APPENDIX 2F UBC FACULTY OF MEDICINE DESIGN GUIDELINES AND FUNCTIONAL REQUIREMENTS

EXECUTION VERSION

SEPTEMBER 9, 2022

FACULTY OF MEDICINE

Design Guidelines and Functional Requirements for Learning Spaces: Small Seminar Rooms

JANUARY 17, 2022

Version	Date	Author(s)	Description of Change
1.0	August 18, 2019	Frenklach, Macdonald, Housden, Steiger, Wong	Initial Draft
2.0	August 26, 2019	Frenklach, Macdonald, Housden, Steiger, Wong	Comments Review
3.0	Feb 11, 2021	Frenklach	Adjustments to CDHR
4.0	January 17, 2022	Frenklach	Lesson Learned updates

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1 INTRODUCTION

1.1 FACULTY OF MEDICINE DISTRIBUTED MEDICAL PROGRAM

In 2004, the University of British Columbia (UBC) Faculty of Medicine (FOM) initiated its Distributed Medical Program (DMP), the purpose of which is to provide equal access to medical teaching and training for students, residents, and practicing physicians across BC. The DMP is made possible by technology-enabled learning spaces located at university sites (UNBC, UBCO, UVic, and UBC) as well as Clinical Academic Campuses and Affiliated Regional Centres located across the province. Many of these spaces are also videoconference (VC)-enabled and are connected to each other via the central VC Bridge, all of which rests on a dedicated network called the Distributed Medical Program Audiovisual (DMP-AV) network. The requirements laid out in this document support the Accreditation standards defined by the Royal College of Canada.

1.2 DOCUMENT PURPOSE AND APPLICABLE SPACES

This document is part of a collection of documents referred to as the **UBC FOM Design Guidelines and Functional Requirements for Learning Spaces** (henceforth referred to as Design Guidelines and Functional Requirements). They provide requirements for learning spaces based on best practices and extensive organizational experience developed since 2004. Each learning space type has an associated Design Guideline and Functional Requirements document about that space type.

This document provides the design guidelines and functional requirements for the Videoconference rooms (commonly called VC Rooms) as they are identified in Appendix 2A - Clinical Specifications; OS-GP-04 – UBC Facilities:

Ref #	Space ID	# of Unit	NSM	Total NSM
8	Meeting/Videoconference Room 8 Seats	1	26	26
9	Meeting/Videoconference Room 16 Seats	1	44	44

1.3 PROCESS AND APPROVAL

The UBC FOM Project Team (FoM Team) shall be required to provide approval at each design stage and construction phase milestones, as specified in the Project Agreement (PA) and as required, to ensure architectural, infrastructure, AV systems, and all supporting systems are designed and implementation as specified.

1.4 ROOMS USAGE AND BOOKING PROCESS

The VC rooms are video conferencing-enabled teaching, learning, and meeting spaces. They are used to connect a small group of people in a meeting-style room with other groups of people in other VC enabled rooms. All participants remotely and local must have equivalent ability to interact with the other participants. These rooms are located at University Sites, Clinical Academic Campuses, and Affiliated Regional Centres, and Community Education Facilities. VC rooms are used by students, instructors, and staff.

This component will be shared between UBC Faculty of Medicine learners, post graduate resident trainees, faculty, and staff internal and external to the Hospital and therefore access to these rooms should be from a public corridor.

As part of the CACMS (Committee on Accreditation of Canadian Medical Schools) Accreditation Standard for Medical Schools, the UBC Faculty of Medicine must demonstrate how the medical education program has priority in shared educational spaces required for learning experiences in medical curriculum. The UBC Faculty of Medicine room booking policy, advanced booking process, and provincial-wide booking system must be used to demonstrate that the medical school meets the accreditation standard for priority scheduling in shared academic learning spaces across the province.

1.5 FUNCTIONAL REQUIREMENTS

VC rooms must enable all participants (located at all connected sites) to see, hear, and speak to the other participants, regardless of which site the participants are physically located. All participants must also be able to see (and hear, where applicable) other participants' presentation material.

1.5.1 VC ROOM CAPABILITIES AND FEATURES

In order to meet the functional requirements, the VC rooms shall be equipped with a permanently installed VC system which includes the following capabilities and features:

- 1.5.1.1 Participants must be able to display content for all participants (at all connected sites) from a user provided mobile device.
- 1.5.1.2 The system will utilize two displays to show remote participants and content independently
  - 1.5.1.2.1 System will utilize the left display to show remote sites while in a VC call
  - 1.5.1.2.2 System will utilize the right display to show local content or remote content while in a VC call
  - 1.5.1.2.3 System will utilize the left and right display to show local presentation content while not in a VC call
- 1.5.1.3 The video conferencing microphone(s) shall have the following features:
  - 1.5.1.3.1 Designed for speech intelligibility and human voice frequencies
  - 1.5.1.3.2 Placement of microphones shall be at participant in order to avoid the introduction of environmental noises such as HVAC.
  - 1.5.1.3.3 One (1) push-to-talk microphone per three (3) participants. An alternative microphone solution that achieves all the requirements of this document's specifications shall be approved by UBC FoM team.
  - 1.5.1.3.4 One (1) wireless lapel mic and one fixed push-to-talk mic for presenter area (when partitionable rooms joined)
- 1.5.1.4 The video conferencing camera shall have the following features:
  - 1.5.1.4.1 VC camera must auto-track the active talker. A maximum of two (2) adjacent participants can be framed in the shot when tracking the active talker.
  - 1.5.1.4.2 VC camera shall be minimum 1080p resolution.
  - 1.5.1.4.3 VC camera must be positioned at the front of room centred to the participant seating configuration in order to capture 100% of room participants.
  - 1.5.1.4.4 VC camera must be positioned such that when the audience is looking at the screens, they appear to be looking in the direction of the camera.
  - 1.5.1.4.5 VC camera must have protection from theft and damage.

1.5.1.4.6 VC camera has a low tolerance for structure borne vibration which is magnified when using the zoom function. Dampening material shall be provided to eliminate any vibration in order to stabilize the image.

1.5.1.5 The video conferencing codec shall have the following features:

1.5.1.5.1 Codec shall allow simultaneous transmission and reception of minimum two 1080p resolution graphics channels.

1.5.1.5.2 Codec shall support a minimum of 1080p resolution on its content and camera inputs, and its display device outputs.

1.5.1.5.3 Codec shall contain noise reduction and acoustic echo cancellation circuits

1.5.1.5.4 Codec shall utilize H.323 protocol and shall be able to register to a gatekeeper for call control routing.

1.5.1.5.5 Codec shall be fully controlled via touch panel which will include such features as:

1.5.1.5.5.1 System on/off

1.5.1.5.5.2 Microphone mute/unmute

1.5.1.5.5.3 Volume up/down

1.5.1.5.5.4 Source input selection

1.5.1.5.5.5 VC Dialing

1.5.1.5.5.6 VC Call receive

1.5.1.6 The display devices shall have the following features:

1.5.1.6.1 A minimum brightness of 350 cd/m2

1.5.1.6.2 A 16:9 aspect ratio

1.5.1.6.3 A minimum 4000:1 static contrast ratio

1.5.1.6.4 Digital input (HDMI, DisplayPort or similar)

1.5.1.6.5 Native resolution of 1080p or better

1.5.1.6.6 Be UL60065 CAN/CSA-22.2 No. 60065:03 and FCC Part 15 Class-B, ICES-003 certified

1.5.1.6.7 Utilize standard VESA mounts (100, 200, 300, or 400)

1.5.1.6.8 Must be professional series and rated for 24/7 operation

1.5.1.6.9 Must sleep when sync is lost and wake when sync is restored

1.5.1.6.10 Must be black in colour

1.5.1.6.11 Displays need to be of adequate size to enable all participants to clearly see the content on the screen. Screen size is a function of the furthest participant's viewing distance.

1.5.1.6.11.1 Ratio of the distance from the displays to the most distant viewer (MDV) to image height will not exceed a factor of 6.0 (distance to most distant viewer, MDV, divided by a single image height) for all seats.

1.5.1.7 Audio system will have the following characteristics:

1.5.1.7.1 Audio reproduction to be facilitated via two appropriately sized speakers flanking the displays or a suitable speaker bar

1.5.1.7.2 Sound systems intended for AV playback support must provide a minimum speech intelligibility of 0.56 STI throughout the audience seating area.

1.5.1.7.3 Sound systems intended for speech reinforcement must provide a minimum speech intelligibility of 0.67 STI throughout the audience seating area.

1.5.1.7.4 Coverage uniformity from 500Hz-2000Hz must be within 6dB (+/- 3dB) in the listening plane throughout the seating area for any sound system for all applications. The coverage uniformity below 500Hz must be within 10dB (+/- 5dB) in the listening plane

throughout the seating area. The coverage uniformity above 4000Hz must be within 8dB (+/- 4dB) in the listening plane throughout the seating area.

