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# 1 Purpose

The purpose of the UNSW Learning Spaces Design Standards document is to:

- provide a technical reference for UNSW service providers to be used in the design, build and/or ongoing operation and maintenance of physical learning and teaching spaces for UNSW's Kensington and Paddington campuses
- ensure consistency in the development of future learning environments so that they contribute to the implementation of the University's 2025 Strategy

# 2 Scope

This document provides design standards for physical learning spaces on UNSW's Kensington and Paddington campuses. The following spaces are not specifically described:

- common rooms, including general, student and staff rooms
- specialist teaching or research spaces, including clinical areas, dry laboratories, wet laboratories, computer laboratories, interview/consultation practice room, language laboratory, moot court room, music teaching and practice room, observation/control room, operating theatre, and studios (including ceramic, dance, design, drama, multi-purpose, photography, multimedia and sculpture/metal/woodwork)

The technical features covered by this document include audio visual and display capability; architectural features, including physical fit out and acoustics; communications; electrical including power sources and lighting; air conditioning; and security.

Detailed specifications of the equipment (including audio visual) listed in this document are provided in the Equipment Schedule maintained by the AV team.

It is important to note that these standards are not an exhaustive architectural guide. Rather, they relate to aspects of design that are agreed to be significant to the operation of learning environments at UNSW.

The application of these Standards will need to reflect the limitations set by any existing building structure.

# 3 The benefits of design standards

The ability for multiple University stakeholders to reference a single source of information that describes the design standards for learning environments is beneficial to University because:

- learning environments are designed consistently for ease of use
- the goods and services required can be aggregated by the Procurement team to achieve lower market prices
- internal providers can simplify and standardise the provision of their support services

# 4 Governance

The Design Standards are the responsibility of Learning Environments in the Pro Vice-Chancellor (Education) portfolio. Amendment of the Standards requires sign-off by the Program Manager, Learning Environments.

# 5 References

In defining the design standards, reference was made to the following documents:

- AS/NZS 1680.2 regarding lighting
- AS/NZS 2107 regarding acoustics
- ISO/ANSI/INFOCOMM standards including:
  - ANSI/INFOCOMM 1M-2009 'Audio Coverage Uniformity in Enclosed Listener Areas'
  - ANSI/INFOCOMM 2M-2010 'Standard Guide for Audio-visual Systems Design and Coordination Process'
  - ANSI/INFOCOMM 3M-2011 'Projected Image System Contrast Ratio'
  - ANSI/INFOCOMM 4-2012 'Audio-visual Systems Energy Management'
- 'Audio Visual Design Guidelines – Tertiary Teaching Spaces' 2<sup>nd</sup> edition, 2012, Association of Educational Technology Managers
- 'Space Planning Guidelines'. The third edition of these guidelines was published in 2009 by Tertiary Education Facilities Management Association (TEFMA) Incorporated and is available from <http://www.tefma.com/uploads/content/26-TEFMA-SPACE-PLANNING-GUIDELINES-FINAL-ED3-28-AUGUST-09.pdf>

## 6 Key design themes

There are several design themes that should be considered an integral part of all learning spaces at UNSW, irrespective of the type and primary purpose of the space. They are:

- wide screen display – 16:10
- digital infrastructure for initially digital signals
- hearing augmentation (now required by the BCA in all classrooms with amplified audio)
- incorporation of natural lighting in spaces
- limited ambient noise and noise insulation
- clearly visible contact numbers in all learning spaces for academics to call if they have service issues
- supportive seating for students both in class and in informal spaces
- high hygiene standards in all learning spaces
- a booking system that allows students to book group study spaces in all Faculty buildings
- QR codes for student feedback
- flexible furniture that promotes active and collaborative learning, where possible

# Design standards

Design standards have been established for the following categories of learning environments at UNSW.

**Table 1 Learning environments categories**

Category	Alias*
Single projector lecture theatre (tiered)	
Dual projector lecture theatre (tiered)	
Standard flat floor classroom	Active learning space, Collaborative learning space
Standard flat floor classroom with audio enhancement	Active learning space, Collaborative learning space
High specification flat floor classroom	Active learning space, Interactive learning space
Meeting room	
Individual study space	Student led space
Group study space	Student led space
Group study room	Student led space

\*Allows the user to easily identify standards according to their room type by providing alternative names.

## 7 Single projector lecture theatre (tiered)

### 7.1 Room description

A stepped floor or tiered lecture theatre with a single projector that is typically used for teaching larger cohorts of students. They are moderately flexible spaces and often contain fixed furniture.

### 7.2 Room standards

#### 7.2.1 Audio visual equipment

The scope of works shall include, but not be limited to, the following:

Equipment (supplied and installed)	Quantity	Additional requirements
Motorised projection screens	1	
Video/data projectors	1	
Sound system	1	Including: <ul style="list-style-type: none"> <li>ceiling speakers</li> <li>program speakers on the presentation wall</li> <li>microphones</li> <li>wireless microphone receiver</li> <li>DSP</li> <li>amplifier</li> <li>XLR in/out panel</li> <li>hearing augmentation</li> </ul>
Lectern	1	Fitted with: <ul style="list-style-type: none"> <li>two equipment racks per lectern to house system equipment</li> <li>necessary connection plates and cables</li> </ul>
Video system	1	Including: <ul style="list-style-type: none"> <li>DVD</li> </ul>

Equipment (supplied and installed)	Quantity	Additional requirements
		<ul style="list-style-type: none"> <li>document camera</li> <li>matrix switcher</li> <li>external audio visual connection</li> </ul>
Computing system	1	<ul style="list-style-type: none"> <li>Including:</li> <li>PC (install only, supply by UNSW)</li> <li>monitor</li> <li>VGA laptop connection</li> <li>HDMI laptop connection</li> </ul>
Lecture recording system	1	<ul style="list-style-type: none"> <li>Including:</li> <li>recorder</li> <li>lectern camera (supplied by UNSW)</li> <li>recording indicator</li> </ul>
AMX control system	1	<ul style="list-style-type: none"> <li>Including:</li> <li>touch screen</li> <li>controller</li> <li>power controller (with program supplied by UNSW)</li> </ul>

## 7.2.2 Sightline and viewing conditions

Viewing ratio	Angle ratio	Placement of screens and projectors
Minimum 5.3:1	Maximum 45 degrees horizontal and maximum 15 degrees vertical	Screen to be 1.2m above floor level

Source: AETM Audio Visual Design Guidelines – Tertiary Teaching Spaces, Edition 2

## 7.2.3 Communications

Lectern	In room	Wireless
<p>A minimum of eight Cat6 ports will be required at each lectern.</p> <ul style="list-style-type: none"> <li>One for an analogue 'help' phone with internal call only restriction</li> <li>One for PC connection to the University network via the CATS_RMS VLAN 9</li> <li>One for touchscreen connection to the University network via the CATS_RMS VLAN 9</li> <li>One for system controller connection to the University network via the CATS_RMS VLAN 9</li> <li>One for the lecture recording device via VLAN 100</li> <li>Three spare</li> </ul> <p>These ports should be mounted in the lectern, on a rack mounted patch panel.</p>	<p>It is recommended that four data ports be put on one of the non-presentation walls. These should only be patched on request. There is no need for lockable covers on these ports.</p>	<p>Wireless networking should be provided in these rooms.</p> <p>The number and location of base stations should be advised by IT@UNSW.</p> <p>Please note that wireless base stations should not be installed in lecterns or on the presentation wall.</p> <p>The wireless base station network connection is by dedicated ports – not included in the list above.</p>

## 7.2.4 Electrical

### a) Lighting

Feature	Requirements
Lighting control	<p>Lighting control is achieved by dimming, the most flexible form of control. Dimming can be easily integrated in the overall AV control system.</p> <p>The dimming ballasts should be DALI with Dynalite control, and controllable using the AV touchscreen. The following requirements apply:</p> <ul style="list-style-type: none"> <li>▪ The controller should disconnect power at lights off.</li> <li>▪ Each room must be a separate system.</li> <li>▪ A Dynalite push button panel should be supplied and installed by the builder to provide all on/all off override control.</li> <li>▪ The controller (and override button) should be located in an accessible cupboard away from AV equipment and available while classes are in progress. This cupboard may also contain a local distribution board.</li> </ul> <p>A control port linking the AV control system to the lighting control system should be provided at the lectern.</p>
Lighting areas	<p>The room lighting needs to be controlled in a number of areas:</p> <ul style="list-style-type: none"> <li>▪ Whiteboards 1 and 2. It should be possible to light one whiteboard without lighting the screen that comes down in front of the second whiteboard. This may require directional and very low spill luminaires on the whiteboard surface.</li> <li>▪ Lectern – lighting over the lectern should not interfere with the use of the screen(s), but should allow sufficient work light for the teacher, light for lecturer camera (used in lecture recording) and sufficient directional light for lip reading.</li> <li>▪ 'Front of house' – lighting should illuminate the front of the room but should not reflect off projection screens.</li> <li>▪ Main area lighting – where the students sit. Please note the relevant Australian Standard for work surface illumination.</li> <li>▪ Any access foyer/alcove which forms part of the room.</li> </ul> <p>These provisions mean that there will normally be a need for at least five lighting zones in each theatre.</p>
Lighting control points	<p>All areas should be individually controlled only from the touch screen.</p> <p>Entry pushbuttons (connecting back to the AV control system, not the lighting control system) should be installed at each entry by the AV team. Entry pushbuttons need only provide all on/all off control.</p> <p>The electrical contractor should provide one set of pushbuttons connected directly to the dimmers. These should be installed with the dimmer to allow minimum lighting control in the event of failure in the AV control system.</p>
Lighting control programming (AV system)	<p>Motion detected by the (AV system) PIR should bring all lights to fully on, providing the AV system is off. If the AV control system is active, the PIR should have no effect.</p> <p>Lowering a screen should dim the matching whiteboard lighting.</p> <p>Manual control from the touch screen should be possible over each area.</p> <p>When no activity is detected in a room, the lighting should be turned off by the AV control system.</p>

### b) Power

Power required for:	Requirements
Shutters	If used as window covering.
Lectern	Should be powered from a GPO under the lectern with the cable coming via a core hole or chase in the floor. The lectern then powers the projectors and screens.
Cleaners	Blue outlet on the walls.
Laptop power	Fixed seating – outlets installed under the seating with an <i>outlet per seat or a double outlet between two seats</i> . This provision extends to the wheelchair spaces.
GPOs	At least one double outlet on each of the non-presentation walls.

