PROJECT: ERASMUS+ Project # 101177299-eCAMPUS-EDU-2024-CBHE

"Fostering Socially Distanced and Inclusive on Campus Education in Armenian HEIs" - eCAMPUS

DELIVERABLE 4.4: 8 FUNCTIONING SMART CLASSROOMS (SC) AT CONSORTIUM AM HEIS

Deliverable Number: D4.4

Work Package: WP.4: SMARTclass

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EXECUTIVE SUMMARY

This report documents the implementation and outcomes of Deliverable 4.4 (D4.4) under Work Package 4 (WP.4) of the Erasmus+ Capacity Building in Higher Education (CBHE) project *eCAMPUS*. The deliverable focuses on the establishment, technical equipping, and full operationalisation of eight (8) Smart Classrooms (SCs) across four Armenian (AM) partner higher education institutions (HEIs).

The creation of Smart Classrooms aimed at modernising the physical and digital teaching and learning (T&L) environments within the partner institutions. These classrooms are designed to support technology-enhanced, hybrid, and inclusive education models, responding to the increasing demand for flexible delivery formats, remote participation, and interactive pedagogical approaches.

Each Smart Classroom has been equipped with state-of-the-art audiovisual, interactive, and streaming technologies. The integrated solutions enable high-quality content delivery, real-time interaction between on-site and remote participants, lecture recording, and reuse of digital learning materials. Collectively, these features contribute to improved learner engagement, enhanced accessibility, and strengthened institutional capacity for digital transformation.

A total of eight Smart Classrooms have been successfully deployed and are fully operational, distributed among the Armenian partner HEIs as follows:

- Yerevan State University (YSU): 3 Smart Classrooms

- Armenian State Pedagogical University (ASPU): 2 Smart Classrooms

- Yerevan State Medical University (YSMU): 2 Smart Classrooms

- Northern University (NU): 1 Smart Classroom

All designated rooms were renovated and refurbished by the host institutions using their own resources. The equipment was professionally installed, configured, and tested, and relevant academic and technical staff received initial in-house training. The Smart Classrooms are already in active use for study programmes, faculty continuous professional development, and hybrid teaching activities, thereby directly contributing to the objectives of WP.4 and the overall goals of the eCAMPUS project.

1. EQUIPMENT PROCUREMENT

To ensure efficiency, consistency, and optimal value for money, the consortium agreed - within the framework of the Consortium Agreement and during the first Consortium Meeting - that the project coordinator, Yerevan State University (YSU), would centrally manage the tendering and procurement process for all Armenian partner HEIs.

Centralised procurement allowed the project to consolidate equipment needs across institutions, attract qualified suppliers, and ensure technical compatibility of the installed systems. The procurement procedure was conducted in full compliance with the national procurement legislation of the Republic of Armenia and followed principles of transparency, competitiveness, and equal treatment.

The tendering process was highly competitive and implemented in several stages. More than three qualified suppliers participated across different equipment categories. Evaluation criteria included technical specifications, compliance with project requirements, warranty conditions, delivery timelines, and overall cost-effectiveness.

In total, forty-six (46) items of equipment across six (6) nomenclature categories were procured. All items fully correspond to the approved project application and the Detailed Budget Tables (Depreciation Costs). Procurement contracts included manufacturer warranties of at least one year (and longer for selected equipment), as well as professional installation, functional testing, commissioning, and initial training of technical staff responsible for operation and maintenance.

Table 1. Procured Equipment and Distribution

N°	Equipment Description	YSU	ASPU	YSMU	NU	Total Quantity
1	98" Interactive LCD Display with built-in Android PC	3	2	2	1	**8**
2	4K Dual Lens PTZ Professional Camera with Audio Auto-Tracking	6	4	4	2	**16**
3	Integrated microphone & speaker bar with camera tracking	3	2	2	1	**8**
4	All-in-one Media Station, HD Recorder & Streamer	3	2	2	1	**8**
5	Laptop computers	2	1	1	1	**5**
6	Digital photo/video camera with lens & tripod	1	0	0	0	**1**
	Total	**18**	**11**	**11**	**6**	**46**

