

Colorado State University Classroom Standards

*Classroom Support Services – Academic Computing & Networking Services
Version 2019.06*

Colorado State University seeks to create world-class academic spaces that enable learning of the highest caliber. The following document encapsulates current thinking about academic technology that delivers the best in-person and online learning environments. CSU Classroom Support Services should be consulted at all phases of the design and construction of new academic spaces for interpretation of the standards defined below, and to pursue variation for innovative and creative approaches to the application of technology in the learning environment.

CSU Classroom Support Services maintains a current list of defined hardware standards, which are updated regularly as technology evolves. While this document reflects defined standards and is updated frequently, the hardware standards should be considered as always up to date regardless of the RFP process and requirements.

Hardware Standards: See the Classroom Support Services web site
<http://www.acns.colostate.edu/Services/CSS>

Note: CSU Telecom performs all data cabling installation on the campuses of Colorado State University in Fort Collins. Please refer to the CSU Telecom Building Standards for guidance and standards regarding structured cabling infrastructure.

Building Standards: <https://telecom.colostate.edu/planning/>

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CLASSROOM STANDARDS:

1 - Classroom Design & Equipment Overview:

1.1 – Description of General Assignment Classrooms

CSU classrooms are designed with consistent characteristics to make it easier for faculty to operate the classroom systems.

- Lecterns are two rack units wide with a Crestron touch screen mounted on the top panel for control functions.
- The Crestron system provides controls for all AV equipment in the room.
- Cables for laptop connection, network and any other equipment are routed through a cable nook inset into the top surface of the lectern.
- For rooms seating 50 or more, a raceway must be provided from the lectern to a practical PTZ camera placement location suitable for a lecture capture camera.
- Lecture capture rooms should be equipped with ceiling mounted microphones.
- Suspended lighting fixtures are mounted clear of the sight lines for projectors and cameras.
- All AV equipment with a network port is connected to the CSU network.
- All projectors are laser type.
- Whiteboards are installed on the front wall and sometimes also the side walls of classrooms. There must be a substantial amount of whiteboard space available to teachers even when the projection screens are fully lowered.

1.2 Large classroom, 100+ seats:

One or more motorized 16:10 powered projection screens, laser projector(s), ceiling PA speakers, ceiling and wireless microphones, lectern, touch screen control, LED monitors where appropriate. All large classrooms are lecture capture rooms; see section 1.6 for more information.

Equipment for the Large classroom:

- All video monitors must be capable of at least 1920 x 1200 resolution.
- Projectors must be laser, capable of at least 1920 x 1200 resolution. Control via CAT6A cable.
- Data projector must use industry standard (typically Cat6A STP) cable to the switcher's HDBaseT-compatible port.
- Larger rooms often have 2 (two) projectors with ability for the user to put matrix-switched different content on each.
- Where whiteboards are located behind screens, programming allows user to power off each projector and raise the screen individually to use the whiteboard. Control also allows user to raise and lower each screen individually while leaving the projector powered on to illuminate the whiteboard.

- Projection screens are powered with housings recessed into the ceiling. Screens actuate automatically with projector power and can be overridden (retracted) via lectern-mounted touch panel control.
- A two-bay lectern houses the A/V equipment unless an A/V closet is used; in that case, A/V controls, laptop connection, touch screen monitor, DVD player and document camera must still be user-accessible and located on the lectern.
- Touch-screen monitor shall be mounted on the desktop with mount located centrally on the lectern desktop to allow full range of motion. Mount shall be adjusted to eliminate 360-degree rotation which can damage connecting cables and monitor connectors.
- Monitor cable installation will include strain relief to protect the cables and the monitor connections.
- Additional large screen (supplemental) monitors may be required around the room for breakout group sessions. Need for monitors is determined on a room by room basis in design phase.
- Each supplemental video monitor shall have a wireless presentation device, and wall plate HDMI connections shall also be provided adjacent to each monitor.
- Each supplemental video monitor shall be connected to the CSU Network.
- Each supplemental monitor output and input shall be routed to the room matrix switcher to allow display of any source on or from any source to any display.
- Display sources located in/on the lectern:
 - Laptop (HDMI output and RJ-45 network connections are required)
 - Document camera
 - Blu-Ray player with wired network connection and
 - Touch screen monitor for computer.
 - Wireless connection device mounted inside lectern.
- Two CAT6A STP cables must be run from the lectern to a practical camera placement location suitable for a PTZ camera.
- There will be one or more ceiling mounted digital microphones depending on the size of the room.
- The lectern shall have one wireless microphone system; output is to be fed to room PA and any recording or lecture capture system.
- Crestron DMPS unit with appropriate switching capacity for the equipment installed, with Crestron touch panel mounted in lectern top.

