ERASMUS +

HIGHER EDUCATION CAPACITY BUILDING

Erasmus+ Project

New Courses in Geospatial Engineering for Climate Change Adaptation of Coastal Ecosystems

(GEOCLIC)

Invitation to Tender for Equipment Procurement

(Turkmenistan)

#GEOCLIC/10.11/2021/TM

Prepared by:

EXOLAUNCH GmbH

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Dear Sir/Madam,

We kindly invite you to submit your **tender for the supply of Equipment to the project partner universities in Turkmenistan** (see the technical specifications provided in the Part-III of this document) within the framework of the Project "*New Courses in Geospatial Engineering for Climate Change Adaptation of Coastal Ecosystems*"- (*GEOCLIC)*, co-funded by the **ERASMUS+ Programme of the European Union**.

The tender will be announced for two laboratories: GEOLAB*-Set & CVE**-Set.
Companies that want to participate in the tendering process for the supply of Equipment for two laboratories must submit a separate commercial offer for each laboratory.

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

Please note that in the tender procedure may also participate commercial offers for some of the items presented in the technical specifications of GEOLAB-Set provided in the Part-III of this document. Partial delivery of equipment for GEOLAB-Set is possible.

The tenderer must complete all annexes and provide all information for CVE-Set. Only completed annexes will be accepted for consideration.

Tenders should be submitted in English **by email to** info@ecm-academy.de not later than **Wednesday, November 24, 2021 at 17:00 (Berlin local time)**.

We kindly ask you to be 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: #GEOCLIC/10.11/2021/TM "Invitation to Tender for Equipment Procurement + LAB Name (Turkmenistan)".

*GEOCLIC Lab

** Class Room for Virtual Events

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

Sincerely yours,

EXOLAUNCH GmbH

Contents

Part I - Project Description

1.1. About GEOCLIC

The "New Courses in Geospatial Engineering for Climate Change Adaptation of Coastal Ecosystems" – GEOCLIC (project reference number GEOCLIC 619011-EPP-1-2020-1-KZ-EPPKA2-CBHE-JP) is a three-year duration multi-country joint project co-funded by the Erasmus+ Capacity Building in the Field of Higher Education Programme of the European Union (EU) launched in 2021. The aim of the project is to modernize and internationalize training in the field of monitoring and environmental protection of coastal ecosystems using new geospatial technologies, big data and remote sensing, at the undergraduate / graduate / doctoral levels in Azerbaijan, Kazakhstan and Turkmenistan through innovative three-level curricula that meet market requirements and best practices.

The lack of specialists with the competencies and skills to understand, transform and interpret satellite and ground-based data to make decisions related to environmental protection and the lack of specialists in the field of ecology, management and engineering of the coastal zone affects the economic development of the Caspian Sea region. The lack of programs and equipment for analyzing coastal dynamics using satellite imagery and remote sensing affects the competencies and skills of graduates and specialists in geospatial engineering.

Anticipated project outputs and results:

- Update the current BA / MSc / PhD courses in the target area in accordance with the objectives of the Bologna Process and the requirements of the modern labor market;
- Develop, implement and accredit new practice-oriented, student-centered courses in geospatial technologies, remote sensing, monitoring and big data processing specifically designed for the environmental safety of coastal ecosystems in accordance with the guidelines; including an innovative teaching / learning environment and ECTS;
- Conduct professional development of teachers of target universities in European universities;
- To develop and create an innovative teaching / learning environment, create and equip each partner university with a new GEOCLIC laboratory (GEOLAB), a GEOCLIC office (GEOCOF), and a virtual events classroom (CVE) to strengthen links with the labor market, provide services to various target groups, and market educational services;
- Establish strong scientific and academic links between partner organizations, EU universities and enterprises;
- Ensure high quality of project results and sustainability of project results.

1.2. GEOCLIC Partners – Project Consortium

The GEOCLIC Project (New Courses in Geospatial Engineering for Climate Change Adaptation of Coastal Ecosystems**)** is implemented by a Partnership of 17 organisations from 7 countries:

