# UCONN
## UNIVERSITY OF CONNECTICUT

# Audio Video Equipment Standards

**Information Tecnology Services and
Planning, Architectural and Engineering Services
Established Date:   July 2016**

| Exhibit I | Tech Ready Classroom AV Equipment (quantities determined by design) | | |
|---|---|---|---|
| | capacity 35 students | | as of July 2016 |
| | **Item** | **Features and Performance requirements** | **Performance Product** |
| | | | |
| **Audio/Video Displays** | Laser Video Projector w/ Mount | With HDMI input RS-232 control and HDBaseT Input. Lensing and brightness determined by screen size and room light conditions.  Ceiling mount to be compatible with the for selected projector.  Must have security features. | Sony VPL-FHZ57W projector or approved equivalent   Chief RPA-020 Mount or approved equivalent |
| | Projection Screen and Switch Control | Screen size shall be determined by 9' ceiling height mounting needs. Motorized contrast grey preferred.  Switch mounted on wall for screen control. | Draper, Da-Lite, or approved equivalent |
| | Ceiling Speakers | Must provide appropriate number of speakers for complete room coverage. | Sound Advance, JBL or approved equivalent |
| | Miscellaneous | All cables connectors and hardware necessary to install a complete working system | |
| | | | |
| **Control Equipment** | Central Room Control TouchPanel Power Connections Power Supply | 7" Touch Panel for room control Power over ethernet for touch panel if required Low voltage interface to integrate screen control with control system Power Supply for AMX controller | AMX MSD-701-L or MST-701 AMX  PS-POE AF TC AMX PS4.4 |
| | Master Controller | The NX-2200 / NetLinx® NX Integrated Controller is a programmable network appliance specifically designed to control AV and building technology using multiple analog and digital formats. The NX-2200 provides a scalable platform for the future by combining high performance, backward compatibility and extensive network security features. The NX-2200 is ideal for control and automation of medium-sized rooms and multi-room applications, as it includes more ports and security capabilities than the NX-1200. | AMX NX-2200 |
| | | | |
| **Video Switching / Processing Equipment** | Scaling AV Switcher | IN-1608 AV switcher. 2 DTP inputs, 4 HDMI inputs, 2 VGA inputs, 3 scaleable outputs with audio level control. | Extron IN1608 MA 70 HDBT HDCP-Compliant Scaling Switcher 60-1238-73 |
| | | | |
| **Video Source equipment** | Annotation Tablet w/ 2 Pens and Desk Monitor Arm | Digital HD 18.5" preview monitor with ability to annotate using Smart Technologies software. And Swiveling monitor arm to attach preview monitor to podium | Smart Tablet SP-518NB or approved equivalent Smart Pen 20-01545-20 or approved equivalent Chief monitor arm K1W120B or approved equivalent |
| | Miscellaneous | All cables connectors and hardware necessary to install a complete working system | |
| **Complete Podium** | Teaching Podium | Native Maple finish, custom base, 23" turret frame with vented rack inserts, trim and finishing kits with custom cut out for specified control panel. | Middle Atlantic L5TURFRW23, L5KTK23NT, FIN-NM, and L5-CUSTPNL-23 Podium with L5-SHOC-XLR-S and L5-Tasklight18  or approved equivalent |
| | Networking switch | Policy-based access control, identity and role-aware network, data integrity and confidentiality. Layer 2 threat defense capabilities with integrated security features for flexible collaboration between users on the network.  Compliance with Payment Card Industry Data Security Standard (PCI DSS) to meet regulatory mandates. Physical security with cable guard and lock. Ease of Deployment: •Zero touch deployment and ease of troubleshooting •Automatic configuring of the switch based on the type of device connected to the port •State-of-the-art QoS implementation for IP telephony and video Reduce Energy Costs: •Support to monitor, manage and reduce energy consumption of the devices connected to the switch Connectivity: •8-12 Fast Ethernet or Gigabit Ethernet connectivity •Power over Ethernet (PoE) and PoE pass-through •Two 1-Gb Ethernet uplinks | Cisco Catalyst 2960C 8 FE PoE or approved equivalent |
| | Power Management Unit | Must have ethernet control | RLNK-SW815R-SP |
| | Gooseneck Mic | Also shock mont Mic holder and light. For wireless mic mounted to podium | Clock Audio  C34E/SR-RF or approved equivalent |
| | Audio Amplifier | Only if Wattage of speakers exceed Extron Crosspoint 40 Amplifier wattage | Extron, QSC, JBL or approved equivalent |
| | USB Switcher | Features with emulation for Smart software functionality between PC and laptop.  Four-input USB switchers that allow switching between multiple host devices and multiple USB peripherals. Integrator-friendly for implementing USB 2.0 compatible switching.  Streamline integration such as: port status indication, RS-232 pass-through, front panel security lockout, and multiple control points. Host and Peripheral Emulation Mode, which provides "keep alive" functionality by continuously mimicking host and keyboard/mouse communications within the switcher. Eliminates the need for enumeration, and reduction in the chance of failed device communications throughout the switching process. | Extron SW4 USB  60-954-02 or approved equivalent |
| | Captive Cable Kit | plate with one large hole and two small | Extron 70-317-13 or approved equivalent |
| | Grommet Plate | for VGA/Audio Cable | Extron 70-317-12 or approved equivalent |
| | Adapters | CSM 6 captive screw to female adapter. Display Port to HDMI adaptor for PC to switcher audio | Extron or approved equivalent |
| | Miscellaneous | All cables connectors and hardware necessary to install a complete working system | |
| | | | |