Auditorium installations often use additional matrix switchers and audio equipment. These installations require additional A/V rack spaces which are normally provided in an AV closet location.

1.3 Medium Classroom: 50 - 100 seats

16:10 powered projection screen, projector, touchscreen control on lectern, ceiling speakers for playback. These rooms are to be lecture-capture ready, with rough-in to support installation of PTZ cameras and ceiling-mounted microphones.

- All video monitors must be capable of at least 1920 x 1200 resolution.

- Projectors must be laser, capable of at least 1920 x 1200 resolution. Control via CAT6A cable.
- Data projector must use industry standard (typically Cat6A STP) cable to the switcher's HDBaseT-compatible port.
- Projection screen shall be powered, with mount recessed in ceiling.
- Additional large screen (supplemental) monitors may be required around the room for breakout group sessions. Need for monitors is determined on a room by room basis in design phase.
- Each supplemental video monitor shall have a wireless presentation device, and wall plate HDMI connections shall also be provided adjacent to each monitor.
- Each supplemental video monitor shall be connected to the CSU Network.
- Each supplemental monitor output and input shall be routed to the room matrix switcher to allow display of any source on or from any source to any display.
- A two-bay lectern houses the AV equipment.
- Crestron DMPS unit will be installed with appropriate switching capacity for the equipment installed and Crestron touch panel mounted on lectern top.
- Wireless presentation device outputs shall be connected to the DMPS control unit or matrix switcher for classroom display.
- Wireless microphone as specified above may be installed depending on design.
- Ceiling microphone may be installed depending on design.
- PA speakers may be wall or ceiling mounted depending on room design.

If Medium classroom will have lecture capture, SEE 1.6 FOR LECTURE CAPTURE SPECS.

1.4 Small Classroom: Fewer than 50 seats

- Specifications and equipment are same as medium classroom.
- Lecterns may not be used in some rooms that are small enough to double as conference rooms; in those cases, the Crestron touch panel will normally be placed on a table.
- No wireless microphone is needed in small classrooms unless lecture capture is to be installed. If lecture capture is to be used in the room, a wireless QLX series microphone (belt pack and lavalier mic) and charger as specified above are required.

If Small classroom will have lecture capture, SEE 1.6 FOR LECTURE CAPTURE SPECS.

1.5 Conference Room

- Most conference rooms seat 6-12 people and use a video flat panel rather than a projector and screen. Standard video display is a wall-mounted video monitor, 65" or larger, capable of at least 1920 x 1200 resolution.
- Lecterns are generally not used in conference rooms, but there are exceptions. Check with CSU Classroom support to confirm.
- Crestron controls may be used if the amount of equipment to be installed justifies it; this decision is made on an individual room basis.

- Regardless of the control system, there must be a means of turning displays on and off and selecting display inputs without using buttons on the monitor or a TV remote control.
- Connections to the monitor are generally routed via HDMI cable from the conference table area to the monitor.
- The video monitor shall be connected to the CSU Network.
- If not routed through a floor box, at least two HDMI connections to the monitor shall be enclosed in a floor box, or shall be provided on a wall plate adjacent to the monitor.

