संत लौंगोवाल अभियांत्रिकी एवं प्रौद्योगिकी संस्थान,
लौंगोवाल, संगरुर, पंजाब - १४८ १०६
(मानव संसाधन मंत्रालय के अधीन समविश्वविद्यालय)
Sant Longowal Institute of Engineering and Technology
Longowal, Dist. Sangrur, Punjab – 148106
(Deemed to be University under MHRD)

Ref. No. SLIET/PUR/54/20/822

Date: 18/11/2020

Corrigendum

The following changes are made in the e-tender PUR/30/2020-21 already uploaded on 04.11.2020 for purchase of various equipments under HEFA:

Sr. No.	Cat.	Name of item	Already uploaded	Changes made
1.	**D (FET)**	Centrifuge	Inadvertently included in Annexure-A of tender document	The item may be treated as deleted from **Annexure-A** of tender document.
2.	**C (EIE)**	Multi-physiological signal acquisition system at **Sr. No. 54 in bids**	Detailed specifications not uploaded in the Technical & Price bid	1. Technical & price bid has been replaced. 2. Detailed specifications of item no. 54 are available in **Annexure-X** for reference.

Accordingly, the last date for submission of bids against category "C" (EIE dept.) of e-tender PUR/30/2020-21 is extended and the revised schedule for submission & opening of e-tender bids of **Cat. C** is as under:

Date & Time of availability of e-tender against cat. C for downloading	01.12.2020 up to 2:00 PM
Last date & Time for submission of e-tender against cat. C	01.12.2020 up to 5:00 PM
Date & Time for opening of technical bids against cat. C	03.12.2020 at 11:30 AM
Date & Time for opening of commercial bids against cat. C	08.12.2020 at 11:30 AM

Manjit Singh 18/11/20
Assistant Registrar
(Store & Purchase)

ANNEXURE-'X'

A multi physiological data acquisition system is required for recording Bio-potentials (ECG, EEG, EMG, EOG etc.), Respiration, Blood Pressure, Heart Sound, Grip Strength etc.

PART A (Mandatory Quote)

Multi Physiological signal acquisition system with compatible sensors

- High speed USB based 4 channel data acquisition system.
- The system should have a facility for upgradation facility to record up-to 16 or more channels of raw data.
- Range: ± 2 mV to +10 V and sampling rate of 400 KHz (aggregate speed),
- ADC resolution = 24 bits. on all gain ranges and variable sampling speed on each channel.
- Expansion Port with Digital output and Digital Input : 8 independent lines, TTL output & input level
- Dual channel Bio-potential amplifiers for recording ECG, EMG, EEG, EOG etc.
- Constant Current & Constant Voltage Isolated stimulator unit with Current range 0-20mA, compliance voltage 100V, Integrated and synchronised with software.
- ECG recording with multi - leads phono cardiogram to record heart sounds and correlate the sound with the electrical events of the cardiac cycle. Real time Cardiac & Vector Axis analysis facility.
- Balance board for static posturography should be four sensors based force plate and should communicate via Bluetooth and realtime analysis on the software.
- Transducers for recording Bio potential, respiration, Hand Grip, Pulse, Heart Sound, Reflexes, GSR, Temperature, Spirometry, Blood Pressure, wireless heart rate.
- Should have software controlled filtering High Pass, Low Pass filters, AC Coupling, Digital filters, band pass filter & Main filters.
- Display Modes: - Must have Simple Chart View, Scope View, XY View, Zoom View, FFT, Spectrum, averaging view etc.
- Facility to perform complete real time and offline heart rate variability analysis (Time & Frequency domains), ECG interpretation, PQRST amplitudes and ST elevation.
- Cyclic Measurements: Rate, period, frequency, count, minimum, maximum, height, integral, variance, derivative, Arithmetic & mathematic formulae, Spectrum Analysis.
- Real time data streaming with Excel, Matlab and other common formats.
- Export formats should allow export Text, Excel, Edf, Binary, IGOR, MATLAB, QuickTime, Wav etc.
- It should have various automatic analysis modules for ECG, HRV, Blood Pressure, Peak analysis, spike histogram etc.
- The software should provide an easy file sharing option to a distant user with-out involving any cost with a minimum of 5 year of free updates and upgrades. Training and Demonstration to be provided at the institute.
- IEC, ISO and other safety certificate for human use must be provided of manufacturer.
- Laptop/PC to operate above system smoothly.