| Exhibit 2 Classroom Standards | | Hi-Tech Ready Classroom AV Equipment (Quantities determined by design) capacity to 99 students | | |
|---|---|---|---|---|
| | **Item** | **Features and Performance requirements** | | **Performance Product** |
| **Audio/Video Displays** | Laser Video Projector w/ Mount | With HDMI input RS-232 control and HDBaseT Input. Lensing and brightness determined by screen size and room light conditions. Ceiling mount to be compatible with the for selected projector. Must have security features. | | Sony VPL-FHZ57W projector or approved equivalent Chief RPA-020 Mount or approved equivalent |
| | Projection Screen and Switch Control | Screen size shall be determined by 9' ceiling height mounting needs. Motorized contrast grey preferred. Switch mounted on wall for screen control. | | Draper, Da-Lite, or approved equivalent |
| | Ceiling Speakers | Must provide appropriate number of speakers for complete room coverage. | | Sound Advance, JBL or approved equivalent |
| | Miscellaneous | All cables connectors and hardware necessary to install a complete working system | | |
| | | | | |
| **Control Equipment** | Central Room Control TouchPanel Power Connections Power Supply | 7" Touch Panel for room control Power over ethernet for touch panel if required Low voltage interface to integrate screen control with control system Power Supply for AMX controller | | AMX MSD-701-L or MST-701 AMX PS-POE AF TC AMX PS4.4 |
| | Master Controller | The NX-2200 / NetLinx® NX Integrated Controller is a programmable network appliance specifically designed to control AV and building technology using multiple analog and digital formats. The NX-2200 provides a scalable platform for the future by combining high performance, backward compatibility and extensive network security features. The NX-2200 is ideal for control and automation of medium-sized rooms and multi-room applications, as it includes more ports and security capabilities than the NX-1200. | | AMX NX-2200 |
| | | | | |
| **Video Switching / Processing Equipment** | Scaling AV Switcher | IN-1608 AV switcher. 2 DTP inputs, 4 HDMI inputs, 2 VGA inputs, 3 scaleable outputs with audio level control. | | Extron IN1608 MA 70 HDBT HDCP-Compliant Scaling Switcher 60-1238-73 |
| | | | | |
| **Video Source equipment** | Annotation Tablet w/ 2 Pens and Desk Monitor Arm | Digital HD 18.5" preview monitor with ability to annotate using Smart Technologies software. And Swiveling monitor arm to attach preview monitor to podium | | Smart Tablet SP-518NB or approved equivalent Smart Pen 20-01545-20 or approved equivalent Chief monitor arm K1W120B or approved equivalent |
| | Document Camera | Desktop style with HDMI output | | Epson, QOMO or approved equivalent |
| | Blu-ray Player | Blu-ray player with HDMI output. | | Sony BDP-S5500 or approved equivalent |
| | Wired lavalier microphone | Must provide clear non-interference sound | | Audio Technica AT-831R or approved equivalent |
| | Miscellaneous | All cables connectors and hardware necessary to install a complete working system | | |