1.6 All rooms with Lecture Capture function, any size:

- All rooms of any size should be roughed in for lecture capture. All rooms seating more than 50 students shall be fully equipped with lecture capture including microphones, camera and connections for digital recorder.
- Each room will have a PTZ camera mounted on the wall opposite the lectern and presentation screen; the current model is
- A CSU network port and an AC power outlet shall be located next to the camera.
- There shall be two CAT6A cables run between the camera mount and the interior of the lectern, with HDMI transmitter/receiver units on one cable for the camera signal.
- HDMI connections for the camera and for the video sent to the room projector shall be provided inside the lectern.
- Program audio out from the DMPS unit to a 1/8" jack shall be provided for the lecture capture device.
- The audio for the classroom and ceiling microphones must be programmed as a constant/line level output, and must not mute to the lecture capture recorder when the mic is muted in the room PA system.
- Lights in the room shall be mounted so as not to obstruct the camera view of the presentation area.
- Ceiling mounted whiteboard lights are strongly discouraged. If they are used, they must not hang down from the ceiling far enough to intrude into the camera view or the projector image path.

2 - Standard Lectern Design:

Fixed lecterns are standard.

Classroom Lecterns

When lecterns will be included in the design of a room, all AV control equipment should be located within the lectern. Absent a lectern, AV equipment should either be housed within an in-room equipment rack, or in a dedicated AV systems room within allowable distance.

CSU classrooms use a two rack-bay wooden lectern. Each room is configured to be a user-friendly teaching station with an intuitive touch panel control system designed with ease of control over media sources. Current lectern suppliers: CSU Facilities or Growling Bear Company of Greeley CO: 1-970-353-6964. **Note:** CSU is willing to consider accessible lectern options – please consult with Classroom Support Services when specifying accessible lecterns in designs.

Lecterns will have a document camera mounted on the lectern top surface on the right side. All lecterns will have removable panels (normally hinged doors on the back side) to provide full access for service and maintenance.

(See Section 7.1 for lectern electronics) Open spaces in any rack shall be filled with blank metal panels to block user access to the interior rack space. If the electronic equipment fills only one rack, the open side of the lectern shall be equipped with rack rails on the front, to which a dark-tinted Plexiglas or Polycarbonate panel covering the open enclosure shall be mounted. If the electronic equipment also requires all or part of the second rack space, a full front and back rack unit shall be installed with blank metal panels blocking access to the unused rack spaces.

No immovable objects may be located within 30 inches of the access doors or within the access path for AV electronics to protect access for maintenance.

Lecterns should be supplied with power and conduit to support data and AV equipment connectivity directly from below the lectern.

3 - Lectern power and data requirements

- **Power strips mounted to the rear of mounted equipment with surge protection** appropriate to the number of devices in the lectern should be provided in each lectern. Two open and available powered outlets shall be provided for future equipment installation.
- **Two 4-Plex 120V AC outlets per side** (on the inner walls of the lectern) coming up through the rear of the lectern on flex from a combined 20 amp circuit.
- One **network cable** shall be provided from the in-lectern switch to the top surface of the lectern for user connectivity.
- **Locks:** lectern doors shall be equipped with CompX brand lock sets, part # C8053-C415A-14A, using key C415A.

4 - Equipment Specifications:

4.1 - Display Input Sources - source switching specifications: The input signal path must handle a wide range of input resolutions up to 1920x1200.

Video Outputs:

- Minimum four HDMI outputs to serve room display, lecture capture, touchscreen monitor on lectern, and one spare. All shall be HDMI scaled outputs. More may be required depending on room design.

Audio Outputs:

- One line-level, variable stereo program output from analog and HDMI sources, combined with variable mic output to power amp.
- Microphone –two outputs, wireless mixed and level controlled.
- One audio output for Echo360 Pod recorder with program audio integrated on the HDMI video input to the recorder; one fixed mic audio output is required with a 1/8" analog plug for the mic input on the Echo360 recorder.
- One additional fixed stereo program (mic plus all other devices) output for lecture capture. This output will have program and mic audio.
- In lecture capture rooms, mute functions must not mute the program or the mic audio feed to the lecture capture device.