- P1:   Al-Farabi Kazakh National University (KazNU); Almaty, KZ
- P2:   University of Twente, Faculty of Geo-Information Science and Earth Observation (UT-ITC); Enschede; NL
- P3:   Technische Uiversiät Berlin (TUB); DE; Berlin
- P4:   Vilnius Gediminas Technical University (VGTU); LT, Vilnius
- P5:   Maritime University of Constanta (CMU); Constanta; ROU
- P6:   EXOLAUNCH GMBH (EXO), DE; Berlin
- P7:   Baku State University (BSUA); AZ; Baku
- P8:   Azerbaijan National Aviation Academy (NAA); AZ; Baku
- P9:   Azerbaijan University of Architecture and Construction (AzUAC); Baku; AZ
- P10:   Mingachevir State University (MSU); Mingachevir; AZ
- P11:   Caspian State University of Technologies and Engineering named after Sh. Yessenov (CSUTE); Aktau/KZ
- P12:   Atyrau oil and gas university named after Safi Utebayev (S. Utebayev AOGU); Atyrau; KZ
- P13:   Turkmen Agriculture University named after S.A.Niyazov (TAU); Ashgabat; TM
- P14:   Magtymguly Turkmen State University (TSU); Ashgabat; TM
- P15:   International University for the Humanities and Development (IUHN); Ashgabat, TM
- P16:   International Ecoenergy Academy (IEEA); Baku; AZ
- P17:   PLC "Institute of Geography" of the Ministry of Education and Sciences of the Republic of Kazakhstan (PLC "Institute of Geography"), Almaty, KZ

1.3. Disclaimer

"This project has been funded with support from the European Commission. This document reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein".

Part II – Tender Specifications

2.1. Object of the Tender

EXOLAUNCH GmbH (Reuchlin Str. 10, 10553 Berlin, Germany) announces a tender for the procurement of the equipment to the project partners universities in Turkmenistan (TM) (see 2.8), within the technical specifications provided in the Part-III of this document.

This document represents an invitation to tender for the supply of computer, multimedia, audio & video and other equipment as part of GEOCLIC Project co-funded by the ERASMUS+ Programme of the European Union.

The tenderer must complete all annexes and provide all information for CVE-Set. Only completed annexes will be accepted for consideration.

Partial delivery of equipment for GEOLAB-Set is possible. You can submit commercial offers for selected items from the GEOLAB-Set.

This invitation to tender is in no way binding on the contracting authority. The contracting authority's contractual obligation commences only upon the signature of the contract with the successful tenderer.

2.2. Special Conditions

1. According to the agreements between EU and the mentioned above project partner countries, all equipment purchased and any provision of services within the framework of Erasmus+ projects is exempted from taxes (including Value Added Tax (VAT)), duties and charges. An appropriate Certificate for the VAT exemption will be provided by the project partners universities – recipients of the equipment (see 2.8).

2. VAT is not considered as an eligible project cost, the commercial offer and later an invoice must not include VAT ("Erasmus+ Programme Guide" of Grant Agreement).

3. In order to be eligible for exemption from the abovementioned taxes (including VAT), duties and charges the equipment procured within this tender should be delivered as CIP Incoterms, as well the seller clears the goods for export and is responsible for delivery of these goods at an agreed place of shipment. (e.g. customs warehouse/door-to-door transportation).

4. The manufacturer brand of all PC items must be a company that is listed in the rating from Gartner or/and IDC.

5. Certification requirement: ISO 9001 certification of the manufacturer; CE Mark.

6. All participants of a tender procedure agree to provide after the tender MAF (manufacturer authorization form) on Workstation, AIO and Notebook with the name of the project and the competition number to confirm warranty service in the country of delivery. Equipment supplied must have service centers in the country of delivery.

7. It is necessary to provide together with commercial offer links to the sites or datasheets of the manufacturers of all items.

2.3. Currency and Language of the Tender

The tenders shall be presented in EURO for both the unit prices and the overall amount of the commitment. The currency of payment will be also in EURO. The tenders shall be presented in English.

2.4. Submission of the Tenders: Means and Deadline

Tenders should be submitted in English by email to info@ecm-academy.de not later than **Wednesday, November 24, 2021 at 17:00 (Berlin local time)**. No offer may be submitted or modified after this date.

We kindly ask you to be 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:

2.5. Documents to be Submitted by the Tenderer

The tenderer must complete all annexes and provide all information.

Additional documents such as instructions and operating manuals shall be required with the delivery of equipment.

All necessary supporting documents and international certificates required in the country of destination for customs clearance must be provided.

Companies that want to participate in the tendering process for the supply of Equipment for two laboratories must submit a separate commercial offer for each laboratory.

2.6. Deadline for Engagement

Tenderers shall remain bound by their tenders for a period of thirty (30) days from the closing date for submission on Wednesday, November 24**, 2021 at 17:00 (Berlin local time)**.

2.7. Subcontracting

It is prohibited for the tenderers to subcontract parts of the tender to third parties.

2.8. Terms of delivery

Term of delivery is customs control point airport in Ashgabat, TM (CIP), if possible, by means of door to door transportation. ***Please, indicate delivery type in the commercial offer.***

The full addresses and contact details of the responsible persons in partner universities will be provided after the signature of the contract with the selected supplier.

