that have been executed. However, the perception of their condition is universally negative, and the bulk of the classrooms are in need of comprehensive renovation. These guidelines for renovation work are proposed based on the values expressed by the university community in the 2010 Strategic Thinking document and on the successful renovation practices and strategies of the last decade.

#### *Vision for UIC: 2010 Strategic Thinking*

Over the course of two years, the campus community engaged in a strategic thinking process in order to formulate a coherent set of shared values and

priorities and to provide a complex and evolving institution with a point of reference for its myriad initiatives. The process involved a broad spectrum of individuals representing virtually every aspect of the campus. Thus the resultant document serves as a valid departure for productive decision-making that serves the best interests of UIC as a whole.

*Vision for UIC* identifies the physical environment as a "critical issue" and acknowledges that it plays a major role in defining the institution. The document supports the notion that the physical setting has implications for the social activities and relationships that take place here, and that the identity of the institution is strongly connected to it.

The core institutional values are identified as "access" and "excellence," each of which have implications for the built environment. Indeed, their physical manifestation is clearly expected. In addition, innovative design, environmental sustainability, and technological astuteness are clearly articulated priorities.

The campus core provides constant confirmation of UIC's unique strength, its Chicago location. It shares with the city a legacy of innovative architecture and planning, an idealistic beginning that should be preserved. While valuing this heritage and continuing to embrace the original architectural intentions, the campus and its classrooms must be renewed to the "highest standards of design excellence," with attention to universal access and sustainable design. "UIC can and should be a part of the architectural imperative that is Chicago."

"The challenge is to create a coherent, functioning entity while respecting the uniqueness and strengths of constituent parts." Coherence should be sought through more regular planning processes: "any future vision of UIC depends on innovative, comprehensive and long-term efforts in construction and renovation." These guidelines are intended to serve that goal by suggesting consistency for classroom renovation projects that will extend through several decades. Needless to say, the guidelines will need to be revised and updated periodically, but they will continue to provide administrators and design consultants a meaningful baseline reference point.

"We recognize that decades of neglect cannot be repaired overnight. Restoring the campus will require creativity, careful planning and a clear commitment of resources. But without it, UIC cannot be the great urban institution it aspires to be."

#### *Successful renovation practices*

Recent renovations in the classrooms were conducted with the goal of establishing a design palette. A full evaluation of the pilot project rooms was conducted in order to evaluate the results. Those elements that proved successful for UIC classrooms should be adopted as standard practices, and are therefore included as examples in these guidelines.

## **Goals**

UIC has made an institutional commitment to providing high-quality learning environments. These design guidelines will be useful for anyone involved in a classroom or teaching lab design project on the UIC campus: faculty and administrators considering a classroom project, classroom users and their chosen representatives, UIC project managers, and design consultants. While every project has its own unique circumstances, administrative and support structures of the university may require that certain elements adhere to either standardized selections or particular approvals. Without a set of guidelines, it can be difficult to know if everyone that will be impacted by design decisions has had adequate input. Only

when the fullest context for use, administration, maintenance, and repair is a consideration for design can we assure the highest quality can be upheld over time.

Thus, the principle objective is the facilitation of a process for achieving the highest quality learning environment possible. These guidelines contain a mixture of general information, more detailed design parameters, and specific design criteria. They provide a shared vocabulary for the project team. It is anticipated that some decisions may be made that are at variance with the guidelines, however, variances will arise with awareness and for agreed-upon reasoning rather than by random chance.

The following are goals for classroom renovation arising from the UIC campus context as articulated in the previous section.

*Respect the founding architecture*

The mid-century modernism of Walter Netsch/SOM was innovative and daring in its day, in tune with Chicago's leadership in American architecture of the 20th century. Its principles are easily discerned and can be artfully extended and critiqued by renovation. Respect does not imply repetition without change, but it does mean never ignoring or covering up the original fabric.

*Provide accessibility*

All renovations should strive to achieve accessibility for all users.

*Provide for appropriate and changing technology*

Renovations should provide an infrastructure which is adaptable, flexible, and able to support future technologies. Instructional technology should be easily accessed and employed. There must be balance between standardization for easier use and maintenance, and the need to upgrade, update, and add new capacities as technologies evolve. Every learning environment shall be designed for the accommodation of widespread lap-top computer and internet use.

*Provide flexibility for interactive and evolving patterns of learning*

Wherever possible, design for adaptability and change for the whole room as well as its constituent elements. Spaces must be flexible in order to support active and collaborative learning.