| Complete Podium | Teaching Podium | Native Maple finish, custom base, 33" turret frame with vented rack inserts, trim and finishing kits with custom cut out for specified control panel. | Middle Atlantic L5TURFRW33, L5KTK33NT, FIN-NM, and L5-CUSTPNL-33 Podium with L5-SHOC-XLR-S and L5-Tasklight18  or approved equivalent |
|---|---|---|---|
| | Networking switch | Policy-based access control, identity and role-aware network, data integrity and confidentiality. Layer 2 threat defense capabilities with integrated security features for flexible collaboration between users on the network.  Compliance with Payment Card Industry Data Security Standard (PCI DSS) to meet regulatory mandates. Physical security with cable guard and lock. **Ease of Deployment:** •Zero touch deployment and ease of troubleshooting •Automatic configuring of the switch based on the type of device connected to the port •State-of-the-art QoS implementation for IP telephony and video **Reduce Energy Costs:** •Support to monitor, manage and reduce energy consumption of the devices connected to the switch **Connectivity:** •8-12 Fast Ethernet or Gigabit Ethernet connectivity •Power over Ethernet (PoE) and PoE pass-through •Two 1-Gb Ethernet uplinks | Cisco Catalyst 2960C 8 FE PoE or approved equivalent |
| | Power Management Unit | Must have ethernet control | RLNK-SW815R-SP |
| | Gooseneck Mic | With shock mont Mic holder and light. For wireless mic mounted to podium | Clock Audio  C34E/SR-RF or approved equivalent |
| | Wireless Mic System with microphone | Must be G3 frequency | Shure ULXS124/85 or approved equivalent |
| | Audio Amplifier | Only if Wattage of speakers exceed Extron Crosspoint 84 Amplifier wattage | Extron, QSC, JBL or approved equivalent |
| | USB Switcher | Features with emulation for Smart software functionality between PC and laptop.   Four-input USB switchers that allow switching between multiple host devices and multiple USB peripherals. Integrator-friendly for implementing USB 2.0 compatible switching.  Streamline integration such as: port status indication, RS-232 pass-through, front panel security lockout, and multiple control points. Host and Peripheral Emulation Mode, which provides "keep alive" functionality by continuously mimicking host and keyboard/mouse communications within the switcher. Eliminates the need for enumeration, and reduction in the chance of failed device communications throughout the switching process. | Extron SW4 USB  60-954-02 or approved equivalent |
| | Captive Cable Kit |  plate with one large hole and two small | Extron 70-317-13 or approved equivalent |
| | Grommet Plate |  for VGA/Audio Cable | Extron 70-317-12 or approved equivalent |
| | Adapters | CSM 6 captive screw to female adapter.   Display Port to HDMI adaptor for PC to switcher audio | Extron or approved equivalent |
| | Miscellaneous | All cables connectors and hardware necessary to install a complete working system | |
| | Wiremold | Over Floor Raceway | color: black |

