

| Revision History | Date | Editor | Nature of Change |
|------------------|-----------|-------------|-----------------------------|
| Version | | | |
| 1.0 | 2/27/2024 | Heath Moore | Update of outdated document |

Scope or Purpose:

These Guidelines are intended to be used as a tool for the design and construction of new or renovated Academic Technology Enhanced Classrooms at the University of Northern Colorado. The goal of these guidelines is to help clarify the technological requirements to construct well designed learning spaces.

These guidelines are not meant to be static nor stand alone. They are not intended to establish rigid standards for the design, construction, and renovation of classrooms. Nor are these guidelines intended to be a substitute for the development of specific program requirements. These guidelines do not address room layout, room locations, room sizing, acoustics, lighting/electrical, HVAC, windows, or other infrastructure. Proper Project Management and planning will need to be completed for each individual space.

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1. General Principles

- Classroom Technology should be flexible to serve multiple users with varying teaching styles.
- The design should provide easy access to equipment for maintenance and cleaning, as well as flexibility to change equipment over time.
- The design should provide easy flow and mobility for students and instructors as well as provide space that promotes interaction.
- The design should allow for the ability to enable hybrid/distance learning.
- The technology installed should be user-friendly and operated by a lone instructor.
- The design should contain costs without sacrificing quality.
- Classrooms must be designed to comply with the Americans with Disabilities Act Accessibility Guidelines.

2. Audio Visual Technologies

A. Projectors

Objectives/specifications:

- LCD Laser projectors that do not require lamps.
- HDCP and "Crestron Connected" HDBaseT compliant.
- Minimum 5200 lumen brightness.
- Minimum 3,000,000:1 contrast.
- Minimum WUXGA (1920x1200 pixels).
- Low noise output
- Compatibility with computers, laptops and other AV components.
- Uniformly bright, clear images and excellent color rendition.
- High definition widescreen format.

Current UNC Standard Projector Models:

- Panasonic PT-VMZ51 (5200 lumens)
- Panasonic PT-VMZ61 (6200 lumens)







- Panasonic PT-VMZ71 (7000 lumens)
- Panasonic PT-RZ890 for larger rooms. (8500 lumens)

B. Projector Screens

Objectives/Specifications:

- Screen size is determined by room size.
- High-Definition widescreen format.
- Located to allow viewing from all seats and by the instructor.
- Location should not impede instructor or students.
- Matte white screen material.
- When using electric screens, they should be controllable and either wall or ceiling mounted.
- Where possible in average to small sized rooms, we prefer to install Da-Lite Interactive Dry Erase Application (or IDEA) boards.
- Multiple screens/boards for larger rooms.
- Sizing/throw distance resources include:
 - o <u>www.projectorcentral.com/projection-calculator-pro.cfm</u>
 - o www.legrandav.com/products/da-lite

Current UNC Standard Screen Models:

- DaLite IDEAboard (writeable/erasable surface)
- DaLite Tensioned Countour Electrol (electric screen)

C. Flat Panel Displays:

Objectives/specifications:

- To be used in smaller rooms in place of a projector, or in addition in certain applications.
- High-definition widescreen format.
- Size based on room size and viewing angles and distance.
- 4K Ultra High Definition capability.
- RS232 control.
- VESA mount capable.

Current UNC Standard Flat Panel Display Models:

- Samsung LED (various models and sizes)
- Smart Board 6000s Pro Series for interactive displays







D. Audio Systems:

Objectives/specifications:

- Playback sound amplification should be present with a video display in a room.
- Minimum of two speakers (left and right) to allow for stereo sound.
- Speakers should be mounted close to the ceiling.
- Speakers should be mounted at the front of the room and on each side of screens/monitors.
- Wireless microphones available where needed (lecture halls i.e. McKee L152, Lindou).
- Rooms used for music, film studies or other specialized instruction may need to be professionally designed and outsourced.

Current UNC Standard Audio Devices:

- Crestron Saros SMT6T-AW-W-T
- Shure Wireless Microphone PGX-D

E. Room Control Systems:

Objectives/specifications:

- Room control hardware must be top of the line, dependable and available.
- Touch Panels are designed with simplicity and the user in mind.
- Designed to control all the audio-visual equipment.
- Designed to control the volume, screen(s), and mute video.
- Standardized touch panels for consistency across campus, with buttons in same locations.
- Designed with flexibility for adding new equipment and upgrading equipment.
- Touch Panel user interface (GUI) built with custom UNC logos and branding.

Current UNC Standard Control System Devices:

- Crestron DMPS3-4K-150-C
- Crestron TS-770B-S Touch Panel
- Crestron AMP-X75 amplifier







F. Audio Visual Peripheral Equipment:

Objectives/specifications:

- Equipment used as a value add to assist in teaching and learning.
- High Quality equipment.
- Installed to allow ease of use.

Current UNC Standard Audio Visual Peripheral Equipment:

- Podium Computer
 - Windows Based All In One PC (Currently Dell OptiPlex 7410 All-In-One)
 - Apple iMac (Primarily in PVA spaces)
- Document Camera
 - Wolfvision VZ-3neo.UHD
 - Ipevo VZ-R HDMI and USB Dual Mode Document Camera for budget installations
- Lecture Capture Microphone
 - Yeti X Professional Multi-Pattern USB Microphone
- Lecture Capture Camera
 - Huddle Cam HC10X PTZ Camera
- Lectern
 - Spectrum Industries Media Manager Series (either Compact or Director)

G. Classroom Connectivity:

Objectives/specifications:

- To create minimum connectivity requirements for common user laptops or other peripherals, and for internet connectivity.
- To provide for calls to TSC or emergency services.

Current UNC Standard Connectivity Requirements:

- HDMI cable for connection to modern laptops.
 - We may soon need to look at USB-C.
- UNC WiFi access.
- Some rooms have VoIP telephones. This is under review.
- Power outlets in podiums to charge devices.

Guidelines for Classroom Technology Design







H. Classroom Security:

Objectives/specifications:

• To provide safety and security for students and faculty in the classroom, as well as asset tracking and monitoring.

Current UNC Standard Connectivity Requirements:

- Card Access Control System (Facilities)
- Video Surveillance Camera (Axis M3086-V Dome Camera)
- Panic buttons in rooms (Facilities and PD)