*Provide easy functionality and comfort*

Lighting, equipment, and furniture should be ergonomically designed and, when possible, easily adjustable by individual users. Designs should provide visual comfort by providing proper illumination levels and control, acoustic comfort by addressing reverberation times, and year round thermal comfort by providing well monitored and controlled HVAC systems.

*Promote health and sustainability*

Designs must consider the importance of daylight and air quality in the promotion of good health. Sustainability and energy efficiency shall guide the design and selection of architectural materials, products, and engineering systems used in classroom renovation projects.

*Promote pride in place*

Classroom renovations should strive to be well designed, inspiring places which build pride and morale and help recruit the best faculty and students. Materials, products, and finishes should be selected for their durability and maintainability in addition to their style to assure the spaces age gracefully.

## **UIC learning environments: characteristics and challenges**

## Building types

### *Lecture centers*

Lecture Centers A, C, D, and F form the anchors of the campus core. Their radial plans and glass curtain walls define the buildings and dictate in large part the character of the classrooms within. Exposed concrete structure and interior brick walls provide the main materials, with wood accents for doors and screening elements. Most of the rooms are pie-shaped, with fixed seating on sloped floors focused at the narrow point, the instructional area. Challenges in these rooms include the limitations on the space for the instructor and proper control of the daylight entering in the exterior curtain wall.

Lecture Centers B and E are twin buildings that are the opposite of the other four: opaque rather than transparent, and orthogonally rather than radially planned. Each contains one large lecture room with a fairly steeply tiered floor in addition to some other rooms. These buildings are more readily adaptable and could sustain more radical transformation. They are good candidates for providing services to the lecture core that were not originally considered, but which are now necessary for contemporary standards of student comfort.

### *Small classroom buildings*

Small classroom buildings are typically three stories in height and have a central corridor with small orthogonal classrooms on each side. The exterior wall on the first floor consists of a glass storefront system, with a tinted film applied to the glass. The exterior wall on the top two levels consists of ribbed pre-cast concrete panels with slender vertical glass panes. Interior walls are mostly ground-faced block with built-in blackboards. Ceilings are exposed concrete joists or waffle slabs with integrated surface-mounted fluorescent lighting. The original floors are vinyl asbestos tile, some of which have been replaced over time with vinyl composite tile products.

The main challenges in these rooms, include achieving thermal comfort, acoustic comfort, proper lighting levels and control, access to daylight, and creating a welcoming and inviting space.

### *SES and BSB*

These building plans were based on complex geometries emanating from the architect's ideas described as field theory. Whereas the geometry of the earlier buildings was simple, clear, and comprehensible, the geometry of field theory was a complex play of interlocking polygons, not easily read in the massing and circulation systems. The resultant classrooms vary in shape and size, but all bear the strong imprint of the unusual plan. Concrete structure in these buildings is somewhat less muscular and overbearing. Brick and concrete block are the common wall treatments. However, the complexity of these buildings makes their material logic less insistent. Drywall panels and concrete walls occur without any sense of disruption.

Fixed-seat rooms on tiered floors allow little room for substantial alteration. Challenges include relatively small crowded instructional areas, sightlines that are beyond the optimal cone of vision for the projection screen, and doors located at the front of the room. However, advantages include a greater intimacy for larger class sizes.

Smaller rooms with level floors and flexible seating offer other challenges: more unusual geometries, no windows, all hard surfaces. The main challenges in these rooms, include achieving acoustic comfort, proper lighting levels and control, and creating a welcoming and inviting space.

### *Other*

Other buildings on campus (e.g., SEL and EPASW on east campus, various

buildings on west campus) are more orthogonally planned and so offer a more standard set of parameters for renovations. Some of the buildings on west campus are adaptive re-use of former institutional uses; in those buildings, classrooms may present more unique problems.

## Room types

Learning naturally happens in numerous and disparate places, and the campus as a whole is designed to support informal learning and intellectual exchange as the dominant social milieu. However, formal spaces for scheduled instruction can be divided into a few specific categories based on room characteristics and the types of learning inherent to their design.

### *Lecture classroom*

Lecture rooms are larger rooms with a capacity of 60 students or more that are primarily used for presentation-style teaching. The most important feature is that each seat should have a clear unobstructed view of the primary wall, where the instructor and instructional media are located. The primary instructional wall should include vertical or horizontal sliding whiteboards and a projection screen. The screen should be motorized in rooms with high ceilings or manual pull down in rooms with low ceilings. All lecture rooms should be designed with infrastructure to support multi-media equipment.

