

**ERASMUS +**

**HIGHER EDUCATION – INTERNATIONAL CAPACITY BUILDING**

**Erasmus+ Project**

**New Study Program in Space Systems and Communications Engineering**

**(SPACE.COM)**

**Invitation to Tender for Equipment Procurement –**

**Satellite Construction LAB1**

**(Uzbekistan)**

#SPACECOM2020

Dear Sir/Madam,

We kindly invite you to submit your **tender for the supply of Equipment to the project partner universities in Uzbekistan** (see the technical specifications provided in the Part-III of the main document) within the framework of the Project “*New Study Program in Space Systems and Communications Engineering*” – (*SPACE.COM)*, co-funded by the **ERASMUS+ Programme of the European Union**.

When preparing your tender, please be guided by the invitation to tender.

Tenders should be submitted in English **by Email** tospacecom.tender@gmail.com not later than **28.08.2020** (Tashkent local time).

We kindly ask you to ensure that the tender is **signed, stamped, and in the PDF format**. An acknowledgement of receipt will be sent to you accordingly.

In all cases, please add the below reference: #SPACECOM2020 “Invitation to Tender for Equipment Procurement – Satellite Construction LAB1 (Uzbekistan)”.

*For any additional information, please, contact us* ***only*** *by Email.*

Dr. Khabibullo Nosirov

spacecom.tender@gmail.com

100084, Amir Temur str. 108

Tashkent city,

Uzbekistan

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# Annex 1: Company Information Sheet

#SPACECOM2020 “Invitation to Tender for Equipment Procurement – Satellite Construction LAB1 (Uzbekistan)”

*Please, fill in all fields.*

|  |
| --- |
| **Bidderʼs Information** |
| **Company legal name**  |  |
| **Company legal address**  |  |
| **Company E-Mail** |  |
| **Company authorized representative**(name, address, telephone number(s), fax number(s) and e-mail address) |  |
| **Attached are copies of the following documents:*** A photocopy of the trade name registration papers
 |

# Annex 2: Equipment Description

#SPACECOM2020 “Invitation to Tender for Equipment Procurement – Satellite Construction LAB1 (Uzbekistan)”

*Please, fill in all fields.*

|  |
| --- |
| **Satellite Construction LAB1: //The table of equipment required for one university** |
| **#** | **Required Technical Specifications and Standards** | **Quantity** |
| ***#1C*** | ***Oscilloscope TDS2012*** |  ***2 pcs*** |
| **1** | **Key performance specifications:*** 100 MHz bandwidth models
* 2-channel
* Up to 2 GS/s sample rate on all channels
* 2.5k point record length on all channels
* Advanced triggers including pulse width trigger and line-selectable video trigger
 |  |
| **2** | **Key features:*** 16 automated measurements and FFT analysis for waveform analysis
* Built-in waveform limit testing
* Automated, extended data logging feature
* Autoset and signal auto-ranging
* Built-in context-sensitive help
* Probe check wizard
* 11-language user interface
 |  |
| **3** | **144 mm (5.7 inch) active TFT color display**  |  |
| **4** | **Small footprint and lightweight - only 124 mm (4.9 inches) deep and 2 kg (4.4 lb)** |   |
| **5** | **USB 2.0 host port on the front panel for data storage**  |  |
| **6** | **USB 2.0 device port on the rear panel for connection to a PC or for direct printing to a PictBridge® -compatible printer** |   |