5 – Video, Data Projector and Lighting Specifications:

Projector Design Specifications:

CSU uses only laser projectors at wide screen (16:10) resolution. Wall displays are usually 16:9.

- HDMI input must comply with the latest HDCP specifications.
- Ethernet connection is required on all projectors and wall displays.
- Crestron connection capability is required on all projectors.
- Projectors shall use the latest LCD or DLP technologies available on the market, capable of 1920 x 1200 resolution. Wall displays are commonly 1920 x 1080; not 1920 x 1200.

Lighting:

- Ceiling mounted whiteboard lights are strongly discouraged. If they are used, they must not hang down from the ceiling far enough to intrude into the camera view or the projector image path. They must also be capable of being turned off from the lectern separately from all other room lighting.
- **No suspended lighting in any classroom shall hang down from the ceiling far enough to intrude into the camera line of sight or the projector image path.** All lights must be mounted at least 12 inches above the centerline of the projector lens.
- Light controls shall be configured so that the row of lights closest to the display screen can be controlled separately from the rest of the room lighting. Using the 50/50 model of light control to enable 50% lighting or no light on that row of lighting is appropriate.

6 - Control System Specifications

6.1 - Control Graphics

CSU Classroom Support Services programs and supports classroom control systems. Crestron products are required for all new installations and upgrades. Control graphics shall conform to CSU design and visual practice.

The basic system in each lectern is comprised of:

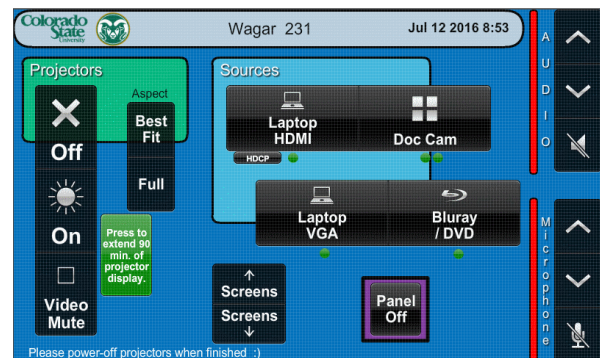
- Controller – normally Crestron DMPS series with network port. If additional controllers are needed, Crestron units are added.
- Touch Panel – TPW-760 – color touch panel.
- Integration capability with Crestron Roomview and Fusion must be included.
- Crestron program and Xpanel software for each room are to be supplied to Classroom Support.
- **CSU Crestron shut down code shall be included in the code for each room.** It is available from Classroom Support and shall be included in the code for each room.

Touch Screen Design Samples (these are examples only, design changes periodically)

Start-up screen:



Operational screen:



Current graphics and layout are available from CSU Classroom Support Services.

PLEASE CONTACT CSU CLASSROOM SUPPORT BEFORE FINALIZING TOUCH SCREEN GRAPHICS OR CONTROLS.

6.2 - Control Design Specifications:

- Programming files, Xpanel files and as-built diagrams for all installations become property of CSU and shall be provided to CSU Classroom Support.
- All graphics, control screen layout and design, controls and functions in each classroom must be reviewed and approved by CSU Classroom Support Services before project signoff.
- Final control and touch panel files are to be given to CSU as part the project signoff.
- Intuitive designs following CSU graphics practices are required, with user-friendly ability to control the room without prior instruction.