| Exhibit 3<br>Classroom Standards | Standard Hi-Tech with iTV Classroom AV Equipment (Quantities determined by design) | | |
|---|---|---|---|
| | | | as of July 2016 |
| | **Item** | **Features and Performance requirements** | **Performance Product** |
| **Audio/Video Displays** | Commercial grade rear monitor | Monitor with RS-232 control and HDMI inputs to be viewed by system user from teaching station. Size determined by room size. | NEC |
| | Commercial grade front reinforcement monitor(s) | Monitor with RS-232 control and HDMI. Quantity and size determined by room size. | NEC |
| | Wall Mount | For Confidence and Reinforcement Monitors. Required for rooms that have a ceiling height of nine (9) feet or more. Must have 180 degree radius and security features. | Chief or approved equivalent |
| | Ceiling Mount | For Confidence and Reinforcement Monitors. Required for rooms that have a ceiling height of nine (9) feet or more and ceiling material of lay-in accoustical tile. Must have Must have 180 degree radius and security features. | Chief or approved equivalent |
| | Laser Video Projector w/ Mount | With HDMI input RS-232 control and HDBaseT Input. Lensing and brightness determined by screen size and room light conditions. Ceiling mount to be compatible with the for selected projector. Must have security features. | Sony VPL-FHZ57W projector or approved equivalent Chief RPA-020 Mount or approved equivalent |
| | Projection Screen and Switch Control | Screen size shall be determined by 9' ceiling height mounting needs. Motorized contrast grey preferred. Switch mounted on wall for screen control. | Draper, Da-Lite, or approved equivalent |
| | Ceiling Speakers | Must provide appropriate number of speakers for complete room coverage. | Sound Advance, JBL or approved equivalent |
| | Miscellaneous | All cables connectors and hardware necessary to install a complete working system | |
| **Control Equipment** | Central Room Control TouchPanel Power Connections Power Supply | 7" Touch Panel for room control<br>Power over ethernet for touch panel if required<br>Low voltage interface to integrate screen control with control system<br>Power Supply for AMX controller | AMX MSD-701-L or MST-701<br>AMX PS-POE AF TC<br>AMX PS4.4 |
| | Master Controller | The NX-3200 / NetLinx® NX Integrated Controller is a programmable network appliance specifically designed to control AV and building technology using multiple analog and digital formats. The NX-2200 provides a scalable platform for the future by combining high performance, backward compatibility and extensive network security features | AMX NX-3200 |
| **Video Switching / Processing Equipment** | Scaling matrix switcher switcher. | All‑in‑one 8x4 matrix switcher, scaler, audio DSP, audio power amplifier, and control processor | Extron DTP CrossPoint 84 IPCP MA 70 - 60-1368-13 |
| | Digital Video Transmitter/Receiver | Long distance transmitter for sending HDMI, audio, and bidirectional RS‑232 and IR signals up to 330 feet (100 meters) over a shielded CATx cable to enabled products. Extending HDMI with embedded multi-channel audio from HDMI-equipped devices and accepts analog stereo audio signals for simultaneous transmission over the same shielded twisted pair cable. It supports video signals at resolutions up to 4K. Compact enclosure size and remote power capability. | Extron DTP HDMI 330 TX , 60-1331-12 or approved equivalent |
| | Digital Receiver | Long distance, digital twisted pair receiver that works with the transmitter to send HDMI, audio, and bidirectional RS-232 and IR signals up to 330 feet (100 meters) over a shielded CATx cable. Extended HDMI with embedded multi-channel audio from HDMI-equipped devices. Accepts analog stereo audio signals over the same shielded twisted pair cable. Supports video signals at resolutions up to 4K. Compact enclosure size and remote power capability for discreet placement in lecterns and behind flat-panel displays. | Extron DTP HDMI 330 RX, 60-1331-13 or approved equivalent |
| | HDMI video DA | HDMI Distrubution Amplifier for output to Front and Rear Monitors for Video Conferencing | Extron or approved equivalent |

| | | | |
|---|---|---|---|
| **Video Source equipment** | Annotation Tablet w/ 2 Pens and Desk Monitor Arm | Digital HD 18.5" preview monitor with ability to annotate using Smart Technologies software.   And Swiveling monitor arm to attach preview monitor to podium | Smart Tablet SP-518NB or approved equivalent Smart Pen 20-01545-20 or approved equivalent Chief monitor arm K1W120B or approved equivalent |
| | Document Camera | Desktop style with HDMI output | Epson, QOMO or approved equivalent |
| | Blu-ray Player | Blu-ray player with HDMI output. | Sony BDP-S5500 or approved equivalent |
| | Wired lavalier microphone | Must provide clear non-interference sound | Audio Technica AT-831R or approved equivalent |
| | Miscellaneous | All cables connectors and hardware necessary to install a complete working system | |
| **Complete Podium** | Teaching Podium | Native Maple finish, custom base, 33" turret frame with vented rack inserts, trim and finishing kits with custom cut out for specified control panel. | Middle Atlantic L5TURFRW33, L5KTK33NT, FIN-NM, and L5-CUSTPNL-33 Podium with L5-SHOC-XLR-S and L5-Tasklight18   or approved equivalent |
| | Networking switch | Policy-based access control, identity and role-aware network, data integrity and confidentiality. Layer 2 threat defense capabilities with integrated security features for flexible collaboration between users on the network.  Compliance with Payment Card Industry Data Security Standard (PCI DSS) to meet regulatory mandates. Physical security with cable guard and lock. Ease of Deployment: •Zero touch deployment and ease of troubleshooting •Automatic configuring of the switch based on the type of device connected to the port •State-of-the-art QoS implementation for IP telephony and video Reduce Energy Costs: •Support to monitor, manage and reduce energy consumption of the devices connected to the switch Connectivity: •8-12 Fast Ethernet or Gigabit Ethernet connectivity •Power over Ethernet (PoE) and PoE pass-through •Two 1-Gb Ethernet uplinks | Cisco Catalyst 2960C 8 FE PoE or approved equivalent |