Most rooms serving this capacity should have a tiered or sloped floor so that visual contact can be maintained between every student and the instructor. To maintain this condition, fixed seats facing the presentation wall with adequate aisle widths and sufficient space for the instructor are optimal.

In special cases, a collaborative learning style may be desirable in a class size over 60. This could be provided in tiered or sloped rooms by providing rows of seats which can swivel 180 degrees to face the row behind. If a flat floor is desired in classes of this size to promote collaborative learning, then consideration shall be given to the impact on sight lines and visual connection to the presentation media. Furniture in these collaborative spaces with flat floors should include rectangular, stackable, nesting tables on casters and sled based chairs. The tables can be distributed in accordance with the pedagogical needs.

### *Discussion classroom*

Discussion classrooms are those serving a capacity of between 20 and 60. In theory, they should be designed to function equally well as presentation spaces or for collaborative learning and other interactive approaches. However, it is recognized that the classroom furniture, the space available per student, and the level of media technology provided will impact any particular room's performance capability.

All furnishings in discussion classrooms should be mobile. In those classrooms having the greatest level of technology, the instructor's podium or other A/V equipment should have limited mobility, but remote control, wireless microphones, and wireless keyboards should allow for movement and flexibility. The room should be planned with a primary presentation wall where whiteboards and screens are located. However, the inclusion of whiteboards on perpendicular walls will enable the room to be used in alternate configurations.

Tables on casters and sled based chairs are the preferred furniture for discussion classrooms. A universal design approach is best met by using 60" wide tables that serve two students in regular chairs. Height adjustable tables designed to meet ADA requirements shall be provided in each classroom, with the quantity per code.

Tablet arm chairs are the least desirable choice for discussion classrooms, since they are least adaptable to lap-top use and their dimensions are least friendly to a student body that features great degrees of physical difference.

#### *Seminar classrooms*

Seminar classrooms serve the needs of conversation and discussion primarily, and allow for presentation as a secondary consideration. These rooms serve a capacity of up to 20, ideally arranged so that students can see and hear each other equally well. Typically, this is accomplished with a single large table or with a series of identical tables arranged in an "island" or "doughnut" configuration. Accommodation of table-top technology that is carried in by users shall be a consideration. Some seminar rooms may be provided with a built-in projector and a pull-down screen; most can be designed for a table-top model with the projection on a blank wall.

#### *Class laboratory*

Class laboratories have furnishings and equipment that are discipline-specific. Their furnishing, layout, and inclusion of instructional media are too varied to enumerate. Renovation of lab spaces should be subject to current national standards and to departmental desires. Some aspects of lab facilities may be governed by disciplinary accreditation requirements. All renovations shall be designed by consultants with specific experience for the type, and shall proceed from a review of best models and current practices.

Student comfort should be as much of a consideration in labs as in other classrooms. Students sometimes spend much longer hours in their laboratories, so design for ergonomics, health, and sustainability should be taken into account.

### **Interior architecture and engineering systems**

#### *Layout*

Most classroom renovations do not entail alterations to the shape and dimensions of the space; they are usually a given. Within the existing conditions, certain choices about using the space to best effect should be considered. Principal factors in determining the layout and capacity will be: determine which wall will be the primary presentation wall, establish an appropriate zone for the instructor at the primary presentation wall, determine the location and height of the screen, place student stations so that the majority are within a 90-degree cone of viewing based on the centerline of the screen (in plan view), and the eye line of the closest viewer is within a 35-degree cone of viewing to the top of the screen (in sectional view). Classrooms must be studied in both plan and section to evaluate sight lines and to avoid obstructed views caused by users heads, lights, and ceiling hung equipment.

Check with the Office of Public Safety for the maximum capacity of the room for egress purposes. (The allowable limit will likely exceed the number that makes best sense for full effectiveness of the room, but must be determined at the start of the planning process.) For fixed-seat classrooms, locate accessible student stations in such a way as to allow choice. Determine the level of instructional technology to be dedicated to the room and whether a wall rack or an audio-visual podium will be used so that its impact on the arrangement of student seating can be anticipated.

#### *Color*

Color needs to be used judiciously in classrooms. While color is often considered a desirable element for a bright and attractive interior environment, the successful classroom must appeal to a wide variety of users who have strikingly different cultural conditioning and individual taste. Also, good maintenance of painted surfaces is unrealistic in an institutional environment if there are too many different colors employed. Therefore, a palette of neutral or earth tones should be established and

adhered to as a general rule. Brighter accent colors and patterns are appropriate for fabric-covered acoustic panels or furniture, edge trim, or perhaps in floors. The color and pattern in the floors shall be carefully considered to make sure the design is as timeless as possible. Classroom walls should benefit from the well-understood potential for a very little bit of bright color to have a large impact on the overall feeling. Walls painted with bold colors should be limited and used primarily for way finding purposes.