Desirable- perpetual license for software

PART B (Optional, to be quoted separately)

Compatible Wireless Physiological Parameters Acquisition

- The wireless belts/Transducers of different sizes to record the chest ECG signals, Respiration, Acceleration (3 axis)Activity, Skin Temperature, SPO2 ,PPG and GSR at least 8 hrs data recording and logging facility supplied with external battery pack it should compatible with the same software and hardware supplied in Part A.
- The range of the equipment should be at least 80 meters.
- The wired System (Part A) and Wireless System (Part B) should run individually as well as simultaneously as per user requirement.
- Safety Standard certificate should be supplied

PART C (Optional, to be quoted separately)

(Compatible Online Learning and Assessment Platform for 100 students Yearly Subscription)

- Platform should be on cloud-based technology on which teacher be allowed to login with their own Institutional Email ID with standard password recovery through email.
- Teacher should have complete capability of managing multiple courses in single account
- Teacher should be able to schedule lessons and modify it as and when required online.
- Automated email invitations to each student in course when added by the teacher.
- Multiple Teachers can participate teaching a single course, therefore same course should appear in multiple Teachers' account
- Faculty and the University administration should have access to monitor or download the performance of students for any given assignment/assessment.
- Student should be allowed to login with their email ID. System should be provided to accommodate at least hundred students with facility to upgrade the number in future.
- Users can access the lessons from PC, laptop and mobile devices having Windows/Android/iOS.

- All files saved in one place, teachers have time to focus on lesson plans and assessments rather than spend time on redundant administrative work.
- Teachers can keep track of the students' work/progress. Students and subject analytics
- The Platform should have interactive editable lessons for Human Physiology,
- Should be provided with Human Physiology experiments collections. These include videos of lab protocols and procedures, as well as video Patient case library.
- Easily edit, share and update existing content or create in real-time, as per course requirement.
- Teacher can set timing for the availability of Lessons/Assignments/Tests as & when required and grant extensions to students if needed.
- Drag-and-drop a range of content types including video, audio, images, quizzes and text directly into lessons.
- Should have access to built-in example data for their online remote learning
- Option to upgrade for Students to record signals on their own in the lab environment with Plug & Play Smart Sensors like Pulse Transducer, Spirometer, Hand Dynamometer, Respiratory Belt Transducers and other Biological amplifiers.
- Should be compatible with the equipment supplied in PART A.
- Creating Text Questions, Multi-Choice questions, Label Image, Upload & Annotate Image, Categories, Table Questions, and Drag & Drop questions, etc
- Teachers can choose a grading system and create grade categories where Assignments &/or tests are auto graded. The Grades & Analytics can be downloaded or published to existing system.
- Teachers should be able to assign assignments to all students/ groups or individual students.
- Students should be able to work in a small group together.
- Teachers can create assignments using learning material like YouTube videos, Google Form surveys, or PDFs from the drive.
- View live analytics for each lesson to see how long students spend in a lesson, how many times the answer was checked, and how much of a video they watched. The student progress dashboard shows lesson progress and individual student progress.
- Platform should encrypt messages, files, and names before sending them to the cloud. Thus, content arrives in encrypted form and is processed (data in use) and stored (data at rest) in its encrypted state until it is decrypted on the intended recipients' devices.

PART D (Optional, to be quoted separately)

Compatible Multi Physiological signal acquisition system

- High speed USB based 4 channel data acquisition system.
- The system should have a facility for upgradation facility to record up-to 16 or more channels of raw data.
- Range: ± 2 mV to +10 V and sampling rate of 400 KHz (aggregate speed),
- ADC resolution = 24 bits. on all gain ranges and variable sampling speed on each channel.
- Expansion Port with Digital output and Digital Input : 8 independent lines, TTL output & input level
- Dual channel Bio-potential amplifiers for recording ECG, EMG, EEG, EOG etc.
- Constant Current & Constant Voltage Isolated stimulator unit with Current range 0-20mA, compliance voltage 100V, Integrated and synchronised with software.
- Along with supportive software for acquisition and analysis.