

# Learning Spaces Standards

May 2018

## Introduction

William Paterson University has a variety of Learning Spaces on the main campus and at our Valley Road location. These spaces are designed, supported, maintained, updated, and managed by three divisions of Information Technology:

Instruction and Research Technology (IRT) manages the design, installation, maintenance and support of new and renovated spaces; Enterprise, Network, and System Services handles networking and wireless service; and User Services oversees the management and support of Computer Labs. IRT works with Facilities/Plant Operations on lighting, power, and furniture. The Learning Spaces Committee, comprised of the CIO, IT/IRT staff members, representatives of Facilities/Plant Management, the Registrar's Office, and faculty from a variety of disciplines, discusses decisions and assists with planning for new Learning Spaces as well as those in need of renovations and upgrades. This committee is chaired by the Director of IRT.

This document describes and explains standards for each of these types of spaces, including current equipment, lighting, furniture, and other features, as well as estimated costs.

William Paterson has three categories of Learning Spaces:

- A: Formal Learning Spaces
  - A.1 Standard Classrooms
  - A.2 Tiered Classrooms
  - A.3 Auditoriums
  - A.4 Seminar Rooms
  - A.5 Active Learning Classrooms
- B: Computer Labs
  - B.1 Public Computer Labs
  - B.2 Departmental Computer Labs requiring specialized hard- and/or software
- C: Informal Learning Spaces
  - C.1 Group Study Rooms
  - C.2 Other Informal Spaces in Public Areas (Extended Learning Areas)

## Fundamental Concepts of Learning Space Design and Support

### Fundamental Concepts

- Learning Spaces should support the activities of effective learning, emphasizing flexibility for collaborative and active learning.
- A clear and consistent process must be in place so that space allocation and configuration is appropriate to the needs of the University.
- Stakeholders as represented on the Learning Spaces Committee (CIO, IT/IRT staff members, representatives of Facilities/Plant Management, the Registrar's Office, and faculty from a variety of disciplines), and, if possible, students, should be involved early on in the design process.

- Technology should be easy to use for faculty and students so that they can focus on course content, teaching and learning.
- All mediated classrooms will be equipped to present course materials so that they are clearly visible and audible to all in the room. HD projection and high-quality sound systems are standard in William Paterson classrooms. It should be possible, with nominal training, reasonable preparation, and within the time allowed between classes, to project media from the installed classroom computer, laptop, document camera or optical drive, and to switch between these sources quickly and easily using standard control panels.
- Standardization across mediated classrooms allows for users to be familiar and comfortable with technology no matter where their classes take place. Instructors need to find familiar configurations whenever they are assigned a mediated classroom.
- A larger number of cost-effective mediated classrooms is preferable to a small number of expensive technology showcase rooms. Cost-effectiveness is achieved through standardization.
- “The classroom of the future will be optimized for sets of functions and will be flexible for changing requirements.” (EDUCAUSE Review, July/August 2005)
- Campus spaces may be renovated every 15 to 20 years. Installing conduit and cabling that can accommodate future needs expands flexibility for changes between major renovations.
- Because students study in Learning Spaces across campus, security and accessibility must be balanced. All unscheduled Learning Spaces will be secure while also kept as accessible as possible.
- A responsive and effective support infrastructure for faculty, staff, and students must be established and maintained. Users must be able to trust that equipment will work as expected, and that problems will be solved quickly if there is a problem.

### [Alignment with EDUCAUSE Learning Spaces Rating System, Version 2 \(June 2017\)](#)

The following categories come from the EDUCAUSE Learning Spaces Rating System, Version 2, published in June, 2017.

#### [Integration with Campus Context](#)

The guiding principles for William Paterson Learning Space Design and Support are: continual research on state-of-the art equipment and pedagogy trends; alignment of classroom design with University and IT strategic plans as well as current pedagogical trends in higher education; painstaking installation; professional control system programming; future-proofing; pre-emptive troubleshooting and maintenance; planned upgrades on a regular cycle; excellence in pedagogical and technology; remote and on-site in-class technology support; and adherence to the standards as described by this document.

All media instructional classroom equipment will be designed and installed in such a way that is consistent with the scale of the room and in keeping with appropriate technology and aesthetic design standards as outlined in this document. Equipment configurations must be designed and installed so that all units can be easily accessed for maintenance or replaced when needed. To facilitate a rapid change out, a sufficient quantity of spare equipment is maintained in IRT. In order to maintain classroom safety, a small reduction in seating capacity may result with the installation of smart classroom systems.

