

الجامعة الألمانية الأردنية
German Jordanian University

**RFP for Design, Supply,
Delivery, Installation and
Commissioning of Smart
Classroom Solution**

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1. INTRODUCTION

The German Jordanian University (GJU) intends to acquire and implement a Smart Classroom Project at the Consultation and Training Center (CTC) located in Jabal Amman, bidders are invited to submit their proposals for the Smart Classroom Project, the project should include the following components:

- Interactive Display Screen
- Integrated E-Podium
- Teacher Tracking Camera
- Student Tracking Camera
- Microphones Kit
- Classroom Speakers
- Smart TV Screen
- Document Camera
- Mixing, Recording, and Lecture Capturing System
- Power Outage Protection

2. GENERAL INSTRUCTIONS AND REQUIREMENTS

2.1 Bid Requirements

- Equipment to be provided as part of the proposal should meet the best commercial practices, reliability, maintainability and performance as defined in this document.
- Any accessories and/or parts and or software that are needed for the installation and were not stated in the offer are the bidder's responsibility to provide at no extra cost.
- The selected bidder should perform the transportation, storing, assembly and operation of the equipment.
- The selected bidder will be responsible for the installation, configuration, cabling, and drilling.
- The selected bidder should not involve Sub-Bidders without GJU knowledge and approval.
- The selected bidder should be at least a SILVER CERTIFIED PARTNER with the vendor within the Hashemite Kingdom of Jordan, and should only supply new equipment certified by the vendor (no refurbished/renewed or used equipment).
- The bidder should not quote End of Sale (EoS) and End of Life (EoL) products/services. The bidder should also provide life cycle of the offered components.
- The bidder should ensure that the installation is carried out by fully trained personnel who are familiar with the systems, equipment and with the required installation techniques.
- All bidders should make available at least during the whole project lifecycle the following expertise:
 - ✓ One Project Manager.



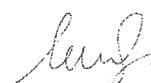
- ✓ Two Technology Specialist – Certified from the vendor.
 - ✓ Two experienced staff in the field of sound, video systems and smart room solutions.
 - ✓ Networks cabling, electrical systems technicians.
- The bidder should provide all necessary test equipment required to carry out the commissioning and acceptance testing.
 - The bidder should mention and clarify all licenses that are needed to expand the items later.
 - The bidder should install all equipment and any required accessories to produce a fully functioning system ready for hand over to GJU.
 - The bidder should label each cable on each end indicating the designation that appears in the System Design Manual and/or cabling schedule.
 - Bidders preferred to have all equipment installed and ready for testing within 6 weeks from receiving the PO.
 - Bidder should provide Mean Time Between Failure (MTBF) and Mean Time to Repair (MTTR) data for all major system components.
 - The brand of items for all supplied equipment and components must be WELL-KNOWN brand and has a recognized partner and support.
 - The selected bidder will be responsible for any damage to GJU facilities and assets during the implementation period.
 - GJU will select the most suitable offer and is not committed to selecting the offer with the lowest price.
 - All products should have Regulatory Compliance Certification i.e. CE, RoHS.
 - All cabling works during the installation of Smart Classroom along with the Interactive Display and sound/video system will be carried out by the bidder, suitable cap with tidy appearance in the classroom should be implemented.

2.2 Notices

Any notices, questions concerning technical specifications or commercial questions should be sent to GJU in writing and delivered either by hand, by facsimile, or by email (with a hard copy sent by letter) addressed to Tenders and Supplies Department, phone 06-429 4444.

2.3 Format of Proposals

- The bidder should submit the Technical and Financial Proposals in one sealed box.
- The bidder should submit logical and physical diagrams for the components architecture, interconnection, and wiring, in addition to an explanation for the offered smart classroom solution must be included in the proposal.
- A compliance checklist sheet should be included in the Technical Proposal.

3. GJU SMART CLASSROOM REQUIREMENTS AND SPECIFICATIONS

This section discusses all requirements and specifications for the GJU Smart Classroom, all bidders are welcome to suggest any solution that meets the requirements in this RFP. The requested quantity for this solution is One Smart Classroom.

