

## **SECTION 12.0c**

### **CONSTRUCTION SYSTEMS AND ASSEMBLIES STANDARDS AND GUIDELINES**

#### **ADDENDUM C: CLASSROOMS AND AUDITORIA BEST PRACTICES**

##### **INTRODUCTION**

The following list of classroom and auditorium features was compiled by Academic Program Management for use in the design of teaching space. Some of the information will duplicate information in various areas within Section 12, but is repeated here for convenience. Design consultants should review the list with the user for applicability to individual projects.

##### General Purpose Classroom

- Wiring/Lighting
- Master on/off light switch by every door to the classroom.
- Lights zoned parallel to whiteboard with dimming capability
- Two rows of two-scene indirect/direct luminaires mounted perpendicular to the main teaching wall (parallel to the window)
- Dedicated luminaire is used to illuminate the whiteboard on the main teaching wall and spaced 14-15' apart
- Wireless or laptop plug-in friendly room
- Data and electrical stub up instead of stretch across floor
- Prevent interference between pendant lights and data projector
- Data and electrical capacity –transformer box as needed
- Teacher control is placed at the front of the classroom. Place teacher controls within 6" of the whiteboard for easy access.
- Install technology waist-level (but wheelchair accessible) so faculty don't have to kneel down to plug in their equipment

##### Layout

- Line of sight
- Bench/stadium seating preferred
- Back or side hall entry
- Instructor podium walk-about area

Equipment/Furnishings (see also UH Technology Infrastructure Standards, Section 13.0.

<http://www.uh.edu/infotech/services/computing/networks/network-infra-standards/>

- Largest desk tablets (laptop friendly)
- Complete blackout curtain
- Seat #s on chairs
- Faculty table/chair – table for exam collection
- Bulletin or information boards – some place to post grades/flyers/class appropriate information, e.g. periodic tables
- Maximum length of best quality whiteboards
- Wall borders and trays for boards
- If drop down screens, large enough side panels with electronic whiteboard access
- Classroom support telephone number chart by each light switch/phone
- Post basic instruction tables for lights/sound/tech system
- Default settings on equipment – all tech set-ups identical
- Cougar ICard readers – not typically used; if requested by faculty inform that there is a cost of use associated with the readers to get usage reports; if used in large room – have enough readers located inside the room and enough to avoid bottlenecks on student traffic; for general purpose rooms, consider using maglock readers on doors for security/access control.

Other

- Rooms must be Life Safety and ADA code-compliant
- Security features protecting technology and students (see also Design Guidelines Section 12 C1025 INTERIOR DOOR HARDWARE and D5030 FIRE DETECTION AND ALARM SYSTEM)

Large Auditoria (150 seats plus) -- in addition to the general purpose classroom provisions, provide the following:

Wiring/Lighting

- Spotlights for speaker area (for official presentations)
- Lighting sufficient in all student seating areas for exams

Layout

- Back and/or side hall entry
- Break-out session rooms
- Lobby area with seating
- Seating in restrooms

Equipment/Furnishings (see also UH Technology Infrastructure Standards, Section 13.0.

<http://www.uh.edu/infotech/services/computing/networks/network-infra-standards/>

Option: Projection capability to record or project the speaker during the presentation on the screens (e.g. Houston room)

- Portable microphones
- Remote control for presentations (e.g. PowerPoint slides, remote advance)

Other

- Rooms must be Life Safety and ADA code-compliant
- Security features protecting technology and students

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The following information was provided by the IT Classroom Technology group, which updates maintains, and issues the information as necessary. It is provided here to assist in preliminary classroom planning. Information below should be confirmed with University of Houston information Technology Classroom Technologies:

**University of Houston information Technology  
Classroom Technologies  
Standardized Classroom Teaching Equipment**

*(See also UH Technology Infrastructure Standards, Section 13.0.*

<http://www.uh.edu/infotech/services/computing/networks/network-infra-standards/>

This information represents the current standards in the design of AV equipping for general classrooms at the University of Houston. Technology standards are intended to provide a common, consistent and user friendly environment for Faculty, Teacher Assistant and Staff.

The goal is to install reliable systems with consistent functionality and common interfaces for all classrooms.

These goals will improve technical support and system management, resulting in reduced operational costs and faster response time for maintenance issues.

Four types of classrooms are defined:

Type 1 basic: < 50 students,

Type 2 medium: < 100 students,

Type 3 large: < 200 students,

Type 4 auditorium: 200 – 600 students.