1.5.1.7.5 Sound systems must be calibrated to output at a minimum of 20 dBa over the ambient sound levels of the enclosing space (as measured during typical use), and must be capable of delivering no less than 75dBa sound level at the most distant seating position in the classroom at ear level.

1.5.1.7.6 System Noise (S/N) with all inputs assigned is at least -65 dBu below nominal operating level

1.5.1.7.7 Total Harmonic Distortion < 0.5% at peak operating level

1.5.1.7.8 System frequency response 50Hz – 18kHz +/- 2dB at nominal operating level

1.5.1.7.9 Nominal operating level of the electronic chain must be +4 dBm

1.5.1.8 The VC room shall be remotely supported with the following features:

1.5.1.8.1 An IP camera shall be installed at the back of the room to allow remote viewing of the participants and the VC system.

1.5.1.8.2 Network access to the video conferencing codec system configuration to facilitate remote codec manipulation from the local Central Technician Office (CTO) and remote UBC Med IT help desk sites.

1.5.1.9 Any dividable space shall have the following characteristics:

1.5.1.9.1 Must not reduce NSM allocated for the room in either divided or combined configuration

1.5.1.9.2 When spaces are divided, all above requirements apply.

1.5.1.9.3 Divider to meet all acoustical requirements found in this document

1.5.1.9.4 Validation of acoustical performance to be provided to UBC via acoustical engineer report

1.5.1.9.5 Must be easily movable by single person

1.5.1.9.6 When room is combined, the combined room will function as a single video conference room

1.5.1.9.7 Partitionable spaces with control systems will utilize virtual control panels to remotely manipulate room control systems. Note that multiple virtual control panels are required to be open simultaneously by the support staff.

1.5.1.9.8 A dedicated presenter camera will cover a presentation area at front of room. Camera shall have pan, tilt and zoom functionality to allow adjustment of the presenter area shot.

1.5.1.9.9 Audience cameras and presenter cameras will auto-switch to transmit the active talker to the far-end participants. Presenter will take precedence if audience and presenter talk simultaneously.

2 ROOM ENVIROMENTAL DESIGN

The room requires VC-appropriate architecture, acoustical treatments, wall and furniture colours, lighting, cooling, power and data ports, and cable pathways. The following sections describe requirements for additional aspects of room and VC system design.

UBC FOM technology-enabled learning spaces have active AV equipment 24 hours per day, 7 days per week. Spaces are primarily used during business hours (6am-6pm Monday-Friday), but can be used at any time.

2.1 ARCHITECTURE & INTERIOR DESIGN

2.1.1 GENERAL DESCRIPTION

2.1.1.1 The space shall be rectangular with an aspect ratio of side walls to front/back walls of 1:1.13.
2.1.1.2 Site lines to the main screens (on display wall) required to be unobstructed from all seats.
2.1.1.3 Columns or other obstructions within the room envelope are not be acceptable. This is necessary to maintain the usability and orientation of the space.
2.1.1.4 The seating design is a rectangular or U-shaped seating, depends on the size of the room, with loose tables
2.1.1.5 The minimum distance from the front wall to the closest seated participant required to be 1600mm.
2.1.1.6 The ratio of distance from displays to the most distant viewer (MDV), to image height, will not exceed a factor of 6.0 (distance from display to MDV divided by image height) for all seats.
2.1.1.7 The horizontal viewing angle for all seats will not exceed 60 degrees for both displays (measured from occupant seat to display center).
2.1.1.8 The entire front wall must be reinforced to permit secure mounting of equipment. Exact weight load to be coordinated by Project Co with based on AV system design and display sizes in compliance with FoM requirements.
2.1.1.9 The entrance is required to be at the back of the room (opposite the wall with the displays and camera). The number of entrances will be determined during the design

2.1.2 WINDOWS

2.1.2.1 If exterior or interior windows exist, 90% or better blackout blinds shall be provided for these windows to facilitate an optimal viewing and environment.
2.1.2.2 Blackout blinds shall utilize side rails/tracks to ensure no light leakage between panels.

2.1.3 DOORS

2.1.3.1 Access to the room shall be card access controlled.
2.1.3.2 Install kick plate on both sides of the door.
2.1.3.3 Door width to accommodate patient bed.
2.1.3.4 Glass hatch with integrated blinds.
2.1.3.5 Door hold open.
2.1.3.6 Refer to the section below for required acoustical performance

2.1.4 WALLS

2.1.4.1 Refer to section below for required acoustical performance of the walls.
2.1.4.2 Install wall and corner protection throughout the room from floor to 1000mm AFF.
2.1.4.3 Flooring

2.1.5 EQUIPMENT AND FURNITURE

2.1.5.1 The participant table shall be either rectangular or U-shaped, based on number of occupants.
- 2.1.5.1.1 Tables will have a 12 inch modesty panel.
- 2.1.5.1.2 In a room with 4-10 VC participants, a rectangular table configuration shall be used, with one table or a ganged set of tables suitable for the number of occupants.
- 2.1.5.1.3 In a room with 10-20 VC participants, a U-shaped table configuration opening towards the camera shall be provided for best viewing angles.

2.1.5.1.4 Additional tables and chairs will be needed to close the U-shaped table configuration. These seats will be occupied for non-VC use cases.

2.1.5.2 UBC FoM Team shall provide final approval on proposed tables required to form the seating arrangement that best suits the seating capacity and geometry of the space.

2.1.5.3 Floor box placement shall be coordinated with the approved furniture configuration. For floor box requirements refer to the electrical section of this document.

2.1.5.4 Phone, wall mounted by the entrance and a Tele-conference phone on the tables.

2.1.6 COLOURS

2.1.6.1 The colour of the walls, carpeting, and chairs must be neutral as either solid grey or solid blue to provide visual definition to the participants relative to the background. The purpose of the solid colour is to avoid the reflected light from the background affecting colour quality of the camera images.

2.1.6.2 The colour of the table surface must be either antique white, light grey, or light maple to maximize reflected light.

2.2 MECHANICAL

2.2.1 HVAC AND HEAT LOAD

2.2.1.1 HVAC designs must account for all AV equipment and maximum occupancy to maintain temperatures comfortable for occupants and safe for AV equipment and designed to the acoustical performance requirements as outlined in this document.

2.2.1.1.1 Long-term ambient room temperature target for these VC rooms to operate in is 21 degrees Celsius with a relative humidity level of 30-50%.

2.2.1.1.2 Maximum short-term (1 hour) sustainable ambient temperature for these rooms is 24 degrees Celsius with a relative humidity level of 30-50%.

2.2.1.2 Active cooling shall be provided to account for the equipment and occupancy heat gains. The minimum cooling capacity shall be calculated and coordinated by Project Co. Maximum occupancy must be factored in for all heating calculations.

2.2.1.3 The location of the compressor must not interfere with the acoustical requirements and must not introduce vibration into any wall or bulkhead that supports a camera or displace device.

2.2.1.4 A dedicated thermostat, locally controlled shall be provided.

2.2.2 PROTECTION FROM WATER DAMAGE

2.2.2.1 All VC rooms must be designed and constructed to protect the AV equipment from the potential any damage caused by plumbing failures and condensation.

2.2.2.2 If pressurized water lines run above the AV system components, install a drip tray in the ceiling to prevent equipment damage in the event of a leak.

2.3 ELECTRICAL

2.3.1 LIGHTING

2.3.1.1 Lighting is a key factor in a properly functional VC room. Minimum requirements are as follows:

2.3.1.1.1 All participants to be well illuminated for the VC cameras;

2.3.1.1.2 Minimize reflections on screens and video display surfaces;
2.3.1.1.3 Avoid an overly illuminated or glaring participant area;
2.3.1.1.4 No hot spots or shadows on participants;
2.3.1.1.5 All participants to easily control the lighting conditions;
2.3.1.1.6 Illuminate the entire participant area.

2.3.1.2 Light reflecting off the table surface require to be at 15-20 degree angle.

2.3.1.3 Colour temperature to be 3500 degrees Kelvin. Different colour temperatures will not be permitted.

2.3.1.4 Lighting to provide a minimum brightness of 80 foot-candles measured at table height.

2.3.1.5 Light controls to be located by the entrance.

2.3.1.6 Dimmer shall have the following features:
2.3.1.6.1 Dimming range of 0% to 100% in steps of 5% or less

2.3.1.7 Lighting fixtures shall have the following features:
2.3.1.7.1 Fixture ballasts to support dimming steps of 5% or less.