| | | | |
|---|---|---|---|
| | Gooseneck Mic | With shock mont Mic holder and light. For wireless mic mounted to podium | Clock Audio C34E/SR-RF or approved equivalent |
| | Power Management Unit | Must have ethernet control | RLNK-SW815R-SP |
| | Wireless Mic System w/microphone | Must be G3 frequency | Shure ULXS124/85 or approved equivalent |
| | Audio Amplifier | Only if Wattage of speakers exceed Extron Crosspoint 84 Amplifier wattage | Extron, QSC, JBL or approved equivalent |
| **Podium Continue** | USB Switcher | Features with emulation for Smart software functionality between PC and laptop. Four-input USB switchers that allow switching between multiple host devices and multiple USB peripherals. Integrator-friendly for implementing USB 2.0 compatible switching. Streamline integration such as: port status indication, RS-232 pass-through, front panel security lockout, and multiple control points. Host and Peripheral Emulation Mode, which provides "keep alive" functionality by continuously mimicking host and keyboard/mouse communications within the switcher. Eliminates the need for enumeration, and reduction in the chance of failed device communications throughout the switching process. | Extron SW4 USB 60-954-02 or approved equivalent |
| | Captive Cable Kit | plate with one large hole and two small | Extron 70-317-13 or approved equivalent |
| | Grommet Plate | for VGA/Audio Cable | Extron 70-317-12 or approved equivalent |
| | Adapters | CSM 6 captive screw to female adapter. Display Port to HDMI adaptor for PC to switcher audio | Extron or approved equivalent |
| | Miscellaneous | All cables connectors and hardware necessary to install a complete working system | |
| | | | |
| **Videoconference Equipment** | | The audio and video engine to incorporate high-definition video collaboration applications into large meeting rooms. See weblink for all features and capabilities. http://www.cisco.com/c/en/us/products/collateral/collaboration-endpoints/telepresence-quick-set-series/datasheet-c78-731242.html | |
| | Video Conference Codec | SX80 Codec | Cisco CTS-SX80-IPST60-K9 |
| | Cameras and Camera Mounting Hardware | Wall Mount Kit for Speaker Track 60 Microphone Array | Cisco CTS-ST-ARR60-WMK- |
| | | Interface plate CAM-P60 to Speaker Track 60 | Cisco CTS-ST-INT-PLATE- |
| | | Bracket for mounting of Precision 60 Camera | Cisco CTS-CAM60-BRKT |
| | | Speaker Track 60 Microphone Array | Cisco CTS-ST-ARRAY60+ |
| | | Cisco TelePresence Precision 60 Camera - auto expand only | Cisco CTS-CAM-P60+ |
| | | TelePresence Precision 60 Camera | Cisco CTS-CAM-P60 |
| | Touch Panel | Touch 10 auto expand | Cisco CTS-CTRL-DVX-10+ |
| | Miscellaneous | Pwr Cord US 1.8m Black YP-12 To YC-12 | Cisco PWR-CORD-US-A |
| | | 12.5 meter flat grey Ethernet cable for Touch 10 | Cisco CAB-DV10-12.5M |
| | | Presentation cable w/audio VGA/Jack to DVI/Phoenix | Cisco CAB-DVI-VGA-PHOEN |
| | | Two Ethernet cables (0.35m & 0.2m) for SpeakerTrack 60 | Cisco CAB-ETH-ST-SHORT- |
| | | Two 12V power cables (0.45m & 0.2m) for SpeakerTrack 60 | Cisco CAB-PWR-ST-SHORT- |
| | | Power supply 12VDC 84W | Cisco PWR-12VDC-84W- |
| | | SX80 rack ears - for auto expand only | Cisco CTS-SX80-RACKEARS- |