2. FUNCTIONING SMART CLASSROOMS

Each Smart Classroom has been designed as a hybrid, interactive learning environment that supports both face-to-face and remote participation. The standard configuration of each classroom includes:

- one (1) 98" interactive LCD display serving as the primary visual and interactive interface;

- two (2) 4K dual-lens PTZ professional cameras enabling multi-angle video capture and automatic speaker tracking;

- one (1) integrated microphone and speaker bar with camera-tracking functionality to ensure high-quality audio capture;

- one (1) all-in-one media station with HD recording and streaming capabilities for live broadcasting and content archiving.

Beyond equipment installation, all host institutions undertook comprehensive physical renovation and refurbishment of the selected rooms using their own institutional resources. This included upgrading furniture, improving lighting conditions, reorganising spatial layouts, and ensuring flexibility for different pedagogical scenarios such as group work, interactive sessions, and hybrid delivery.

The technical installation phase has been fully completed for all eight Smart Classrooms. Equipment functionality, software configuration, system integration, and internet connectivity were tested and validated. In parallel, dedicated technical teams provided initial in-house training sessions to academic and support staff, ensuring effective and sustainable use of the Smart Classrooms in daily educational practice.

All procured equipment has been officially registered in the institutional asset repositories of the AM HEIs, in accordance with their internal regulations.

3. CURRENT USE

The Smart Classrooms are actively used across the partner institutions and already integrated into regular academic and professional activities. Their current use includes, but is not limited to:

- hybrid teaching and learning, combining on-site instruction with synchronous online participation;

- delivery of courses within bachelor's, master's, and continuing education programmes;

- faculty continuous professional development (CPD), including training on digital pedagogy and technology-enhanced teaching methods;

- institutional meetings, workshops, and dissemination events related to the eCAMPUS project and beyond.

The early and systematic utilisation of the Smart Classrooms demonstrates their relevance, functionality, and added value for the partner HEIs.

4. SMART CLASSROOMS AT YEREVAN STATE UNIVERSITY (YSU)

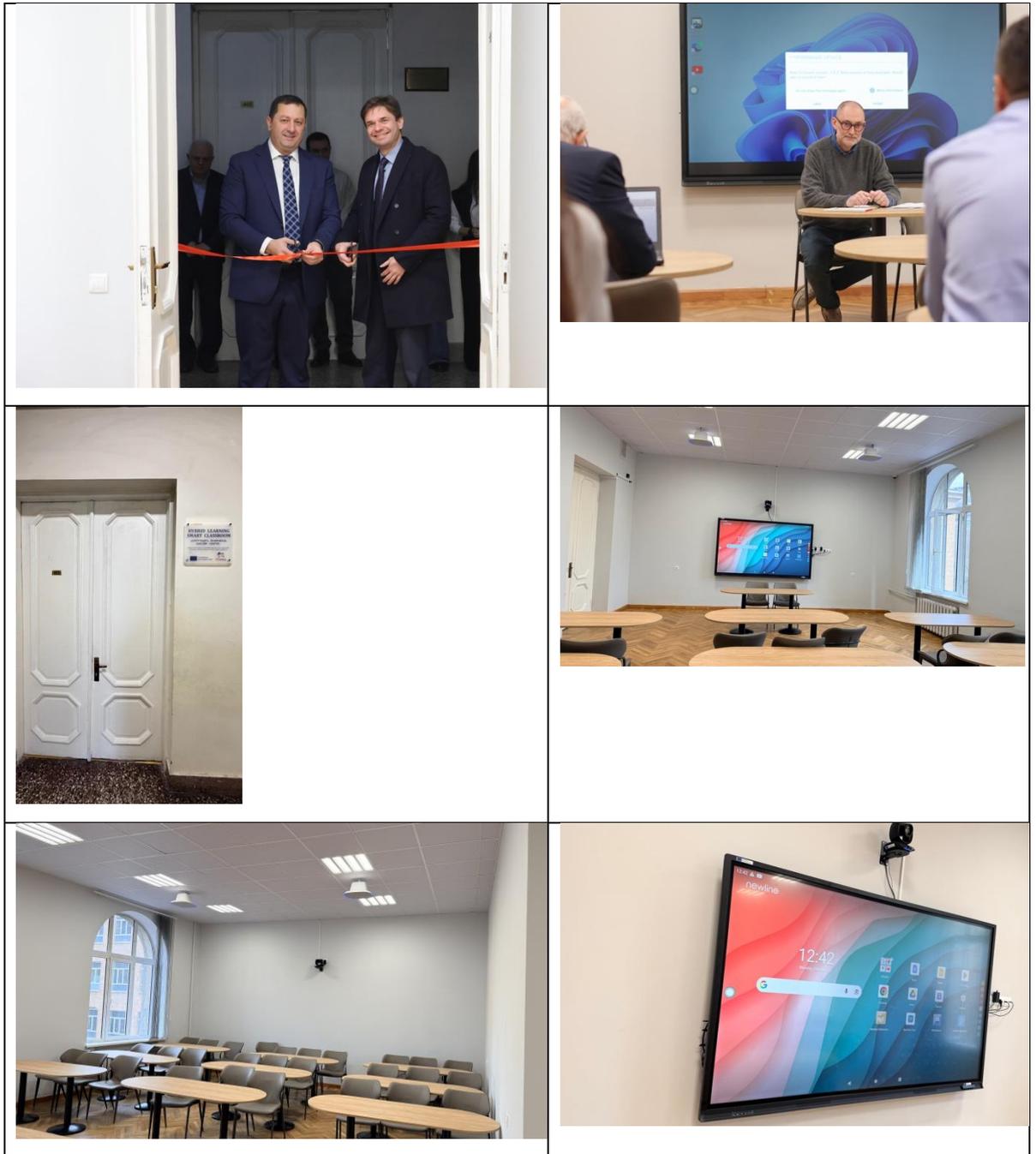**SC 1:** Building of the Faculty of International Relations, 4th floor, Auditorium No. 405