## 7.2.5 Room location

Feature	Description	Benefits	Additional notes
Floor	Ground floor	<ul style="list-style-type: none"> <li>Good accessibility</li> <li>Ease in locating</li> <li>Reduces use of lifts, resulting in energy conservation and lower maintenance costs</li> </ul>	With new buildings, having all theatres on the same floor may help with the ceiling height.
Main entry	Located near the main or major entry to a building	<ul style="list-style-type: none"> <li>Ease in locating</li> <li>Reduces people traffic through office and research areas which otherwise could be quiet work spaces</li> </ul>	
Noisy locations	Away from noisy environments	<ul style="list-style-type: none"> <li>Minimises class disruption</li> </ul>	Including: <ul style="list-style-type: none"> <li>loading docks</li> <li>workshops</li> <li>busy vehicle and pedestrian traffic routes</li> <li>food courts</li> </ul>
Clustered	Classrooms and theatres in clusters (where possible)	<ul style="list-style-type: none"> <li>Ease in locating</li> <li>Reduces of people traffic through office and research areas which otherwise could be quiet work spaces</li> <li>Makes room checking/servicing quicker</li> <li>Facilitates room swaps in cases of equipment failure</li> <li>Improves use of spaces as breakout venues from plenary conference sessions</li> </ul>	This provision places strain on the foyer provisions. There is a need to provide space for the students waiting to attend classes in the clustered rooms, as well as to provide sufficient space for students leaving the previous classes.
Waiting areas	Allocated in foyers	<ul style="list-style-type: none"> <li>Incidental seating and waiting</li> </ul>	These spaces should have: <ul style="list-style-type: none"> <li>seating for individuals and small groups</li> <li>GPOs for laptop power</li> <li>wireless network access (supplied through UNSW IT)</li> </ul>
Restrooms	Located close to classroom cluster	<ul style="list-style-type: none"> <li>Convenient</li> </ul>	

## 7.2.6 Architectural

### a) Space allowance

Area	Capacity
0.5 – 2.02m <sup>2</sup> UFA/EFTSL	The space should hold up to 100 students

Area Source: TEFMA Space Planning Guidelines, Edition 3, Page 13

### b) Joinery

- Theatre seating can be either fixed row-by-row, or movable seating on castors fixed or swivel.
- A3 writing tablets or desks should be supplied.
- Seat centre-to-centre spacing should be 550-600mm.
- Row to row spacing and tiers to comply with BC A.
- Tilting seat bases should be used.
- Wheelchairs spaces and tablets to be provided as per code.



**c) Front row**

The front row of seats should be no closer to the screen than twice the screen’s vertical dimension. The front row of the audience should not look up more than 30° to the top of the screen.

**d) Aisles**

The number and position of aisles should be calculated to get the correct number of seats between aisles and to maximise capacity. Centre aisles should be avoided as the room centre has the optimum sightlines to the screens.

Writable surfaces/whiteboards to be included on the periphery.

**e) Loose furniture**

- A lectern should be provided at the front of the room.
- A stool should be provided at each lectern.
- A standard table and chair should be provided at the front of the room for the teacher.
- A battery-operated white clock with second hand and a 300mm face should be mounted on a side wall so that it is visible to the teacher and students.

**f) Finishes**

The objective is to give a bright, airy and colourful feel to the space with easy to maintain finishes. Attention should be given to the acoustic rating of finishes. In general:

Floor	Walls	Ceiling
The floor should be a darker colour than the wall finishes with gentle texturing to hide wear and dirt. Carpet tiles are the preferred floor covering. The stairs should have slip-resistant nosing, including ‘ecoglo’ safety markers.	The presentation wall should be lighter than the floor finishes but should provide a good surround for the screen(s). Other walls should be of a similar light colour so as to maximise lighting.	The ceiling should be white or very light so as to give the impression of height.

**g) Partitions and glazing**

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

**h) Acoustics**

Please refer to AS/NZS 2107.

- Ambient noise must not exceed 40 dB(A). In particular, check the noise from mechanical systems.
- Typical reverb time (RT60) should be in the range 0.7 -1.0s.
- Furnishing and finishes should be selected to keep room noise low.

**i) Doors and windows**

Doors	Windows
The door handle should be a lever at 1000mm above the floor. The door should be keyed to the CATS room master and an electronic strike provided for programmed opening and locking. A door closer should be supplied to keep the door in a normally closed position.	There should not be any windows in the presentation wall. Natural light can create an extreme contrast at the front of the room. South-facing windows are best for natural light. They allow the use of natural light without overwhelming projections with direct sunlight. If natural light is affecting on-screen presentations, blackout (roller) shutters under the control of the AV system should be used.

**j) Entry location**

Entries should not be in the presentation wall.

The entry should ideally be located at the back of the room to minimise disruptions caused by latecomers and toilet visits.

### k) Ceiling

#### Ceiling height

The minimum ceiling clearance should be calculated as  $1.5M + (\text{distance to back wall in } M)/5$ . This allows a minimum height screen to be properly located on the presentation wall. If a greater clearance is possible it should be considered as this would enable a larger screen/image. The minimum screen height makes the typical 10-point lettering on a web page readable from the back row when projected using the standard projector.

#### Ceiling shape

The sightline from the back row of seats should not be above the top of the video projector screens.

Video projectors should not be mounted any higher than the top of the image they are presenting. The sightline from the back row of seats to the projector screen must not be obstructed by the video projector.

### l) Glass

A glass viewing panel should be provided either in or immediately adjacent to each door. This is to facilitate the safe use of the doors and to make it easy to determine if the room is in use.

### m) Signage/graphics

The following signs are available from UNSW Learning Environments:

Sign	Details
Way-finding	<ul style="list-style-type: none"> <li>The passage from the major building entry to the classroom should be clearly signed as 'CATS theatres', give their numbers/names and indicate direction. Or, the signage may indicate building name and theatre name.</li> <li>The room number/name should be clearly visible when the door is either open or closed.</li> <li>A timetable holder (A4) and pin board (A3) should be provided either on the door or immediately adjacent.</li> </ul>
CATS sign	No smoking No eating or drinking Please switch your mobile phone to silent
Room capacity	This should be on display inside the room near the main entry. The actual capacity number should be displayed eg 100
Folding seat warning notice	
Hearing augmentation	As per the Australian Standard. This should be supplied by the loop supplier as each sign must show the coverage of the specific room.

## 7.2.7 Security

Access to other parts of the building should be prohibited when the room cluster is open. This allows the teaching spaces to be used outside of normal office hours without compromising security in the rest of the building.

## 7.2.8 Mechanical

### Air conditioning

Basic air handling/conditioning commands should be controlled via the lectern including basic on/off control. The lectern and associated air conditioning controls should:

- not interfere with any building management system being used
- provide 'off' command when room not occupied
- provide 'on' command with timer (typically two hours) when activated from the touch screen

Set points and other configuration should not be accessible in the venue.

## 7.2.9 Disability support

- Hearing augmentation system (Infrared).
- Physical functions to meet accessibility requirements.
- 2-3% allowance of wheelchair spaces for accessibility.
- Clearance of 1.5 metres around furniture.
- Doors into classrooms should have an automatic opening option for disability access.

# 8 Dual projector lecture theatre

## 8.1 Room description

A stepped floor or tiered lecture theatre with a dual projector that is typically used for teaching large cohorts of students. These rooms are most often used in a didactic mode of teaching. They are moderately flexible spaces and often contain fixed furniture. The room allows for some interaction between the teacher and students.

## 8.2 Room standards

### 8.2.1 Audio visual equipment

The scope of works shall include, but not be limited to, the following:

Equipment (supplied and installed)	Quantity	Additional requirements
Motorised projection screens	2	
Video/data projectors	2	
Lectern	1	Fitted with: <ul style="list-style-type: none"> <li>▪ two equipment racks per lectern to house system equipment</li> <li>▪ necessary connection plates and cables</li> </ul>
Sound system	1	Including: <ul style="list-style-type: none"> <li>▪ ceiling speakers</li> <li>▪ program speakers on the presentation wall</li> <li>▪ microphones</li> <li>▪ wireless microphone receiver</li> <li>▪ DSP</li> <li>▪ amplifier</li> <li>▪ XLR in/out panel</li> <li>▪ hearing augmentation</li> </ul>
Video system	1	Including: <ul style="list-style-type: none"> <li>▪ Blu-ray Player</li> <li>▪ document camera</li> <li>▪ matrix switcher</li> <li>▪ external audio visual connection</li> </ul>
Computing system	1	Including: <ul style="list-style-type: none"> <li>▪ PC (install only, supply by UNSW)</li> <li>▪ monitor</li> <li>▪ VGA laptop connection</li> <li>▪ HDMI laptop connection</li> </ul>
Lecture recording system	1	Including: <ul style="list-style-type: none"> <li>▪ recorder</li> <li>▪ lectern camera (supplied by UNSW)</li> <li>▪ recording indicator</li> </ul>
AMX control system	1	Including:

Equipment (supplied and installed)	Quantity	Additional requirements
		<ul style="list-style-type: none"> <li>touch screen</li> <li>controller</li> <li>power controller (with program supplied by UNSW).</li> </ul>

## 8.2.2 Sightline and viewing conditions

Viewing ratio	Angle ratio	Placement of screens and projectors
Minimum 5.3:1	Maximum 45 degrees horizontal and maximum 15 degrees vertical	Screen to be 1.2m above floor level

Source: AETM Audio Visual Design Guidelines – Tertiary Teaching Spaces, Edition 2

## 8.2.3 Communications

Lectern	In room	Wireless
<p>A minimum of eight Cat6 ports will be required at each lectern.</p> <ul style="list-style-type: none"> <li>One for an analogue 'help' phone with internal call-only restriction</li> <li>One for PC connection to the University network via the CATS_RMS VLAN 9</li> <li>One for touchscreen connection to the University network via the CATS_RMS VLAN 9</li> <li>One for system controller connection to the University network via the CATS_RMS VLAN 9</li> <li>One for the lecture recording device via VLAN 100</li> <li>Three spare</li> </ul> <p>These ports should be mounted in the lectern on a rack-mounted patch panel.</p>	<p>It is recommended that four data ports be put on one of the non-presentation walls. These should only be patched on request. There is no need for lockable covers on these ports.</p>	<p>Wireless networking should be provided in these rooms.</p> <p>The number and location of base stations should be advised by IT@UNSW.</p> <p>Please note that wireless base stations should not be installed in lecterns or on the presentation wall.</p> <p>The wireless base station network connection is by dedicated ports – not included in the list above.</p>