## Planning & Design Process

Instruction & Research Technology (IRT) is responsible for the design, standardization, implementation and support of classroom technology in new and remodeled classrooms throughout the campus. Installing technology equipment permanently in classrooms and providing remote and on-site maintenance and support reduces costs and down time. New building projects and building renovations should follow a standard process to ensure that rooms are technology-ready. It is important to note that purchases not approved or administered through IRT disrupt standardization efforts and may not be supported.

In the event that funding will not allow for the installation of all the necessary presentation equipment for every room at time of construction, appropriate measures must be taken so that standard technology equipment can be installed later on, as funding permits. It is equally important to establish criteria for the environment in the classroom such as data, lighting and acoustics. Technologies will change, but fundamental building blocks will remain constant. For example, new wireless projection technology will still require connectivity between teaching stations, audiovisual sources and a ceiling or wall mounted projector/display.

Approval of the Learning Spaces Committee is required for any work done outside the scope of this document.

## Support & Operations

Faculty members teaching in mediated classrooms are supported by IRT Classroom Technology Support and Media Services. These two areas conduct training on equipment and provide in-class troubleshooting. Equally important are the faculty workshops in support of pedagogy best practices for effective use of classroom equipment provided by the IRT Center for Teaching with Technology.

Equipment purchases are funded through the IRT budget so that standards, responsibility and cyclical replacement costs can be facilitated. Following initial capital investment, a replacement fund of at least 5% of the value of the classroom hardware is needed each year for equipment renewal and replacement. Continuing replacement reduces the labor-intensive costs of repair of older equipment and ensures reliability of classroom technologies. Furthermore, installing new equipment regularly supports the image of the University as having state-of-the-art equipment and facilities.

## In-Class Support

The phone number to call for in-class assistance is posted prominently. Instructors can call for immediate help for any issues with classroom equipment, and often the issue can be resolved remotely. In the rare instance that a support staff member is required to go to the room, they are dispatched immediately to solve the problem with as little disruption of the class as possible.

## Electrical Outlets and Networking

In new construction, there should be enough power outlets and charging stations to accommodate student laptops or other portable devices. Wired network access is provided for instructor presentation systems, and wireless access is preferable for student laptops and mobile devices. There should be adequate wireless coverage throughout all Learning Spaces, as well as technology-ready infrastructure (conduit) to support flexibility for improvements and upgrades in the future.

## Security

As stated elsewhere in this document, security and accessibility must be balanced wherever technology equipment is present on campus. There are inherent risks in providing access to the classroom/Learning Spaces, however security measures should not interfere with user access to use of educational functionality of the room. Currently, most equipment is locked in classroom podiums (projectors are attached to locking ceiling mounts). On-line electronic door locks will be included in renovations of existing Learning Spaces, if possible, and in all new construction, making access control and flexibility far easier than in the past.

## Environmental Quality

### HVAC and Noise Level

- The HVAC system shall be designed to maintain a temperature range of 70-72 degrees year-round. Humidity shall range from 40-65% relative humidity throughout the year. Above-ceiling mechanical equipment needing routine service should be installed in a location outside the classroom. This allows service without disrupting classes.
- Disruptive noise is the single most prevalent complaint made about classroom environments. Therefore, careful attention must be paid to acoustics in the design of the classroom. Noise related to the HVAC system is transmitted to the classroom in three ways:
  - Noise can be transmitted from areas adjacent to the classroom. This noise can travel through doors, lighting fixtures, return air paths, plenum spaces and return ductwork.
  - Noise can be transmitted from the classroom diffusers. This noise can be air noise and radiated noise from the HVAC equipment.
  - Noise can be transmitted from adjacent HVAC equipment. This is frequently caused by the location of mechanical rooms, location of fan-powered terminal units and location of ductwork mains.

- Noise Criterion (NC) ratings for general classrooms shall be NC 30 or less and for large lecture halls, NC 25 or less. Individual HVAC equipment such as fans, ductwork and diffusers shall have rating not exceeding NC 25 throughout the load range.

### Acoustics

The front wall may reflect sound to the rear of the room. If a reverberation problem occurs, applying acoustical material to the walls in the rear of the room should reduce the problem. Walls in the classroom should have a minimum Sound Transmission Class (STC) of 50. The rear wall of any large classroom (over 75 seats) should have an acoustically absorbent finish. Side walls in large lecture halls should not be parallel and they should have a rough or textured surface. Noise levels should not exceed NC 30 for general classrooms, and NC 25 for large lecture halls and auditoriums.