2.3.1.8 Minimum of three (3) lighting zones shall be provided:
2.3.1.8.1 Display device lighting within one (1) meter of the display devices
2.3.1.8.2 Wall wash lighting
2.3.1.8.3 Participant and ceiling lighting

2.3.1.9 Dimmer controller shall have a minimum of 5 lighting presets:
2.3.1.9.1 All on;
2.3.1.9.2 All off;
2.3.1.9.3 Receiving;
2.3.1.9.4 Presenting;
2.3.1.9.5 (Custom)

2.3.2 POWER OUTLET

2.3.2.1 Convenience receptacles shall be provided over and above receptacles required for AV equipment:
2.3.2.1.1 Provide four (4) convenience receptacles at each wall for a total of sixteen (16) receptacles.
2.3.2.1.2 Provide one (1) floor box convenience receptacle for every four (4) participants in local session. Floor box shall also accommodate data outlets as specified in the section below.

2.3.2.2 AV equipment loads shall be calculated and coordinated by Project Co.

2.3.2.3 Refer to section “Conduits and Cable Pathways” for AV equipment power receptacles locations.

2.3.3 CONDUITS AND CABLE PATHWAYS

2.3.3.1 Basket tray shall be sized for communications and audio-visual cable density plus 25% future expansion capacity:
2.3.3.1.1 Continuous, rigid, welded steel wire mesh spaced 50mm x 100mm;
2.3.3.1.2 Continuous T-weld on top rail of tray;
2.3.3.1.3 And Finish: electroplated zinc coating.

2.3.3.2 A zone conduit system shall be used in areas where basket tray is not feasible. Zone pull boxes c/w access hatches shall be spaced maximum 9 meters apart. All outlet box conduits shall homerun to the nearest zone pull box.

2.3.3.3 Power connection shall be adjacent to audio-visual outlet box.

2.3.3.4 Pathways shall avoid potential sources of electromagnetic interference by maintaining clearances of at least:
2.3.3.4.1 305mm from fluorescent ballasts;
2.3.3.4.2 305mm from electrical distribution conduit and cable less than 1kV;
2.3.3.4.3 1000mm from electrical distribution conduit and cable more than 1kV;

2.3.3.4.4 1220mm from motors and transformers;
2.3.3.4.5 And 305mm from HVAC equipment, ducts and pipes.

2.3.3.5 Audio-visual outlet boxes shall be masonry back box with minimum depth of 90mm. Outlet box shall be recessed if wall mounted below finished ceiling. All outlet boxes shall have cover plates installed and colour coordinated with other outlets and services.

2.3.3.6 Floor boxes shall not be used for any audio-visual cabling. Furniture will be movable and minimal support will be provided for setup and reconfiguration which must be considered in the AV design. Cable bundles extending from wall outlets and removable Velcro floor tracks are acceptable solutions for cable management of audio-visual cabling.

2.3.3.7 The bend radius shall be at least six (6) times the internal diameter for conduit that has an internal diameter of 50mm or less. The bend radius shall be at least ten (10) times the internal diameter for conduit that has an internal diameter more than 50mm.

2.3.3.8 The maximum number of bends between cable pull boxes in a conduit run shall be two (2) 90 degree bends.

2.3.3.9 Conduit runs shall have no continuous sections longer than 30m between pull boxes.

2.3.3.10 If a conduit run requires a reverse bend between 100 degree and 180 degree then a pull box shall be inserted into the bend but shall not be used as the bend.

2.3.3.11 Pull boxes shall be installed in fully accessible spaces.

2.3.3.12 Support and secure all boxes independent of the conduit connected thereto.

2.3.3.13 All conduit ends shall be protected by insulating bushings.

2.3.3.14 Conduit stub and insulating bushing shall be as short as possible inside the outlet box to ensure that it does not obstruct installation of the audio-visual device.

2.3.3.15 All conduits shall be left with a nylon pull string installed.

2.3.3.16 Each outlet box shall be clearly marked in back of box with an 'AV#' that corresponds to the riser diagram and floor plan.

2.3.3.17 Audio-visual conduits and outlet boxes shall be colour coded with paint or similar. The colour shall be different from other systems including communications pathway.

2.3.3.18 Quantity and size of conduits will be designed by Project Co to facilitate final AV system designs. At a minimum, Project Co will provide:

AV Infrastructure Table:

AV Source	**AV Destination**
Primary pull box or Rack	Microphones
Primary pull box or Rack	Displays
Primary pull box or Rack	Table Inputs
Primary pull box or Rack	Speakers
Primary pull box or Rack	Plenum Space
Primary pull box or Rack	VC Camera 1
Additional AV infrastructure for dividable rooms	
Primary pull box or Rack	Airwall Sensor
Primary pull box or Rack	VC Camera (Audience joint)
Primary pull box or Rack	VC Camera (Presenter)
Primary pull box or Rack	Presenter Inputs

2.4 DATA & TELEPHONE

2.4.1 WI-FI:

2.4.1.1 Provide a complete wireless network infrastructure throughout the AV spaces with no dead spots allowing any standard network applications or telephone applications to be utilized.

2.4.1.2 A wireless predictive survey shall be performed to provide 100% wireless coverage throughout each AV room with a minimum signal strength of 70dB for both 2.4GHz and 5GHz bandwidth. The predictive model shall consider building construction materials. Once the AV rooms are near completion, the predictive model shall be verified by performing a physical wireless study. Once complete, the model and results shall be handed over to the UBC FoM team for review and approval.

2.4.1.3 The proposed solution shall be able to support the following criteria:

2.4.1.3.1 Density shall be calculated allowing for two (2) mobile devices per participant

2.4.2 WIRED DATA PORTS:

2.4.2.1 Each AV system shall have three (3) data drops behind the right display.

2.4.2.1.1 1x assigned to the VC VLAN

2.4.2.1.2 1x assigned to the house network

2.4.2.1.3 1x assigned to the UBC network

2.4.2.2 Two (2) convenience data drops for 2 wall for a total of four (4) convenience data drops.

2.4.2.3 One (1) data drop per floor box.

2.4.2.4 One (1) data drop directly opposite displays at 2134mm AFF for IP camera.

2.4.2.5 Enable access to both VIHA and UBC network

2.4.3 PHONE PORTS:

2.4.3.1 One (1) VoIP phone data drop to be wall mounted by the door.

2.4.3.2 One (1) VoIP phone data drop to accommodate a conference speakerphone in centre of the room

2.5 ACOUSTICS

2.5.1 GENERAL CHARACTERISTICS

2.5.1.1 Room acoustics play a key role in ensuring presenter and audience speech intelligibility.

2.5.1.2 Design characteristics intended to support the acoustical requirements must be validated by a qualified and approved acoustical consultant. The acoustical report generated will address acoustical requirements for the HVAC system, ambient noise levels, lighting ballasts, reflective surfaces, treatments, reverberation, and other noise mitigation methodologies.

2.5.1.3 Acoustical consultant shall provide acoustical performance validation test and report at milestones as defined in the project agreement to be issued to UBC FoM Team for approval.

2.5.1.4 There are three (3) primary factors for consideration:

2.5.1.4.1 Background noise which considers ambient noise from HVAC and other systems that may create continuous/intermittent noise in the space;

2.5.1.4.2 Sound isolation which considers noise transfer from outside the space to inside the space; and

2.5.1.4.3 Interior acoustics which considers the movement and reflection of sound waves within the room.

2.5.2 BACKGROUND NOISE

2.5.2.1 Provide good speech intelligibility for local and remote listeners. The background noise target shall be Noise Criteria (NC) 25-30 with no pure tones.
2.5.2.2 Achieving these low NC levels means very tight control of fan noise and air flow conditions.
2.5.2.3 Noise-producing HVAC equipment including mixing boxes, fan-powered mixing boxes, and fan coil units shall not be located inside VC rooms or within the ceiling plenum space.

2.5.3 NOISE ISOLATION

2.5.3.1 It is critical to the proper operation of the VC room to achieve adequate sound isolation between the rooms and adjacent spaces and for dividable rooms, in-between the two sections.
2.5.3.2 The following targets are applicable to all VC rooms:
2.5.3.2.1 All perimeter walls must achieve a Sound Transmission Class (STC) rating of STC 55. The door must be targeted for a purpose built STC 45.
2.5.3.2.2 Noise isolation to rooms above and below are set at minimum STC 50.
2.5.3.2.3 A target Impact Isolation Class (IIC) 65 rating must be set for the floor/ceiling system.
2.5.3.2.4 The dividable wall shall have a rating of STC 55.

2.5.4 INTERIOR ACOUSTICS

2.5.4.1 VC rooms must have appropriate acoustical conditions to optimize the rooms for presentations, VC, and/or monitoring. Appropriate acoustical treatment must be installed to control reverberation, minimize reflections, flutter echo and other acoustical issues that may adversely affect the microphone pickup.
2.5.4.2 Reverberation time must be 0.45 to 0.55 seconds in the mid and high frequencies, with controllable low frequency energy.