## 8.2.4 Electrical

### a) Lighting

Feature	Requirements
Lighting control	<p>Lighting control is achieved by dimming, the most flexible form of control. Dimming can be easily integrated in the overall AV control system.</p> <p>The dimming ballasts should be DALI with Dyalite control, and controllable using the AV touchscreen. The following requirements apply:</p> <ul style="list-style-type: none"> <li>The controller should disconnect power at lights off.</li> <li>Each room must be a separate system.</li> <li>A Dyalite push button panel should be supplied and installed by the builder to provide all on/all off override control.</li> <li>The controller (and override button) should be located in an accessible cupboard away from AV equipment and available while classes are in progress. This cupboard may also contain a local distribution board.</li> </ul> <p>A control port linking the AV control system to the lighting control system should be provided at the lectern.</p>

Feature	Requirements
Lighting areas	<p>The room lighting needs to be controlled in a number of areas.</p> <ul style="list-style-type: none"> <li>Whiteboards 1 and 2. It should be possible to light one whiteboard without lighting the screen that comes down in front of the second whiteboard. This requires directional and very low spill luminaires on the whiteboard surface.</li> <li>Lectern – lighting over the lectern should not interfere with the use of the screen(s), but should allow sufficient work light for the teacher, light for lecturer camera (used in lecture recording) and sufficient directional light for lip reading.</li> <li>'Front of house' – lighting should illuminate the front of the room but should not reflect off the projection screens.</li> <li>Main area lighting – where the students sit. Please note the relevant Australian Standard for work surface illumination.</li> <li>Any access foyer/alcove which forms part of the room.</li> </ul> <p>These provisions mean that there will normally be a need for at least five lighting zones in each theatre.</p>
Lighting control points	<p>All areas should be individually controlled only from the touch screen.</p> <p>Entry pushbuttons (connecting back to the AV control system, not the lighting control system) should be installed at each entry by the AV team. Entry pushbuttons need only provide all on/all off control.</p> <p>The electrical contractor should provide one set of pushbuttons connected directly to the dimmers. These should be installed with the dimmer to allow minimum lighting control in the event of failure in the AV control system.</p>
Lighting control programming (AV system)	<p>Motion detected by the (AV system) PIR should bring all lights to fully on, providing the AV system is off. If the AV control system is active, the PIR should have no effect.</p> <p>Lowering a screen should dim the matching whiteboard lighting.</p> <p>Manual control from the touch screen should be possible over each area.</p> <p>When no activity is detected in a room, the lighting should be turned off by the AV control system.</p>

## b) Power

Power required for:	Requirements
Shutters	If used as window covering.
Lectern	Should be powered from a GPO under the lectern with the cable coming via a core hole or chase in the floor. The lectern then powers the projectors and screens.
Cleaners	Blue outlet on the walls.
Laptop power	Fixed seating – outlets installed under the seating with an <i>outlet per seat or a double outlet between two seats</i> . This provision extends to the wheelchair spaces.
GPOs	At least one double outlet on each of the non-presentation walls.

## 8.2.5 Room location

Feature	Description	Benefits	Additional notes
Floor	Ground floor	<ul style="list-style-type: none"> <li>Good accessibility</li> <li>Ease in locating</li> <li>Reduces use of lifts, resulting in energy conservation and lower maintenance costs</li> </ul>	With new buildings, having all theatres on the same floor may help with the ceiling height.
Main entry	Located near the main or major entry to a building	<ul style="list-style-type: none"> <li>Ease in locating</li> <li>Reduces people traffic through office and research areas which otherwise could be quiet work spaces</li> </ul>	

Feature	Description	Benefits	Additional notes
Noisy locations	Away from noisy environments	<ul style="list-style-type: none"> <li>Minimises class disruption</li> </ul>	Including: <ul style="list-style-type: none"> <li>loading docks</li> <li>workshops</li> <li>busy vehicle and pedestrian traffic routes</li> <li>food courts</li> </ul>
Clustered	Classrooms and theatres in clusters (where possible)	<ul style="list-style-type: none"> <li>Ease in locating</li> <li>Reduces of people traffic through office and research areas which otherwise could be quiet work spaces</li> <li>Makes room checking/servicing quicker</li> <li>Facilitates room swaps in cases of equipment failure</li> <li>Improves use of spaces as breakout venues from plenary conference sessions</li> </ul>	This provision places strain on the foyer provisions. There is a need to provide space for the students waiting to attend classes in the clustered rooms, as well as to provide sufficient space for students leaving the previous classes.
Waiting areas	Allocated in foyers	<ul style="list-style-type: none"> <li>Incidental seating and waiting</li> </ul>	These spaces should have: <ul style="list-style-type: none"> <li>seating for individuals and small groups</li> <li>GPOs for laptop power</li> <li>wireless network access (supplied through UNSW IT)</li> </ul>
Restrooms	Located close to classroom cluster	<ul style="list-style-type: none"> <li>Convenient</li> </ul>	

## 8.2.6 Architectural

### a) Space allowance

Area	Capacity
1.7 – 1.8 m <sup>2</sup> UFA/EFTSL	The space should hold up to 500 students.

Area Source: TEFMA Space Planning Guidelines, Edition 3, Page 23

### b) Joinery

- Theatre seating can be either fixed row-by-row or movable seating on castors fixed or swivel loose swivel.
- A3 writing tablets or desks should be supplied.
- Seat centre-to-centre spacing should be 550–600mm.
- Row to row spacing and tiers to comply with BCA.
- Tilting seat bases should be used.
- Wheelchairs spaces and tablets to be provided as per Code.

### c) Front row

The front row of seats should be no closer to the screen than twice the screen's vertical dimension. The front row of the audience should not look up more than 30° to the top of the screen.

### d) Aisles

The number and position of aisles should be calculated to get the correct number of seats between aisles and to maximise capacity. Centre aisles should be avoided as the room centre has the optimum sightlines to the screens.

Writable surfaces/whiteboards to be included on the periphery.

### e) *Loose furniture*

- A lectern should be provided at the front of the room.
- A stool should be provided at each lectern.
- A standard table and chair should be provided at the front of the room for the teacher.
- A battery-operated white clock with second hand and a 300mm face should be mounted on a side wall so that it is visible to the teacher and students.

### f) *Finishes*

The objective is to give a bright, airy and colourful feel to the space while still providing a good frame to the projected image with easy to maintain finishes. Attention should be given to the acoustic rating of finishes. In general:

Floor	Walls	Ceiling
The floor should be with gentle texturing to hide wear and dirt. Carpet tiles are the preferred floor covering. The stairs should have slip-resistant nosing, including 'ecoglo' safety markers.	The presentation wall should be lighter than the floor finishes but should provide a good surround for the screen(s). Other walls should be of a similar light colour to maximise lighting.	The ceiling should be white or very light so as to give the impression of height.

### g) *Partitions and glazing*

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

### h) *Acoustics*

Please refer to AS/NZS 2107.

- Ambient noise must not exceed 40 dB(A). In particular, check the noise from mechanical systems.
- Typical reverb time (RT60) should be in the range 0.7 - 1.0s.
- Furnishing and finishes should be selected to keep room noise low.

### i) *Doors and windows*

Doors	Windows
The door handle should be a lever at 1000mm above the floor. The door should be keyed to the CATS room master and an electronic strike provided for programmed opening and locking. A door closer should be supplied to keep the door in a normally closed position.	There should not be any windows in the presentation wall. Natural light can create an extreme contrast at the front of the room. South-facing windows are best for natural light. They allow the use of natural light without overwhelming projections with direct sunlight. If natural light is affecting on-screen presentations, blackout (roller) shutters under the control of the AV system should be used.

### Entry location

Entries should not be in the presentation wall. The entry should ideally be located at the back of the room to minimise disruptions caused by latecomers and toilet visits.

### j) *Ceiling*

#### Ceiling height

The minimum ceiling clearance should be calculated as  $1.5M + (\text{distance to back wall in } M)/5$ . This allows a minimum height screen to be properly located on the presentation wall. If a greater clearance is possible it should be considered as this would enable a larger screen/image.

The minimum screen height makes the typical 10-point lettering on a web page readable from the back row when projected using the standard projector.

#### Ceiling shape

The sightline from the back row of seats should not be above the top of the video projector screens.

Video projectors should not be mounted any higher than the top of the image they are presenting. The sightline from the back row of seats to the projector screen must not be obstructed by the video projector.

### k) Glass

A glass viewing panel should be provided either in or immediately adjacent to each door. This is to facilitate the safe use of the doors and to make it easy to determine if the room is in use.

### l) Signage/graphics

The following signs are available from UNSW Learning Environments:

Sign	Details
Way-finding	<ul style="list-style-type: none"> <li>The passage from the major building entry to the classroom should be clearly signed as 'CATS theatres', give their numbers/names and indicate direction. Or, the signage may indicate building name and theatre name.</li> <li>The room number/name should be clearly visible when the door is either open or closed.</li> <li>A timetable holder (A4) and pin board (A3) should be provided either on the door or immediately adjacent.</li> </ul>
CATS sign	No smoking No eating or drinking Please switch your mobile phone to silent
Room capacity	This should be on display inside the room near the main entry. The actual capacity number should be displayed eg 100
Folding seat warning notice	
Hearing augmentation	As per the Australian Standard. This should be supplied by the loop supplier as each sign must show the coverage of the specific room.

## 8.2.7 Security

Access to other parts of the building should be prohibited when the room cluster is open. This allows the teaching spaces to be used outside of normal office hours without compromising security in the rest of the building.

## 8.2.8 Mechanical

### Air conditioning

Basic air handling/conditioning commands should be controlled via the lectern including basic on/off control. The lectern and associated air conditioning controls should:

- not interfere with any building management system being used
- provide 'off' command when room not occupied
- provide 'on' command with timer (typically two hours) when activated from the touch screen

Set points and other configuration should not be accessible in the venue.