### *Ceilings*

Ceilings provide an opportunity for elements that can effect the experience of the room in a positive way without being vulnerable to wear and use problems. UIC classroom ceilings are mostly composed of concrete structural elements: joists, beams and the underside of flat or waffle slabs. The exposed structure lends visible order to the space, but is sometimes heavy and overbearing, especially when it is a darker color. Effective treatments to lighten the appearance without obscuring the order include:

- Painting the concrete an off-white color
- Suspending light fixtures with an up-light component to light the underside of the beams
- Adhering acoustic panels (when needed for absorption) to the concrete slab in a pattern consistent with the room or structural geometry (example: BSB 285)
- Suspended ceiling "cloud" in a large panel (or panels) "floated" beneath the structure; executed in shapes consistent with the geometry of the room; the "cloud" should be held several feet away from the walls to allow the perception of the structure above; acoustical tile ceiling should be fine texture, highly absorptive tile with a thin, minimal profile grid; suspended ceilings should be as high as possible.

### *Floors*

Flooring should be selected based equally on appearance and on maintenance and durability. For this reason, carpet should be avoided for classrooms whenever possible. It may sometimes be necessary to help with acoustics or due to existing conditions. The smallest classrooms may sometimes be carpeted in order to create a cross between a conference room and a seminar classroom. Whenever carpet is applied to level floors in classrooms, carpet tiles should be used for ease of replacement.

Hard flooring products, whether in sheets of tiles, should be environmentally friendly, using natural materials or with substantive recycled content.

Originally exposed concrete floors should remain so unless they are in poor condition. They can be polished in order to freshen their appearance (examples: A2-7, BSB285)

A dark colored, coved vinyl base shall be applied on all hard floor surfaces and a straight base on carpeted floors.

### *Walls*

Wall finishes should be selected based on appearance and on durability and maintenance. Original walls were mostly brick and block so that there was little wear from the impact of high volumes of traffic in and out of the classrooms. However, some users find the masonry colors and the hardness of these surfaces oppressive. Painting existing masonry to brighten it visually should be avoided. While light-colored paint may brighten the wall, it tends to increase its hardness. The preferred way to add color is in panels: acoustical panels if they are needed, polycarbonate, or wood panels. Application of the panels requires careful consideration of points vulnerable

to chipping or other wear, especially from furniture pushed against the wall, staining from foot marks and from student's heads leaning against a back wall.

If gypsum board walls are used, then a chair rail should be provided and a hard, durable, washable, wall covering should be applied below the chair rail.

#### *Poetic element*

Value is also placed on the presence in a classroom of some element that points to an idea. On older campuses, this was commonly achieved by a suitable inscription or by the names of some appropriate heroes of our civilization. In the UIC pilot classrooms, this has been attempted through the presence of natural elements (bamboo, grasses, flowers) in a fixed glazed panel, polycarbonate, tile mosaic or wood panels. Future classrooms should include an element that achieves the same intention.

#### *Doors and hardware*

Original doors and hardware were of the highest quality when they were installed, providing excellent soundproofing and remaining absolutely true in the frames. Wood doors may be marred and scuffed, and therefore in need of refinishing but not replacement. Other doors may need re-painting.

New hardware, when needed, should match the finish of the existing. When new hardware is needed to meet current codes, problems may arise with noise created by the closing of the door. The Office for Access and Equity and Disability Resource Center should be consulted about the need for automatic openers on classroom doors.

Any new doors should contain a tall narrow vision panel located away from the door handle. Door leaves must be 36" minimum width.

Security of classroom doors is not uniform; some doors are locked by keys, some by a computer program/card swipe system, and the majority are not locked at all if there is no electronic equipment within. Security on equipment varies also and includes use of access cards, key pads, keyed locks, and security cables. Newly renovated classrooms with audio-visual equipment will need security both at the door and at the equipment. The offices of Classroom Learning Environments, A/V Services, and ACCC will determine what kind of security to provide for each room until such time as Facilities Management institutes a campus-wide system.

All multi-media capable classrooms shall have locks on the doors and be locked when not in use. Locally programmed electronic locks (i.e. Locknetics) are preferred for all newly renovated rooms; however, entrance function locks may be considered.

For newly purchased audio-visual equipment, fiber optic security alarm cables shall be placed on the equipment in the podium.

