DESIGN STANDARD FOR AUDIOVISUAL SYSTEMS

General:

The SCC is intent on moving to 21st century unified communications and data systems, consistent with industry standards and best practices as they evolve. To that end all SCC AV will be digital (unless laws or codes specify otherwise) and/or will digitally controlled through a enterprise management system, and will be tightly integrated into the data components of the SCC technology plan.

Purpose:

The purpose of this document is to standardize the basic elements of the audiovisual systems design process, and to guide AV to the integrated solutions envisioned above. The Design Standard has the purpose of creating a consistent application of audiovisual systems design throughout the Solano Community College (SCC) District, therefore achieving a standard of quality for maintenance and reliability throughout all renovation and new building projects. This standard serves as a supporting document part of the overall Solano Community College Technology Plan (2013-2015). Deviations from this standard shall be approved by SCC.

Background of Audiovisual Systems within the District:

Audiovisual Systems cover both instructional and informational AV technology. Instructional AV technology covers systems that support teaching, learning, and research. Students and staff members use this technology in pursuit of the College’s educational goals. Informational AV technology covers the digital signage systems deployed around the College. Students and staff members use this technology to share content with the different audiences that may occupy the spaces within the College.

For the purposes of this document the instructional AV technology will be referred to as AUDIOVISUAL SYSTEMS. The informational AV technology will be referred to as DIGITAL SIGNAGE SYSTEMS.

Audiovisual Systems-Related Support Staff and Committees:

Chief Technology Officer
Director, Technology Services & Support
Desktop Services
Network Services
The Strategic Technology Advisory Committee (STAC)
Design Standard:

Smart Classroom General Descriptions

Audio/Video (A/V) Cabinet:
- Located next to wall adjacent to teaching wall 5' from corner.
- A 2-3” hole is to be cut in the side of cabinet for cables at location of junction box.
- 2” Conduit from ceiling to 4” junction box in the wall behind A/V cabinet in line with 2-3” hole cut in side of cabinet.
- Remove casters from AV Cabinet.
- Install shelf or rails if not already installed.
- In certain situations the room configuration may dictate the elimination of and A/V Cabinet. Elimination of cabinet to be determined by SCC IT.

Lighting:
- Shall be coordinated for appropriate levels related to room functions
- Must include controls at the A/V Cabinet so that lights directly over the teaching wall can be dimmed or turned off for maximum viewing capability.
- Industry standards and guidelines shall be followed.
- Refer to Codes & Standards section of this document for a list of related standards.

Power requirements:
- One (1) outlet above the ceiling at the projector location
- Four (4) outlets at the A/V cabinet. Two (2) outlets to be at the table top height of cabinet and two (2) below/behind cabinet near the junction box for AV cables.

Projection screens:
- May be motorized or manual roll up and shall be sized appropriately for the room size and desired coverage areas.
- Motorized screens shall be used are in areas in which the screen sizes are larger than 12 ft., typically the Lecture and Multipurpose rooms, Cafeteria, and Boardroom.
- Smaller screens shall be manual roll up.
- Screens are to be centered on teaching wall mounted no more than 6” below the ceiling (in rooms with normal ceiling heights).

Screen mounts:
- Must have back board of sufficient size to permit speakers to be mounted next to the screen.
- For larger screens or rooms with high ceilings (over 10’) contact IT management for screen installation instructions.

Projectors:
- Shall be industry standard High Definition, with HDMI and Internet Protocol (IP) input, native 16:9 format.
- To be mounted 12-14’ from the projection screen with input sources selectable via Utelogy control.
Distance should be close enough so that the image will take up as much screen space as possible. With this in mind it is highly preferable to locate the projector mount closet to 12’.

Projector mount should be offset 3.5” right of screen as viewed from the screen location to accommodate for the offset of the projector lens.

Care should be taken to NOT place anything in the projection path (i.e. lights, art work hangers etc.)

Coordinate requirements with SCC IT.

Audiovisual Systems – Conference Rooms

Conference Rooms shall utilize single wall mounted LED flat panel display sized accordingly for video content presentation. Size of flat panel display shall be determined by using the minimum display dimension formulas illustrated in Figure 1.

Power outlet shall be installed behind LED displays. (1) 2-port data outlet MAY be required to be installed behind LED display for future proofing (Smart TV’s, network devices, etc.). Coordinate power/data requirements with SCC IT. All outlet mounting shall be coordinated with mounting brackets. Mount to be installed to prevent easy access to display controls wherever possible. Installation shall be coordinated with SCC IT.
Figure 1: Minimum display dimensions shall be calculated using the coverage area formulas represented above. Acceptable coverage area begins at the green dashed circle, which is calculated by obtaining the height of the display and multiplying it by 1.5. Alternatively, one could obtain the desired minimum coverage area and divide this by 1.5. Similarly, the blue and red dashed circles represent the optimal coverage areas for text and video images, respectively.