2.6 SECURITY

2.6.1 ROOM ACCESS

2.6.1.1 All entrances to the VC rooms will include an RFID Card Reader

2.6.2 EQUIPMENT

2.6.2.1 The display mounts require a padlock secured via 4 digit combination lock.
2.6.2.2 The camera, codec, and Touch 10 require a 4 digit combination T-Lock style laptop cable lock.

FACULTY OF MEDICINE

Design Guidelines and Functional Requirements for Learning Spaces: Enhanced Clinical Skills Suite

JANUARY 17, 2022

Version	Date	Author(s)	Description of Change
1	Aug 26, 2019	Housden, Wong, Steiger, Watanabe, MacDonald, Frenklach	Initial Draft
2	Feb 11, 2021	Mickey Frenklach	Adjustments to CDHR
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This document provides the design guidelines and functional requirements for the Enhanced Clinical Skills rooms (commonly called ECSR), Control room, change Cubical and storage room as they are identified in Appendix 2A - Clinical Specifications; OS-GP-04 – UBC Facilities:

Ref #	Space ID	# of Unit	NSM	Total NSM
10	Enhanced Clinical Skills Room	2	22	44
11	Control Room	1	14	14
12	Change Cubical - Accessible	2	4	8
13	Storage Room – Equip/supply	1	15	15

1.3 PROCESS AND APPROVAL

The UBC FOM Project Team (FoM Team) shall be required to provide approval at each design stage and construction phase milestones, as specified in the Project Agreement (PA) and as required, to ensure architectural, infrastructure, AV systems, and all supporting systems are designed and implementation as specified.

1.4 ROOM USAGE AND BOOKING PROCESS

Enhanced Clinical Skills rooms (ECSRs) are used in different ways throughout the medical program. Typically, the rooms are used by 2-9 students, plus 1 instructor/clinician and 1 volunteer or standardized patient and sometimes 1 family member.

These rooms are used by students and residents to practice performing clinical procedures within a safe learning environment. Procedures are conducted on volunteer or standardized patients (actors), or for more sensitive procedures, on task trainers or advanced clinical skills devices. They are also used to conduct exams, such as the objective structured clinical exam (OSCEs) for years 1 - 4. ECSRs are regularly used by students in years 1 & 2 for "Clinical Skills" and, at some distributed sites for "Doctor, Patient and Society" courses.

The adjacent Change Cubicles used by volunteer patients that will be moved to the CSRs and ECSR after changing into gowns.

Technology is used to support the delivery of clinical skills education by enhancing access to materials that students can use to prepare, review, and debrief. However, the primary objective and focus is always on the student's interaction with the patient, building communication skills, rapport, learning new skills and refining approach to clinical encounters, preparing students for medical practice.

This component will be shared between UBC Faculty of Medicine learners, post graduate resident trainees, faculty, and staff internal and external to the Hospital and therefore access to these rooms should be from a public corridor.

As part of the CACMS (Committee on Accreditation of Canadian Medical Schools) Accreditation Standard for Medical Schools, the UBC Faculty of Medicine must demonstrate how the medical education program has priority in shared educational spaces required for learning experiences in medical curriculum. The UBC Faculty of Medicine room booking policy, advanced booking process, and provincial-wide booking system must be used to demonstrate that the medical school meets the accreditation standard for priority scheduling in shared academic learning spaces across the province.

1.5 FUNCTIONAL REQUIREMENTS

Enhanced Clinical Skills Rooms (ECSRs) are designed to accommodate simulation mannequins and task trainers as well as to simulate Doctor-Patient activity in a clinic or patient examination room. ECSRs are compromised of an ECSR activity room and a control-observation room. Because task trainers and mannequins require fluids, gasses, power, and data, the ECSR spaces must be outfitted with the same equipment and services as a typical trauma bay. ECSR control room purpose built for monitoring the ECSR activity room and remotely operating simulation mannequins.

Change cubicles to provide space for patients to change into gown in a private setting and walk to the immediate adjacent ECSR.

Storage room will store mannequins, patient bed, resuscitation carts and other clinical equipment.

1.5.1 ECSR Core AV Requirements

1.5.1.1 High definition digital display (AKA: Side display) – This is used to review procedural instruction videos, prior to launching into a clinical skills class; review exhibits to enhance the students' ability to correlate diagnostic information with case history (x-rays, lab results, photographs, medical records, etc).

- 1.5.1.1.1 A minimum brightness of 350 cd/m2
- 1.5.1.1.2 A 16:9 aspect ratio
- 1.5.1.1.3 A minimum 4000:1 static contrast ratio
- 1.5.1.1.4 Digital and analog inputs (HDMI, VGA)
- 1.5.1.1.5 Displays must have built-in speakers suitable for size of space
- 1.5.1.1.6 Native resolution of 1080p or better
- 1.5.1.1.7 Be UL60065 CAN/CSA-22.2 No. 60065:03 and FCC Part 15 Class-B, ICES-003 certified
- 1.5.1.1.8 Utilize standard VESA mounts (100, 200, 300, or 400)
- 1.5.1.1.9 Must be professional series and rated for 24/7 operation
- 1.5.1.1.10 Must sleep when sync is lost and wake when sync is restored
- 1.5.1.1.11 Must be black in color
- 1.5.1.1.12 Displays need to be of adequate size to enable all participants to clearly see the content on the screen. Screen size is a function of the furthest participant's viewing distance.

1.5.1.2 Ratio of the distance from the displays to the most distant viewer (MDV) to image height will not exceed a factor of 6.0 (distance to most distant viewer, MDV, divided by a single image height) for all room occupants

1.5.1.3 In-room PC

1.5.1.4 Internet access required

- 1.5.1.4.1 Connection to hospital network for patient records access
- 1.5.1.4.2 Fitted with DVD compatible optical drive for playback of DVD media
- 1.5.1.4.3 Software video codecs installed to facilitate various formats of multimedia playback

1.5.1.5 A bidirectional audio system will be installed between ECSR/ CSR and Control room.

- 1.5.1.5.1 Centrally located ceiling mounted boundary microphone
- 1.5.1.5.2 Suitably sized ceiling mounted speaker located near the observation window
- 1.5.1.5.3 Light indicator to inform room occupants of when the audio system is actively listening to the room
- 1.5.1.5.4 While the push to talk microphone is active the audio system will duck or mute the control room speaker to prevent an audio feedback loop

1.5.1.6 Mannequin vitals display to be mounted on articulating arm on headwall near bed

- 1.5.1.6.1 Vitals monitor to meet the following requirements:
  - 1.5.1.6.1.1 A minimum brightness of 350 cd/m2
  - 1.5.1.6.1.2 A 16:9 aspect ratio
  - 1.5.1.6.1.3 A minimum 4000:1 static contrast ratio
  - 1.5.1.6.1.4 Digital and analog inputs (HDMI, VGA)
  - 1.5.1.6.1.5 Display must have built-in speakers
  - 1.5.1.6.1.6 Native resolution of 1080p or better
  - 1.5.1.6.1.7 Be UL60065 CAN/CSA-22.2 No. 60065:03 and FCC Part 15 Class-B, ICES-003 certified
  - 1.5.1.6.1.8 Utilize standard VESA mounts (100 or 200)
  - 1.5.1.6.1.9 Must sleep when sync is lost and wake when sync is restored
  - 1.5.1.6.1.10 Must be black in color

1.5.1.6.2 An HDMI output will be mounted to the headwall near the vitals monitor to provide video signal to the vitals monitor

1.5.1.6.3 A USB extender will be mounted to the headwall near the vitals monitor to pass touch input to the mannequin control PC

1.5.1.6.4 A point-to-point CAT6 RJ-45 LAN port will be mounted to the headwall near the vitals monitor to pass control data between the mannequin and control PC.

1.5.1.7 Voice of patient (audio from control room to mannequin)

1.5.1.7.1 A 3.5mm audio output connector will be installed on the headwall near the vitals monitor to pass audio from the mannequin control PC to the mannequin.

1.5.1.7.2 A flat flexible speaker will be placed under the neck area of the mannequin and connected to the 3.5mm audio output connector.

1.5.1.8 Room side display to have local HDMI & VGA inputs as well as control room HDMI & VGA inputs

1.5.1.8.1 Side display inputs to be facilitated via a 12' VGA & HDMI cable terminating behind display

1.5.1.8.2 Input cables will be hung on a hook located below display

1.5.1.8.3 Side display inputs to be auto-switching and superseded by control room inputs

1.5.1.8.4 A point-to-point CAT6 RJ-45 LAN port will be installed behind the side display to facilitate Control room inputs being fed to display via CAT6 cable

1.5.1.9 Infrastructure to support future simulation recording cameras. See electrical - cables and infrastructure

1.5.1.10 Provide all conduits and back box infrastructure necessary for AV system design

1.5.1.11 Provide trauma bay equivalent services (fluids, gasses, power, data, and diagnostic equipment) to support the use of simulation task trainers and simulation mannequins for the intended use cases.