For new construction, the following is recommended:

- Acoustic consultants should be hired for large room designs.
- HVAC system designs should focus on reducing ambient noise.
- Walls should extend to structure above ceiling to provide sound isolation.
- Folding or moveable walls should be avoided because of sound leakage.
- Ceilings in small classrooms with fewer than 50 students should be entirely acoustical tile.
- The surface of the ceiling must be designed to accommodate the required acoustical properties of the room. The ceiling should include significant amounts of hard surface material coupled with acoustical tile.
- The ceiling should act as a sound mirror, reflecting sound downward to blend with direct sound.

### Flooring

Carpet tiles should be considered where appropriate. If carpet cannot be installed under seats in fixed classrooms due to maintenance, then the concrete floors should be free of cracks and defects and should be sealed.

### Accessibility

Rooms should be handicap-accessible and contain a minimum of 10% left-handed tablet arms on seats. Flexible table height is required to accommodate wheelchairs. Assistive listening transmitters should be installed in large rooms with audio distribution systems. William Paterson University adheres to the Americans with Disabilities Act (ADA) for new construction and renovation projects. Working closely with the Accessibility Services, accommodations are taken into account in all Learning Spaces.

### Lighting

- Formal Learning Spaces will have lighting controls such that it is possible to control the amount of light in the room at all times, day or night, from a location which is readily accessible to the instructor. It should be possible to adjust the lighting to permit both comfortable work levels and display viewing for students. Emergency lights should be placed as far away from the projector or screen as possible. Ideally, lighting will be zoned from front to back of the room to be able to switch off light in the projection screen area. Special room lighting requirements or exceptions to the standard configuration should be determined by IRT in consultation with Physical Plant and appropriate university representatives and approved by the Learning Spaces Committee.
- For new construction the following is recommended:

- Appropriate lighting for glass boards.
- Operation of lighting should be integrated into the touch screen control panel or located near the teaching station.
- Fluorescent ballasts that operate at frequencies greater than 30 Khz can interfere with infrared controls and should be avoided.
- Note-taking should be possible with dimmable incandescent, LED, fluorescent lights, or switchable floor/ceiling fixtures.
- Motion sensors shut off the lights in a space after a specified period of inactivity. This reduces electrical consumption by assuring that lights are off when the space is not in use. When installing motion sensors in classrooms, timers should be to maximum length to avoid accidental light shutdown during relatively low-motion activities like testing.
- Studio fluorescent lights should be used in interactive video rooms such as the Presentation Training Classroom.

### Window Coverings

- Blinds are the recommended for window coverings in Formal Learning Spaces. They can be manual if they are easily accessible and if there aren't many windows in the room. If windows are too high to reach and/or are too numerous, then the window treatments should be motorized and capable of being controlled by the touch screen control panel.
- Motorized shades are not recommended if there are windows that can be open behind the shade. Use of light diffusing shades on a roller is recommended. Blinds should be room-darkening for optimal viewing of projection screens or displays.
- Window treatments should have a non-reflective matte finish.

### Layout & Furnishings

Classroom layouts are determined by room categories. Standard Mediated Classrooms are generally designed to accommodate the instructor teaching from the front, however some of these rooms have more flexible/moveable furniture than others to allow for students to work together more comfortably. Auditoriums are always front-oriented with fixed seating. Active Learning Classroom layouts provide the most flexibility so that there is ample space to reconfigure according to group work and other in-class activities.

Currently, IRT funds podiums, lecterns and credenzas, but no other furnishings. IRT and the Learning Spaces Committee have input on the furnishings, depending on the room category. For example, IRT must participate in the selection of furniture of Active Learning Classrooms.

### Technology & Tools

#### *Standard Technology Equipment*

The current model for mediated classrooms includes a projector and screen or flat-panel display, and a permanently located technology podium that houses a computer, optical drive for CD and DVD content, document camera, cables to display laptops instead of the installed computer, and a sound system. It includes a touch screen control system that allows instructors to power the system on and off, lower and raise the screen, direct different sources to the projector or display, and control volume. Control systems are connected to a remote monitoring system called Global Viewer Enterprise (GVE). IRT staff can login remotely to view the status of classroom equipment and provide immediate assistance when

an instructor calls with an issue. The GVE system is also used for diagnostics and routine equipment checks to prevent/fix issues that would otherwise impact classes.