## 8.2.9 Disability support

- Hearing augmentation system (Infrared).
- Physical functions to meet accessibility requirements.
- 2-3% allowance of wheelchair spaces for accessibility.
- Clearance of 1.5 metres around furniture.
- Doors into classrooms should have an automatic opening option for disability access.



## 9 Standard Flat Floor Classroom

### 9.1 Room description

A teaching room with a flat floor that facilitates active learning. The furniture is easily movable and configurable to suit different Teaching modes. Students can interact with the teacher and collaborate with peers. Whiteboards are the prime method of freehand display to the class. There is a baseline amount of AV expected to be found in this type of room.

### 9.2 Room standards

#### 9.2.1 Audio visual

The scope of works shall include, but not be limited to, the following:

Equipment supplied and installed)	Quantity	Additional requirements
Motorised projection screens	1	
Video/data projectors	1	
Lectern	1	Fitted with: <ul style="list-style-type: none"> <li>▪ one equipment rack per lectern to house system equipment</li> <li>▪ necessary connection plates and cables</li> <li>▪ help phone</li> </ul>
Sound system	1	Including: <ul style="list-style-type: none"> <li>▪ program speakers on the presentation wall</li> <li>▪ amplifier</li> </ul>
Video system	1	Including: <ul style="list-style-type: none"> <li>▪ DVD</li> <li>▪ presentation switcher</li> <li>▪ external audio visual connection</li> <li>▪ document camera</li> </ul>
Computing system	1	Including: <ul style="list-style-type: none"> <li>▪ PC</li> <li>▪ monitor</li> <li>▪ VGA laptop connection</li> <li>▪ HDMI laptop connection</li> </ul>
AMX control system	1	Including: <ul style="list-style-type: none"> <li>▪ touch screen</li> <li>▪ controller</li> <li>▪ power controller (with program supplied by UNSW)</li> <li>▪ Control panel at each pod</li> </ul>

#### 9.2.2 Sightline and viewing conditions

Viewing ratio	Angle ratio	Placement of screens and projectors
Minimum 5.3:1	Maximum 45 degrees horizontal and maximum 15 degrees vertical	Screen to be 1.2m above floor level.

Source: AETM Audio Visual Design Guidelines – Tertiary Teaching Spaces, Edition 2

## 9.2.3 Communications

Lectern	In Room	Wireless
<p>A minimum of six Cat6 ports will be required at each lectern.</p> <ul style="list-style-type: none"> <li>One for an analogue 'help' phone with internal call only restriction</li> <li>One for PC connection to the University network via the CATS_RMS VLAN 9</li> <li>One for touchscreen connection to the University network via the CATS_RMS VLAN 9</li> <li>One for system controller connection to the University network via the CATS_RMS VLAN 9</li> <li>One for the lecture recording device via VLAN 100</li> <li>Two spare</li> </ul> <p>These ports should be wall mounted immediately adjacent to the lectern.</p>	<p>It is recommended that four data ports be put on one of the non-presentation walls. These should only be patched on request. There is no need for lockable covers on these ports.</p>	<p>Wireless networking should be provided in these rooms.</p> <p>The number and location of base stations should be advised by IT@UNSW.</p> <p>Please note that wireless base stations should not be installed in lecterns or on the presentation wall.</p> <p>The wireless base station network connection is by dedicated ports – not included in the list above.</p>

## 9.2.4 Electrical

### a) Lighting

Feature	Requirements
Lighting control	<p>Lighting control is achieved by dimming, the most flexible form of control . Dimming can be easily integrated in the overall AV control system.</p> <p>The dimming ballasts should be DALI with Dyalite control, and controllable using the AV touchscreen. The following requirements apply:</p> <ul style="list-style-type: none"> <li>The controller should disconnect power at lights off.</li> <li>Each room must be a separate system.</li> <li>A Dyalite push button panel should be supplied and installed by the builder to provide all on/all off override control.</li> <li>The controller (and override button) should be located in an accessible cupboard away from AV equipment and available while classes are in progress. This cupboard may also contain a local distribution board.</li> </ul>
Lighting areas	<p>The room lighting needs to be controlled in a number of areas.</p> <ul style="list-style-type: none"> <li>Whiteboards – split into two areas. It should be possible to light one whiteboard without lighting the screen that comes down in front of the second whiteboard. This requires directional and very low spill luminaires on the whiteboard surface.</li> <li>Lectern – lighting over the lectern should not interfere with the use of the projection screen(s), but should allow sufficient work light for the teacher, light for lecturer camera (used in lecture recording) and sufficient directional light for lip reading.</li> <li>'Front of house' – lighting should illuminate the front of the room but should not reflect off the projection screens.</li> <li>Main area lighting – where the students sit.</li> <li>Any access foyer/alcove which forms part of the room.</li> </ul> <p>These provisions mean that there will normally be a need for at least five lighting zones in each room.</p>
Lighting control points	<p>All areas should be individually controlled only from the touch screen.</p> <p>Entry pushbuttons (connecting back to the AV control system, not the lighting control system) should be installed at each entry by the AV team. Entry pushbuttons need only provide all on/all off control.</p> <p>The electrical contractor should provide one set of pushbuttons connected directly to the dimmers. These should be installed with the dimmer to allow minimum lighting control in the event of failure in the AV control system.</p>

Feature	Requirements
Lighting control programming (AV system)	<p>Motion detected by the (AV system) PIR should bring all lights to full – providing the AV system is off. If the AV control system is active, the PIR should have no effect.</p> <p>When no activity is detected in a room the lighting should be turned off by the AV control system.</p> <ul style="list-style-type: none"> <li>▪ If the lighting control is integrated into the AV control system:</li> <li>▪ lowering a screen should dim/turn off the matching whiteboard lighting</li> <li>▪ direct manual control from the touch screen should be provided for each area</li> </ul>

## b) Power

Power required for:	Requirements
Shutters/blinds	If used as window covering.
Lectern	Should be powered by a GPO with a lockable cover and mounted above the skirting duct immediately adjacent to the lectern. Alternatively, a circuit through the floor that is mounted in the lectern can be used. The lectern then powers the projectors and screens.
Laptop power	<p>Fixed seating – outlets installed under the seating with an <i>outlet per seat or a double outlet between two seats</i>. This provision extends to the wheelchair spaces.</p> <p>Movable seating – consideration should be given to the installation of ducted skirting above table height around the non-presentation walls. <i>A double GPO should be provided at each notional seating row.</i></p>
GPOs	At least one double outlet on each of the non-presentation walls.
Cleaners	Blue outlet on the skirting duct.

## 9.2.5 Room location

Feature	Description	Benefits	Additional notes
Floor	Ground floor	<ul style="list-style-type: none"> <li>▪ Good accessibility</li> <li>▪ Ease in locating</li> <li>▪ Reduces use of lifts, resulting in energy conservation and lower maintenance costs</li> </ul>	With new buildings, having all theatres on the same floor may help with the ceiling height.
Main entry	Located near the main or major entry to a building	<ul style="list-style-type: none"> <li>▪ Ease in locating</li> <li>▪ Reduces people traffic through office and research areas which otherwise could be quiet work spaces</li> </ul>	
Noisy locations	Away from noisy environments	<ul style="list-style-type: none"> <li>▪ Minimises class disruption</li> </ul>	Including: <ul style="list-style-type: none"> <li>▪ loading docks</li> <li>▪ workshops</li> <li>▪ busy vehicle and pedestrian traffic routes</li> <li>▪ food courts</li> </ul>
Clustered	Classrooms in clusters (where possible)	<ul style="list-style-type: none"> <li>▪ Ease in locating</li> <li>▪ Reduces of people traffic through office and research areas which otherwise could be quiet work spaces</li> <li>▪ Makes room checking/servicing quicker</li> <li>▪ Facilitates room swaps in cases of equipment failure</li> </ul>	This provision places strain on the foyer provisions. There is a need to provide space for all students waiting to attend classes in the clustered rooms, as well as to provide sufficient space for the students leaving the previous classes.

Feature	Description	Benefits	Additional notes
		<ul style="list-style-type: none"> <li>Improves use of spaces as breakout venues from plenary conference sessions</li> </ul>	
Waiting areas	Allocated in foyers	<ul style="list-style-type: none"> <li>Incidental seating and waiting</li> </ul>	These spaces should have: <ul style="list-style-type: none"> <li>seating for individuals and small groups</li> <li>GPOs for laptop power</li> <li>wireless network access (supplied through UNSW IT)</li> </ul>
Restrooms	Located close to classroom cluster	<ul style="list-style-type: none"> <li>Convenient</li> </ul>	

## 9.2.6 Architectural

### a) Space allowance

Area	Capacity
2m <sup>2</sup> UFA/EFTSL	The space should hold up to 60 students.

Area Source: TEFMA Space Planning Guidelines, Edition 3, Page 23

### b) Joinery

Whiteboards should be provided where possible.

When renovating rooms, and if the presentation wall is being moved, existing whiteboards should be retained, provided they will not interfere with the functioning of the room.

### c) Loose furniture

- One table for every two students should be provided (600 x 1,200mm).
- The SEBEL 'Hurry Up' title tables fitted with castors are preferred.
- One chair should be provided for each student (must be stackable). The SEBEL upholstered Progress chair is preferred.
- A lectern should be provided at the front of the room.
- A stool should be provided at each lectern.
- A battery-operated white clock with second hand and a 300mm face should be mounted on a side wall so that it is visible to the teacher as well as the students.

### d) Finishes

The objective is to give a bright, airy and colourful feel to the space while still providing a good frame to the projected image with easy to maintain finishes. Attention should be given to the acoustic rating of finishes. In general:

Floor	Walls	Ceiling
The floor should be darker than the wall finishes with gentle texturing to hide wear and dirt. Carpet tiles are the preferred floor covering.	The presentation wall should be lighter than the floor finishes and should provide a good surround for the screen(s). Other walls should be of a similar colour to maximise lighting.	The ceiling should be white or very light so as to give the impression of height.

### e) Partitions and glazing

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

### f) Acoustics

Please refer to AS/NZS 2107.

- Ambient noise must not exceed 35 dB(A). In particular, check the noise from mechanical systems.
- Typical reverb time (RT60) should be in the range 0.7 -1.0s.
- Furnishing and finishes should be selected to keep room noise low.