1.5.2 AV requirements for Control room:

1.5.2.1 Provide millwork wide enough for two workstations and three computers below the ECSR/CSR observation room window

1.5.2.1.1 ECSR: Millwork to extend left or right to cover an AV half rack without impeding workstations

1.5.2.1.2 CSR observation side: folding millwork, 30cm wide 60cm long.

1.5.2.2 Below the window and above the millwork provide a HDMI and VGA auto switching inputs to feed the side display in the ECSR

1.5.2.2.1 Inputs in Control room to supersede in room side display inputs.

1.5.2.3 Below the window and above the millwork provide HDMI and VGA auto switching inputs to feed the vitals display in the ECSR activity room

1.5.2.4 Non-latching push to talk microphone for injecting audio into the activity room

1.5.2.5 Volume knob to control the audio volume level

1.5.2.6 Below the window and above the millwork provide USB extender outputs to provide the mannequin control PC USB input from the vitals monitor

1.5.2.7 Below the window and above the millwork provide a 3.5mm audio input jack to supply audio from the control PC to the mannequin (Voice of Patient)

1.5.2.8 Control room will require the bi-directional audio system described in core requirements.

1.5.2.8.1 Two headphone amps with independent volume controls to facilitate headphone listening of activity room audio

1.5.2.9 AV rack, 15U, 24" deep located under the millwork to facilitate the AV systems equipment

1.5.2.9.1 Rack to have front and rear equipment mounting rails

1.5.2.9.2 Rack to have open back and front

1.5.2.9.3 Rack to have closed top, bottom, and sides

1.5.2.9.4 Rack to have leveling feet

1.5.2.10 Space will be provided to facilitate a second half rack under the millwork (next to the AV rack) to facilitate a future simulation recording/debrief system
1.5.2.11 A primary AV pull box will be installed behind the AV rack location

2 ROOM ENVIROMENTAL DESIGN

The rooms require teaching and learning and VC-appropriate architecture, acoustical treatments, lighting, cooling, power and data ports, and cable pathways. The following sections describe requirements for additional aspects of rooms and VC system design.

UBC FOM enhanced clinical skills and control rooms have active AV equipment 24 hours per day, 7 days per week.

Spaces required access 24 hours per day, 7 days per week but are primarily used during business hours.

2.1 ARCHITECTURE & INTERIOR DESIGN

2.1.1 General Description

For all spaces under this document:

2.1.1.1 Columns or other obstructions within the room envelope will increase the NSM requirement. This is necessary to maintain the usability and orientation of the space.
2.1.1.2 Refer to the section below for required acoustical performance.
2.1.1.3 All walls and corners to include wall and corner protection from floor to 1000mm AFF within the rooms and the corridors where the equipment is being transferred to and from.
2.1.1.4 Doors:
- 2.1.1.4.1 Width of 1200mm minimum.
- 2.1.1.4.2 RFID Card Reader.
- 2.1.1.4.3 Doors to include patient bed height kick plates on both sides and frame protection.
- 2.1.1.4.4 Door hold-open.

2.1.1.5 Windows: If exterior or interior windows exist, 90% or better blackout blinds shall be provided for these windows to facilitate an optimal viewing and environment. Blackout blinds shall utilize side rails/tracks to ensure no light leak between panels.

2.1.2 Rooms layout design:

2.1.2.1 Room size and aspect ratio (app 1:1.45)
2.1.2.2 Minimum clearance of 1m required around stretcher/exam table to provide appropriate working space. This clearance must not be intruded upon by fixed equipment, millwork or door swings, although portable equipment may be placed within the clearance limit, as appropriate.
2.1.2.3 Hold up to 11 people (8 students + 1 tutor + 1 patient + 1 family member).
2.1.2.4 An additional door way (standard size) between ECSR and control room with twist lock on the passage set (Control room side).
2.1.2.5 Closely model a patient examination room, (e.g.: sink, soap, and paper towels are required for hand washing, cleaning materials, and teaching specific procedures, such as dialysis).

2.1.2.6 Interact with a volunteer or standardized patient as they would in a real doctor's office, including access to an examination table, head wall with diagnostic equipment, and supplies such as sutures and gloves.

2.1.2.7 All of the walls must have wall protection to the height of the patient bed. From the height if the patient bed to 2100mm AFF the walls must be reinforced to permit secure mounting of equipment existing and future.

2.1.2.8 One wall to be dedicated as the 'head wall' with the Medical diagnostic equipment panel including Blood Pressure cuff (left side), otoscope (with tip dispenser) ophthalmoscope (right side) and wall mounted thermometer; gas, ports, and valves, patient vital signs monitor, compressed air of 50psi (Required to drive mechanical functions on some task trainers) and suction.

- 2.1.2.8.1 To reduce noise and complexity, centrally supplied air is preferred over local air compressors (located in the control room's gasses closet).
- 2.1.2.8.2 Gas outlets must be identified as simulated or actual.

2.1.2.9 Ceiling mounted exam light.

2.1.2.10 Code blue button or nurse call button (signage must indicate whether fully operational for hospital drills, connected to control room only for simulation, or completely inactive).

2.1.2.11 Upper and lower cabinetry, lockable (for small items used in clinical procedures such as hospital linens, hospital gowns, gloves, otoscope tips, tongue depressors, sutures, etc) and counter top.

2.1.2.12 A utility sink to clean task trainers and hand washing.

2.1.2.13 Wall mounted computer with height adjustable mounting bracket.

2.1.2.14 It is preferable not to have any exterior windows, to preserve patient privacy. If non-observation windows are unavoidable then window coverings must be provided 90% or better blackout blinds to ensure patient privacy.

2.1.2.15 Patient ceiling lift.

2.1.2.16 One-way glass between the ECSR/ CSR and the control room.

- 2.1.2.16.1 Location of the window to provide an unobstructed view of the entire room.
- 2.1.2.16.2 8' to 14' wide by min of 4' high continues glass. The bottom edge of the frame must be 36" above finished floor.
- 2.1.2.16.3 Integrated blinds or blinds of both sides.

2.1.2.17 The orientation of the bed or exam table is such that the feet point toward the observation window so the line of site is not obstructed when the learners are tending to the patient or task trainer.

2.1.2.18 Furniture and Equipment:

- 2.1.2.18.1 Sharp container.
- 2.1.2.18.2 Patient stepper.
- 2.1.2.18.3 30"x60" Mobile flip tables (HPL work surfaces) w/ rounded table corners (PVC edging).
- 2.1.2.18.4 9 stackable chairs on casters
- 2.1.2.18.5 4'x8' whiteboard / glassboard
- 2.1.2.18.6 Disposable clinical supplies.
- 2.1.2.18.7 Digital clock above patient bed/exam table
- 2.1.2.18.8 1 x Examination bed 90° Fowler backrest and footrests.
- 2.1.2.18.9 1 x patient bed as specified in the ICU.
- 2.1.2.18.10 Phone, wall mounted by the entrance.

2.1.3 Control room:

2.1.3.1 Control holds up to 4 people (1 technicial+1 tutor+2 students).

2.1.3.2 Lockable acoustically treated closet is required to house the air compressor, tanks, vacuum pump, and related equipment.

2.1.3.3 Table/millwork for 2 workstations with computers, task chairs and two phones.

2.1.4 Waiting Area and Change cubicles

2.1.4.1 Location of the waiting area and changing cubicles must be with immediate adjacency to the ECSR / CSRs.

2.1.4.2 Waiting area to be design to enable privacy for waiting patients.

2.1.4.3 Each cubicle to have a door with privacy lock from the inside, and include small bench, a full height digitally lockable locker and a full height mirror.

2.1.5 Storage rooms:

2.1.5.1 Location of the storage rooms must be close to the ECSR.

2.1.5.2 Install backing on all walls for heavy duty shelving.

2.1.5.3 Install 8000 lin mm 60 cm deep adjustable shelving. Consider flip-down drawers for easy movement onto stretcher.

2.2 MECHANICAL

2.2.1 HVAC and Heat Load

2.2.1.1 Ventilation should be appropriate based on intended clinical uses, expected equipment BTUs and if real medical gasses will be used and designed to the acoustical performance requirements as outlined in this document.

2.2.1.2 Cooling systems must to be designed for a heat load from the specified equipment and a team of up to eleven performing intensive work and one person dressed only in a hospital gown inside the room for one or more hours with all doors closed.

2.2.1.3 An individual locally temperature control within each room is required. This is especially important when students are working in smaller groups with one patient; the patient becomes very cold if the temperature cannot be adjusted to a comfortable level for someone dressed only in a hospital gown.