3.1 General Technical Requirements for Smart Classroom

- The solution must include modern Interactive Display systems.
- The solution must support auto-tracking and directing function for teacher with multiple frames comparison technology.
- The solution must support auto-tracking function for the students based on their location at the Smart Classroom.
- The solution must support at least 4-signal auto-switching technology. All signals including instructor view, students view, document camera view, and the interactive display stream must be switched automatically as well as the video stream layout should allow having one stream, a subset of the all streams, or all streams.
- The solution must support recording each stream with desired sound/video quality into a separate file for post editing purposes.
- Audio and sound quality should be produced at high quality, noise suppression and echo cancellation should be considered in a professional way.
- The solution must support live streaming and recording.
- The solution must support 4K recording and access of diverse live streaming application which allows users watch live and online videos anytime, anywhere.
- The solution must support interactions and seminars with people at the distance learning site, and local teaching activities in the multimedia classroom.
- The solution might be integrated with GJU-LMS system (e-Learning Moodle) and/or any standard LMS (Optional).
- The solution must be integrated with Microsoft 365 products certainly Microsoft Teams and Stream.
- The solution must provide seamless and transparent lecture control, i.e. the instructor shouldn't configure or setup multiple settings every time, and it is preferred to be Start/End actions only.
- Primary components of this solution should be managed remotely using remote management protocols such as SSH, RDP, HTTPS etc. Central remote management is also a plus.
- The solution must support the following scenarios:

Scenario 1: The instructor (alone) is physically giving the lecture from the smart classroom (via possibly MS Teams), while the attendees (e.g., students) are joining the lecture online from outside the university. The following views must be supported in this scenario:



- A) Instructor View: The Interactive Display Screen should show the content presented by the instructor, while the Smart TV Screen should show the MS Teams (Zoom etc.) attendees' grid.
- B) Attendee View: Should show in separate MS Teams (Zoom etc.) grid windows the view of the instructor tracking camera and the rest of the attendees (if available).

Scenario 2: The instructor and attendees (e.g., students) are both physically available in the smart classroom to possibly record an interactive session – hence MS Teams is not required in this case. The following views must be supported for viewing in the room or recording on the mixing system:

- A) The Interactive Display Screen should show the content presented by the instructor.
- B) The Smart TV Screen should allow showing separately or mixed the student tracking camera view and/or the instructor tracking camera view.

Scenario 3: The instructor is physically giving the lecture from the smart classroom (via possibly MS Teams), while the attendees (e.g., students) are physically available in another smart classroom at GJU including the instructor's room – hence an instructor can give a lecture to students in multiple smart classroom. The following views must be supported in this scenario:

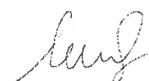
- A) Instructor Room: The Interactive Display Screen should show the content presented by the instructor, while the Smart TV Screen should show the MS Teams (Zoom etc.) attendees' grid.
- B) Other Rooms: The Interactive Display Screen should show the content of the instructor's Interactive Display Screen, while the Smart TV Screen should show the MS Teams (Zoom etc.) attendees' grid.

3.2 Smart Classroom Specifications

This section mentions the desired GJU Smart Classroom specifications. All bidders are welcome to offer one or more option in their proposals, while noting that all components below must be integrated as a whole to deliver the desired solution.

3.2.1 Interactive Display Screen

- Must support all-in-one integrated design with slim and stylish appearance, delivering natural experiences with appropriate video angle and height.
- Must support multiple installation options, the right installation method could be chosen for the Smart Classroom or meeting rooms.
- The bidder must offer screen size of 85+ inches and 4K screen with super color performance.
- Must support Multi-Touch Technology with 10 points touch, high precision, and highly sensitive.