### g) Doors and windows

Doors	Windows
<p>The door handle should be a lever at 1000mm above the floor.</p> <p>The door should be keyed to the CATS room master and an electronic strike provided for programmed opening and locking.</p> <p>A door closer should be supplied to keep the door in a normally closed position.</p>	<p>There should not be any windows in the presentation wall. Natural light can create an extreme contrast at the front of the room.</p> <p>South-facing windows are best for natural light. They allow the use of natural light without overwhelming projections with direct sunlight.</p> <p>If natural light is affecting on-screen presentations, blackout (roller) shutters under the control of the AV system should be used.</p>

### Entry location

Entries should not be in the presentation wall.

The entry should ideally be located at the back of the room to minimise disruptions caused by latecomers and toilet visits.

### h) Ceiling

#### Ceiling height

The minimum ceiling clearance should be calculated as  $1.5M + (\text{distance to back wall in } M)/5$ . This allows a minimum height screen to be properly located on the presentation wall. If a greater clearance is possible it should be considered as this would enable a larger screen/image.

The minimum screen height makes the typical 10-point lettering on a web page readable from the back row when projected using the standard projector.

#### Ceiling shape

The sightline from the back row of seats should not be above the top of the video projector screens.

Video projectors should not be mounted any higher than the top of the image they are presenting. The sightline from the back row of seats to the projector screen must not be obstructed by the video projector.

### i) Glass

A glass viewing panel should be provided either in or immediately adjacent to each door. This is to facilitate the safe use of the doors and to make it easy to determine if the room is in use.

### j) Signage/graphics

The following signs are available from UNSW Learning Environments:

Sign	Details
Way-finding	<ul style="list-style-type: none"> <li>The passage from the major building entry to the classroom should be clearly signed as 'CATS theatres', give their numbers/names and indicate direction. Or, the signage may indicate building name and theatre name.</li> <li>The room number/name should be clearly visible when the door is either open or closed.</li> <li>A timetable holder (A4) and pin board (A3) should be provided either on the door or immediately adjacent.</li> </ul>
CATS sign	<p>No smoking</p> <p>No eating or drinking</p> <p>Please switch your mobile phone to silent</p>
Room capacity	This should be on display inside the room near the main entry. The actual capacity number should be displayed eg 100
Folding seat warning notice	
Hearing augmentation	As per the Australian Standard. This should be supplied by the loop supplier as each sign must show the coverage of the specific room.

## 9.2.7 Security

Access to other parts of the building should be prohibited when the room cluster is open. This allows the teaching spaces to be used outside of normal office hours without compromising security in the rest of the building.

An electronic door strike is required on each room as this provides centralised room access.

## 9.2.8 Mechanical

### Air conditioning

Basic air handling/conditioning commands should be controlled via the lectern, including basic on/off control. The lectern and associated air conditioning controls should:

- not interfere with any building management system being used
- provide 'off' command when room not occupied
- provide 'on' command with timer (typically two hours) when activated from the touch screen

Set points and other configuration should not be accessible in the venue.

## 9.2.9 Disability support

- Hearing augmentation system (Infrared).
- Physical functions to meet accessibility requirements.
- 10 to 15% of tables to be height adjustable.
- Allowance for wheelchair spaces.
- Clearance of 1.5 metres around furniture.
- Doors into classrooms should have an automatic opening option for disability access.

# 10 Standard flat floor classroom with audio enhancement

## 10.1 Room description

A teaching room with a flat floor that facilitates active learning. The furniture is easily movable and configurable to suit different teaching modes. Students can interact with the teacher and collaborate with peers. There is a larger amount of AV expected to be found in this type of room. This room provides specific supports for students with disabilities.

## 10.2 Room standards

### 10.2.1 Audio visual

The scope of works shall include, but not be limited to, the following:

Equipment (supplied and installed)	Quantity	Additional requirements
Motorised projection screens	1	
Video/data projectors	1	
Lectern	1	Fitted with: one equipment rack per lectern to house system equipment necessary connection plates and cables help phone
Sound system	1	Including: <ul style="list-style-type: none"> <li>▪ program speakers on the presentation wall</li> <li>▪ amplifier</li> </ul>
Video system	1	Including: <ul style="list-style-type: none"> <li>▪ DVD</li> <li>▪ presentation switcher</li> <li>▪ external audio visual connection</li> <li>▪ document camera</li> </ul>
Computing system	1	Including: <ul style="list-style-type: none"> <li>▪ PC</li> <li>▪ monitor</li> <li>▪ VGA laptop connection</li> </ul>

Equipment (supplied and installed)	Quantity	Additional requirements
		<ul style="list-style-type: none"> <li>HDMI laptop connection</li> </ul>
AMX control system	1	Including: <ul style="list-style-type: none"> <li>touch screen</li> <li>controller</li> <li>power controller (with program supplied by UNSW)</li> </ul>

### 10.2.2 Sightline and viewing conditions

Viewing ratio	Angle ratio	Placement of screens and projectors
Minimum 5.3:1	Maximum 45 degrees horizontal and maximum 15 degrees vertical	Screen to be 1.2m above floor level.

Source: AETM Audio Visual Design Guidelines – Tertiary Teaching Spaces, Edition 2

### 10.2.3 Communications

Lectern	In room	Wireless
A minimum of eight Cat6 ports will be required at each lectern. <ul style="list-style-type: none"> <li>One for an analogue 'help' phone with internal call only restriction</li> <li>One for PC connection to the University network via the CATS_RMS VLAN 9</li> <li>One for touchscreen connection to the University network via the CATS_RMS VLAN 9</li> <li>One for system controller connection to the University network via the CATS_RMS VLAN 9</li> <li>One for the lecture recording device via VLAN 100</li> <li>Two spare</li> </ul> These ports should be wall mounted immediately adjacent to the lectern.	N/A	Wireless networking should be provided in these rooms. The number and location of base stations should be advised by IT@UNSW. Please note that wireless base stations should not be installed in lecterns or on the presentation wall. The wireless base station network connection is by dedicated ports – not included in the list above.

### 10.2.4 Electrical

#### a) Lighting

Feature	Requirements
Lighting control	Lighting control is achieved by dimming, the most flexible form of control . Dimming can be easily integrated in the overall AV control system. The dimming ballasts should be DALI with Dynalite control, and controllable using the AV touchscreen. The following requirements apply: <ul style="list-style-type: none"> <li>The controller should disconnect power at lights off.</li> <li>Each room must be a separate system.</li> <li>A Dynalite push button panel should be supplied and installed by the builder to provide all on/all off override control.</li> <li>The controller (and override button) should be located in an accessible cupboard away from AV equipment and available while classes are in progress. This cupboard may also contain a local distribution board.</li> </ul>
Lighting areas	The room lighting needs to be controlled in a number of areas.

Feature	Requirements
	<ul style="list-style-type: none"> <li>▪ Whiteboards – split into two areas. It should be possible to light one whiteboard without lighting the screen that comes down in front of the second whiteboard. This requires directional and very low spill luminaires on the whiteboard surface.</li> <li>▪ Lectern – lighting over the lectern should not interfere with the use of the screen(s), but should allow sufficient work light for the teacher, light for lecturer camera (used in lecture recording) and sufficient directional light for lip reading.</li> <li>▪ ‘Front of house’ – lighting should illuminate the front of the room but should not reflect off the projection screens.</li> <li>▪ Main area lighting – where the students sit.</li> <li>▪ Any access foyer/alcove which forms part of the room.</li> </ul> <p>These provisions mean that there will normally be a need for at least five lighting zones in each room.</p>
Lighting control points	<p>All areas should be individually controlled only from the touch screen.</p> <p>Entry pushbuttons (connecting back to the AV control system, not the lighting control system) should be installed at each entry by the AV team. Entry pushbuttons need only provide all on/all off control.</p> <p>The electrical contractor should provide one set of pushbuttons connected directly to the dimmers. These should be installed with the dimmer to allow minimum lighting control in the event of failure in the AV control system.</p>
Lighting control programming (AV system)	<p>Motion detected by the (AV system) PIR should bring all lights to full – providing the AV system is off. If the AV control system is active, the PIR should have no effect.</p> <p>When no activity is detected in a room the lighting should be turned off by the AV control system.</p> <p>If the lighting control is integrated into the AV control system:</p> <ul style="list-style-type: none"> <li>▪ lowering a screen should dim/turn off the matching whiteboard lighting</li> <li>▪ direct manual control from the touch screen should be provided for each area</li> </ul>

## b) Power

Power required for:	Requirements
Shutters/blinds	If used as window covering.
Lectern	Should be powered by a GPO with a lockable cover that is mounted above the skirting duct immediately adjacent to the lectern. Alternatively, a circuit through the floor and mounted in the lectern can be used. The lectern then powers the projectors and screens.
Laptop power	<p>Fixed seating – outlets installed under the seating with an <i>outlet per seat or a double outlet between two seats</i>. This provision extends to the wheelchair spaces.</p> <p>Movable seating – consideration should be given to the installation of ducted skirting above table height around the non-presentation walls. <i>A double GPO should be provided at each notional seating row.</i></p>
GPOs	At least one double outlet on each of the non-presentation walls.
Cleaners	Blue outlet on the skirting duct.