The following 3 (three) universities are involved in this call for tender as the recipients of goods:

No	Partner	Acronym	Location
P13	Turkmen Agriculture University named after S.A.Niyazov	TAU	Ashgabat/Turkmenistan
P14	Magtymguly Turkmen State University	TSU	Ashgabat/Turkmenistan
P15	International University for the Humanities and Development	IUHN	Ashgabat/Turkmenistan

2.9. Goods Delivery Time and Warranty Conditions

The delivery period may not exceed 60 days from the date of signature of the contract with the selected supplier.

The warranty period of the provided Equipment should be at least 12 months from the date of acceptance of the Equipment by the partner university and signing the acceptance note.

2.10. Price and terms of payment

There is no prepayment. 100% payment should be made only after delivery of the equipment and a final inventory of the equipment at the partner university. Payment will be made within 8 (eight) weeks from the submission of a written confirmation from the partner university with the inventory number in the above-mentioned universities (see 2.8).

All transportation, warranty, installation expenses, possible taxes and bank charges should be included in the commercial offer.

Please indicate the cost of transportation and equipment installation services separately from the rest of the equipment in the commercial offer.

2.11. Evaluation and Award of the Contract

The key principles that shall govern the process of evaluation of tenders are listed as follows:

- Non-discrimination: Any discrimination with regard to tenderers on the basis of nationality is forbidden.
- Equal treatment: All tenders submitted within the set deadline are to be treated equally. They will be evaluated on the basis of the same terms, conditions and requirements set in the tender documents.
- Transparency: Detailed written records are being kept of all actions of the evaluation panel. All decisions taken will be sufficiently justified and documented. In this way, any discriminatory behaviour can be prevented and if not prevented, then monitored.
- Confidentiality: The process of evaluation of tenders is confidential. Information concerning the process of evaluation of tenders and the award recommendation is not to be disclosed to the tenderers or to any other person who is not officially concerned with the process until information on the award of the contract is communicated to all tenderers.

Exclusion criteria: Tenderers are excluded from participation in procurement procedures if:

- they have submitted a tender that does not meet all the requirements provided in this document, including the ones in clause 2.5.
- they are bankrupt or being wound up, are having their affairs administered by the courts, have entered into an arrangement with creditors, have suspended business activities, are the subject of proceedings concerning those matters, or are in any analogous situation arising from a similar procedure provided for in national legislation or regulations,
- they have been convicted of an offence concerning their professional conduct by a judgment which has the force of res judicata,
- they have not fulfilled obligations relating to the payment of social security contributions or the payment of taxes in accordance with the national legal provisions,
- they have been the subject of a judgment which has the force of res judicata for fraud, corruption, involvement in a criminal organisation or any other illegal activity.

In the selection process only will be considered the suppliers who would provide delivery of the equipment to all of the above-mentioned universities (see 2.8).

Selection criteria: tenderers will be selected based on the following criteria:

1. Having submitted the tender that complies with all of the specifications, requirements and offers the lowest price, as well as all other evaluation criteria indicated, shall be selected;
2. Having the necessary economic, financial, technical and professional capacity to perform the contract.

Award criteria: the awarded tender/tenders will be the one who offered the best quality and price tender out of those submitted by tenderers which are not excluded, and which meet the selection criteria.

The awarded tenderer should:

1. Be in full compliance of tender to the tender specifications, bill of quantities and technical specifications;
2. Provided technical information for all the equipment to be supplied.

The contract will be awarded to the tenderer whose tender has been found to be in conformity with the invitation to tender. The award method will be the "best value for money" meaning that the winning tender is the one offering the best quality/price ratio, taking into account the criteria announced in the specifications.

2.12. Evaluation Committee

Tenders will be evaluated by the GEOCLIC Project Tender Evaluation Committee comprising at least 5 (five) members appointed for the purpose.

2.13. Questions, Notification of Results

Participants' questions should be sent no later than 3 days before the deadline for submitting tender proposals by email to info@ecm-academy.de with the reference #GEOCLIC/10.11/2021/TM "Invitation to Tender for Equipment Procurement + LAB Name (Turkmenistan)". Clarifications will be sent within 3 days.

Tenderers will be notified of the results within 10 days from the closing date for submission by email. Thus, it is important to provide the email of the main contact person.