Displays may require wall-mounted speakers approximately 6”-12” on either side of display. Mounting shall be designed to best project sound throughout the conference room. If wall speakers are not provided, the flat panel display must have integrated speakers. Coordinate speaker requirements with SCC IT.

System inputs will include VGA, HDMI, Audio and data ports. Location of input panel shall be coordinated with SCC IT.

Content will be managed and controlled via the Utelogy suite accessed via a control station within the room. Control station and speakers shall integrate with Utelogy to support automatic switching of inputs and outputs. Coordinate Utelogy integration requirements with SCC IT.

Lighting shall be coordinated for appropriate levels related to room functions. Industry standards and guidelines shall be followed. Refer to Codes & Standards section of this document for a list of related standards.
Typical Conference Room Layout

Typical Conference Room Connectivity Diagram

Audiovisual Systems – Smart Classroom

Smart Classrooms shall utilize a ceiling mounted project, projection screen, A/V Cabinet and wall mounted speakers. An ADA compliant teaching table shall be located next to the A/V cabinet. Monitor, document camera and system input panel shall be installed on the table. System inputs shall be via input panel that will include VGA, HDMI, USB, Audio and data ports. Content will be managed and controlled via the Utelogy suite accessed via a stationary workstation within the room. The workstation shall
support USB, DVD/CD, VGA, and HDMI input. Displays and speakers shall integrate with Utelogy to support automatic switching of inputs and outputs. Coordinate Utelogy integration requirements with SCC IT.

Typical Smart Classroom Layout

Audiovisual Systems – Computer Labs

Computer Labs shall utilize a ceiling mounted projector, projection screen, and wall mounted speakers. An ADA compliant teaching table shall contain dual monitor setup, document camera and system input panel and student workstations will be single monitor. Instructor shall be able to view student desktops upon command.

System inputs shall be via input panel that will include VGA, HDMI, USB, Audio and data ports.
Content will be managed and controlled via the Utelogy suite accessed via a stationary workstation within the room. The workstation shall support USB, DVD/CD, VGA, and HDMI input. Displays and speakers shall integrate with Utelogy to support automatic switching of inputs and outputs. Coordinate Utelogy integration requirements with SCC IT.

Typical Computer Lab Layout

![Typical Computer Lab Layout](image)

Typical Computer Lab Connectivity Diagram

![Typical Computer Lab Connectivity Diagram](image)

**Digital Signage Systems**

Digital signage content shall be displayed via LED flat panel displays sized accordingly for this application. Size of flat panel display shall be determined by using the minimum display dimension formulas illustrated in Figure 1.

Digital signage is found typically in Lounges and public spaces, but may be required in specialty areas as well. Power outlet shall be installed behind LED displays. (1) 2-port data outlet MAY be required to be installed behind LED display for future proofing. Coordinate power/data requirements with SCC IT. All
outlet mounting shall be coordinated with mounting brackets. Mount to be installed to prevent easy access to display controls wherever possible. Mounting type may include wall mount, pole mount, or other, depending on the application. Installation shall be coordinated with SCC IT.

TV to be mounted on wall mount so as to permit optimal viewing and is to be secured to the mount to prevent easy theft.

If deployed in outdoor or unmonitored public areas consideration should be given to anti-vandalism measures including cabinets with toughened Macaralon type screen protection.

Digital Media Player (DMP) is to be mounted on the back of the TV or attached to the wall.

Content will be managed and controlled by a content management system. The system will be selected and controlled by SCC IT.

Refer to Codes & Standards section of this document for a list of related standards.

**Preferred Manufacturers:**

LED Flat Panel Displays:
1. Samsung  
2. Sony  
3. NEC  
4. Other as approved by IT

Video Projectors:
1. Hitachi  
2. Panasonic  
3. Epson  
4. Other as approved by IT

Workstations provided by SCC.

All District Related technology purchases must be approved by Technology Services management. Purchases must follow the Technology Purchases policy of the Solano Community College.

All audiovisual equipment shall be purchased by the District. Equipment lists/Bill of Materials shall be completed and submitted to SCC for purchase, once approved. Coordinate with SCC IT.

**Substitutes Allowed:**

All substitutions must be approved by SCC IT. Requests for substitutions must be submitted in writing prior to design, purchase, and installation.
Associated Design Standards and Construction Specifications

Codes and Standards:
ANSI/INFOCOMM 1M-2009 Audio Coverage Uniformity in Enclosed Listener Areas
ANSI/INFOCOMM 3M-2011 Projected Image System Contrast Ratio

Construction Specifications:
274100 Audiovisual Systems
274200 Digital Signage Systems

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