| Video Conference Equipment Continue | Miscellaneous | 4 meter flat grey Ethernet cable for Touch 10 | Cisco CAB-DV10-4M |
|---|---|---|---|
| | | Power Injector (802.3af) | Cisco CTS-PWR-AIR-INJ5+ |
| | | Power Supply 12 VDC 40W | Cisco PSU-12VDC-40W2 |
| | | Power Cord US 1.8m Black YP-12 To YC-12 | Cisco PWR-CORD-US-A |
| | | Installation sheet for Precision 60 Camera bracket | Cisco DOC-P60CAM-BRKT |
| | Microphone | TelePresence Table Microphone 60 | Cisco CTS-MIC-TABL60 |
| | Ceiling Microphone | Universal AudioScience Mounting Kit | Cisco CTS-MTKIT-UA |
| | | Ceiling Microphone Gen 2 stand alone kit | Cisco CTS-MIC-CLNG-G2= |
| | | Ceiling Mic. dongles, RJ45-Euroblock and RJ45-MiniJack Spare | Cisco CTS-MIC-CLNG-DNG= |
| | | Ceiling Microphone parts - Ceiling mounting wire kit Spare | Cisco CTS-MIC-CLNG-WRK= |
| | | Microphone element for Ceiling Microphone Spare | Cisco CTS-MIC-CLNG-ELM= |
| | | Ceiling Microphone parts - Top and Back plates Spare | Cisco CTS-MIC-CLNG-PLT= |
| | License Key or Serice Warranty | Remote monitoring options for TelePresence Endpoints | Cisco L-TP-RM |
| | | Remote monitoring option for SX series Endpoints | Cisco L-SX-SERIES-RM |
| | | ESS WITH 8X5XNBD Cisco SX80 Codec Speaker Trk 60 Touch | Cisco CON-ECDN-SX80IP60 |
| | | License key to activate sw encryption module | Cisco LIC-TC-CRYPTO-K9 |
| | | ESS WITH 8X5XNBD Cisco TelePresence Precision 60 Camera | Cisco CON-ECDN-CTSCAM60 |
| | | ESS WITH 8X5XNBD Cisco TelePresence Table Microphone 60 | Cisco CON-ECDN-CTSMICTB |
| | | SW Image for SX80 MX700 MX800 | Cisco SW-S52020-TC7-K9 |

**Exhibit 4**
**Classroom Standards**

# Lecture Hall and Auditoria AV Equipment (Quantities determined by design) capacity for 100 students and up

as of July 2016

| | Item | Features and Performance requirements | Performance Product |
|---|---|---|---|
| **Audio / Video Displays** | Commercial grade rear monitor | Monitor with RS-232 control and HDMI inputs to be viewed by system user from teaching station. Size determined by room size. | NEC |
| | Commercial grade front reinforcement monitor(s) | Monitor with RS-232 control and HDMI. Quantity and size determined by room size. | NEC |
| | Wall Mount | For Confidence and Reinforcement Monitors. Required for rooms that have a ceiling height of nine (9) feet or more. Must have 180 degree radius and security features. | Chief or approved equivalent |
| | Ceiling Mount | For Confidence and Reinforcement Monitors. Required for rooms that have a ceiling height of nine (9) feet or more and ceiling material of lay-in accoustical tile. Must have Must have 180 degree radius and security features. | Chief or approved equivalent |
| | Laser Video Projector w/ Mount | With HDMI input RS-232 control and HDBaseT Input. Lensing and brightness determined by screen size and room light conditions. Ceiling mount to be compatible with the for selected projector. Must have security features. | Sony VPL-FHZ57W projector or approved equivalent Chief RPA-020 Mount or approved equivalent |
| | Projection Screen and Switch Control | Screen size shall be determined by 9' ceiling height mounting needs. Motorized contrast grey preferred. Switch mounted on wall for screen control. | Draper, Da-Lite, or approved equivalent |
| | Ceiling Speakers | Must provide appropriate number of speakers for complete room coverage. | Sound Advance, JBL or approved equivalent |
| | Miscellaneous | All cables connectors and hardware necessary to install a complete working system | |
| **Control Equipment** | Central Room Control TouchPanel Power Connections | 7" Touch Panel for room control<br>Power over ethernet for touch panel if required<br>Low voltage interface to integrate screen control with control system | AMX MSD-701-L or MST-701<br>AMX PS-POE AF TC |
| | Master Controller | The NX-3200 / NetLinx® NX Integrated Controller is a programmable network appliance specifically designed to control AV and building technology using multiple analog and digital formats. The NX-2200 provides a scalable platform for the future by combining high performance, backward compatibility and extensive network security features | AMX NX-3200 |
| **Video Switching / Processing Equipment** | Scaling matrix switcher switcher. | All‑in‑one 8x4 matrix switcher, scaler, audio DSP, audio power amplifier, and control processor | Extron DTP CrossPoint 84 IPCP MA 70 - 60-1368-13 |
| | Digital Video Transmitter/Receiver | Long distance transmitter for sending HDMI, audio, and bidirectional RS‑232 and IR signals up to 330 feet (100 meters) over a shielded CATx cable to enabled products. Extending HDMI with embedded multi-channel audio from HDMI-equipped devices and accepts analog stereo audio signals for simultaneous transmission over the same shielded twisted pair cable. It supports video signals at resolutions up to 4K. Compact enclosure size and remote power capability. | Extron DTP HDMI 330 TX , 60-1331-12 or approved equivalent |
| | Digital Receiver | Long distance, digital twisted pair receiver that works with the transmitter to send HDMI, audio, and bidirectional RS-232 and IR signals up to 330 feet (100 meters) over a shielded CATx cable. Extended HDMI with embedded multi-channel audio from HDMI-equipped devices. Accepts analog stereo audio signals over the same shielded twisted pair cable. Supports video signals at resolutions up to 4K. Compact enclosure size and remote power capability for discreet placement in lecterns and behind flat-panel displays. | Extron DTP HDMI 330 RX, 60-1331-13 or approved equivalent |
| | HDMI video DA | HDMI Distrubution Amplifier for output to Front and Rear Monitors for Video Conferencing | Extron or approved equivalent |
| | Video PIP Device | Smeamless scaller for Picture in Picture | DVS 605 |
| **Video Source Equipment** | Annotation Tablet w/ 2 Pens and Desk Monitor Arm | Digital HD 18.5" preview monitor with ability to annotate using Smart Technologies software.<br>And Swiveling monitor arm to attach preview monitor to podium | Smart Tablet SP-518NB or approved equivalent Smart Pen 20-01545-20 or approved equivalent Chief monitor arm K1W120B or approved equivalent |