Part III – Bill of Quantities and Technical Specifications

The following base **GEOLAB-Set** (for 1 University) is planned for procurement within this tender (total 3 sets):

	GEOLAB-Set: //The table of equipment required	
#	**Required Technical Specifications and Standards**	**Quantity**
#GEOLAB1	***Flow Rate Sensor***	***1 pc***
	The Flow Rate Sensor measures the flow rate and temperature of moving water.	
1	**Sensor Range:** - Flow Rate: 0.3 to 13 ft./sec. - Temperature: -3° to 42°C	
2	**Accuracy:** 0.1 ft./sec	
3	**Pulse frequency:** 8.62 pulses/linear foot	
4	**Unit options:** meters/sec; feet/sec; total pulses	
5	**Probe length:** 3 to 7 ft. with telescoping tube (Probe is 7 feet when fully expanded.)	
6	**Minimum depth:** 1.5 in. (3.8 cm)	
#GEOLAB2	***Thermocline Sensor***	***1 pc***
	The Thermocline Sensor allows to study the relationship between depth and temperature in a body of water.	
1	**The following parts must be included:** 1) **Thermocline Sensor Head with 10 m cable** 2) **Thermocline Sensor Amplifier**	
2	**Depth (Pressure) Sensor** Range: 0 to 34.6 feet (0 to 10.54 m) Absolute Accuracy: 0.5 feet (0.15 m) Repeatability: ± 0.05% of full scale Resolution: 0.1 feet (0.03 m) Response Time (10% to 90%): 0.5 ms Temperature Compensation: 0 °C to 70 °C	

3	**Temperature Sensor:** Range: 0 °C to 70 °C Absolute Accuracy: ±1.5 °C typical ± 0.6 °C at 25 °C Resolution: 0.05 °C Response Time (10% to 90%): 10 s	

#GEOLAB3	*Ethanol Sensor*	*1 pc*
	The Ethanol Sensor measures the concentration of ethanol in a gas or indirectly in a liquid.	

1	**The following parts must be included:**
	   1. Amplifier
	   2. Probe
	   3. PTFE tape for membrane replacement	

2	**Accuracy:** 20% of reading **Range:** 0% to 3% ethanol in gas	

#GEOLAB4	*Water Quality Starter Kit*	*1 pc*
	Allows to conduct various colorimetric experiments easily and conveniently without mix-matching harmful chemicals. **The kit contains the Water Quality Colorimeter, and three popular water quality test kits: Nitrate, Ammonia, and Phosphate.** **The following components must be included:**	
1	**ezSample Snap Vial – Ammonia** (incl. Nitrate Test Vials (30); Calibration Ampoule; Zinc Foil Pack A-6905 (30); A-6901 Acidifier Solution; Reaction Tube; Sample Cup)	
2	**ezSample Snap Vial – Nitrate** (incl. Nitrate Test Vials (30); Calibration Ampoule; Zinc Foil Pack A-6905 (30); A-6901 Acidifier Solution; Reaction Tube; Sample Cup)	
3	**ezSample Snap Vial – Phosphate** (incl. Nitrate Test Vials (30); Calibration Ampoule; Zinc Foil Pack A-6905 (30); A-6901 Acidifier Solution; Reaction Tube; Sample Cup)	

#GEOLAB5	*Wireless Temperature Sensor*	*1 pc*
	The Wireless Temperature Sensor measures temperature over a range from -40° C to +125°C. The Wireless Temperature Sensor transmits live data and allows to continuously monitor, log, and plot temperature measurements on nearly any device.	

1	**Range**: -40°C to +125°C (for the probe) -15°C to +50°C (for the housing)	
2	**Accuracy:** ±0.5° C	
3	**Resolution:** 0.01°C	
4	**Sample Rate:** Up to 10 Hz	
5	**Battery & Logging** Stored Data Points Memory (Logging) >55,000 Battery - Connected (Data Collection Mode) >275 hr (2-3yrs of normal classroom use) Battery - Logging (Data Logging Mode) 35 days Battery Type Coin	

#GEOLAB6	*Wireless pH Sensor*	*1 pc*
	The Wireless pH Sensor measures the pH of a solution within a range between 0 and 14 pH. The Wireless pH Sensor enhances countless activities, including acid-base titrations, investigations into household chemicals, analyses of chemical reactions, water quality studies, and much more.	
1	**The following parts must be included:** 1. Wireless pH Sensor 2. pH Probe	
2	**Range:** 0-14 pH	
3	**Resolution:** 0.02 pH	
4	**Accuracy:** ±0.1 pH with calibration	
5	**Logging:** Yes	
6	**Connectivity:** Bluetooth 4.0	
7	**Temperature Range:** 5°C to 60°C	
8	**Battery & Logging** Stored Data Points Memory (Logging) >55,000 Battery - Connected (Data Collection Mode) >220 hr (2-3yrs of normal c classroom use) Battery - Logging (Data Logging Mode) 90 days Battery Type Coin Cell	

#GEOLAB7	*Wireless CO2 Sensor*	*1 pc*
	The sensor measures carbon dioxide concentration in the range between 0 parts per million (ppm) and 100,000 ppm. **The following components must be included:** 1) **Wireless CO2 Sensor** 2) **Micro USB Cable (1 meter)**	