2.2.1.4 For rooms that will include an AV rack, a separated standalone HVAC unit is required to provide cooling 24/07 and not operated by occupancy.

2.2.2 Plumbing

2.2.2.1 A sink, soap, and paper towels are required for hand washing, cleaning task trainer materials, and teaching specific procedures, such as gowning and gloving.

2.2.2.2 For control room: A floor drain in the gasses closet will be required for the air compressor.

2.2.3 Protection from Water Damage

2.2.3.1 All AV equipment must be protected from damage caused by plumbing failures and excessive condensation.

2.2.3.2 If overhead pressurized water pipes exist, the designs should include a mitigation strategy in the event of a leak.

2.3 ELECTRICAL

2.3.1 Lighting

2.3.1.1 All lighting, including clinical lights need to be coordinated with the locations of the speakers and ceiling mics.

2.3.1.2 Lighting must meet or exceed 80 Foot candles at 30” AFF.

2.3.1.3 A separate zone for lights within 1 meter of the one-way mirror

2.3.1.4 All lights will be dimmable. Dimmer shall have the following features:

2.3.1.4.1 Dimming range of 0% to 100% in steps of 5% or less
2.3.1.4.2 Lighting fixtures to have ballasts that support dimming steps of 5% or less.
2.3.1.5 All light control in the ECSR side needs to be duplicated in the Control from the observation seating area.
2.3.1.6 Control room: The gasses closet will require its own light and switch.

2.3.2 Power outlets

ECSR/CSR:

2.3.2.1 At the headboard provide power for:
2.3.2.1.1 CSR: diagnostic set, examination bed, and other equipment as will be provided during design phase.
2.3.2.1.2 ECSR: Mannequin, physiological monitor, crash cart, diagnostic set, examination bed, and other equipment as will be provided during design phase.
2.3.2.2 Power for the camera mounted above the control room window, looking out towards the feet of the patient bed.
2.3.2.3 Power for the ceiling-mounted camera facing down above the patient bed
2.3.2.4 4x standard duplex outlets at standard height on each wall for Participants' personal devices, mobile ultrasound machine, PC, etc.
2.3.2.5 Power for the future camera position immediately above the display.

Control rooms:

2.3.2.6 1 standard duplex power outlets at each operator station.
2.3.2.7 1 double duplex power outlet adjacent to the primary AV pull box at the AV rack location.
2.3.2.8 1 standard duplex power outlet for vacuum pump and air compressor in gasses closet.

Storage Room:

2.3.2.9 Provide 8 power duplex throughout the storage room

2.3.3 Conduits and Cable pathways

ECSR:

2.3.3.1 One quad gang box with 3x 25mm conduits installed at headwall behind vitals display (Vitals video, PtP RJ45, USB extender, VoP)
2.3.3.2 One single gang box with 1x 25mm conduit will be installed on the underslab directly above the patient bed (for speakers)
2.3.3.3 One single gang box with 1x 25mm conduit will be installed on the underslab directly above the patient bed (for microphone)
2.3.3.4 One single gang box with 1x 25mm conduit will be installed on the underslab directly above the patient bed (for future simulation camera)
2.3.3.5 One single gang box with 1x 25mm conduit will be installed on the underslab directly above the observation window (for future simulation camera)
2.3.3.6 One double gang box with 1x 25mm conduit installed at behind side display (Control room display inputs)

2.3.3.7 All conduits tie back to AV Pull Box in Control room.

Control room:

2.3.3.8 AV pullbox of sufficient size to accommodate up to 18 conduits, located behind AV equipment rack
2.3.3.9 One single gang box with 1x 25mm conduit will be installed on the underslab directly above the the operator stations (speakers)
2.3.3.10 One quad gang box with 3x 25mm conduits located below observation window and above millwork (vitals video, PtP RJ45, USB extender, VoP)
2.3.3.11 One double gang box with 1x 25mm conduit located below observation window and above millwork (Side display inputs)
2.3.3.12 One double gang box with 1x 25mm conduit located below observation window and above millwork (microphone input)
2.3.3.13 One double gang box with 1x 25mm conduit located below observation window and above millwork (headphone amp outputs)
2.3.3.14 1x 25mm conduit from cable tray to AV pull box
2.3.3.15 All AV conduits will route through the primary AV pull box
2.3.3.16 Provide all services, conduits, and back box infrastructure necessary for AV system design

AV Infrastructure Table

AV Source	AV Destination
ECSR activity mic	AV Pull Box
ECSR activity speaker	AV Pull Box
ECSR activity vitals display	AV Pull Box
ECSR activity voice of patient	AV Pull Box
ECSR activity mannequin control	AV Pull Box
ECSR activity future simulation cam 1	AV Pull Box
ECSR activity future simulation cam 2	AV Pull Box
ECSR control speaker	AV Pull Box
ECSR control vitals input	AV Pull Box
ECSR control side display input	AV Pull Box
ECSR control microphone input	AV Pull Box
ECSR control headphone amp output	AV Pull Box
Cable tray	AV Pull Box

2.4 NETWORK, DATA & TELEPHONE

2.4.1 Wi-Fi:

2.4.1.1 Provide a complete wireless network infrastructure throughout the AV spaces with no dead spots allowing any standard network applications or telephone applications to be utilized.

2.4.1.2 A wireless predictive survey shall be performed to provide 100% wireless coverage throughout each AV room with a minimum signal strength of 70dB for both 2.4GHz and 5GHz bandwidth. The predictive model shall consider building construction materials. Once the AV rooms are near completion, the predictive model shall be verified by performing a physical wireless study. Once complete, the model and results shall be handed over to the UBC FoM team for review and approval.

2.4.1.3 The proposed solution shall be able to support the following criteria:

2.4.1.3.1 Density shall be calculated allowing for two (2) mobile devices per participant

2.4.2 ECSR/CSR

2.4.2.1 2 data ports for each computer station.
2.4.2.2 Enable access to both VIHA and UBC network
2.4.2.3 Phone port and a wall mounted speaker phone by the door at standing height.
2.4.2.4 Additional speaker phone (to the above) mounted on or immediately next to the headwall at standing height.
2.4.2.5 4 Data ports by the bed/exam tables.

2.4.3 Control room:

2.4.3.1 One phone port at each operator station
2.4.3.2 Electrical systems and data conduit must support the equipment detailed below, including connections between this equipment and the systems noted in the ECSR. Note that some of the equipment below may optionally be placed in a separate server room, assuming on-demand access to this equipment is ensured.
2.4.3.3 Network design account for specific requirements of recording/debriefing system and task trainers. For example, recording/debriefing systems may have specific bandwidth requirements based on anticipated peak use, and may require specific ports to be open on the network.
2.4.3.4 Access to the recording/debrief server VLAN will be available from the house VLAN to facilitate remote (within the building) connections and playback of recorded content.
2.4.3.5 A wireless network is required as some task trainers are controlled via tablet computers or other portable devices.
2.4.3.6 4 house network ports at or near the equipment rack location.
2.4.3.7 4 house network ports above desk height for computer equipment (2 on each side of the observation window)
2.4.3.8 Enable access to both VIHA and UBC network

2.5 SECURITY

2.5.1 Room Access

2.5.1.1 All entrances to the ECSR, CSR, control room and storage will include an RFID Card Reader

2.5.2 Equipment

2.5.2.1 The display mounts require a padlock secured via 4 digit combination lock.

2.6 ACOUSTICS

2.6.1 General Characteristics

2.6.1.1 Room acoustics play a key role in ensuring presenter and audience speech intelligibility.
2.6.1.2 Design characteristics intended to support the acoustical requirements and must be validated by a qualified and approved acoustical consultant. The acoustical report generated will address acoustical requirements for the HVAC system, ambient noise levels, lighting ballasts, reflective surfaces, treatments, reverberation, and other noise mitigation methodologies.
2.6.1.3 Acoustical consultant shall provide acoustical performance validation test and report at milestones as defined in the project agreement to be issued to UBC FoM Team for approval.
2.6.1.4 There are three (3) primary factors for consideration:

2.6.1.4.1 Background noise which considers ambient noise from HVAC and other systems that may create continuous/intermittent noise in the space;