## 10.2.5 Room location

Feature	Description	Benefits	Additional notes
Floor	Ground floor	<ul style="list-style-type: none"> <li>▪ Good accessibility</li> <li>▪ Ease in locating</li> <li>▪ Reduces use of lifts, resulting in energy conservation and lower maintenance costs</li> </ul>	With new buildings, having all theatres on the same floor may help with the ceiling height.
Main entry	Located near the main or major entry to a building	<ul style="list-style-type: none"> <li>▪ Ease in locating</li> </ul>	



Feature	Description	Benefits	Additional notes
		<ul style="list-style-type: none"> <li>Reduces people traffic through office and research areas which otherwise could be quiet work spaces</li> </ul>	
Noisy locations	Away from noisy environments	<ul style="list-style-type: none"> <li>Minimises class disruption</li> </ul>	Including: <ul style="list-style-type: none"> <li>loading docks</li> <li>workshops</li> <li>busy vehicle and pedestrian traffic routes</li> <li>food courts</li> </ul>
Clustered	Classrooms in clusters (where possible)	<ul style="list-style-type: none"> <li>Ease in locating</li> <li>Reduces people traffic through office and research areas which otherwise could be quiet work spaces</li> <li>Makes room checking/servicing quicker</li> <li>Facilitates room swaps in cases of equipment failure</li> <li>Improves use of spaces as breakout venues from plenary conference sessions</li> </ul>	This provision places strain on the foyer provisions. There is a need to provide space for the students waiting to attend classes in the clustered rooms, as well as to provide sufficient space for the students leaving the previous classes.
Waiting areas	Allocated in foyers	<ul style="list-style-type: none"> <li>Incidental seating and waiting</li> </ul>	These spaces should have: <ul style="list-style-type: none"> <li>seating for individuals and small groups</li> <li>GPOs for laptop power</li> <li>wireless network access (supplied through UNSW IT)</li> </ul>
Restrooms	Located close to classroom cluster	<ul style="list-style-type: none"> <li>Convenient</li> </ul>	

## 10.2.6 Architectural

### a) Space allowance

Area	Capacity
2m <sup>2</sup> UFA/EFTSL	The space should hold up to 100 students

Area Source: TEFMA Space Planning Guidelines, Edition 3, Page 23

### b) Joinery

#### Whiteboards

Whiteboards should be provided where possible

When renovating rooms and if the presentation wall is being moved, existing whiteboards should be retained, provided they will not interfere with the functioning of the room.

### c) Loose furniture

- One table for every two students should be provided (600 x 1,200mm).
- The SEBEL 'Hurry Up' title tables fitted with castors are preferred.
- One chair should be provided for each student (must be stackable). The SEBEL upholstered Progress chair are preferred.
- A lectern should be provided at the front of the room.
- A stool should be provided at each lectern.
- A battery-operated white clock with second hand and a 300mm face should be mounted on a side wall so that it is visible to the teacher as well as the students.

### d) Finishes

The objective is to give a bright, airy and colourful feel to the space with easy to maintain finishes. Attention should be given to the acoustic rating of finishes. In general:

Floor	Walls	Ceiling
The floor should be darker than the wall finish with gentle texturing to hide wear and dirt. Carpet tiles are the preferred floor covering.	The presentation wall should be lighter than the floor finish and should provide a good surround for the screen(s). Other walls should be of a similar light colour so as to maximise lighting.	The ceiling should be white or very light so as to give the impression of height.

### e) Partitions and glazing

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

### f) Acoustics

- Please refer to AS/NZS 2107. Ambient noise must not exceed 35 dB(A). In particular, check the noise from mechanical systems.
- Typical reverb time (RT60) should be in the range 0.7 -1.0s.
- Furnishing and finishes should be selected to keep room noise low.

### g) Doors and windows

Doors	Windows
The door handle should be a lever at 1000mm above the floor. The door should be keyed to the CATS room master and an electronic strike provided for programmed opening and locking. A door closer should be supplied to keep the door in a normally closed position.	There should not be any windows in the presentation wall. Natural light can create an extreme contrast at the front of the room. South-facing windows are best for natural light. They allow the use of natural light without overwhelming projections with direct sunlight. If natural light is affecting on-screen presentations, blackout (roller) shutters under the control of the AV system should be used.

### Entry location

Entries should not be in the presentation wall. The entry should be ideally located at the back of the room to minimise disruptions caused by latecomers and toilet visits.

### h) Ceiling

#### Ceiling height

The minimum ceiling clearance should be calculated as  $1.5M + (\text{distance to back wall in M})/5$ . This allows a minimum height screen to be properly located on the presentation wall. If a greater clearance is possible it should be considered as this would enable a larger screen/image.

The minimum screen height makes the typical 10-point lettering on a web page readable from the back row when projected using the standard projector.

### i) Glass

A glass viewing panel should be provided either in or immediately adjacent to each door. This is to facilitate the safe use of the doors and to make it easy to determine if the room is in use.

### j) Signage/graphics

The following signs are available from UNSW Learning Environments:

Sign	Details
Way-finding	<ul style="list-style-type: none"> <li>■ The passage from the major building entry to the classroom should be clearly signed as 'CATS rooms', give their numbers/names and indicate direction.</li> <li>■ The room number/name should be clearly visible when the door is either open or closed.</li> </ul>

Sign	Details
	<ul style="list-style-type: none"> <li>A timetable holder (A4) and pin board (A3) should be provided either on the door or immediately adjacent.</li> </ul>
CATS sign	No smoking No eating or drinking Please switch your mobile phone to silent
Room capacity	Inside the room near the main entry. The actual capacity number is applied lettering.
Folding seat warning notice	Inside the room near the main entry
Hearing augmentation	As per the Australian Standard. This should be supplied by the loop supplier as each sign must show the coverage of the specific room.

## 10.2.7 Security

Access to other parts of the building should be prohibited when the room cluster is open. This allows the teaching spaces to be used outside of normal office hours without compromising security in the rest of the building.

An electronic door strike is required on each room as this provides centralised room access.

## 10.2.8 Mechanical

### Air conditioning

Basic air handling/conditioning commands should be controlled via the lectern, including basic on/off control. The lectern and associated air conditioning controls should:

- not interfere with any building management system being used
- provide 'off' command when room not occupied
- provide 'on' command with timer (typically two hours) when activated from the touch screen
- Set points and other configuration should not be accessible in the venue.

## 10.2.9 Disability support

- Hearing augmentation system (Infrared).
- Physical functions to meet accessibility requirements.
- 10 to 15% of tables to be height adjustable.
- Allowance for wheelchair spaces.
- Clearance of 1.5 metres around furniture
- Doors into classrooms should have an automatic opening option for disability access.

# 11 High specification flat floor classroom

## 11.1 Room description

A teaching room with a flat floor that is designed to encourage active learning. The furniture is easily movable and configurable to suit collaborative learning. Students can interact with the teacher and collaborate with peers, often in small groups. The room is equipped with specific technology such as mobile/fixed LED screens, microphones, shared computers and document cameras to support a range of behaviours and activities that allow students to maximise their use of the environment.

## 11.2 Room standards

### 11.2.1 Audio visual

The scope of works shall include, but not be limited to, the following:

Equipment (supplied and installed)	Quantity	Additional requirements
Motorised projection screens	1	
Video/data projectors	1	
Lectern	1	Fitted with: <ul style="list-style-type: none"> <li>one equipment rack per lectern to house system equipment</li> <li>necessary connection plates and cables</li> <li>help phone</li> </ul>
Sound system	1	Including: <ul style="list-style-type: none"> <li>program speakers on the presentation wall</li> <li>amplifier</li> </ul>
Video system	1	Including: <ul style="list-style-type: none"> <li>DVD</li> <li>presentation switcher</li> <li>external audio visual connection</li> <li>document camera</li> </ul>
Computing system	1	Including: <ul style="list-style-type: none"> <li>PC</li> <li>monitor</li> <li>VGA laptop connection</li> <li>HDMI laptop connection</li> </ul>
AMX control system	1	Including: <ul style="list-style-type: none"> <li>touch screen</li> <li>controller</li> <li>power controller (with program supplied by UNSW)</li> <li>additional controllers at each pod</li> <li>microphone at each pod</li> </ul>
LED screens	6-10	
Video conferencing	TBC	

### 11.2.2 Sightline and viewing conditions

Viewing Ratio	Angle ratio	Placement of screens and projectors
Minimum 5.3:1	Maximum 45 degrees horizontal, and maximum 15 degrees vertical.	Screen to be 1.2m above floor level.

Source: AETM Audio Visual Design Guidelines – Tertiary Teaching Spaces, Edition 2

### 11.2.3 Communications

Lectern	In room – AV cupboard	Wireless
A minimum of eight Cat6 ports will be required at each lectern. <ul style="list-style-type: none"> <li>One for an analogue 'help' phone with internal call only restriction</li> <li>One for PC connection to the University network via the CATS_RMS VLAN 9</li> <li>One for touchscreen connection to the University network via the CATS_RMS VLAN 9</li> </ul>	AV rack cupboard – eight Cat6 ports to be installed in a 1RU Cat6 panel	Wireless networking should be provided in these rooms. The number and location of base stations should be advised by IT@UNSW.

Lectern	In room – AV cupboard	Wireless
<ul style="list-style-type: none"> <li>One for system controller connection to the University network via the CATS_RMS VLAN 9</li> <li>One for the lecture recording device via VLAN 100</li> <li>Two spare</li> </ul> These ports should be wall mounted immediately adjacent to the lectern.		Please note that wireless base stations should not be installed in lecterns or on the presentation wall. The wireless base station network connection is by dedicated ports – not included in the list above.

## 11.2.4 Electrical

### a) Lighting

Feature	Requirements
Lighting control	Lighting control is achieved by dimming, the most flexible form of control. Dimming can be easily integrated in the overall AV control system. The dimming ballasts should be DALI with Dyalite control, and controllable using the AV touchscreen. The following requirements apply: <ul style="list-style-type: none"> <li>The controller should disconnect power at lights off.</li> <li>Each room must be a separate system.</li> <li>A Dyalite push button panel should be supplied and installed by the builder to provide all on/all off override control.</li> <li>The controller (and override button) should be located in an accessible cupboard away from AV equipment and available while classes are in progress. This cupboard may also contain a local distribution board.</li> </ul>
Lighting areas	The room lighting needs to be controlled in a number of areas. <ul style="list-style-type: none"> <li>Whiteboards – split into two areas. It should be possible to light the whiteboard without lighting the screen that comes down in front of part of the whiteboard. This requires directional and very low spill luminaires on the whiteboard area.</li> <li>Lectern – lighting over the lectern should not interfere with the use of the screen(s) but should allow sufficient work light for the teacher and sufficient directional light for lip reading.</li> <li>'Front of house' – lighting should illuminate the front of the room but should not reflect off the screens.</li> <li>Main area lighting – where the students sit.</li> <li>Any access foyer/alcove which is effectively part of the room.</li> </ul> These provisions mean that there will normally be a need for at least five lighting zones in each room.
Lighting control points	All areas should be individually controlled only from the touch screen. Entry pushbuttons (connecting back to the AV control system, not the lighting control system) need to be installed at each entry by the AV team. Entry pushbuttons need only provide all on/all off control. The electrical contractor should provide one set of pushbuttons connected directly to the dimmers. These should be installed with the dimmer to allow minimum lighting control in the event of failure in the AV control system.
Lighting control programming (AV system)	Motion detected by the (AV system) PIR should bring all lights to full – providing the AV system is off. If the AV control system is active, the PIR should have no effect. When no activity is detected in a room the lighting should be turned off by the AV control system. If the lighting control is integrated into the AV control system: <ul style="list-style-type: none"> <li>lowering a screen should dim/turn-off the matching whiteboard lighting.</li> <li>direct manual control from the touch screen should be provided for each area</li> </ul>

### b) Power

Power required for:	Requirements
Shutters/blinds	If used as window covering.