	3) Gas Sampling Bottle (250 mL)	
1	**Range:** 0 to 100,000 ppm	
2	**Accuracy: 0 to 1000 ppm:** ± 100 ppm **Accuracy: 1000 - 10,000 ppm** ±5% of reading+100 ppm **Accuracy: 10,000 - 50,000 ppm** ±10% of reading **Accuracy: 50,000 - 100,000 ppm** ±15% of reading	
3	**Resolution:** 2 ppm	
4	**Battery:** Rechargeable, Lithium-Polymer **Battery Life:** 18 to 24 hours of continuous use either when connected to devices or in logging mode	
5	**Connectivity:** Bluetooth SMART or USB	
6	**Operating Environment:** 0 to 50³C; 0 to 95% relative humidity	
7	**Warm-up Time:** 180 seconds	
8	**Pressure Effect:** 0.19% of reading per mm of Hg from standard pressure	
9	**Max Wireless Range: 30 m (unobstructed)**	
10	**Gas Sampling Mode:** Diffusion	
#GEOLAB8	***Wireless Conductivity Sensor***	***1 pc***
	The Wireless Conductivity Sensor measures conductivity over a range from 0 to 20,000 microsiemens/centimeter (µS/cm).	
1	**Range:** 0 to 20,000 microsiemens/centimeter	
2	**Accuracy, Conductivity:** 10% of value from 200 µS/cm to 20,000 µS/cm; Below 200 µS/cm: qualitative	
3	**Accuracy: Total, Dissolved Solids (TDS):** 15% of value from 100 parts per million; (ppm) to 10,000 ppm; Below 100 ppm: qualitative	
4	**Response Time:** 95% of final reading in 5 seconds	
5	**Temperature, Compensation forTDS:** 5°C to 35°C	
6	**Temperature, Accuracy:** ±0.5°C	
7	**Operating Temperatures:** Sensor Housing: -15° to +50°C Probe: 0°C to 80°C	
8	**Battery:** Coin Cell (3 V, CR2032) Expected Battery Life > 1 Year	
9	**Max Wireless Range:** 30 m (unobstructed)	

10	**International Protection Mark:** IP67 (water resistant at 1 meter for 30 minutes)	

#GEOLAB9	*Wireless Colorimeter and Turbidity Sensor*	*1 pc*
	The colorimeter simultaneously measures the absorbance and transmittance of six different wavelengths.	
1	**The following components must be included:** 1. Wireless Colorimeter and Turbidity Sensor 2. 2× Cuvette Rack 3. 4× Cuvette with Cap, smooth 4. 6× Cuvette with Cap, lined 5. Ampoule Cap 6. 100 NTU Calibration Solution 7. Micro USB Cable 8. 2× Label, 100 NTU Cuvette 9. 2× Label, 100 NTU Expiration	
2	**Color detection/peak wavelengths:** 650 nm (red), 600 nm (orange), 570 nm (yellow), 550 nm (green), 500 nm (blue), 450 nm (violet)	
3	**Detector ranges:** ±25 nm from peak	
4	**Absorbance:** 0–3 Abs units; useful range (0.05–1.5 Abs)	
5	**Transmittance:** 0-100%	
6	**Turbidity range:** 0-400 NTU	
7	**Accuracy:** ±5% NTU	
8	**Battery & Logging:** Stored Data Points Memory (Logging) >15,000 Battery - Connected (Data Collection Mode) >80 hr Battery - Logging (Data Logging Mode) 3 days Battery Type LiPo	

#GEOLAB10	*Wireless Optical Dissolved Oxygen Sensor*	*1 pc*
	The sensor measures the concentration and the saturation percentage of dissolved oxygen molecules (O2) in aqueous solutions. The sensor also simultaneously measures temperature and barometric pressure. **The following components must be included:** 1) **Wireless Optical Dissolved Oxygen Sensor** 2) **Micro USB Cable (1 meter)**	
1	**Dissolved Oxygen (mg/l and% saturation)** **Range:** 0 - 20 mg/l or 0 - 200% saturation	