**Type of Classrooms:**

**Type 1 (Small)**

General purpose classrooms (< 50 students) have basic standard technologies such as:

**Projector** - Ceiling mounted projector WXGA (1024X800) with minimum 4500 lumens output is required.

**Projection Screen** - A manual pull down screen (16:10 ratio) Matte white mounted on the front wall above the writing surface.

**Controls** - Extron Media Link with IP link for Global Room View.

**Audio** - Amplifier, with 4 to 6 mounted ceiling speakers.

**Wall Plate** - Computer input 1 & 2 (Laptop, Desktop) Video input and HDMI.

**Podium –**

Universal Podium Lectern to include front facing standard 19” rack rails.  
Locking rear access panel,  
Flip up side shelf (right side).

One cable access cut in rear right corner of lectern top.

One ECA Interact with 2 power cords.

Power manager with surge protection located at the top position in the equipment rack.

3 shelves lectern.

Custom rack shelf for Computer, DVD or Blu Ray,  
Empty slots covered with plan face plates

All rack mounted items are to be fastened with security screws.

Multimedia Cables- Conduit for all cables such as: Power, VGA, HDMI, Network,  
Video/Audio cables from Wall Plate to the Podium. Plenum rated cabling may be substituted as required.

**Network** - 3 Network RJ45 jacks (desk top, laptop computers and room view management).

**Electrical** - Electrical outlet to be installed close to the data wall plate, near the podium. AC power with quad plugs provided above the ceiling for Extron controls and projector.

**Equipment to be installed in the Podium.**

The following equipment is to be installed in house by Classroom Technologies group.

Desk Top Computer

DVD – (Regions Free)

**Type 2 (Medium)**

General purpose classrooms (< 100 students) have basic standard technologies such as:

**Projector** - Ceiling mounted projector WUXGA (1920X1200) with minimum 5000

lumens output  
required.

**Projection Screen** - Power screen (16:9 ratio) Matte White mounted in front wall  
above writing  
surface.

**Smart Symposium** - Device allows student to see anything that written on the  
presenters computer screen using a special pen and monitor.

**Wall Plate** – Same as GPC plus RCA audio & video in/output for recording.

And all of the items described in Type 1.

### **Type 3 (Large)**

General purpose classroom (< 200 students) has basic standard technologies such as:

**Projectors (Dual)** - Ceiling mounted projectors WUXGA (1920X1200) with minimum  
5000 lumens output  
required.

**Projection Screen (Dual)** - Power Screens (16:9 ratio) Matte White is mounted in front wall  
above writing  
surface.

**Crestron Touch Screen Control** - Control lighting, power screen, and audio etc.

**Audio** - Amplifier, Wireless Audio Receiver and Transmitter (microphone) with 6  
to 8 mounted ceiling speakers.

**Document Camera** (Optional)- displays objects or documents through projector.

**Teleconference & Mediasite** – Room to be pre-wired and programmed into the  
Crestron Controls.

**Wall Plate** – Same as GPC plus RCA audio & video in/output for recording.

And all of the items described in Type 1.

### **Type 4 (Auditorium)**

General purpose classroom (200-600 students), It has basic standard technologies  
such as:

**Projector** - XGA (1024X768) projector with a minimum of 7000 to 12000 Lumens

output required.

**Projection Screen** - Power Screens (16:9 ratio) Matte White mounted in front wall above writing surface.

**Crestron Touch Screen Control** - Control lighting, power screen, and audio etc.

**Audio** - Amplifier, Wireless Audio Receiver and Transmitter (microphone) with 8 to 12 mounted ceiling speakers.

**Document Camera** (Optional) - displays objects or documents through projector.

**Smart Symposium** - Device allows student to see anything written on the presenters computer screen using a special pen and monitor.

**Teleconference & Mediasite** - Room to be pre-wired and programmed into the Crestron Controls

**Wall Plate** – Same as GPC plus RCA audio & video in/output for recording.

And all of the items described in Type 1.

## NOTES

**Audio:** Number of speaker, it depends on the type of seating, room configuration.

**Controls:** Future room view management from remote sites. All operation controls shall be ADA compliant.

**Projector:** Multiple projectors may be required, depending on the type of seating, room configuration.

**Projection Screen:** Multiple screens may be required, depending on the type of seating, room configuration and instruction style.

**Wall Plate:** To be installed in front of classroom, opposite side of door entry, toward the corner.

**Podium:** Size of the podium depends on the type of seating, room configuration. All operate controls on the podiums are placed within ADA compliance.