The touch panel classroom control system allows for data exchange between the control system and the Media Services department and allows for remote management, security and control of room technology equipment and functions. With this type of technology available to instructors, in a consistent and easy-to-operate teaching station, they will find classrooms more familiar therefore be more likely to use these teaching tools.

### *Screens and Flat-panel Displays*

Projection screens are installed for front projection and are oriented towards the center of the seating area in all Mediated Learning Spaces. Screens shall be located and sized so that students in all seats can easily see the entire projected image without discomfort or eye strain.

Screen Size:

- Minimum Height: 20% of distance to seat farthest away from screen
- Minimum Width: Determined by aspect ratio of projected images. Industry standard is a 16:9 aspect ratio. For example, if the distance from the screen to the seat farthest away is 36 feet, then the projected image should be 7.2 feet high and 12.8 feet wide. In this case, the dimensions of the installed screen should be 7.5 feet high and 13 feet wide.

As an exception to the standards in this document, Smartboards are installed instead of screens in some classrooms in the College of Education (Valley Road).

Flat panel displays are becoming increasingly popular, and there are a number of new or upgraded mediated classrooms with these displays installed instead of projectors and screens. Display sizes are determined by the size of the room.

### *Writing Surfaces*

Glass boards and white boards are recommended over blackboards because chalk dust can damage technology equipment, which is costly and time-consuming to repair or replace. Projection screens should be mounted so that they do not entirely block the writing surface. If possible, writing surfaces should be installed on multiple walls.

## Learning Space Categories, Descriptions, Equipment Specifications and Estimated Costs

### A. Formal Learning Spaces

EDUCAUSE defines a Formal Learning Space as "...a classroom, designed to accommodate all members of a course in face-to-face meetings scheduled by a central office, such as the registrar."<sup>1</sup> These are currently comprised of Standard Mediated Classrooms, Tiered Classrooms, Auditoriums, and Active Learning Classrooms.

---

<sup>1</sup> EDUCAUSE article online

### *A.1 Standard Mediated Classrooms (Main Campus 197, Valley Road 36)*

Standard Mediated Classrooms are forward-facing, with a projection screen or flat-panel display at the front of the room and rows of tables and chairs for students. Some of these classrooms have moveable/flexible seating, while others have tables and chairs that are moveable but not as readily as other rooms. All of Formal Learning Spaces have projection to a screen or display, a podium with a computer and optical drive, document camera, and a control panel which is used to power the system on and off, lower the screen, direct different sources to the projector or display, and control volume. Virtually all mediated classrooms have one or more glass boards, which are the current standard in higher education. As stated above, lighting, power, wireless capacity, and furniture are part of all classroom design such that all elements work together to provide environments conducive to teaching and learning.

#### *Equipment Installed in all Standard Mediated Classrooms*

- Projection - either Projector and Screen or Flat-panel Display
- Touch screen classroom control panel
- Podium
  - Computer with optical drive
  - Video and audio switcher
  - Control processor
  - Document camera
  - Hardwired HDMI and VGA laptop connections
- Amplified speakers
- At least two 8' glass boards

Estimated cost of new Standard Mediated Classroom with single display: \$23,000

Cost of upgrading a mediated standard classroom from analog to HD (using existing infrastructure):  
Approximately \$11,000<sup>2</sup>

### *A.2 Tiered Classrooms (8, Valley Road)*

Tiered Classrooms have fixed seating. They are configured like small auditoriums. These have the same equipment and estimated cost as Standard Mediated Classrooms.

### *A.3 Auditoriums (8)*

Technology is the same in Auditoriums as in Standard Mediated Classrooms, with additional screens/displays to cover viewing areas. All Auditoriums have integrated microphones and fixed seating. Some Auditoriums have power built in to tables for students to charge their laptops and other devices.

Same equipment as Standard Mediated Classrooms, with the addition of:

- Higher grade projectors and screens or flat-panel displays
- Lectern (costs more than standard podium)
- Lectern microphone

---

<sup>2</sup> With the exception of classrooms in Ben Shahn and a few classrooms in residence halls, all Formal Learning Spaces have been upgraded to HD.



- Higher scale audio/video switcher

Estimated cost for Auditorium: \$30,000

#### *A.4 Seminar Rooms (Main Campus 9, Valley Road 20)*

Seminar Rooms have a similar layout as conference rooms. Based on a fully interactive model, they have a center table with chairs around it to facilitate discussion between faculty members and students.