- All classrooms should have the ability to dim the lights nearest to the projection screens, with that control separate from the classroom lighting.
- All electric powered screens are to be controlled via the lectern touch panel.
- Projectors are controlled via RS232 or Ethernet – with run hours, filter hours and reset for both provided in the programming and on the touch panel service page.
- Source / switcher selections shall be controlled either by RS232 or Ethernet.
- Program audio shall be volume controlled and muted separately from microphone audio.
- Audio controls and indicators for both program and microphone audio shall be easily accessible on all touch panel screens, including mute control.
- Blu-ray control pages are to be included with control via IR or RS232.
- A maintenance / service page shall be provided, with these features:
 - Panel setup access
 - Lift controls in rooms with projector lifts
 - Executive modes with executive mode on/off toggles for switcher control

6.3 - Audio System Specification:

Design Consideration - Evenly distributed and clearly audible sound is required for both audio program material and wireless microphone audio.

- Audio source selection – separate controls for program out and microphone volume, with mute button for each.
- Audio source and mic volume control – if not DMPS unit, A/V switcher via RS232 commands.
- Audio source amplification shall be a stereo power amp.
- Speakers shall be wall speakers or multiple ceiling speakers; speakers are not to be located immediately behind or above the lectern to minimize audio feedback.
- Microphone – Shure QLXD wireless system noted in section 1.1 above; for medium or large classrooms, two microphone systems (with one each belt pack and handheld transmitters) shall be provided.

6.4 Network Design

Design Consideration - No private vendor, building or project networks (separate from the building network) will be created or used for A/V functions and controls. Network connections for all systems, wired and wireless, must use the CSU campus network.

- CSU Classroom Support and ACNS will assign static IP addresses to all networkable AV equipment in classrooms.
- All wireless equipment installed in a classroom must connect to and use the CSU wireless infrastructure already in place; no new wireless networks shall be created in the classroom.
- Lecterns shall have two CAT6a network drops, wired back to the nearest telecom room, terminated within the lectern. Two of these drops will support installation of a network switch (to be specified by CSU Telecom and included in the Telecom

bid for any building project) to which all in-lectern equipment will be connected. A third network drop will be available to connect a VoIP phone in the lectern.

7 - Build Specifications:

7.1 - Lectern Equipment Locations:

- Standard Equipment rack is a **Middle Atlantic 4-post rack similar to the CFR series**, providing 14 RU of rack space. There will be two (2) racks in a large Lectern.
- Equipment racks are to be prewired and tested before being installed at the installation site.
- **Crestron Connect It TT-100** cable holder shall be built into lectern top to provide AC power, VGA and HDMI connectors, and a network Ethernet cable for laptops.
- User interface equipment (PC and Blu-Ray Players) is to be located at or near the top left side of the lectern rack mount.
- All other equipment including the A/V controllers: switchers, and audio amps, receivers and equalizers (if any) are to be located below the user access area and placed behind a hinged, lockable Plexiglas enclosure which uses the standard CSU key set.
- This cover may enclose only the part of the rack containing A/V equipment, leaving the PC and DVD player user-accessible.
- At least one rack unit (1 RU) of space shall be provided between equipment located in the rack to provide for proper heat ventilation and dissipation.
- Lectern back side main access panel/door shall not be located closer than thirty-six inches (36") from any fixed furniture or object to provide maintenance access.
- The document camera is to be located on the top of the lectern centered in the right half (flat area) of the lectern surface.
- **Any open rack space** in lecterns is to be blocked off by either blank rack panels or smoked Plexiglas.

7.2 - Wiring / Cable Specifications to be used in all installations:

- **All lecterns shall be access by a 2-inch conduit installed in the floor, or equivalent cable space shall be provided for cable runs to the lectern.**
- Shielded CAT6A Crestron DM or Extron XTP or equivalent. Cat5e cable is acceptable for short runs which are not parallel to AC power cables.
- RS 232 control: Belden 9451- 2 conductor, 22 AWG, stranded, shielded.
- Speaker: Belden 5200U or equivalent (audio), minimum 18 gauge.
- Quality Extron cables or equivalent for all HDMI and VGA lectern cabling.