|  |  |  |
| --- | --- | --- |
| ***#2C*** | ***Oscilloscope TDS2002*** |  ***1 pc*** |
| **1** | **Key performance specifications:*** 70 MHz bandwidth models
* 2-channel
* Up to 2 GS/s sample rate on all channels
* 2.5k point record length on all channels
* Advanced triggers including pulse width trigger and line-selectable video trigger
 |  |
| **2** | **Key features:*** 16 automated measurements and FFT analysis for waveform analysis
* Built-in waveform limit testing
* Automated, extended data logging feature
* Autoset and signal auto-ranging
* Built-in context-sensitive help
* Probe check wizard
* 11-language user interface
 |  |
| **3** | **144 mm (5.7 inch) active TFT color display**  |  |
| **4** | **Small footprint and lightweight - only 124 mm (4.9 inches) deep and 2 kg (4.4 lb)** |  |
| **5** | **USB 2.0 host port on the front panel for data storage** |  |
| **6** | **USB 2.0 device port on the rear panel for connection to a PC or for direct printing to a PictBridge® -compatible printer** |  |
|   |
| ***#3C*** | ***Oscilloscope TDS2014*** |  ***1 pc*** |
| **1** | **Key performance specifications:*** 100 MHz bandwidth models
* 4-channel
* Up to 2 GS/s sample rate on all channels
* 2.5k point record length on all channels
* Advanced triggers including pulse width trigger and line-selectable video trigger
 |  |
| **2** | **Key features:*** 16 automated measurements and FFT analysis for waveform analysis
* Built-in waveform limit testing
* Automated, extended data logging feature
* Autoset and signal auto-ranging
* Built-in context-sensitive help
* Probe check wizard
* 11-language user interface
 |  |
| **3** | **144 mm (5.7 inch) active TFT color display**  |  |
| **4** | **Small footprint and lightweight - only 124 mm (4.9 inches) deep and 2 kg (4.4 lb)** |  |
| **5** | **USB 2.0 host port on the front panel for data storage** |  |
| **6** | **USB 2.0 device port on the rear panel for connection to a PC or for direct printing to a PictBridge® -compatible printer** |  |
|  |
| ***#4C*** | ***DC Power Supplies Tektronix PWS2721*** | ***2 pcs*** |
| **1** | **Linear Regulation** |  |
| **2** | **Up to 72 V Output Voltage** |  |
| **3** | **Output Current-Channel: 0 A to 1.5 A** |  |
| **4** | **0.05% Basic Voltage Accuracy** |  |
| **5** | **0.2% Basic Current Accuracy** |  |
| **6** | **10 mV / 10 mA Programming Resolution** |  |
| **7** | **Less than 3 mVp-p Ripple and Noise*** **Ripple and Noise (20 Hz to 7 MHz)**
* **Voltage ≤1 mVRMS / 3 mVp-p**
* **Current ≤5 mARMS**
 |  |
| **8** | **Bright Display** |  |
| **9** | **20 User-defined Setup Memories** |  |
| **10** | **Direct Parameter Entry using Numeric Keypad** |  |
| **11** | **Power Consumption 350 VA** |  |
| **12** | **All cables and connectors must be included** |  |
|  |
| ***#5C*** | ***Fluke 116 HVAC Multimeter*** | ***2 pcs*** |
| **1** | **Maximum voltage between any terminal and earth ground: 600 V** |  |
| **2** | **Surge protection: 6 kV peak per IEC 61010-1 600 V CAT III, Pollution Degree 2** |  |
| **3** | **Display: Digital: 6,000 counts, updates 4 per second** |  |
| **4** | **Bar graph: 33 segments, updates 32 per second** |  |
| **5** | **Operating Temperature: -10 °C to + 50 °C** |  |
| **6** | **Storage Temperature: -40 °C to + 60 °C** |  |
| **7** | **Battery type: 9 volt Alkaline, NEDA 1604A/ IEC 6LR61** |  |
| **8** | **Battery Life: 400 hours typical, without backlight** |  |
| **9** | **Accuracy Specifications:****DC millivolts:** * Range: 600.0 mV
* Resolution: 0.1 mV
* Accuracy: ± ([% of reading] + [counts]): 0.5% + 2

**DC volts:*** Range/Resolution: 6.000 V / 0.001 V
* Range/Resolution: 60.00 V / 0.01 V
* Range/Resolution: 600.00 V / 0.1 V
* Accuracy: ± ([% of reading] + [counts]): 0.5% + 2

