

# Guidelines for Technology Classroom Design

---

## Introduction

These Guidelines are intended to be used as a tool for the design and construction of new or renovated Technology Classrooms at the University of Northern Colorado. The goal of these guidelines is to help clarify the technology 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.

## General Principles

- Technology Classrooms should be flexible to serve multiple users with many 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 instructor as well provide space that promotes interaction.
- The Design should provide for connectivity and networking for data, voice and/or video information.
- The technology systems installed should be user friendly and easily operated by an instructor without the assistance of a technician.
- The Design should be closely coordinated with lighting and mechanical systems.
- The Design should contain cost without sacrificing quality.
- All classrooms must be designed to comply with the Americans with Disabilities Act Accessibility Guidelines.

## Audio-Visual Technologies

To keep pace with technology changes the UNC Classroom Support team should work directly with consultants/vendors to specify the equipment that meets the current criteria established by the University of Northern Colorado.

### 1. Video Projectors

#### Video Projector Performance Objectives

- Low noise output
- Compatibility with computers, laptops and other A-V components
- Uniformly bright, clear images with good resolution and excellent color rendition
- Easily accessible lamps and filters
- Interchangeable Lens for non-standard installations
- Readily available and reasonably priced lamps and replacement parts

#### Current UNC Standard Models

- Sanyo PLC-XU75 projector
- Sanyo PLC-XT25 projector
- Panasonic PT-F200 projector
- Chief Security Mounts

## 2. Projection Screens

#### Projection Screen Objectives

- Screens are to be sized according to the viewing task
- Minimum Height: 20% of the distance to the farthest seat
- Minimum Width: Determined by aspect ratio
- Located to allow viewing from all seats and from by the instructor
- Minimum distance from the screen to the closest seat is the same as the screen width in small rooms and 1.5 times the width in larger rooms
- Matte White Screen
- Electronically operated wherever possible
- Multiple screens for rooms larger rooms or when need for multiple presentations.

#### Current UNC Standard Models

- Dalite Model B (manual)
- DaLite CONTOUR ELECTROL (electronic)

## 3. LCD/Plasma Monitors

#### Monitor Objectives

- Monitors can be used in smaller rooms in place of projectors or in addition to projectors in certain applications
- For viewing HDTV images the screen height is to be 0.125X the distance to the furthest viewer. (Width to be 0.22X the distance to the furthest viewer.)
- 60" maximum size

- 42" minimum size
- HDTV 1080p
- LCD preferred over Plasma if size available.

#### Current UNC Standard Models

- LG LCD
- Sony
- Sharp

### 4. Audio Systems

#### Audio Performance Objectives

- Playback sound amplification should be present when a projector is in the room
- Minimum of two speakers (left and right)
- Speakers should be mounted in or close to the ceiling
- Speakers should be placed at the front of the room or placed to project sound from the lectern and/or screen
- Rooms used for music, film studies or other specialized instruction should be professionally designed
- Fixed microphones installed on the lectern where needed
- Wireless microphone available where needed

#### Current UNC Standard Models

- JBL 25AV speakers (pair)
- Atlas Sound FAP42TC
- Shure Wireless Microphone Model SLX-14/93-J3

### 5. Room Control Systems

#### Control System Objectives

- Designed to control all the audio-visual equipment
- Designed to control lighting, blinds and other devices where needed
- Standardized color touch panel screen layouts for easy use
- Clearly labeled buttons for rooms without touch panels
- Wall interface where applicable with power
- Centrally controlled via the UNC Network and Crestron RoomView
- Designed with flexibility for adding new equipment and upgrading equipment.

#### Current UNC Standard Models

- Crestron Touch Panel – Model TPS-15G-QM
- Crestron Control Systems – Models PRO2, MP2E, MPS-200
- Crestron Wired Keypad – Model CNX-B12
- Crestron Table-Mounted Keypad – Model IM-FTCCV-B
- Crestron Multimedia Switch – Model C2N-MMS
- Extron 8x2 Matrix Switcher – Model ISM482
- Crestron iMedia Receiver – Model IM-RXV1-M
- Crestron iMedia Wall Interface – Model IM-WCCV-M

#### 6. Audio Visual Peripheral Equipment (i.e. document camera, DVD player, computer etc.)

##### Peripheral Equipment Objectives

- Added equipment used to assist in teaching and learning
- Installed to allow ease of use.
- High quality equipment

#### Current UNC Standard Models

- Document Camera
  - Samsung Model SDP-900DXA
  - Elmo Model P10
- DVD/VCR
  - Toshiba DVR660 w/Tuner
  - JVC DRMV100B DVD recorder with VCR
- Computer
  - Dell D630 laptop
  - MacBook 13.3 inch 2.4GHz Intel Core Duo
- Audio Amplifier
  - Crestron Model QM-AMP3x80
- Lectern
  - Model based on the actual application
- Annotation
  - Boeckeler Pointmaker
- Closed Caption
- SmartBoard
  - Model based on the actual application
- Audio CD player
  - Model based on the actual application
- Turntable

- Model based on the actual application
- Audio Capture
  - Model based on the actual application
- Video Capture
  - Model based on the actual application
- Student Response System (Clicker)
  - Einstruction Classroom Performance System

## 7. Classroom Connectivity

### Minimum Connectivity Requirements

- Cat 6 Data Connections (5)
- Wireless Data Network Connectivity
- Telephone
- Coax Cable Television Connection

## 8. Classroom Security

- Door - Card Access Control System (University Standard)
- Campus Standard Video Surveillance Camera(s) (University Standard)
- Telephone (VoIP)
- Laptop Security Cable Lock
- Projector Security Cable Lock