#### *Window Treatment*

Classrooms in the lecture centers and on the first floors of the surrounding classroom buildings have extensive glass curtain walls. Historically, the light has been controlled either by lined (blackout) draperies or by heavily tinted film applied to the glass. The appearance of the draperies and tinted glass from the outside is not attractive. From the interior the draperies are essentially opaque and block out all light, while the tinted film distorts one perception of time of day. Further, like the blackout drapes, the film allows no view into the space from outside. One of the great potentials of the campus plan is the visual dynamic between interior activities and the outside. Activating this visual connection is one way to physically manifest

the whole notion of "access" at the heart of the Strategic Thinking.

Recent renovations have introduced two new options for treatment of window walls that rely on advances in projection technology. Full blackout is no longer necessary for high quality projection. New draperies no longer need vinyl backing, and therefore may show color and pattern both inside and out. They may also have some openness to the weave of the fabric, permitting some of the transparency that is fundamental to the architecture even when the drapes are closed (example: LCD). Another option is motorized semi-transparent shades or veils (example: Grant Hall). The effectiveness of the veil shades in Grant Hall needs to be evaluated to determine if they function well or if more or less translucent shades are required. Whenever these shades are used in classrooms they must be motorized and able to be easily controlled from the primary instructional area of the room.

### *Lighting*

The out-dated lighting systems in the classrooms are a cause of the current dissatisfaction with the learning environment. Problems which need solutions in any classroom renovation may include: insufficient light levels, outdated lamps and lenses, and the inability to control lighting for presentation and projection modes.

These problems have been addressed in recent renovations; some of the practices may be adopted as standards:

- Replace existing surface-mounted fixtures on the undersides of slabs with pendant hung fixtures that combine direct and indirect lighting. These fixtures will light the underside of the beams and lighten the appearance of the concrete structure. Also, in spaces with high ceilings, pendant fixtures will activate the space rather than just calling attention to a surface. However, in rooms with lower ceilings, care must be taken in their height and direction of linear run so that they cannot be reached by users and that they do not interfere with projection.
- If a dropped ceiling is used, then either pendant hung indirect-direct fixtures should be provided (if height allows) or recessed indirect-direct fixtures.
- Strip fixtures are required which evenly illuminate a whiteboard along its full length (example: LCD and BSB 285)
- When possible, set fixtures at heights that accommodate re-lamping without scaffolding so that they are easily maintained. Mounting height of light fixtures must be coordinated with projection light path to prevent the image from being blocked.
- Mesh baskets should be provided in each fixture so one cannot see the lamps from below.
- Provide controllability of light levels; every room should accommodate simultaneous note-taking with projection or presentation. Dimming and zoning of fixtures should be considered in each design. Lighting controls should be intuitive and feature ease of use.
- Occupancy sensors and timers should be employed in each classroom. Daylight sensors should be considered in spaces with abundant daylight.
- Fixtures with energy efficient lamps should be used. Lamp type to be reviewed with OCLE and FM prior to selection.
- Wall switches should be installed near entrance door of every classroom type. Additional set of switches, for larger lecture rooms, should be located near the main instructional wall. Separate switches should be provided for the white board light. Switches and other controls should be mounted at accessible height. Switches should have some type of labeling to identify functions of buttons. It may also be desired for the instructor to control lights from the audio-visual

- podium.
- Appropriate light levels should be provided on stairs in lecture rooms for safety.

Foot-candle levels should meet IES recommendations. Overall even illumination of 50- 60 foot-candles is desirable for lecture and discussion. Dimming for projection should allow between 5 and 10 foot-candles to remain on desktops for note-taking. Even illumination of approximately 75 foot-candles is desirable on white marker boards.

When possible, daylight should be incorporated into all occupied spaces.

#### *Acoustics*

Major room renovations require the professional services of an acoustical consultant as part of the design process. The acoustical consultant shall perform quantitative tests and calculations to determine criteria for type, amount, and placement of absorptive materials. When wall panels are used, it is recommended that they be applied to the higher zones of the walls to avoid the dirt and damage that more readily occur up to 4'-0" AFF.

In addition to controlling echo and reverberation of the desirable sounds within the classroom, attention must be paid to eliminating the unwanted or interfering sounds from adjacent classrooms, corridors, or MEP systems. One of the worst offenders in existing classrooms is the HVAC system. Balancing equipment and adjusting airflow may result in a slight reduction of noise, which can mean a substantial improvement in the learning environment.

Learning spaces should be designed to meet Reverberation times set by industry standards.