Photo 1. Deputy Head of Cooperation at EU Delegation to Armenia V. Sterba and YSU rector H. Hovhannisyan are opening Auditorium No. 405: technology-enhanced auditorium configured for hybrid instruction.

SC 2: Building of the Faculty of Physics, ground floor, Auditorium No. 101

Photo 2. Auditorium No. 101: renovated learning space equipped for interactive and streaming-based teaching.

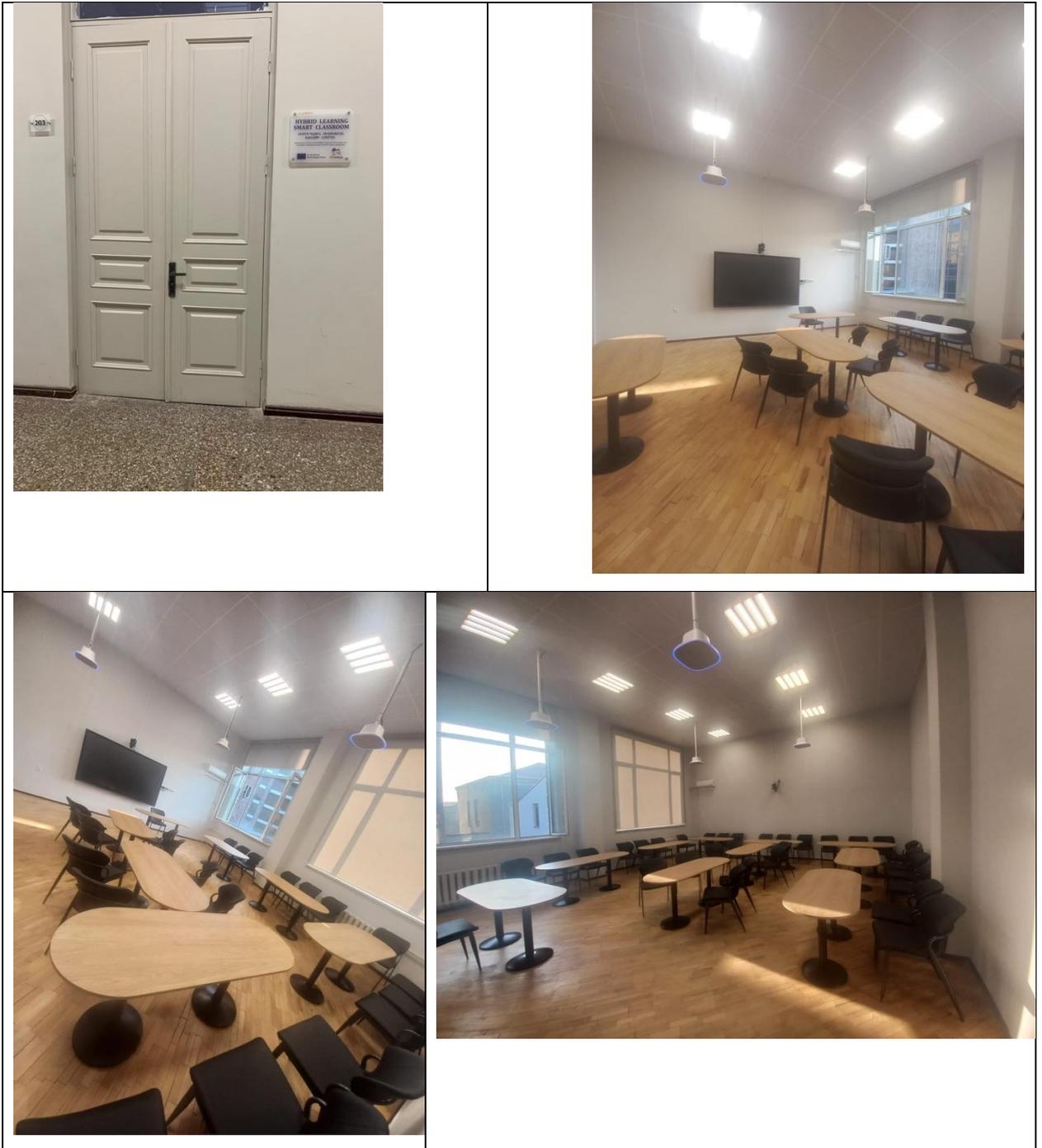**SC 3:** Building of the Faculty of Economics & Management, 2nd floor, Auditorium No. 20

Photo 3. Auditorium No. 203: interactive LCD display, PTZ cameras, and hybrid teaching setup.