	Accuracy: ±0.1 mg/ or ±1.0% (whichever is greater) after calibration above 200% ±10% **Resolution:** 0.01 mg/l or 0.1% saturation	
2	**Temperature (C)** **Range:** 0 – 50 **Accuracy:** 0.1 °C **Resolution:** 0.1°C	
3	**Barometric Pressure (inHg)** **Optional Units:** mmHg **Range:** 375 - 836 mmHg **Accuracy:** TBD **Resolution:** 1 mmHg	
4	**Environmental Operating Range** **Temperature (C):** 0 - 50 **Humidity:** 0 - 100% **Depth:** 10 m **Test Standard:** IP-X8	
5	**Optional Atmospheric In Air (% concentration)** **Range:** 0 - 100% **Accuracy:** Qualitative **Resolution:** 1%	
6	**Battery & Logging** Stored Data Points Memory (Logging) >25,000 Battery - Connected (Data Collection Mode) >40 hr Battery - Logging (Data Logging Mode) 45 hrs Battery Type LiPo	
#GEOLAB11	***Wireless Motion Sensor***	***1 pc***
	The sensor measures distances to an object from 15 centimeters to 4 meters. The sensing element can be rotated 180 degrees. **The following components must be included:** **1) Wireless Motion Sensor** **2) Micro USB Cable (1 meter)**	
1	**Minimum Range:** 15 cm	
2	**Maximum Range:** 4 m	
3	**Transducer Rotation:** 180°	
4	**Resolution: 1.0 mm**	
5	**Battery & Logging** Stored Data Points Memory (Logging) Not Supported Battery - Connected (Data Collection Mode) >20 hr Battery Type LiPo	
#GEOLAB12	***Wireless 3-Axis Magnetic Field Sensor***	***1 pc***

	This 3-Axis Magnetic Field Sensor can sense the Earth's magnetic field, magnetic fields from current-carrying coils, and permanent magnets. The following components must be included: 1) **Wireless 3-Axis Magnetic Field Sensor** 2) **Micro USB Cable (1 meter)**	
1	**Range:** ±0.01 G (50 G range); ±1 G (1300 G range)	
2	**Measurements:** Magnetic Field Strength (3 axes and resultant)	
3	**Connectivity:** Direct USB or via Bluetooth 4.0	
4	**Max. Sample Rate:** 100 Hz	
5	**Battery & Logging:** Stored Data Points Memory (Logging) >25,000 Battery - Connected (Data Collection Mode) >72 hr Battery - Logging (Data Logging Mode) 3.5 days Battery Type LiPo	
#GEOLAB13	*Wireless Weather Sensor with GPS*	*1 pc*
	The sensor measures wind speed, wind direction, barometric pressure, humidity, ambient temperature, light level, UV index, and magnetic heading. **The following components must be included:** 1) **Wireless Weather Sensor with GPS** 2) **Micro USB Cable (1 meter)**	
1	**Water-resistant** Splash proof and designed to withstand the elements	
2	**Barometric Pressure Range:** 225 to 825 mm Hg	
3	**Ambient Temperature Range:** -40 to 125 °C	
4	**Wind Speed Range:** 0.5 to 15 m/s (winds of up to ~ 33 mph)	
5	**Battery & Logging:** Stored Data Points Memory (Logging) >35,000 Battery - Connected (Data Collection Mode) >44 hr Battery - Logging (Data Logging Mode) 1.5 days (with GPS), 11 days (w/o GPS) Battery Type Rechargeable LiPo	
#GEOLAB14	*Wireless Pressure Sensor*	*1 pc*

	The sensor measures pressure in the range between 0 kilopascals (kPa) and 400 kPa (approximately four atmospheres). The following components must be included: 1) Wireless Pressure Sensor 2) Micro USB Cable (1 meter) 3) In-line Connector 1 pc. 4) Male Luer Connector 2 pc. 5) Female Luer Connector 1 pc. 6) Polyurethane Tubing (1/8" ID) 2 feet (60 cm) 7) Syringe, 60 cubic centimeter 1 pc.	
1	**Range:** 0-400 kPa	
2	**Resolution:** 0.1 kPa	
3	**Accuracy:** ±2 kPa	
4	**Logging:** Yes	
5	**Max sample rate:** 1000 Hz	
6	**Connectivity:** Bluetooth 4.0	
7	**Battery & Logging** Stored Data Points Memory (Logging) 1 >30,000 Battery - Connected (Data Collection Mode) 2 >30 hr Battery - Logging (Data Logging Mode) 3 1.5 days Battery Type Rechargeable LiPo	
#GEOLAB15	***Wireless Light Sensor***	***1 pc***
	The Wireless Light Sensor features two separate apertures - one for ambient light measurements and one for directional light measurements.	
1	Battery: Coin Cell, Expected battery life greater than one year.	
2	**Connectivity:** Bluetooth SMART	
3	**Max Wireless Range:** 30 m (unobstructed)	
4	**Max Sample Rate (Ambient):** 2 samples/second	
5	**Default Sample Rate (Ambient):** 1 sample/sec	
6	**Max Sample Rate (Spot):** 20 samples/second	
7	**Default Sample Rate (Spot):** 5 samples/second	
#GEOLAB16	***Wireless Oxygen Gas Sensor***	***1 pc***