| Section | Item | Description | Product |
|---|---|---|---|
| **Video Source Equipment Continue** | Document Camera | Desktop style with HDMI output | Epson, QOMO or approved equivalent |
| | Blu-ray Player | Blu-ray player with HDMI output. | Sony BDP-S5500 or approved equivalent |
| | Wired lavalier microphone | Must provide clear non-interference sound | Audio Technica AT-831R or approved equivalent |
| | Miscellaneous | All cables connectors and hardware necessary to install a complete working system | |
| **Complete Podium** | Teaching Podium | Native Maple finish, custom base, 33" turret frame with vented rack inserts, trim and finishing kits with custom cut out for specified control panel. | Middle Atlantic L5TURFRW43, L5KTK43NT, FIN-NM, and L5-CUSTPNL-43 Podium with L5-SHOC-XLR-S and L5-Tasklight18   or approved equivalent |
| | Networking switch | Policy-based access control, identity and role-aware network, data integrity and confidentiality.  Layer 2 threat defense capabilities with integrated security features for flexible collaboration between users on the network.  Compliance with Payment Card Industry Data Security Standard (PCI DSS) to meet regulatory mandates. Physical security with cable guard and lock.<br>Ease of Deployment:<br>•Zero touch deployment and ease of troubleshooting<br>•Automatic configuring of the switch based on the type of device connected to the port<br>•State-of-the-art QoS implementation for IP telephony and video<br>Reduce Energy Costs:<br>•Support to monitor, manage and reduce energy consumption of the devices connected to the switch<br>Connectivity:<br>•8-12 Fast Ethernet or Gigabit Ethernet connectivity<br>•Power over Ethernet (PoE) and PoE pass-through<br>•Two 1-Gb Ethernet uplinks | Cisco Catalyst 2960C 8 FE PoE or approved equivalent |
| | Gooseneck Mic | With shock mont Mic holder and light. For wireless mic mounted to podium | Clock Audio  C34E/SR-RF or approved equivalent |
| | Wireless Mic System w/microphone | Must be G3 frequency | Shure ULXS124/85 or approved equivalent |
| | Audio Amplifier | Only if Wattage of speakers exceed Extron Crosspoint 84 Amplifier wattage | Extron, QSC, JBL or approved equivalent |
| | USB Switcher | Features with emulation for Smart software functionality between PC and laptop.   Four-input USB switchers that allow switching between multiple host devices and multiple USB peripherals. Integrator-friendly for implementing USB 2.0 compatible switching.  Streamline integration such as: port status indication, RS-232 pass-through, front panel security lockout, and multiple control points. Host and Peripheral Emulation Mode, which provides "keep alive" functionality by continuously mimicking host and keyboard/mouse communications within the switcher.   Eliminates the need for enumeration, and reduction in the chance of failed device communications throughout the switching process. | Extron SW4 USB  60-954-02 or approved equivalent |
| | Hearing Assist Listening Device | | LS-51-072, LA-125 |
| | Captive Cable Kit | plate with one large hole and two small | Extron 70-317-13 or approved equivalent |
| | Grommet Plate | for VGA/Audio Cable | Extron 70-317-12 or approved equivalent |
| | Adapters | CSM 6 captive screw to female adapter.  Display Port to HDMI adaptor for PC to switcher audio | Extron or approved equivalent |
| | Miscellaneous | All cables connectors and hardware necessary to install a complete working system | |
| **Video Conference / Streaming Equipment** | Video Conference Codec | Cisco SX20 with 12X camera | CTS-SX20-PHD12X-K9 |
| | Maintenance | 8x5xNBD service | CON-ECDN-SX2PHD12 |
| | Remote monitoring option | option key | L-SX-SERIES-RM |
| | Camera cable adapter | break out cable | CAB-PHD4XS2-SPLIT= |