2.6.1.4.2 Sound isolation which considers noise transfer from outside the space to inside the space;

2.6.1.4.3 Interior acoustics which considers the movement and reflection of sound waves within the room.

2.6.2 Background Noise

2.6.2.1 Noise control measures must be undertaken to achieve a background noise criterion of NC 30-35.

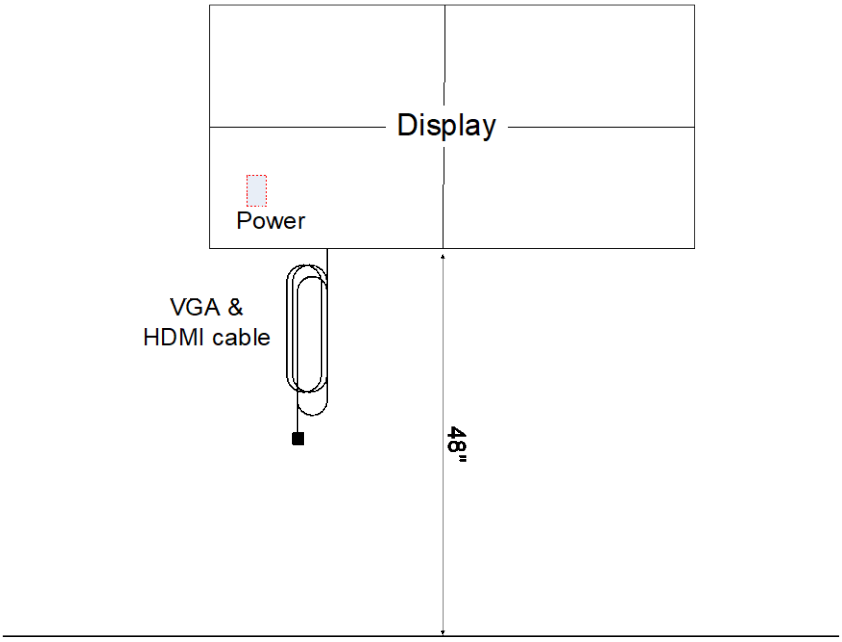
2.6.3 Noise Isolation

2.6.3.1 ECSR/CSR must achieve a Sound Transmission Class (STC) rating of STC 50-54.

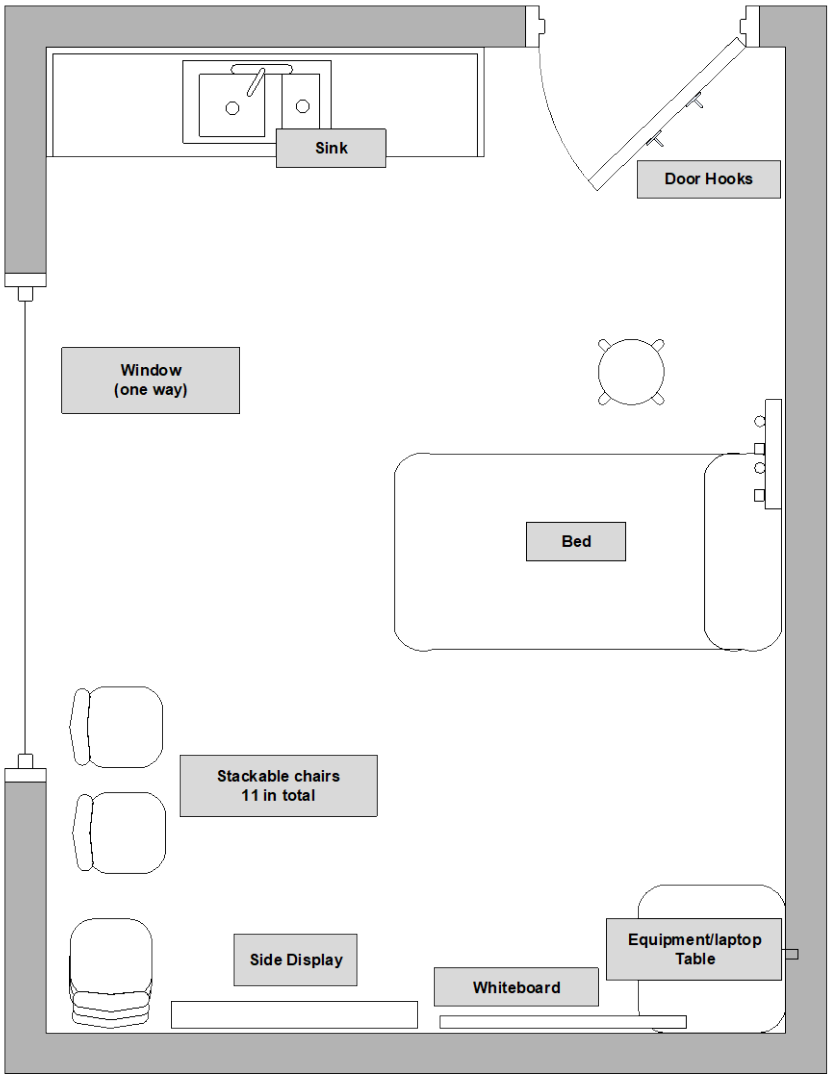
2.6.3.2 Groups of students in adjoining rooms must be able to converse at normal levels and not interrupt their colleagues in adjacent rooms. This is including the designs of the doors, walls and observation one-way mirror.

3 REFERENCE DIAGRAMS

Figure 1: ECSR Display diagram



Please note: Placement of the display and the window and general the room layout will depend on room geometry.



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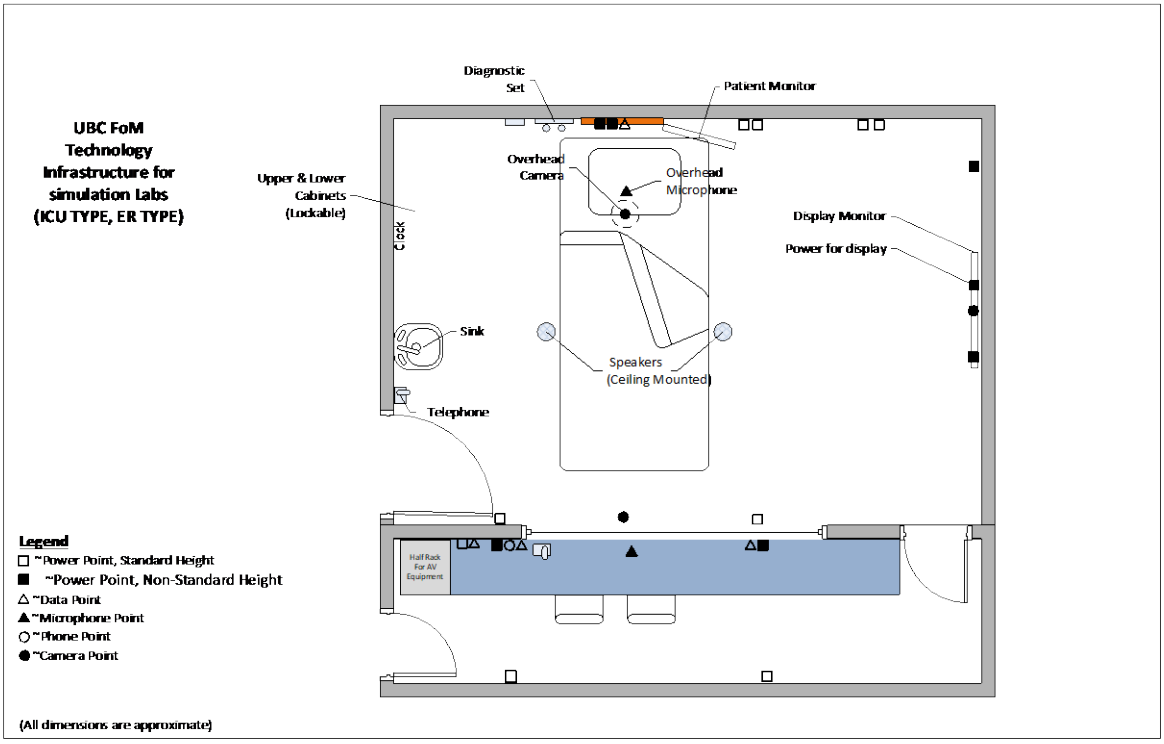

Please note: Placement of the display and the window and general the room layout will depend on room geometry.

FACULTY OF MEDICINE

Design Guidelines and Functional Requirements for Learning Spaces: On-Call Suite

JANUARY 17, 2022

Version	Date	Author(s)	Description of Change
1.0	August 26, 2019	Mickey Frenklach	Creating doc
2.0	Feb 11, 2021	Mickey Frenklach	Adjustments to CDHR
3.0	January 17, 2022	Frenklach	Lesson Learned updates

TABLE OF CONTENTS

1 INTRODUCTION

1.1 FACULTY OF MEDICINE DISTRIBUTED MEDICAL PROGRAM

In 2004, the University of British Columbia (UBC) Faculty of Medicine (FOM) initiated its Distributed Medical Program (DMP), the purpose of which is to provide equal access to medical teaching and training for students, residents, and practicing physicians across BC. The DMP is made possible by technology-enabled learning spaces located at university sites (UNBC, UBCO, UVic, and UBC) as well as Clinical Academic Campuses and Affiliated Regional Centres located across the province. Many of these spaces are also videoconference (VC)-enabled and are connected to each other via the central VC Bridge, all of which rests on a dedicated network called the Distributed Medical Program Audiovisual (DMP-AV) network. The requirements laid out in this document support the Accreditation standards defined by the Royal College of Canada.