- Must support positioning technology that makes it possible to write directly with your pens or fingers.
- Touch pen must be included.
- Must include an interactive software that allows to write, save and erase annotations.
- Must support human centered buttons that enable you to power the Interactive Screen on/off and sleeping mode.
- Must use 4mm toughened glass with a hardness of minimum 6.0 on the Mohs scale.
- Must support the physical screen resolution of 4K, FHD and HD and wide aspect ratio.
- Must support 160 degrees viewing angle at least.
- Must provide all required I/O ports to integrate the Smart Classroom equipment i.e. HDMI, USB ports etc.
- Must include all required wall mount kit and tools.
- Must meet operating voltage in Jordan (~220 Volts). (Low power consumption preferred).
- **Should support full integration with the touch screen and PC in Section (3.2.2 Integrated E-Podium).**

3.2.2 Integrated E-Podium

The Integrated E-Podium must support all Interactive Display functions as well as the rest of the Smart Classroom equipment (e.g., Cameras, Microphones, etc.). In other words, the whole Smart Classroom solution function should be controlled using the Integrated E-Podium.

- Must include Gooseneck Microphone
- Must handle and control all Smart Classroom equipment.
- Must include at least 22 inches FHD mounted Multi-touch screen to handle and control all functions in the Interactive Display Section (**See Section 3.2.1**).
- Must include a certified Embedded/Built-in Mounted PC and interactive software, you can write, save and erase contents, display slides, and play multimedia materials.
- The Embedded/Built-in Mounted PC should have at least Intel Quad-Core CPU, 16 GB RAM, and 1 TB SSD. (Upgradable in-plus)
- Must include all required I/O ports to connect to the smart classroom solution.
- Must allow teacher to mute/unmute all microphones.
- E-Podium system must include USB ports to allow the teacher to present/transfer the teaching materials.
- Preferred to include cabinet/enclosure to secure and aggregate all Smart Classroom interconnecting devices i.e. mixing system and power protection device (UPS). Proper ventilation and reduced noise must be considered in the cabinet. In case the previous requirements cannot be guaranteed, the bidder has the choice to provide a separate cabinet/enclosure, while noting that the cabinet must be placed in the back of the room without any wiring constraints that could affect signal quality.
- Must include a rack/holder for the Document Camera in (Section 3.2.8).
- Must meet operating voltage in Jordan (~220 Volts). Low power consumption preferred.

3.2.3 Teacher Tracking Camera

Standalone Teacher Tracking Camera should adopt image analysis and pattern recognition technology or any equivalent technology to calculate the position of the teacher and rotate the camera to ensure the teacher is always in the center of the image. When there is more than one person on the podium, the system can automatically switch the image to the panoramic view of the podium.

- Support advanced auto tracking technology, system can work out the teacher position, then can easily auto-track teacher's movement.
- Must support 4K-base output or more.
- Must support 4K, FHD, HD and SD video resolutions.
- Must support backlight compensation in low illuminance.
- Must support at least 8X optical zoom.
- Must support auto-focus.
- Must support at least 7-meter auto tracking radius range.
- Built-in camera is not accepted.

3.2.4 Student Tracking Camera

Standalone Student Tracking Camera should support professional video quality, and deliver realistic and superior dynamic images when catching up the class focus in the main Smart Classroom.

- Support student microphone tracking, camera can work out the student position based on the microphone location.
- Must support 4K-base output or more.
- Must support 4K, FHD, HD and SD Video Resolutions.
- Must support backlight compensation in low illuminance.
- Must support at least 8X optical zoom.
- Must support auto-focus.
- Must support at least 10-meter auto tracking radius range.
- Built-in camera is not accepted.

3.2.5 Microphones Kit

The standalone Microphones Kit should seamlessly integrate with HD endpoints and support 360-degree sound pickup with up to a radius of 10 meters in the main classroom.

- At least five standalone microphones including the teacher microphone physically and evenly distributed.
- Must be certified or compatible with HD endpoint.
- Must support Omni-directional sound pickup and up to radius of 10-meter pickup distance.



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- Standalone Mic kit is required.
- Must support noise suppression
- Must support echo cancelation.
- Built-in microphones are not accepted.

3.2.6 Classroom Speakers

The standalone speakers should produce the audio output of Teacher, Students, and Teaching materials i.e. videos playing on the Interactive Display.

- Minimum four speakers for the smart classroom.
- Shouldn't require amplifier or any separated amplification hardware to operate.
- Should support Stereo and Optimized audio.
- Shouldn't cause any noise or echo against another sound system in the room.
- Built-in speakers are not accepted.