5. SMART CLASSROOMS AT ARMENIAN STATE PEDAGOGICAL UNIVERSITY (ASPU)

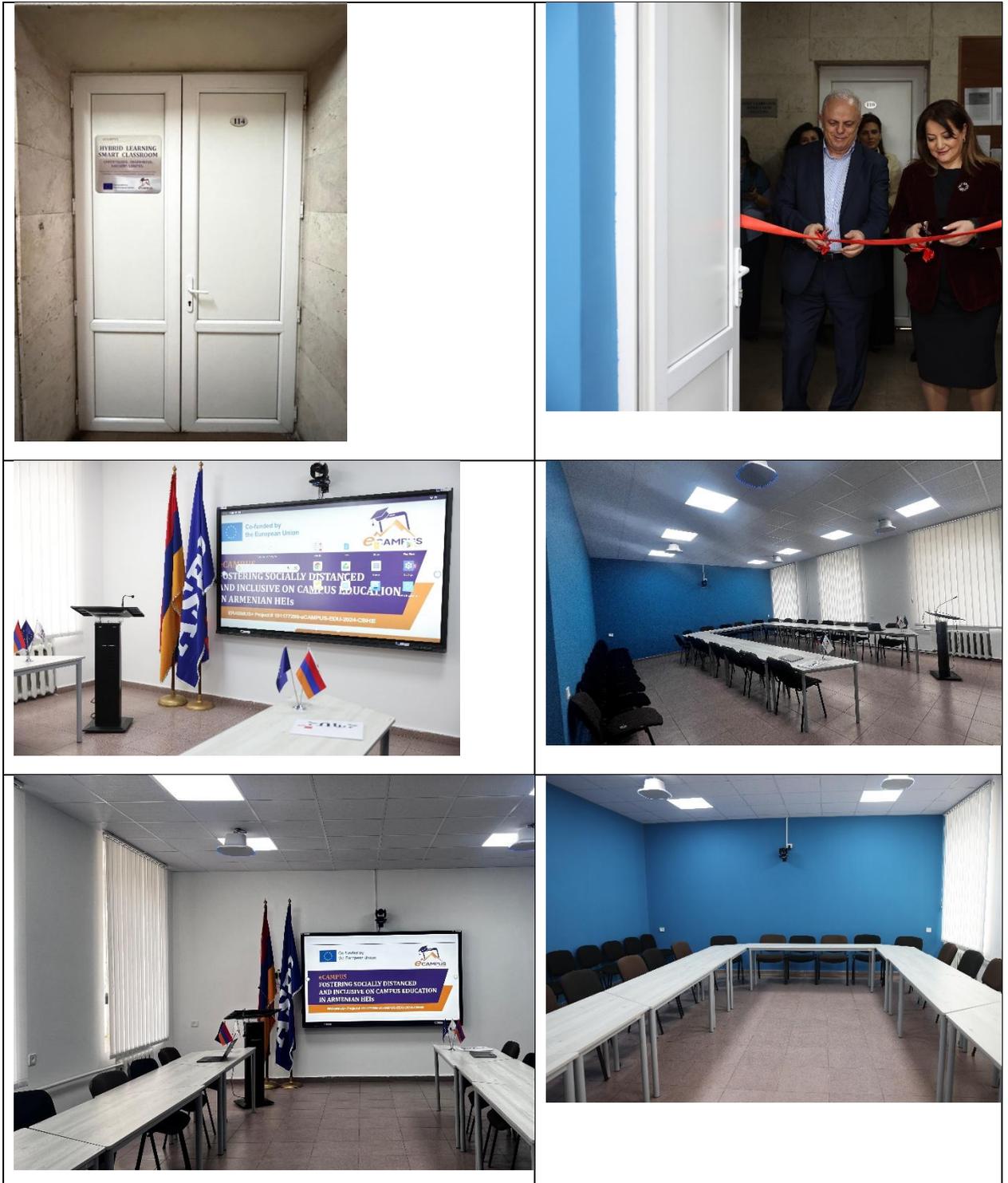**SC 4:** Campus 3 Building (13 Alex Manukyan St.), 1st floor, Auditorium No. 114

Photo 5. ASPU rector L. Mkrtchyan and eCAMPUS project coordinator A. Budaghyan are opening Auditorium No. 114: fully equipped smart classroom with integrated audio-video systems.

SC 5: Campus 3 Building (13 Alex Manukyan St.), 1st floor, Auditorium No. 101

Photo 4. Auditorium No. 101: flexible classroom layout supporting active and hybrid learning.

6. SMART CLASSROOMS AT YEREVAN STATE MEDICAL UNIVERSITY (YSMU)

SC 6: Laboratory Building, 2nd floor, Blueberry Auditorium

Photo 6. Blueberry Auditorium: hybrid-ready medical education environment with high-definition recording and streaming facilities.