	The sensor measures distances to an object from 15 centimeters to 4 meters. The sensing element can be rotated 180 degrees. The following components must be included: 1) **Wireless Oxygen Gas Sensor** 2) **Oxygen Gas Sensing Element** 3) **250 mL Sample Bottle** 4) **Micro USB Cable**	
1	**Range:** 0 to 100 % O2 concentration 0 to 1,000,000 ppm	
2	**Resolution 0.01 % oxygen**	
3	**Repeatability ±0.5% oxygen**	
4	**±1% O2 (constant temperature and pressure)** **±5% O2 (when outside operating temperature range)**	
5	**Operating temperature: 0 to 40 °C**	
#GEOLAB17	***Photosynthesis Tank***	*1 pc*
	The Photosynthesis Tank, which allows you to directly measure the production of oxygen.	
1	**The following components must be included:** 1) **Dual Chamber Photosynthesis Tank** 2) **Rubber Stopper with Sensor Ports** 3) **Rubber Stopper, One hole** 4) **Rubber Stopper, Solid – 2 pc.**	
#GEOLAB18	***Metabolism Chamber***	*1 pc*
	The Metabolism Chamber is designed to allow simultaneous sensor measurements of oxygen and carbon dioxide gas concentrations.	
1	**250-mL sample bottle with 2 holes cut**	
#GEOLAB19	***EcoZone System***	*1 pc*
	3 interconnectable polycarbonate chambers for building own ecosystems. Designed to easily integrate sensors for quantitative environmental measurements. Wireless Oxygen Gas Sensor	
1	**The following components must be included:** 1) Three individual EcoChambers with lids	

	2) Custom tray for holding EcoChambers in a connected ecosystem 3) Stoppers and connectors 4) Cotton wick 5) Syringe and plastic tubing	
2	**Approximate Volume (with lid) – Per Chamber 4.3L** **Approximate Fill Volume (liquid) – Per Chamber 3.3L**	
#GEOLAB20	***Wireless Weather Accessories***	***1 pc***

	The following components must be included:
	   1) Tripod
	   2) Rod
	   3) Weather vane
	   4) Pivot Pin	

#GEOLAB21	***Dissolved CO2 Waterproof Sleeve Accessory***	***1 pc***
	The following components must be included: **1) Sleeve 5 pc** **2) O-ring 5 pc**	
#GEOLAB22	***USB Bluetooth Adapter***	***1 pc***
	The adapter allows Chromebooks, Windows computers and older Macs to connect up to three Bluetooth 4 devices such as wireless sensors, Smart Carts, or the AirLink interface.	
#GEOLAB23	***AirLink Interface***	***2 pcs***
	The AirLink Interface connects PASPORT sensors to a Mac or Windows computer, Chromebook, iPad, tablet, or smartphone via Bluetooth or USB connection. The USB cable is included for charging through a usb charging block and data connection to the computer.	
#GEOLAB24	***SPARK LXi Datalogger***	***1 pc***
	The Bluetooth, handheld science datalogger that enables to connect wired and wireless sensors, collect data, generate graphs, and analyze results.	

1	**The following components must be included:**
	   1) SPARK LXi Datalogger
	   2) Voltage Probe	

	3) Fast Response Temperature Probe 4) USB Charger with Micro USB Cable	
#GEOLAB25	***Methodological guides for geography / ecology / biology***	

The following base **CVE-Set** (for 1 University) is planned for procurement within this tender (total 3 sets):

CVE-Set: //The table of equipment required		
#CVE1	***Workstation***	***1 pc***
#	Required Technical Specifications and Standards	Conformity to Specifications and Reference to the technical literature (data sheets, links, manuals, etc.)
	Offered computers have to be from the producer which brand is included in the list of reports of world analytical agencies like Gartner or IDC report	
	Certification requirement: ISO 9001 certification of the manufacturer; CE Mark	
	The participant agrees to provide MAF (manufacturer authorization form) with the name of the bid, the bid number, confirmation of warranty service in the country of delivery, name of the equipment with software supplied. **Equipment supplied must have service centers in the country of delivery**	
1	**Form-factor: Desktop tower**	
2	**CPU not less than Intel i5 10500 (Base Frequency 3.1Ghz, 12Mb Smart Cache)**	
3	**Motherboard chipset not less than Intel Q470**	
4	**RAM not less than 16GB DDR4 2666Mhz**	
5	**SSD not less than 512Gb NVMe**	
6	**HDD not less than 2x2000Gb 7200rpm SATA (Raid)**	
7	**Graphics Card not less than 8Gb RTX3070**	
8	**PSU according to configuration, 80 Plus**	
9	**Keyboard USB with Numpad Eng/Russian (Qwerty)**	
10	**Mouse USB optical**	
11	**I/O interfaces:** Front panel: - USB Super Speed 10Gb/s Type-A or Type-C – not less than 5 - Audio jacks: front-side Mic/Headset ports - 1 Rear panel:	