7.3 - Terminations and Connectors:

- **RS232** –soldered DB-9 connectors with proper hoods are used for RS232 connections
- **CAT6A** cables are to be terminated with the EIA/TIA - T568B standard; connections are to be tested and verified for proper termination.
- In rooms with camera signals run to the lectern, the cable termination shall be an **HDMI connector**.

- All HDMI cables in lecterns and connected to AV equipment **must have locking connectors** (not screw-type locks).
- In rooms with lecture capture, the program video sent to the projector must also be available via an **HDMI connector** in the lectern.

7.4 - Lectern Wiring and Cable Management

- All video, data and control wires are to be labeled and numbered in correspondence with the system diagram.
- An as-built wiring diagram is to be placed inside the Lectern on the rear equipment side door, and the computer file with that wiring diagram is to be provided to Classroom Support Services; a Microsoft Visio file is preferred.
- Proper wiring dress, maintenance loops, and cable separations are to be employed.
- Lectern is to be secured and bolted to the floor, normally using L-brackets.
- All wires connected from the lectern to ancillary equipment or connections are to be secured under a bolted down cable threshold or through provided conduits with cable sheathing.
- Wiring that is routed to above the ceiling from the lectern shall be inside an installed cable raceway; the portion traversing the wall shall resemble the color of the wall or be painted to match.
- Conduit cable pulls should not exceed 50% of the permissible conduit size.
- Nylon pull strings should be left in place after cables are pulled.
- Each lectern shall have eight (8) network jacks (see earlier specification) installed on an internal block.
- Each data projector location shall have 1 (one) network jack installed next to the projector for network connectivity.
- A/V closets shall have a number of network jacks installed; the number to be determined in consultation with Classroom Support and ACNS.
- All lecterns shall be equipped with **Altinex CNK241 Cable Nook complete** with two AC power outlets included.

7.5 - Projector Mounting

CSU recognizes and adheres to the ICIA / Infocomm Video Systems Installations Handbook standards and recognizes installers certified with the CTS and CTS-I certifications from this organization. A copy of this book is available from CSU Classroom Support Services.

- Projectors shall be mounted as high as practical in each room to reduce the potential for vandalism and unauthorized personnel tampering with the connections. Typical mounting height is level with the top of the projection screen.
- Ceiling tile replacement type mounts are typically used in rooms with drop ceilings - **Premier PFCMA Ceiling Tile replacement – secured to ceiling structure**. Standard 1.5” piping is used to drop the projector down to the proper mounting position to minimize any Keystone effect and subsequent electronic keystone adjustments.

- All cables are routed through the 1.5" pipe – including power; a power outlet mounted on projector mounting plate is standard.
- Projector mount is to be a universal mount by Chief manufacturing model **RPM-U Projector Mount (Key Code "A")**
- All projector HDMI Receivers are to be located either in the plenum or above the projector on the ceiling tile replacement unit.
- All cables not routed through conduit are to be above the ceiling grid on J-hooks.
- Plenum cable is to be used on all and any plenum air space ceiling or raised floor installations.

7.6 - Projector screen specifications: 16:10 Screen by Dalite is standard in all new installations – model varies depending on the size of the room. Recessed electric screens are preferred in new installations.

Manual screens are sometimes used in smart classrooms. Examples:

- Projection screens shall be mounted high enough to prevent line of sight problems for students sitting in the back of the classroom; in most cases, this means the top of the projector screen image area should be as close to the ceiling as possible.
- Projectors shall be mounted so that the placement of room lighting systems does not interfere with the projected image.
- Da-Lite screen, Model C w/CSR, 69" x 110", matte white, white case - #34734
- Da-Lite screen, Model B w/CSR, 57.5" x 92", matte white, white case - #36457

Screens are to be installed according to manufacturer specifications for model type and weight.

7.7 - Monitor Wall Mounting

- All wall mounted monitors in conference rooms shall have user accessible controls either provided in a wall-mounted control box or a Crestron touch panel. The options on the control box or Crestron panel must include at least on/off and source input selection.
- All wall-mounted monitors in classrooms shall be controlled from the lectern Crestron controller and one additional HDMI input port must be provided below or adjacent to the monitor for individual user connection and input.
- All wall-mounted displays including monitors of any type must have a network port connected to the CSU Network, and AC power outlet located behind or adjacent.