Power required for:	Requirements
Lectern	Should be powered by a GPO with a lockable cover that is mounted above the skirting duct immediately adjacent to the lectern. Alternatively, a circuit through the floor and mounted in the lectern can be used. The lectern then powers the projectors and screens.
Laptop power	GPOs should be designed to meet expected capacity and be present on side and rear walls to allow students to use laptops for group work.
GPOs	At least one double outlet on each of the non-presentation walls. Additional GPOs to be present on side and rear walls for pod monitors.
Cleaners	Blue outlet on the skirting duct.

### Room location

Feature	Description	Benefits	Additional notes
Floor	Ground floor	<ul style="list-style-type: none"> <li>Good accessibility</li> <li>Ease in locating</li> <li>Reduces use of lifts, resulting in energy conservation and lower maintenance costs</li> </ul>	With new buildings, having all theatres on the same floor may help with the ceiling height.
Main entry	Located near the main or major entry to a building	<ul style="list-style-type: none"> <li>Ease in locating</li> <li>Reduces people traffic through office and research areas which otherwise could be quiet work spaces</li> </ul>	
Noisy locations	Away from noisy environments	<ul style="list-style-type: none"> <li>Minimises class disruption</li> </ul>	Including: <ul style="list-style-type: none"> <li>loading docks</li> <li>workshops</li> <li>busy vehicle and pedestrian traffic routes</li> <li>food courts</li> </ul>
Clustered	Classrooms in clusters (where possible)	<ul style="list-style-type: none"> <li>Ease in locating</li> <li>Reduces people traffic through office and research areas which otherwise could be quiet work spaces</li> <li>Makes room checking/servicing quicker</li> <li>Facilitates room swaps in cases of equipment failure</li> <li>Improves use of spaces as breakout venues from plenary conference sessions</li> </ul>	This provision places strain on the foyer provisions. There is a need to provide space for all students waiting to attend classes in the clustered rooms, as well as to provide sufficient space for the students leaving the previous classes.
Waiting areas	Allocated in foyers	<ul style="list-style-type: none"> <li>Incidental seating and waiting</li> </ul>	These spaces should have: <ul style="list-style-type: none"> <li>seating for individuals and small groups</li> <li>GPOs for laptop power</li> <li>wireless network access (supplied through UNSW IT)</li> </ul>
Restrooms	Located close to classroom cluster	<ul style="list-style-type: none"> <li>Convenient</li> </ul>	

## 11.2.5 Architectural

### a) Space allowance

Area	Capacity
2m <sup>2</sup> UFA/EFTSL	The space should hold up to 60 students.

Area Source: TEFMA Space Planning Guidelines, Edition 3, Page 23

**b) Joinery**

Whiteboards should be provided where possible.

When renovating rooms and if the presentation wall is being moved, existing whiteboards should be retained provided they will not interfere with the functioning of the room.

**c) Loose furniture**

- Large tables on castors that seats between 6-8 students.
- Chairs on castors for the expected capacity.
- Whiteboards on side and rear walls to facilitate group work in pods.
- A battery-operated white clock with second hand and a 300mm face should be mounted on a side wall so that it is visible to the teacher as well as the students.

**d) Finishes**

The objective is to give a bright, airy and colourful feel to the space with easy to maintain finishes. Attention should be given to the acoustic rating of finishes. In general:

Floor	Walls	Ceiling
The floor should be a darker colour than the wall with gentle texturing to hide wear and dirt. Carpet tiles are the preferred floor covering.	The presentation wall should be lighter colour than the floor finishes but provide a good surround for the screen(s). Other walls should a similar light colour so as to maximise lighting.	The ceiling should be white or very light so as to give the impression of height.

**e) Partitions and glazing**

Please refer to Facilities Management as information needs to be sourced through external consultants.

**f) Acoustics**

Please refer to AS/NZS 2107.

- Ambient noise must not exceed 35 dB(A). In particular, check the noise from mechanical systems.
- Typical reverb time (RT60) should be in the range 0.7 -1.0s.
- Furnishing and finishes should be selected to keep room noise low.

**g) Doors and windows**

Doors	Windows
The door handle should be a lever at 1000mm above the floor. The door should be keyed to the CATS room master and an electronic strike provided for programmed opening and locking. A door closer should be supplied to keep the door in a normally closed position.	There should not be any windows in the presentation wall. Natural light can create an extreme contrast at the front of the room. South-facing windows are best for natural light. They allow the use of natural light without overwhelming projections with direct sunlight. If natural light is affecting on-screen presentations, blackout (roller) shutters under the control of the AV system should be used.

**Entry location**

Entries should not be in the presentation wall. The entry should ideally be located at the back of the room to minimise disruption caused by latecomers and toilet visits.

**h) Ceiling**

**Ceiling height**

The minimum ceiling clearance should be calculated as  $1.5M + (\text{distance to back wall in } M)/5$ . This allows a minimum height screen to be properly located on the presentation wall. If a greater clearance is possible it should be considered as this would enable a larger screen/image.

The minimum screen height makes the typical 10-point lettering on a web page readable from the back row when projected using the standard projector.

**i) Glass**

A glass viewing panel should be provided either in or immediately adjacent to each door. This is to facilitate the safe use of the doors and to make it easy to determine if the room is in use.

### j) Signage/graphics

The following signs are available from UNSW Learning Environments:

Sign	Details
Way-finding	<ul style="list-style-type: none"> <li>The passage from the major building entry to the classroom should be clearly signed as 'CATS rooms', give their numbers/names and indicate direction.</li> <li>The room number/name should be clearly visible when the door is either open or closed.</li> <li>A timetable holder (A4) and pin board (A3) should be provided either on the door or immediately adjacent.</li> </ul>
CATS sign	No smoking No eating or drinking Please switch your mobile phone to silent
Room capacity	Inside the room near the main entry. The actual capacity number is applied lettering.
Folding seat warning notice	Inside the room near the main entry.
Hearing augmentation	As per the Australian Standard. This should be supplied by the loop supplier as each sign must show the coverage of the specific room.

## 11.2.6 Security

Access to other parts of the building should be prohibited when the room cluster is open. This allows the teaching spaces to be used outside of normal office hours without compromising security in the rest of the building.

An electronic door strike is required on each room as this provides centralised room access.

## 11.2.7 Mechanical

### Air conditioning

Basic air handling/conditioning commands should be controlled via the lectern including basic on/off control. The lectern and associated air conditioning controls should:

- not interfere with any building management system being used
- provide 'off' command when room not occupied
- provide 'on' command with timer (typically two hours) when activated from the touch screen

## 11.2.8 Disability support

- Hearing augmentation system (Infrared).
- Physical functions to meet accessibility requirements.
- 10 to 15% of tables to be height adjustable.
- Allowance for wheelchair spaces.
- Clearance of 1.5 metres around furniture.
- Doors into classrooms should have an automatic opening option for disability access.

# 12 Meeting room

## 12.1 Room description

A room specifically for holding meetings, consultations and conferences that contains video and teleconferencing capabilities. It is mainly used by UNSW staff.



## 12.2 Room standards

### 12.2.1 Audio visual

The scope of works shall include, but not be limited to, the following:

Equipment (supplied and installed)	Quantity	Additional requirements
Motorised projection screens	1	
Video/data projectors	1	Including: <ul style="list-style-type: none"> <li>single fixed ceiling-mounted projector to display all AV images</li> </ul> Motorised screen will be utilised
Sound system	1	Including: <ul style="list-style-type: none"> <li>front of house speakers on either side of the display</li> <li>amplifiers</li> <li>DSP</li> <li>AEC</li> <li>audio switching and volume control</li> <li>Hearing augmentation</li> </ul>
Computing system	1	<ul style="list-style-type: none"> <li>PC (install only, supply by UNSW) – Apple Mac Mini</li> <li>Monitor</li> <li>VGA laptop connection</li> <li>HDMI laptop connection</li> </ul>
Video conference system	x	Including: <ul style="list-style-type: none"> <li>Skype hosted on room PC</li> <li>external camera input controlled through control system</li> <li>external microphone input</li> </ul>
AMX control system	1	Including: <ul style="list-style-type: none"> <li>wireless touch panel, residing in a wall mounted dock</li> <li>dedicated AV network and WAP to provide control for AV equipment and touch panel</li> </ul>
Camera system	1	Including: <ul style="list-style-type: none"> <li>1 x Pan Tilt Zoom (PTZ)</li> <li>USB video output</li> </ul> Pre-set locations will zoom into different sections of the room. The camera system should be located above or below the display on a camera shelf attached to the wall.

### 12.2.2 Sightline and viewing conditions

Viewing ratio	Angle Ratio	Placement of screens and projectors
Minimum 5.3:1	Maximum 45 degrees horizontal and maximum 15 degrees vertical	Screen to be 1.2m above floor level

Source: AETM Audio Visual Design Guidelines – Tertiary Teaching Spaces, Edition 2

#### 12.2.2.1 Communications

Wireless networking should be designed for the expected capacity.

### 12.2.3 Electrical

#### a) Lighting

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

### *b) Power*

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

## 12.2.4 Room location

Feature	Description	Benefits	Additional notes
Floor	N/A		
Main entry	N/A		
Noisy locations	N/A		
Clustered	N/A		
Waiting areas	N/A		
Restrooms	N/A		

## 12.2.5 Architectural

### *a) Space allowance*

Area	Capacity
2m <sup>2</sup> per person seated	The size of the spaces varies significantly from four to 20 people.

Area Source: TEFMA Space Planning Guidelines Edition 3, Page 22

### *b) Joinery, loose furniture, finishes, partitions and glazing, doors and windows, ceiling, glass*

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

### *c) Acoustics*

Rooms are soundproofed and acoustically treated.