Depending on the configuration of the room and furnishings, a data projector, screen or flat screen monitor is required. Wall plates may be located on the wall or located on a credenza for VGA, digital and audio connections for user laptop, network connection and power. In some instances a DVD player may be located in the credenza and a document camera placed on top. Ceiling mounted audio speaker are used when audio quality is important.

Wireless microphone receivers are installed in all Seminar Rooms in University, Preakness, and Hunziker Halls. Wireless microphones are available for checkout for those rooms. In some circumstances a table box may be installed, providing access to power, network, VGA and HDMI connections.

There are two kinds of Seminar Rooms, Basic and Enhanced.

#### *Basic Set-up*

- Projector and screen
- Wall plate with VGA and HDMI connectors for laptops
- Control panel (input sources only)
- Wireless microphone receivers

Estimated cost for Basic Set-up Seminar Room: \$5,000

#### *Enhanced Set-up*

Same equipment and estimated costs as Standard Mediated Classroom (\$23,000), with the addition of:

- Wireless microphone receivers
- Wall plate or table box (as appropriate) with VGA and HDMI connectors for laptops
- Credenza (instead of podium)

Estimated cost for Enhanced Set-up Seminar Room: \$25,000.

#### *A.5 Active Learning Classrooms (2)*

William Paterson currently has two Active Learning Classrooms, located in University Hall. These rooms are optimized for active learning pedagogy, which is at the forefront of teaching practices in higher education. These rooms are designed to support group work, which is a major component of active learning. In addition to the same or similar equipment as the general mediated classrooms, Active Learning Classrooms have four conference-style tables, each with a flat-panel display on the wall to encourage and facilitate screen-sharing and group work. These tables are equipped with power for charging and adapters for students to display laptops. Control panels for these two rooms are wireless and portable so that faculty can change sources from anywhere in the room. The classroom computer or any laptop in the room can be displayed on the projection screen and any/all of the displays. There are multiple glass boards in these rooms.

### Active Learning Classroom Equipment:

- 4 Flat-panel displays and receiver units
- Wall-mounted wireless control system
- Credenza
- Computer with optical drive
- Control processor
- Document camera
- Wall plate with hardwired HDMI and VGA connections for instructor
- Wireless display capability for student and faculty devices
- Amplified speakers at displays
- Glass boards

Estimated Cost for Active Learning Classroom: Approximately \$50,000

### B: Computer Labs

*B.1 Public Computer Labs (These labs can be scheduled for class meetings or testing, with the exception of L01, which is reservation-only through the Library)*

Public Computer Labs are open for student use unless reserved for activities such as testing, or occasional class meetings. The labs are managed and supported by User Services and are scheduled through IRT. L01 is reservation-only through the library. Labs are configured with Standard Mediated Classroom set-ups. For a current list of labs, please consult <https://www.wpunj.edu/it/user-services/Labs.html>. User Services maintains a live computer ability lab site at [www.wpunj.edu/ca](http://www.wpunj.edu/ca).

### *B.2 Departmental Computer Labs*

Departmental Labs require specialized hardware and/or software. They are supported by User Services, though managed by the academic Department. Some have Standard Mediated Classroom set-ups, others do not, depending on use.

### Informal Learning Spaces

#### Mediated Group Study Rooms (Main Campus 19)

There are a number of mediated Group Study Rooms on campus located in Hunziker, Preakness, and University Halls. The rooms do not require advance scheduling and are outfitted with conference tables, chairs with wheels, and flat-panel displays. They are BYOD spaces, and have all been built with or updated to wireless functionality to mirror users' laptops and other devices (tablets, smartphones), to flat panel displays. Clear instructions on how to project to the displays appear on the screens.

#### Extended Learning Spaces

These areas serve to expand the available square footage for individual and collaborative learning in both new building construction and renovations. Through creative use of hallways, niches, lobbies and areas near building columns/support, appropriate space should be outfitted for collaborative project-based work and group learning. Additionally, more charging options are being made available, with furniture incorporating power outlets, USB ports, and wireless charging pucks being installed in some areas.

## Conclusion

This update of the William Paterson University Learning Spaces Standards was completed in May, 2018. The document is reviewed and updated on a regular basis. Members of the Learning Spaces Committee, as well as other stakeholders, work to ensure that the standards are complete and up to date. Any questions about the contents of the document should be referred to Gamin Bartle, Director of Instruction and Research Technology.