	- USB 2.0/3.1 ports – not less than 6 - Audio jacks: Headset port – not less than 1 - Video output HDMI/DisplayPort – not less than 3 - LAN-port Gigabit Ethernet (RJ-45) - not less than 1 1	
12	**Internal slots: PCI Express x16 x1, PCI Express x4 x2**	
13	**Wireless module: Dual-band Wi-Fi 6 2x2 + Bluetooth 5**	
14	**Audio: not less than High Definition Audio**	
15	**Operating System - Windows 10 Professional Russian**	
16	**All interface cables and connectors must be included**	
#CVE2	**Monitor**	**1 pc**
#	Required Technical Specifications and Standards	Conformity to Specifications and Reference to the technical literature (data sheets, links, manuals, etc.)
	Certification requirement: ISO 9001 certification of the manufacturer; CE Mark	
	The participant agrees to provide MAF (manufacturer authorization form) with the name of the bid, the bid number, confirmation of warranty service in the country of delivery, name of the equipment with software supplied. **Equipment supplied must have service centers in the country of delivery**	
1	**Diagonal: not less than 27 inches**	
2	**Panel Type: IPS**	
3	**Resolution: not less than 1920 x 1080 at 60 Hz**	
4	**Brightness: not less than 250cd/m2**	
5	**Connectivity: not less than HDMI x1, Display port x1, USB x2**	
6	**All interface cables and connectors must be included**	
#CVE3	**Personal Computer All in One**	**9 pcs**
#	Required Technical Specifications and Standards	Conformity to Specifications and Reference to the

		technical literature (data sheets, links, manuals, etc.)
	Offered computers have to be from the producer which brand is included in the list of reports of world analytical agencies like Gartner or IDC report	
	Certification requirement: ISO 9001 certification of the manufacturer; CE Mark	
	The participant agrees to provide MAF (manufacturer authorization form) with the name of the bid, the bid number, confirmation of warranty service in the country of delivery, name of the equipment with software supplied. **Equipment supplied must have service centers in the country of delivery**	
1	**Form-factor**: AIO	
2	**CPU not less than Intel i5 10400T (Base frequency 2,0Ghz/ 6 Cores/ 12Mb Smart Cache)**	
3	**RAM not less than 8GB DDR4 2666Mhz**	
4	**SSD not less than 256Gb**	
6	**Keyboard USB with Numpad Eng/Russian (Qwerty)**	
7	**Mouse USB optical**	
9	**I/O interfaces:** - USB Super Speed 10Gb/s Type-A or Type-C – not less than 6 - Audio jacks: Mic/Headset ports - Dual-band Wi-Fi 6 2x2 + Bluetooth 5 - Video output Display port – 1 - Video input HDMI - 1 - LAN-port Gigabit Ethernet (RJ-45) - 1	
10	**Audio:** not less than High Definition Audio	
11	**Camera: not less than 5Mp with dual array microphone**	
12	**Screen Size and Resolution not less than 23,8" IPS 1920x1080**	
13	**Operating System - Windows 10 Professional Russian**	
14	**All interface cables and connectors must be included**	
#CVE4	***Notebook***	***2 pcs***
#	Required Technical Specifications and Standards	Conformity to Specifications and Reference to the

			technical literature (data sheets, links, manuals, etc.)
		Certification requirement: ISO 9001 certification of the manufacturer; CE Mark	
		The participant agrees to provide MAF (manufacturer authorization form) with the name of the bid, the bid number, confirmation of warranty service in the country of delivery, name of the equipment with software supplied. **Equipment supplied must have service centers in the country of delivery**	
	1	**Screen Size not less than 15,6" 1920x1080 FullHD**	
	2	**CPU not less than Intel i5 Gen 11**	
	3	**RAM not less than 8GB DDR4**	
	4	**SSD not less than 256Gb NVMe**	
	5	**External ports and connectors: USB 3.1/ HDMI/USB Type-C/** **Display port**	
	6	**Keyboard USB with Numpad Eng/Russian (Qwerty)**	
	7	**Webcam not less than HD 720p**	
	8	**User authentication: fingerprint sensor**	
	9	**Case material: metal cover preferable**	
	10	**OS Windows 10 Pro Russian**	
	11	**All interface cables and connectors must be included**	
#CVE5		***Personal Cloud Storage***	***1 pc***
	1	**CPU not less than Marvell Armada 380 1,3Ghz**	
	2	**RAM not less than 512Mb**	
	3	**Two 2.5" or 3.5" SATA II hard disk interface**	
	4	**Not less than one Gigabit Ethernet RJ-45 connector**	
	5	**Not less than two USB 3.0 ports**	
	6	**Not less than one USB 2.0 port**	
	7	**20 Tb HDD must be included**	
	8	**All interfaces cables and connectors must be included**	