#### *Instructional media*

##### *Whiteboard*

Every classroom will be provided with as extensive a whiteboard surface on the main instructional wall as the room layout will allow. Whiteboard shall be used in all multimedia classrooms due to the negative impacts of chalk dust on electronic equipment. It is desirable to have sufficient white board space on the main wall adjacent to the projection screen, when it is in the lowered position.

In rooms without fixed seats, whiteboard shall extend across the length of at least two walls, perpendicular to each other so that the room may be set in either direction.

White marker boards should be mounted 36" AFF and should be a minimum of 4'-0" high. Marker trays should run the entire length of the board at the bottom, and a tack strip with sliding hooks shall run the length of the top.

##### *Screens*

Screens or an alternative projection surface, such as a painted wall or special whiteboard designed for projection, shall be provided in every classroom. In special use classrooms, two screens shall be installed. If only a single screen is provided, it should be located so that a portion of the whiteboard and the projection screen can be used together. For seminar and discussion classrooms, the screens shall be manual pull down. Motorized screens shall only be used in lecture rooms. Sizing of projection screens are dependent upon the ceiling height, projection ratio (16:9 or 4:3), viewing angles, and desired image size. Mounting height of screens is dependent upon ceiling height, view angles, and desired image size. Make, model, and sizing of screens must be approved by OCLE, A/V Services, and ACCC.

##### *Projectors*

Every classroom that is renovated should be provided with a ceiling-mounted projector. In the largest lecture halls, and elsewhere as required by pedagogical needs, a projector which can support dual projection or two individual projectors shall be provided. Make and model must be approved by OCLE, A/V Services, and ACCC for consistency of lamping and maintenance. Each projector shall be secured with a cable to guard against theft.

#### *Document Cameras*

Overhead projectors are being replaced with the newer models of document cameras. The document camera needs to be positioned on a cart or podium in such a way that the surface can easily be written on, as well as displaying objects or printed pages and images. Make and model must be approved by OCLE, A/V Services, and ACCC for consistency and maintenance. Each document camera shall be secured with a cable to guard against theft.

#### *Instructional computers*

Lecture halls are currently provided with dedicated computers in a podium or wall rack for instructional use. Newly renovated rooms should be provided with wireless keyboard and mouse to allow the greatest mobility for the instructor. Make and models for computers shall be approved by ACCC. Discussion classrooms generally shall be designed for laptops to be carried in by the instructor rather than having dedicated computers in the room.

#### *Other media*

Dedicated combination VCR and DVD players are currently housed in audio-visual podiums. However, VCR players are being phased out and in the future will only be available for "check out" from A/V services for plugging into A/V podiums. Microphones built into the podium and wireless mics shall be provided for instructors in any classroom designed for more than 50 students. Assistive listening (using infrared technology rather than FM) shall be provided in all renovated lecture rooms. Finally, a dedicated spotlight with individual switching for a sign language interpreter shall be provided in the instructional area of lecture rooms.

#### *Student furniture*

Classroom furniture shall be selected with attention to layout and capacity of the room, accessibility, student comfort, appearance, durability and maintenance, and exchange with other classrooms. Specialization in general use classrooms should be avoided as much as possible. All furnishings must be selected from vendors that provide discounts to the State of Illinois, and purchased directly by the project manager from Facilities Management or the Office for Capital Programs. All furnishings for general use classrooms must be approved by the Office of Campus Learning Environments.

Recently renovated fixed-seat classrooms have used the Piretti chair from KI, Inc. This chair was already widely distributed in campus classrooms, and its continued use affords consistency. The chair provides comfort through a hinged back that adjusts to individual users. Tablet arms shall be provided for left-handed students at about 10%.

Fixed-seat rooms shall have designated areas distributed in several locations for students in wheelchairs. Height-adjustable tables (Allsteel GetSet) shall be provided at those stations. Sled-based chairs may be placed at these locations when no student in a wheelchair is using them. There shall be a sign assigning priority to students with accessible needs mounted at the corner of the table. Location of accessible student stations to be approved by the Office for Access and Equity and the Disability Resource Center. The number of accessible tables in classrooms shall be according to

ADA.

Padded and upholstered seating is desirable for student comfort and for visual effect. However, the expense and maintenance of upholstered seating is far more demanding, and its lifecycle is shorter. Therefore, upholstered seating must be used strategically. Lecture rooms with stepped or sloped floors and fixed seats are used by the greatest number of students and are subjected to the most abuse; therefore, these rooms shall have polycarbonate seats. Upholstered seats should be considered only in sled based chairs in discussion and seminar rooms with flat floors. Fabric on seating should be treated to extend life and ease maintenance. Additional attic stock chairs should be ordered and stored by Facilities Management so that badly damaged seats can be replaced over time.