3.2.7 Smart TV Screen

Smart TV Screen will be used to display one or more video signal(s), i.e. remote party video/audio signal, document camera video signal, and Teacher/Student tracking camera signals etc. minimum specification below.

- Must support least 4K Resolution.
- Minimum size 55 inches.
- Two or more HDMI/DP ports.
- Must include all required cables.
- Must include wall mount kits.
- Well-Known brand i.e. Sony, LG, SAMSUNG etc.

3.2.8 Document Camera

- Frame Rate should be at least 30 fps
- Resolution should be at least 5 MP.
- Must support Auto focus.
- Shooting area should cover A3 paper Size
- Output video signal should support HDMI, VGA and USB.
- Must include Built-in LED light.
- Should be compatible with Smart Classroom and the latest Windows OS's 8.0 ~ 10.

3.2.9 Mixing, Recording and Lecture Capturing Solution

- Using more than one device/software in Mixing, Recording and Lecture Capturing System is acceptable, in case of Devices/Software variety, all Devices/Software must be compatible/Certified.

- Support multiple video sources, at least 4 video sources, including teacher close-up, and student camera, document camera and teaching materials.
- Support multi-channel video and voice signal recording, which can save each input signal as a separate file, i.e. Student Tracking camera, Teacher Tracking camera, Document camera, Interactive display should be recorded individually as separate files at 4K quality.
- Support mixed-channel video signal recording, which can mix all streams or certain streams in one layout single file at 4K quality.
- Must support integration with Microsoft Teams, Zoom, and Stream.
- Must support live streaming i.e. MS Stream or YouTube live streaming.
- Must support online video solution i.e. OpenCast, Kaltura etc.
- Must support H.323 and SIP conference recording and recording bandwidth of 512 kbps to 4 Mbps.
- Supports H.264, and H.263 video protocols and 4Kp30, 1080p60, 1080p30, 720p60, 720p30 video formats.
- Must support common audio protocols.
- Must support H.235, TLS, and SRTP security encryption protocols and IPv4 protocol stacks.
- Support multicast for a live broadcast lecture at 1080p60, 1080p30, 720p60, 720p30.
- Supports layout switch among modes such single-screen, dual-screen as well as multi-screen layout.
- Storage Must provide at least a 2 TB built-in hard drive (Fast drive or SSD is preferred) to support recording of at least 100 lecture hours.
- Must support multiple file storage formats such as MP4, AVI, MOV etc.
- Must support network storage devices such as NAS for storage expansion.
- Must support dumping function. When the storage threshold is reached, the system automatically dumps recording files to a remote server or storage.
- Supports recording control (Start, Pause, and Stop) on the endpoints, and recording interface.
- Must support development interfaces for integration with third-party systems.
- Must support integration with Active Directory/Azure Active Directory.
- Must allow teacher to mute/unmute microphones.

3.2.10 Power Outage Protection

Power Outage Protection device should protect all room devices against power interruption, minimum specifications listed below.

- UPS - 2 KVA
- Features – Single Phase Input, Single Phase Output, Output voltage ~220 volts.
- Short circuit and overload protection
- Quiet acoustic UPS is required.
- Lower BTU emission UPS is preferred.
- Interactive LCD/Touch panel
- Backup duration – 1 hour



4 TRAINING AND KNOWLEDGE TRANSFER

The bidder must train GJU academic and technical staff on the usage and integration of Smart Classroom. Due attention should be given to the following aspects during the training:

- o Proper proposal including curriculum for the training will be designed and submitted by the winning bidder at the time of signing the PO.
- o There should be special emphasis on practical training, operating the system for the use of educational content.
- o After the completion of the training the concerned principal of the training center will issue the certificate to the bidder whether the training is satisfactory (by taking the feedback from the trainees) and conducted as per a predefined schedule.

5 WARRANTY AND SUPPORT

All products should have a warranty and support term, all bidders must offer the below two options. (Note that only one option will be selected by GJU as found appropriate)

5.1 Option 1 – Warranty and Support

- o Three Year – Mother company warranty, Onsite Spare parts and Labor.

5.2 Option 2 – Warranty and Support

- o Five Year – Mother company warranty, Onsite Spare parts and Labor.