7.8 – Lighting Specifications:

- If suspended lighting is used in a classroom, the bottom surface of the lights between the data projector or camera must hang no lower than 12 inches above the center line of the data projector or camera installed in the room, whichever is higher.
- If it is not possible to hang suspended lighting at least 12 inches above the projector or camera, then recessed lighting shall be used for all lights located

between the camera and the front of the room in a 60 degree field of view centered on the lectern.

- Light controls shall be provided on the touch panel in each classroom. This shall include the ability to dim the row of lights closest to the data screen independently of other room lights, in order to reduce glare on the screen.

7.9 - Equipment Security Specifications:

Lectern:

- Each lectern will have access panels allowing A/V maintenance and repair, secured by key locks using a CSU standard key set.
- As noted earlier, lectern access panels will be located no closer than 36 inches to permanently mounted objects such as tables and walls.

Video Projector:

- ¼" aircraft type cable securely connected to the projector and fastened in the ceiling with a padlock.
- Sonic Shock audio alarm also adhered to the projector and looped into the ceiling

Document Camera:

- Camera base shall be bolted through the top of the lectern or fastened to lectern with security cable.

8 – Networks

- **All equipment with network connectors purchased under these standards shall be IPV6 compatible.**
- An eight-gang network connection box will be easily accessible and located on an inside lectern wall.
- No private control network (separate from the building network) shall be installed within the classrooms.
- All equipment will be connected to a CSU building or campus network and must be accessible to control access via the CSU network.
- Any necessary network switches must be pre-approved by CSU Telecom.
- As noted in 6.4, all wireless equipment installed in a classroom shall connect to and use the CSU wireless system already in place; no new wireless network shall be created or set up in the classroom.

9 - Final System Checks and Testing:

- **Copies of receipts or purchase orders ITEMIZING SERIAL NUMBERS ON EACH DEVICE for all Crestron equipment installed must be provided to the CSU Classroom Support Supervisor for CSU to obtain credit with Crestron for equipment purchased.**

- All systems must be checked out fully for functionality, installation integrity and build documentation. **All controls and functions in each classroom must be reviewed and approved by CSU Classroom Support Services before signoff.**

Functionality Tests:

Touch Panel External Buttons Labeled
Power On Projector
Select Laptop - Check Video and Audio
Select Doc Cam - Test Video and Controls
Select Video Mute and test
Audio up / down and mute work properly
Switcher / Scaler is set to the Projectors' native resolution

Projector Alignment:

Screen Functional and properly positioned
Image Properly fills the screen on all images
Brightness and Contrast check
Image Keystone set
Image is sharp and in Focus
Fan is set to High Altitude mode

Lectern Tests / Checks:

Little Light Functionality
Check A/C Power in Cable Nook
User Network Cable active at Cable Nook
Plexi / Lexan or Rack Blanks installed in blank spaces
Inside the Lectern: wired neatly and clear of extra parts
Lectern Top Clean and void of leftover parts
Wires Labeled and Block Diagram provided inside the Lectern

Other Diagrams and Specifications:

Sample System Block Diagrams (PDFs)

- Small Smart Class Room (Attachment 1)
- Larger Collaborative Smart Classroom (Attachment 2)
- Matrix Switching Multi Display Classroom (Attachment 3)

A/V Contractor

- RFQ for AV Contractors (Att.)

Lectern Specification Diagrams:

See [CSU LARGE PODIUM 01-20-16]

10 - Classroom Support Services Primary Contact:

Colorado State University Classroom Support Services (CSS)

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Classroom Support Services is a part of Academic Computing & Networking Services:

<http://www.acns.colostate.edu/Services/CSS>

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Please contact Allen Sneesby with questions concerning the information provided.