Level-floor classrooms with mobile furniture should be furnished with tables and chairs. Individual tables should be avoided. Tables for two (60" length) are optimal for ease of movement and setting up, with a minimum width of 20", while 24" width is preferred. (As a rule of thumb, every student shall have 26" of length without interference from table legs.) Tables on casters that nest when folded out of the way are recommended. Chairs on a sled base afford students mobility and comfort. They also stack or nest for alternate configurations of the room.

Students need coat hook strips in each classroom to avoid the crowding and clutter caused in winter by coats and bags.

#### *Instructor furniture*

Large multi-media classrooms have a podium with the electronic controls and some components built-in. In addition to controls for room-based technology, the top of the podium must have sufficient space for a laptop and lecture notes. When possible, podium provided in new renovations should be fully accessible.

If components are in wall racks or located elsewhere in the room, then a lectern for standing delivery shall be provided. Each classroom shall have either an A/V podium or lectern.

In addition, every classroom needs a table and chair for the instructor. In newly furnished classrooms, the finishes on the instructor's furniture shall match the rest. Desirable dimensions for the instructor's table is 24"-30" wide x 60" long, but where space is limited 48" long is allowable.

#### *Clocks*

An electronic clock shall be provided in each classroom and be mounted on a wall visible from the main instructional wall.

#### *Signage*

Provide signage which meets ADA requirements and UIC's standards.

Provide signage inside the classroom with information on whom to contact if an issue arises in the classroom.

Provide signage on the corridor side of classroom doors with info on whom to contact regarding access to the room.

#### *MEP/FP Systems, General Requirements*

HVAC, Electric, and Data systems should be designed based on the assumption that students will bring portable, laptop computers to classrooms and between 50-100% of students will be utilizing the laptops at peak times.

Design of MEP systems should meet or exceed requirements in the

## University's building standards

### *HVAC*

Existing HVAC systems cause much frustration due to thermal as well as acoustical issues. Rooms suffering extreme heat or cold may need to have the airflow adjusted or have devices installed locally to temper the air.

New HVAC systems should be designed for proper zoning, monitoring, and temperature control. Perimeter heating and cooling should be located close to exterior walls for comfort of occupants. Major ductwork should be located in corridors, around perimeter of classrooms, or in the space between structural members in order to maximize ceiling height in classrooms and especially in projection zone. Any HVAC system should take into consideration that this is a classroom environment and therefore needs to be very quiet. Mechanical units, when possible, should be located outside the classroom to minimize noise and provide for access without disturbing the learning environment.

### *Electrical*

Infrastructure should be installed in all renovated classrooms to support the installation of an audio-visual podium and a ceiling mounted projector in the future.

In addition to wall outlets, several flush-mount floor outlets should be provided in each classroom for use by students with laptop computers. There should also be one outlet provided at the instructional area for either an audio-visual podium or faculty member's laptop and one outlet for the ceiling mounted projector.

Conduit pathways should be organized to minimize visual impact.

### *Technology*

Infrastructure should be installed in all renovated classrooms to support the installation of an audio-visual podium and a ceiling mounted projector in the future.

Every renovated classroom shall have the capacity for wireless internet-based instruction. Even in rooms that have been upgraded with wireless access, the instructional area and projector must each have a port for hardwire connection to the internet. Wall data ports should require authentication and make it easy to configure Ethernet connections. Conduit pathways should be organized to minimize visual impact.

## **Appendices**

### **Management of the guidelines**

Principle campus units with responsibilities for classrooms and classroom projects

#### Academic Affairs

Office of Campus Learning Environments

Office of Classroom Scheduling

Center for Teaching and Learning

Academic Computing and Communications Center

#### Facilities Management

Audio-Visual Services

Operations and Maintenance

Service Desk

Small Projects

#### University Police

Office for Capital Programs

Faculty Senate, Building and Grounds Committee

Creation, review, and revision of the guidelines

These guidelines have been drafted by the Office of Campus Learning Environments in consultation with the units listed above and with reference to the UIC Strategic Thinking. Changes in facts, additions, or other revisions can be submitted anytime as needed, and the document will be updated as needed by the Office of Campus Learning Environments.

Review of construction and renovation in or adjacent to classrooms  
 All projects involving centrally administered classrooms should include the director of Campus Learning Environments on the project team in order to assure that the design of classrooms is approached in a uniform way with consistent objectives reflecting the institutional aspirations stated in the Strategic Thinking and the operational systems by which they are constructed, used, and maintained.

