

# Standard Specification for Electrical Systems in Common Learning Spaces

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<b>Target Audience</b>	Project managers and Design consultants

## Revision History

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## 1. Purpose

The standard specifications outlined here define the requirements for electrical systems in common learning spaces (CLS). They ensure the proper installation of lighting control systems, integration with A/V equipment, coordination between contractors and infrastructure teams, compliance with other relevant standards, and provision of necessary outlets and containment systems. These specifications aim to optimise lighting conditions, facilitate A/V equipment usage, ensure safety, and meet regulatory standards.

## 2. Scope

This specification document outlines requirements for electrical systems in common learning spaces (CLS), covering lighting control, A/V integration, safety compliance, and infrastructure coordination. It excludes non-electrical aspects of construction and specialised installations unrelated to CLS requirements.

## 3. Background

Lecture theatres significantly influence the student experience, highlighting the importance of maintaining a consistently high standard when refurbishing these spaces. It is essential to ensure that lecturers are provided with uniform room layouts and user-friendly lighting and presentation control systems.

## 4. Detailed Requirements for Electrical Systems in CLS

- In larger capacity common learning spaces (CLS) rooms, the preferred route for the lighting is the installation of a Helvar DALI control system to manage the room lighting. Control of the lighting will be facilitated by commands from both the lecture bench Audio-Visual (A/V) control touchscreen (if present) and a separate lighting scene switch positioned near the entrance door and/or the lecturer's position. To ensure proper operation, the A/V control touchscreen will need both a Helvar A/V interface and a bus pair cable link. The connection between the Helvar and A/V control touchscreen interfaces shall be accessible within the lecture bench.
- Where lighting control systems are installed, the power supply units are to be supplied via an MK un-switched fused spur unit without neon. All Helvar power supply units are to be installed in such a way to aid access and future maintenance. Above a suspended ceiling is not deemed acceptable. The service designation along with the circuit reference shall be clearly labelled on the front of the spur.
- Where applicable, communication will be required between the Electrical Installation contractor and the iSolutions infrastructure team and/or A/V

installation specialist to ensure the touchscreen interface is commissioned correctly.

- Lighting control system compatible detectors are to be installed to automatically deactivate lighting when the space is unoccupied. A 2-hour timeframe will be programmed into the software to detect periods of inactivity. Moreover, these detectors will activate the main lights to scene setting 1 upon user entry through any door into the room. However, if lights are manually switched off during lecture theatre sessions, the detectors will be overridden to prevent automatic reactivation of the lighting.
- The lighting system will feature dimmable functionality with four preset scenes: Full, Medium, Low (1), and Low (2). Light fittings will be arranged in single rows, tailored to the size of the room. These rows will extend from the front to the rear of the room, running parallel to the projection screen.

The targeted average light levels at desk height (700mm AFFL) are as follows:

- Scene 1 (Full): All lights activated to achieve approximately 400 lux over the seating area.
- Scene 2 (Medium): Dimming of all lights to achieve approximately 200 lux over the seating area.
- Scene 3 (Low 1): Dimming of all lights to achieve approximately 150 lux over the seating area.
- Scene 4 (Low 2): Dimming of all lights to achieve approximately 150 lux over the seating area, with the first row of lights turned off to minimise glare on the A/V image at the front of the room.

Manual control of the lights, including turning them off and adjusting dimming, will be facilitated by separate buttons on the scene switch.

- The commissioning of the lighting control system will be conducted by the manufacturer and overseen by a representative from both the Estates and Facilities Engineering and iSolutions infrastructure teams. This joint oversight ensures the attainment of appropriate light levels suitable for both general room use and A/V presentations.
- In small and medium sized lecture rooms, if lighting dimming control is seen as beneficial, the use of an alternative lighting control systems can be

considered but must meet the approval of the assigned Estates and Facilities liaison Engineer before being deemed acceptable.

- Where necessary, dedicated luminaires will be installed to provide illumination for whiteboards or targeted areas within the space. These luminaires will be controlled by a separate switch conveniently located near the lecture bench or adjacent to the whiteboard.
- If required, gangways shall be lit separately with LED luminaires to ensure a minimum safe light level in the event of a main light failure. These fittings will operate independently, controlled by local presence detectors separate to any dimming system utilised in the room and are to be on a separate circuit to the main lighting.
- Lighting controls shall be provided in projection rooms where applicable. A separate lighting control switch shall be sited in the projection room and on or near the lecture bench to control these lights. A different location can be chosen with prior agreement with the Liaison Engineer.
- In the absence of any specific requirements, in spaces where dimmed lighting control is not required, the lighting level shall be maintained at approx. 400 lux. The lights in the room shall be two-way switched with the second light switch positioned at or near the lecture bench. Absence detection shall be provided in these spaces.
- Emergency lighting, compliant with BS5266 standards, will be installed to guarantee a minimum safe light level in the event of a main light failure. Maintained illuminated directional 'EXIT' signs shall be provided to indicate escape routes. Self-contained, self-test emergency luminaires are preferred where possible and are to be commissioned by the manufacturer. Co-ordination with the Estates and facilities electrical operational department shall be required for information regarding spare capacity on existing systems.
- Luminaires shall be LED with colour rendering Ra80, or greater, and have a colour temperature of 4000K.
- Where applicable, lobby areas outside lecture theatres are to have luminaires controlled via either integral or separate presence detectors.
- Containment systems within CLS rooms shall be of PVC with the multi-compartment dado trunking type to be MK prestige 3D unless agreed otherwise with the liaison Engineer.

- Socket outlets shall be provided around the room as the use of the room dictates. Power and network sockets may also need to be installed within the lecture bench to supply A/V equipment and controls. Detailed requirements will be provided by the project team and/or iSolutions. The provision of USB type A and type C socket outlets is to be considered at or near the lecturer's position.
- Containment required for any relevant AV or network installation purposes are to be carried out by the electrical contractor. In general, these shall be PVC type and in keeping with other existing containment systems
- Lecture benches/cabinets/lecterns, projectors and A/V screens are to be supplied via MK logic plus un-switched fused connection unit without neon (if located in the room) and installed in a convenient local wall position. The designation along with the circuit reference shall be clearly labelled on the front of the spur.
- All inspection, testing, commissioning certificates and as fitted drawings shall be provided electronically by the contractors to the University on completion of the works.
- All Electrical works to be carried out in accordance with BS7671.

#### 4.1 Mandatory Requirements

1. Consideration of a Lighting control system for managing room lighting.
2. Integration of lighting controls with lecture bench A/V touchscreens.
3. Proper labelling and accessibility of lighting control power supply units.
4. Coordination between contractors and infrastructure teams.
5. Installation of presence/ absence lighting detectors for energy efficiency.
6. Provision of emergency lighting compliant with relevant safety standards.
7. Adherence to regulatory standards such as BS7671 for electrical works.
8. Submission of inspection, testing, commissioning certificates, and as-fitted drawings upon completion.
9. Compliance with the Estates & Facilities ES-002 Briefing Notes for Electrical services.
10. Reference to the Estates & Facilities ES-002 Briefing Notes for Electrical services shall be made in conjunction with this document.