1.2 DOCUMENT PURPOSE AND APPLICABLE SPACES

This document is part of a collection of documents referred to as the **UBC FOM Design Guidelines and Functional Requirements for Learning Spaces**. They provide requirements for the design of the learning spaces including furniture and equipment.

This document provides the design guidelines and functional requirements for the spaces included in the on-call Suite as they are identified in Appendix 2A - Clinical Specifications; OS-GP-04 – UBC Facilities:

Ref #	Space ID	# of Unit	NSM	Total NSM
16, 17	On-call room	5	7, 10	38
18	Locker Area	30	0.3	9
19, 24	Washrooms. Refer also to technical specifications for design parameters	6	4.5	27
20	Shower. Refer also to technical specifications for design parameters	5	2.0	10
23	Lounge	1	20	20

1.3 PROCESS AND APPROVAL

The UBC FOM Project Team (FoM Team) shall be required to provide approval at each design stage and construction phase milestones, as specified in the Project Agreement (PA) and as required, to ensure architectural, infrastructure, and all supporting systems are designed and implementation as specified.

1.4 ROOMS USAGE DESCRIPTIONS

The on-call suite is dedicated for the UBC Faculty of Medicine undergraduate students and post-graduate resident trainees that are at the site and is used of the call activities including lockers (e.g, street clothes, books, stethoscope, laptops and backpack), relaxation, networking, and resting.

1.5 FUNCTIONAL REQUIREMENTS AND DESIGN CRETERIA

1.5.1 ON-CALL SUITE GENERAL

1.5.1.1 The on-call suite require to be designed as a centralized suite including all spaces in this section and the Learning Commons.

1.5.1.2 The location must be carefully considered so that the route between this area and inpatient units and the Emergency Department is safe and secure, particularly after hours, and within 5 minutes walking time.

1.5.1.3 Security: This area must to be secure, 24/7 access via RFID Card Reader.

For each of the rooms, the room must be:

1.5.1.3.1 24/7 access via RFID Card Reader.

1.5.1.3.2 Safe and secure within the room in case someone unauthorized entered the on-call suite.

1.5.1.3.3 Enable distress alerting Security without dialing a phone.

1.5.1.3.4 Security must identify immediately and easily the location of the room where the alert was made from.

1.5.1.4 All inside and outside walls and corners to include wall and corner protection from floor to 1000mm AFF.

1.5.1.5 Doors: All doors to have mechanical hydraulics to ensure quiet and soft closing.

1.5.1.6 Wi-Fi:

1.5.1.6.1 Provide a complete wireless network infrastructure throughout the spaces with no dead spots allowing any standard network applications or telephone applications to be utilized.

1.5.1.6.2 A wireless predictive survey shall be performed to provide 100% wireless coverage throughout each AV room with a minimum signal strength of 70dB for both 2.4GHz and 5GHz bandwidth. The predictive model shall consider building construction materials. Once the rooms are near completion, the predictive model shall be verified by performing a physical wireless study. Once complete, the model and results shall be handed over to the UBC FoM team for review and approval.

1.5.1.6.3 Density shall be calculated allowing for two (2) mobile devices per participant

1.5.2 ON-CALL ROOMS:

1.5.2.1 The on-call rooms to be organized in groups and further from the Lounge with a location for clean and soiled linen and scrubs carts.

1.5.2.2 Ref # 17 on-call rooms must be design as accessible room and outfitted for breastfeeding with a small fridge and a comfortable reclining chair.

1.5.2.3 Must not transfer noise in-between the rooms and between the corridors to the rooms with STC 45. Within the rooms Noise Criteria (NC) 25-30 with no pure tones. The location of the HVAC compressor must not interfere with the acoustical requirements.

For further acoustical consideration refer to the acoustical paragraph below.

1.5.2.4 If exterior or interior windows exist, 90% or better blackout blinds shall be provided for these windows.

1.5.2.5 Access will be controlled by RFID Card Reader and the door hardware will be with a deadbolt from the inside and "Occupy/Vacant" indicator on the outside.

1.5.2.6 Support study and resting environment with a bed, study table and a comfortable chair and for Ref # 17 add a small fridge and reclining chair.

1.5.2.7 For each room provide an individual thermostat, locally controlled.

1.5.2.8 Connect to the Hospital's Dictation system.

1.5.2.9 Install a phone by the bed.

1.5.2.10 Secure personal belonging when leaving the room without the use of a key or a lock in a locker with a digital lock.

1.5.2.11 Install a full height mirror.

1.5.2.12 Room light control: one (1) by the door and one (1) by the bed.

1.5.2.13 Power outlet: one (1) duplex by the bed and two (2) duplex above table.

1.5.2.14 Data ports above table for computer, phone and Hospital dictation system.

1.5.2.15 Network connection: 1x VIHA and 1x UBC.

1.5.3 LOUNGE

1.5.3.1 The Lounge must have access to natural light.

1.5.3.2 The noise from the Lounge must not interfere adjacent spaces. For further acoustical consideration refer to the acoustical paragraph below.

1.5.3.3 Wall mounted phone by the entrance.

1.5.3.4 A dedicated thermostat, locally controlled to be provided.

1.5.3.5 The room will be divided into: Eating area; Seating/relaxing and watching TV; and Computer area.

1.5.3.5.1 Eating area:

- Kitchenette for snack preparation with fridge, microwave, coffee maker, sink, dishwasher, durable and easily cleaned surface cabinets and countertop.
- Capacity for vending machines.
- Seating area around a table.
- Power to include all appliances and additional four (2) duplex convenience power by the seating area.
- Data port by the seating area for a wall mounted phone.

1.5.3.5.2 Seating/relaxing and watching TV:

- TV wall mounted. Size to calculate by the size of the seating area. Connected to the Entertainment system of the Hospital or cable TV.
- Power to include six (4) duplex convenience power distributed around in the seating area.
- One (1) Data port by the seating area for a wall mounted phone.

1.5.3.5.3 Computer Area:

- Two (2) computer stations

- Printer.
- Each station:
    - Computer power and data
    - Data for phone.
    - Connection to the Hospital Dictation system.
    - 1x VIHA and 1xUBC network

1.5.4 LOCKER AREA:

1.5.4.1 To be located near the main entrance to the suite.

1.5.4.2 Secure personal belonging including a backpack and coats in a locker with a digital lock.

1.5.4.3 Install a full height mirror, and/or half height with a shelf and power.

1.5.4.4 Include a small mobile bench.

1.5.5 SHOWER AND WASHROOMS

1.5.5.1 For further design parameters refer also to Staff washrooms and showers.

1.5.5.2 The shower and washrooms require to be in a non-public area.

1.5.5.3 At least one washroom and one shower need to be in a single room for Non-Binary individuals.

1.5.5.4 Shower to include “wet area” with shelf for soap and “dry area” with three (3) hooks and a bench. There will be a physical separation between the wet and the dry area.

1.5.5.5 Shower door to be lockable.

1.6 ACOUSTICS

1.6.1 GENERAL CHARACTERISTICS

1.6.1.1 Design characteristics intended to support the acoustical requirements must be validated by a qualified and approved acoustical consultant. The acoustical report generated will address acoustical requirements for the HVAC system, ambient noise levels, lighting ballasts, reflective surfaces, treatments, reverberation, and other noise mitigation methodologies.

1.6.1.2 Acoustical consultant shall provide acoustical performance validation test and report at milestones as defined in the project agreement to be issued to UBC FoM Team for approval.

1.6.1.3 There are three (3) primary factors for consideration:

1.6.1.3.1 Background noise which considers ambient noise from HVAC and other systems that may create continuous/intermittent noise in the space;

1.6.1.3.2 Sound isolation which considers noise transfer from outside the space to inside the space; and

1.6.1.3.3 Interior acoustics which considers the movement and reflection of sound waves within the room.

1.6.2 BACKGROUND NOISE

1.6.2.1 Achieving low NC levels means very tight control of fan noise and air flow conditions.

1.6.2.2 Noise-producing HVAC equipment including mixing boxes, fan-powered mixing boxes, and fan coil units shall not be located inside rooms or within the ceiling plenum space.

1.6.3 ON CALL ROOMS AND LOUNGE NOISE ISOLATION

1.6.3.1 It is critical to achieve adequate sound isolation between these rooms and adjacent spaces.

1.6.3.2 The following targets are applicable for the on-call rooms and lounge:

1.6.3.2.1 All perimeter walls must achieve a Sound Transmission Class (STC) rating of STC 55. The door must be purpose built STC 45.

1.6.3.2.2 Noise isolation to rooms above and below are set at minimum STC 50.

1.6.3.2.3 A target Impact Isolation Class (IIC) 65 rating must be set for the floor/ceiling system.