**Exhibit 5**
**Classroom Standards**

# Basic VTC Conference Room Equipment (Quantities determined by design)
## capacity 16 people

as of July 2016

| | Item | Features and Performance requirements | Performance Product |
|---|---|---|---|
| **Audio / Video Displays** | Monitor | RS-232 control appropriate size for room | NEC comercial or approved equal |
| | Mount | Mount for Monitor (wall or ceiling, room dictates type) | Chief or approved equal |
| | | | |
| **Video Switching / Processing Equipment** | Video Scaler | Video scaler to scale duo video channel for video conference system | Extron HD-HD or equivalent |
| | HDMI DA | HDMI DA to split content to video conference system and monitor | Extron or approved equal |
| | | | |
| **Video Source Equipment** | Input Wall Plate | Wall plate to plug laptop/other sources into. Must have HDMI and VGA | Extron or approved equal |
| | | | |
| **Video Conference Equipment** | Camera and Condec | Video conference codec with maintenance warranty | CTS-SX10-K9, CON-PSRN-CTSSX10 |
| | | | |
| **Control Equipment** | Wall Push Button Control Device | Push button system on the wall to control the inputs and monitor | SP Systems Pixie Plus  or approved equal |

| Exhibit 6 | Executive VTC Conference Room Equipment (Quantities determined by design) capacity 20 people | | as of July 2016 |
|---|---|---|---|
| | **Item** | **Features and Performance requirements** | **Performance Product** |
| **Audio/Video Displays** | Monitor | RS-232 control | NEC comercial or equivelent |
| | Mount | Mount for Monitor | Chief or equivalent |
| | | | |
| **Video Switching / Processing Equipment** | Video Scaler | Video scaler to scale duo video channel for video conference system | HD-HD |
| | Scaling AV Switcher | IN-1606 AV switcher. 4 HDMI inputs, 2 VGA inputs, 2 HDMI scaleable outputs with audio level control. | Extron IN1606 HDCP-Compliant Scaling Switcher 60-1081-01 |
| | | | |
| **Video Source Equipment** | Input Wall Plate | Wall plate to plug laptop/other sources into. Must have HDMI and VGA | |
| | | | |
| **Video Conference Equipment** | Cisco SX10 | Video conference codec with maintenance warranty | CTS-SX10-K9, CON-PSRN-CTSSX10 |
| **Control Equipment** | Master Controller | The NX-2200 / NetLinx® NX Integrated Controller is a programmable network appliance specifically designed to control AV and building technology using multiple analog and digital formats. The NX-2200 provides a scalable platform for the future by combining high performance, backward compatibility and extensive network security features. The NX-2200 is ideal for control and automation of medium-sized rooms and multi-room applications, as it includes more ports and security capabilities than the NX-1200. | AMX NX-2200 |
| | Central Room Control TouchPanel Power Connections Power Supply | 7" Touch Panel for room control Power over ethernet for touch panel if required Low voltage interface to integrate screen control with control system Power Supply for AMX controller | AMX MSD-701-L or MST-701 AMX  PS-POE AF TC AMX PS4.4 |
| **Rack/Podium** | Networking switch | Policy-based access control, identity and role-aware network, data integrity and confidentiality. Layer 2 threat defense capabilities with integrated security features for flexible collaboration between users on the network.  Compliance with Payment Card Industry Data Security Standard (PCI DSS) to meet regulatory mandates. Physical security with cable guard and lock. Ease of Deployment: •Zero touch deployment and ease of troubleshooting •Automatic configuring of the switch based on the type of device connected to the port •State-of-the-art QoS implementation for IP telephony and video Reduce Energy Costs: •Support to monitor, manage and reduce energy consumption of the devices connected to the switch Connectivity: •8-12 Fast Ethernet or Gigabit Ethernet connectivity •Power over Ethernet (PoE) and PoE pass-through •Two 1-Gb Ethernet uplinks | Cisco Catalyst 2960C 8 FE PoE or approved equivalent |
| | 16U Rack | VFI REX16 equipment Rack | |