**Auto volts:** * Range: 600.0 V
* Resolution: 0.1 V
* Accuracy: 2.0 % + 3 (dc, 45 Hz to 500 Hz)

 4.0 % + 3 (500 Hz to 1 kHz)**AC millivolts1 true-rms:*** Range: 600.0 mV
* Resolution: 0.1 mV
* Accuracy: 1.0 % + 3 (dc, 45 Hz to 500 Hz)

 2.0 % + 3 (500 Hz to 1 kHz)**AC volts1 true-rms:*** Range/Resolution: 6.000 V / 0.001 V
* Range/Resolution: 60.00 V / 0.01 V
* Range/Resolution: 600.0 V / 0.1 V
* Accuracy: 1.0 % + 3 (dc, 45 Hz to 500 Hz)

 2.0 % + 3 (500 Hz to 1 kHz)**Continuity:** * Range: 600 Ω
* Resolution: 1 Ω
* Accuracy: Beeper on < 20 Ω, off > 250 Ω; detects opens or shorts of 500 μs or longer

**Ohms:*** Range/Resolution: 600.0 Ω / 0.1 Ω
* Range/Resolution: 6.000 kΩ / 0.001 kΩ
* Range/Resolution: 60.00 kΩ / 0.01 kΩ
* Range/Resolution: 600.0 kΩ / 0.1 kΩ
* Range/Resolution: 6.000 MΩ / 0.001 MΩ
* Accuracy: 0.9 % + 1
* Range/Resolution: 40.00 MΩ / 0.01 MΩ
* Accuracy: 1.5 % + 2

**Diode Test:*** Range/Resolution: 2.000 V / 0.001 V
* Accuracy: 0.9% + 2

**Capacitance:*** Range/Resolution: 1000 nF / 1 nF
* Range/Resolution: 10.00 μF / 0.01 μF
* Range/Resolution: 100.0 μF / 0.1 μF
* Range/Resolution: 9999 μF / 1 μF
* Range/Resolution: 100 μF to 1000 μF
* Accuracy: 1.9% + 2
* Range/Resolution: > 1000 μF
* Accuracy: 5% + 20%

**LoZ capacitance:*** Range: 1 nF to 500 μF
* Accuracy: 10% + 2 typical

**Temperature2 (Type-K thermocouple):*** Range/Resolution: -40 °C to 400 °C / 0.1 °C
* Accuracy: 1% + 102
* Range/Resolution: -40 °F to 752 °F / 0.2 °F
* Accuracy: 1% + 182