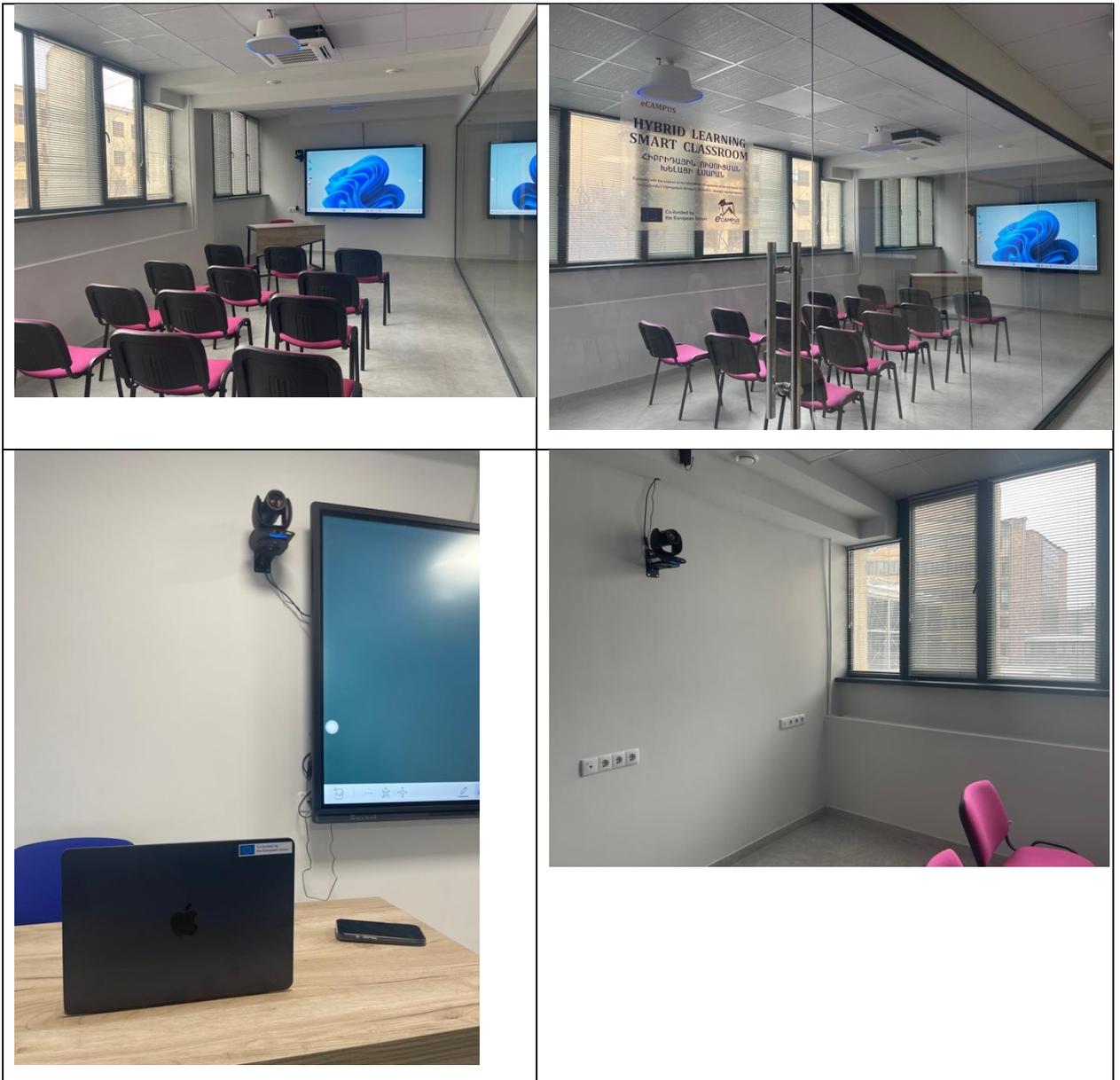**SC 7:** Laboratory Building, 2nd floor, Roseberry Auditorium

Photo 7. Roseberry Auditorium: technology-enhanced auditorium supporting synchronous and asynchronous learning.

7. SMART CLASSROOM AT NORTHERN UNIVERSITY (NU)

SC 8: Main Building, 6th floor, Auditorium No. 607

Photo 8. NU rector M. Makichyan and eCAMPUS project coordinator A. Budaghyan are opening Auditorium No. 607: fully operational smart auditorium enabling hybrid and interactive teaching.

CONCLUSION

Deliverable 4.4 has been fully achieved. Eight Smart Classrooms have been successfully established, equipped, and operationalised across the consortium Armenian HEIs. These classrooms provide a robust technological foundation for innovative, inclusive, and hybrid education, directly contributing to the objectives of WP.4 and the broader goals of the eCAMPUS project.

The Smart Classrooms will continue to play a central role in the implementation of technology-enhanced teaching and learning, institutional capacity building, and sustainability of project outcomes beyond the project lifetime.

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