### *d) Signage/graphics*

Please refer to UNSW Facilities Management for signage guidelines.

## 12.2.6 Security

Please refer to UNSW Facilities Management for security guidelines

## 12.2.7 Mechanical

### **Air conditioning**

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

## 12.2.8 Disability support

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

- Doors into classrooms should have an automatic opening option for disability access.

# 13 Individual study space

## 13.1 Room description

A purpose-built, mostly open plan area that supports informal learning. It is quiet and is often supplied with a single table and a supportive chair to allow individuals to study for long periods of time. Wireless technology and access to power outlets are present in this type of space. Individuals have access to common use computers, printers, lockers, vending machines and microwaves may also be present.

## 13.2 Room standards

### 13.2.1 Audio visual

The scope of works shall include, but not be limited to, the following:

Equipment (supplied and installed)	Quantity	Additional requirements
Motorised projection screens	N/A	
Video/data projectors	N/A	
Sound system	N/A	
Computing system	N/A	
Video conference system	N/A	
AMX control system	N/A	
Camera system	N/A	

### 13.2.2 Sightline and viewing conditions

N/A

### 13.2.3 Communications

Wireless networking must be designed for the expected capacity.

### 13.2.4 Electrical

#### a) Lighting

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

#### b) Power

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

Power required for:	Requirements
GPOs	Installed in all fixed joinery and into walls near loose furniture. Where possible, 1 x double GPO is provided per seat.
Laptop power	Power for student laptops and devices should be provided in a manner that avoids trip hazards.

### 13.2.5 Room location

Feature	Description	Benefits	Additional Notes
Floor	Generally located on the upper levels	<ul style="list-style-type: none"> <li>Quiet</li> </ul>	
Main entry	N/A	<ul style="list-style-type: none"> <li></li> </ul>	
Noisy locations	Quiet	<ul style="list-style-type: none"> <li>Allows students to undertake individual study</li> </ul>	
Clustered	N/A	<ul style="list-style-type: none"> <li></li> </ul>	
Waiting areas	N/A	<ul style="list-style-type: none"> <li></li> </ul>	
Restrooms/food	Restrooms are available at least on alternate levels of the Law and Main Library. At Paddington, restrooms are outside. Hot	<ul style="list-style-type: none"> <li>Convenient</li> </ul>	

Feature	Description	Benefits	Additional Notes
	meals are not allowed. Cold, dry snacks and covered drinks are permitted.		

Source: UNSW Library

## 13.2.6 Architectural

### a) Space allowance

Area	Capacity
2 – 3m <sup>2</sup> UFA/EFSTL	Dependent on size of the space available.

Area Source: TEFMA Space Planning Guidelines, Edition 3, Page 23

### b) Joinery

- Study desks with supportive seating
- Benches with stools
- Laptop tables

### c) Loose furniture

- Clock
- Numerous bins for paper and general rubbish

### d) Finishes

Floor	Walls	Ceiling
Carpet	Paint: Baker White.	The ceiling should be white or very light so as to given the impression of height.

### e) Partitions and glazing, doors and windows, ceiling, glass

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

### f) Acoustics

Room are soundproofed and acoustically treated.

### g) Signage/graphics

The libraries are equipped with adequate signage.

Sign	Details
Emergency regulations	Refer to UNSW Facilities Management for emergency guidelines
Requires UNSW input to complete	

## 13.2.7 Security

Security guards patrol throughout the day and provide dedicated coverage after hours.

## 13.2.8 Mechanical

### Air conditioning

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

### 13.2.9 Disability support

- Main and law libraries are accessible. Paddington is not currently accessible but upgrades are planned for 2016.
- A distance of 1.2 metres between rows of shelving in the library should be maintained.

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

- Doors into classrooms should have an automatic opening option for disability access.

## 14 Group study space

### 14.1 Room description

A purpose-built, mostly open plan area that supports informal learning for groups of students. It is often noisy and contains various types of furniture that can be moved, including tables, stools and lounges. These spaces may be defined by partitions or seating nooks. Wireless technology and access to power outlets are present in this type of space. Groups have access to common use computers, printers, lockers and vending machines. Microwaves may also be present.

### 14.2 Room standards

#### 14.2.1 Audio visual

The scope of works shall include, but not be limited to, the following:

Equipment (supplied and installed)	Quantity	Additional requirements
Motorised projection screens	N/A	
Video/data projectors	N/A	
Sound system	N/A	
Computing system	N/A	
Video conference system	N/A	
AMX control system	N/A	
Camera system	N/A	

#### 14.2.2 Communications

Wireless networking should be designed for the expected capacity.

#### 14.2.3 Electrical

##### *h) Lighting*

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.


##### Power

Power required for:	Requirements
GPOs	Installed into walls near loose furniture. Where possible, 1 x double GPO should be provided per seat.
Laptop power	Power for student laptops and devices should be provided in a manner that avoids trip hazards.

## 14.2.4 Room location

Feature	Description	Benefits	Additional notes
Floor	Generally located on the lower levels	<ul style="list-style-type: none"> <li>Ease of locating</li> </ul>	
Main entry	N/A	<ul style="list-style-type: none"> <li></li> </ul>	
Noisy locations	Noisy	<ul style="list-style-type: none"> <li>Allows students to undertake group study</li> </ul>	
Clustered	N/A	<ul style="list-style-type: none"> <li></li> </ul>	
Waiting areas	N/A	<ul style="list-style-type: none"> <li></li> </ul>	
Restrooms/food	Restrooms are available at least on alternate levels of the Law and Main Library. At Paddington, restrooms are outside. Hot meals are not allowed. Cold, dry snacks and covered drinks are permitted.	<ul style="list-style-type: none"> <li>Convenient</li> </ul>	

Source: UNSW Library

## 14.2.5 Architectural

### i) *Space allowance*

Area	Capacity
2 – 3m <sup>2</sup> UFA/EFSTL	The space should hold up to 6-8 people

Area Source: TEFMA Space Planning Guidelines, Edition 3, Page 23

### j) *Joinery*

- Study desks
- Benches with stools
- Coffee tables
- Fixed whiteboards

### k) *Loose furniture*

- Lounge chairs
- Bean bags
- Ottomans
- At least one clock per floor
- Numerous bins for paper and general rubbish
- Several mobile whiteboards

### l) *Finishes*

Floor	Walls	Ceiling
Carpet	Paint: Baker White.	The ceiling should be white or very light so as to given the impression of height.

### m) *Partitions and glazing*

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

### a) *Acoustics*

Room are soundproofed and acoustically treated.

### b) *Signage/graphics*

The libraries are equipped with adequate signage.

Sign	Details
Emergency regulations	Refer to UNSW Facilities Management for emergency guidelines

### 14.2.6 Security

Security guards patrol throughout the day and provide dedicated coverage after hours.

### 14.2.7 Mechanical

#### Air conditioning

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

### 14.2.8 Disability support

- Main and law libraries are accessible. Paddington is not currently accessible but upgrades are planned for 2016.
- A distance of 1.2 metres between rows of shelving in the library should be maintained.

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

- Doors into classrooms should have an automatic opening option for disability access.

## 15 Group study room

### 15.1 Room description

A room, often with a closed door, that facilitates collaborative study in small groups. The room is set up with furniture and AV equipment, such as a computer or LED screen and whiteboards. Wireless technology and access to power outlets are present in this type of space

### 15.2 Room standards

#### 15.2.1 Audio visual

The scope of works shall include, but not be limited to, the following:

Equipment (supplied and installed)	Quantity	Additional Requirements
Motorised projection screens	N/A	
Video/data projectors	N/A	
Sound system	N/A	
Computing system	N/A	
Video conference system	N/A	
AMX control system	N/A	
Camera system	N/A	
LED screens	1 per room	Students can connect their own laptops via an AV panel.
VHS/DVD players	1 per room	For media booths located in the main library.

#### 15.2.2 Communications

Wireless networking should be designed for the expected capacity.

Source: AETM Audio Visual Design Guidelines – Tertiary Teaching Spaces, Edition 2

### 15.2.3 Electrical

#### a) Lighting

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

#### b) Power

Power required for:	Requirements
GPOs	Most group study rooms have several spare GPOs in addition to those required for the equipment in the space.
Laptop power	Power for student laptops and devices should be provided in a manner that avoids trip hazards.

### 15.2.4 Room location

Feature	Description	Benefits	Additional notes
Floor	Levels 2-4 of main library; Ground and Level 1 at law library.		
Main entry	N/A		
Noisy locations	N/A		
Clustered	N/A		
Waiting areas	N/A		
Restrooms/food	Restrooms are available at least on alternate levels of the Law and Main Library. At Paddington, restrooms are outside. Hot meals are not allowed. Cold, dry snacks and covered drinks are permitted.	Convenient	

Source: UNSW Library

### 15.2.5 Architectural

#### a) Space allowance

Area	Capacity
8-20m <sup>2</sup> Media booth: 5m <sup>2</sup>	The space fits for 4-12 seats.

Source: UNSW Library

#### b) Joinery

- Whiteboards – typically most of one wall is devoted to them.

#### c) Loose furniture

- Chairs and tables to meet expected capacity.
- Bins are not located in small group study rooms but should be close by in the informal learning and teaching spaces.

#### d) Finishes

Floor	Walls	Ceiling
Carpet	Paint: Baker White. Most rooms have vinyl on walls to 1m high to minimise damage and requirement for repainting.	The ceiling should be white or very light so as to give the impression of height.

Source: UNSW Library



**e) Partitions and glazing, doors and windows, ceiling, glass**

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

**f) Acoustics**

Room are soundproofed and acoustically treated.

**g) Signage/graphics**

The libraries are equipped with adequate signage.

Sign	Details
Emergency regulations	Refer to UNSW Facilities Management for emergency guidelines

**15.2.6 Security**

Security guards patrol throughout the day and provide dedicated coverage during afterhours opening times.

**15.2.7 Mechanical****Air conditioning**

Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

**15.2.8 Disability support**

Main and Law libraries are accessible. Paddington is not currently accessible but upgrades are planned for 2016. Please refer to UNSW Facilities Management as information needs to be sourced through external consultants.

Doors into classrooms should have an automatic opening option for disability access.