Projects that are planned in areas adjacent to classrooms should also include the director so that the interests of the classroom integrity can be adequately represented.

Projects involving classrooms that are not centrally administered may choose to involve the director as a consultant.

**Classroom renovation project checklist**

Who is funding the work?

- UIC administration
- Academic department or college
- Both

Who is responsible for maintenance and repair of equipment and furnishings?

- UIC administration
- Academic department or college
- Both

Who will control access to the room (whether keys or codes)?

- UIC administration
- Academic department or college
- Both

Who will control the scheduling of the room?

- UIC administration
- Academic department or college
- Both

If any of the answers to the above questions are “both” or if any question is answered differently than the others, the project administration is more complicated, and it is advisable to initiate it with a memo of understanding so that the split of responsibilities is clearly articulated and is readily available over time. MOU’s will be maintained in the Office of Campus Learning Environments.

If any answer to the above is ‘UIC administration’ or ‘both,’ then these guidelines must be utilized for the project and the administrative contacts involved in the planning and execution as indicated within.

**Principal administrative contacts 2006**

Name / Issues	Unit	Net ID	Phone
Wendy Wagoner <i>Planning, problem-solving</i>	Campus Learning Environment Academic Affairs	wendy	35121
Peggy McDonald <i>&gt;Scheduling, access, utilization</i>	Classroom Scheduling Academic Affairs	pegmc	33641

Michael Michela	Teaching and Learning Center	mmichela	50511
<i>Instructional media, planning, use</i>	Academic Affairs		
Caryn Bills	Access and Equity	cabw	38145
<i>Accessibility planning</i>			
Roxanna Stupp	Disability Resource Center	rstupp	32183
<i>Accessibility, user difficulties</i>	Academic Affairs		
Cynthia Hererra Lindstrom	Academic Computing and	cynthiar	32495
<i>Computer hardware and software</i>	Communications Center, AA		
Arnie Zullo	Audio-Visual Services	arnie	62751
<i>A/V equipment, maintenance, repair</i>	Facilities Management		
Vy Milunas	Small Projects	vmilunas	31361
<i>Construction, Smaller projects</i>	Facilities Management		
Boyd Black	Capital Programs	boydb	60605
<i>Construction, larger projects</i>	Administrative Services		
Winston Atwater	Operations and Maintenance	watwater	56533
<i>Maintenance, building operations</i>	Facilities Management		

### Related documents

These guidelines are general and procedural more so that prescriptive. All applicable building and life safety codes shall be adhered to, as well as the UIC Building Standards (Office for Capital Programs, [www.ocp.uic.edu](http://www.ocp.uic.edu)).

There are two areas in which good classroom design practice should be expected to exceed code requirements: room occupancy (or capacity), and accessibility. In both cases planning should begin with the parameters established by the Office of Public Safety (room capacity based on egress issues) and the Americans with Disabilities Act Accessibility Guidelines. However, UIC has made a commitment to a high-quality learning environment, which means less crowding in classrooms and the accommodation of students with accessible needs whose equipment requires more space than the ADAAG minimums. The number of students in a classroom will naturally decrease as a more generous area is assigned for interactive instruction and as the furnishing that better enables collaborative learning is selected. Guidance on expansion of the clearances and space allotments for wheelchairs and other accommodations that exceed the legal requirements will need to be obtained from the Office for Access and Equity together with Disability Resource Center. The resultant lower capacity of the room should not be viewed as "lost seats," but as improved teacher:student ratios and greater flexibility in the teaching and learning styles accommodated.

### Reference materials

The following documents from other institutions were consulted in the formulation of these guidelines. UIC's particular administrative and physical environments called for a unique approach, but these were nonetheless useful tools and can provide some best practices in more detailed terms if that becomes desirable.

University of Melbourne Teaching Space Design Guidelines  
[www.infodiv.unimelb.edu.au/tss/enhance/TSDG.html](http://www.infodiv.unimelb.edu.au/tss/enhance/TSDG.html)

University of Minnesota Appendix DD-Requirements for University Classrooms  
[www.cppm.umn.edu/standards/AppendixDD.pdf](http://www.cppm.umn.edu/standards/AppendixDD.pdf)

University of Cincinnati Design Guidance: Learning Environments  
[www.uc.edu/architect/documents/design/learnenv.pdf](http://www.uc.edu/architect/documents/design/learnenv.pdf)

Penn State Classroom & Technology Design & Construction Minimum Requirements

[clc.its.psu.edu/classrooms/Design/design.pdf](http://clc.its.psu.edu/classrooms/Design/design.pdf)

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