**AC μamps true-rms (45 Hz to 500 Hz):** * Range/Resolution: 600.0 μA / 0.1 μA
* Accuracy: 1.0% + 2

**DC μamps:*** Range/Resolution: 600.0 μA / 0.1 μA
* Accuracy: 1.0% + 2

**Hz (V or A input)2:** * Range/Resolution: 99.99 Hz / 0.01 Hz
* Range/Resolution: 999.99 Hz / 0.1 Hz
* Range/Resolution: 9.999 Hz / 0.001 Hz
* Range/Resolution: 50.00 Hz / 0.01 Hz
* Accuracy: 0.1% + 2
 |  |
| **10** | **All interfaces cables and connectors must be included** |  |
|  |
| ***#6C*** | ***3D-Printer*** | ***1 pc*** |
| **1** | **Printing technology: FFF (FDM)** |  |
| **2** | **Dimensions, mm: 492 x 390 x 430** |  |
| **3** | **Weight, kg: 16** |  |
| **4** | **Number of print heads: 2** |  |
| **5** | **Supported file formats: stl, plg** |  |
| **6** | **Working chamber, mm: 200 x 200 x 210** |  |
| **7** | **Frame: steel; Platform: aluminum, glass** |  |
| **8** | **Layer thickness, microns, from: 50-200** |  |
| **9** | **Accuracy of positioning XY, micron: 11** |  |
| **10** | **Accuracy of positioning Z, micron: 1.25** |  |
| **11** | **Extrusion temperature, up to, ° C: 380** |  |
| **12** | **Platform temperature, up to, ° C: 140** |  |
| **13** | **Supported materials: ABS, PLA, FLEX, NYLON, ASA, ABS \ PC, PET, PC, PVA, HIPS** |  |
| **14** | **The diameter of the thread, mm: 1.75 ± 0.1** |  |
| **15** | **Nozzle diameter, mm: 0.3** |  |
| **16** | **Interfaces: USB, USB Flash, Micro SD, Ethernet** |  |
| **17** | **Print speed, cm3 / h, up to: 30** |  |
|  |
| ***#7C*** | ***3D-Scanner*** | ***1 pc*** |
| **1** | **Industrial colour cameras with 3.1 mpix sensors capture the finest details and curved surface of the object – up to 0.07 mm** |  |
| **2** | **Accuracy up to 0.04 mm** |  |
| **3** | **Three scanning zones to capture different-sized objects from 1 cm up to 3m** |  |
| **4** | **Three scan modes** |  |
|  |
| ***#8C*** | ***HIPS Filament*** | ***1 pc*** |
| **1** | **Nozzle temperature: 220-240 °C** |  |
| **2** | **Bed temperature: 90-110 °C** |  |
| **3** | **Diameter: 1.75mm +/- 0.1mm** |  |
| **4** | **The net weight of the filament: 750 g** |  |
| **5** | **Shrinkage and warping: Minimal to normal** |  |
| **6** | **Soluble: Yes, in limonene** |  |
| **7** | **Safety warning: Produces toxic fumes during 3D printing** |  |
|  |
| ***#9C*** | ***ABS Filament*** | ***2 pcs*** |
| **1** | **Nozzle Temperature: 230 - 260 ºC** |  |
| **2** | **Bed temperature: 90-110°C** |  |
| **3** | **Diameter: 1.75mm +/- 0.1mm** |  |
| **4** | **Print Speed: 30 - 70 mm/s** |  |
| **5** | **The net weight of the filament: 750 g** |  |
| **6** | **Bed Adhesion: PEI sheet, Buildtak, Adhesion spray, ABS juice** |  |

# Annex 3: Commercial Offer

Note –

*The Company must accomplish the commercial offer for equipment on its letterhead clearly showing the companies complete name and address.*

To: To: The Rector of TUIT

Prof. Tulkin Teshabaev

|  |
| --- |
| ***Commercial offer for the equipment supply within the framework of the project***  ***New Study Program in Space Systems and Communications Engineering*** ***(SPACE.COM)***#SPACECOM2020 “Invitation to Tender for Equipment Procurement – Satellite Construction LAB1 (Uzbekistan)” |

Name of Company \_\_ **\_\_\_\_\_\_\_\_\_**\_\_\_\_

**Satellite Construction LAB1**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Item** | **Description** | **Quantity****(pcs) for 1 University** | **Unit Price (EUR)** | **Total Price per item (EUR) for 1 University** | **Grand Total Price per item (EUR) for 6 Universities** |
| **1** | **2** | **4** | **5** | **6=4 х 5** | **7** |
| #1C | Oscilloscope TDS2012 | 2 |  |  |  |
| #2C | Oscilloscope TDS2002 | 1 |  |  |  |
| #3C | Oscilloscope TDS2014 | 1 |  |  |  |
| #4C | DC Power Supplies Tektronix PWS2721 | 2 |  |  |  |
| #5C | Fluke 116 HVAC Multimeter | 2 |  |  |  |
| #6C | 3D-Printer | 1 |  |  |  |
| #7C | 3D-Scanner | 1 |  |  |  |
| #8C | HIPS Filament | 1 |  |  |  |
| #9C | ABS Filament | 2 |  |  |  |
| **Total Amount (Euro) excluding VAT** |  |  |

Total amount in words (for 1 University): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Grand total amount in words (for 6 Universities): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If there is a discrepancy between words and figures, the amount in words shall prevail

Warranty conditions:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Delivery conditions:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Delivery period:

\_\_\_\_\_\_ days from the date of signature of the contract

Name

In the capacity of

Signed

Duly authorized to sign the company for and on behalf of

Date

Stamp