

THE PURCHASED EQUIPMENT AND ITS USE AT NATIONAL UNIVERSITY OF MONGOLIA UNDER THE URGENT PROJECT PARTNER 5




Introduction:

At the beginning of the URGENT project, the end-user surveys conducted and the result of the survey helped us not only identify gaps in the existed curriculum and develop the list of courses to be revised or developed by NUM, but also identified the equipment that needs to be purchased by the project that would support to strengthen the study laboratory to our students' current needs.

Procurement process:

In the first year of the project, the list of equipment and its technical specifications approved by the project coordinator on 1st August 2021 and by the NUM-P5 on 10th August 2021 According to the Grant rule and under the project coordinator guidance, possibly 8 suppliers were identified and sent them an e-mail with technical specification to request price offer on 7 September 2021.

Table 1: List of the purchased equipment

№	Equipment	Technical specification	Quantity	Photo
1.	Drone DJI Mavic 2 pro	<ul style="list-style-type: none"> ~ Shutter Speed: Electronic Shutter: 8–1/8000s ~ Still Image Size: 5472×3648 ~ Still Photography Modes: ~ Single shot ~ Burst shooting: 3/5 frames ~ AEB: 3/5 bracketed frames at 0.7 EV Bias ~ Video Resolution: ~ 4K: 3840×2160 24/25/30p ~ 2.7K: 2688x1512 24/25/30/48/50/60p ~ FHD: 1920×1080 24/25/30/48/50/60/120p ~ Max Video Bitrate: 100Mbps ~ Photo Format: JPEG / DNG (RAW) 	1	
2.	Water Level Meter Model 101	<ul style="list-style-type: none"> ~ For measuring the depth to water in wells, boreholes, standpipes, and tanks, Model 101 Water Level Meters are the industry standard for portable hand operated meters. The Solinst 101 Water Level Meter with P7 Probe features an extremely durable, laser marked PVDF flat tape, with an enhanced dog bone design that is thicker, reducing adherence to the side of well casing. ~ Durable PVDF non-stretch tape ~ Improved electrical properties ~ Thicker dog bone design prevents clinging to sides of the well ~ Permanently laser marked every 1/100 ft or each mm 	1	
3.	Multiple Water Quality Meter	<ul style="list-style-type: none"> ~ Measuring Item: pH(0.00~14.00), ORP(-2.000~2.000mV), DO(0.00~20.00mg/l), EC(0.00~10.00s./m), Salinity(0.00~4.00%), Total Dissolved Solid Volume(0.0~100.0g/l), Seawater Specific Gravity(0.0~50.0), Temperature(-5.00~55.00°C), Turbidity(0.0~800.0NTU), Water Depth(0.0~100m) ~ Output: RS232C, Printer/Analog/Open collector output ~ Memory: Data for 36 days for all items with 15minutes interval ~ Power Supply: Instrument: AA size alkaline battery×2 ~ Sensor module: AA size alkaline battery×3 ~ Dimension: W75×H187.5×D37.5mm 	1	



		~ Accessory: Standard sensor with 2 m cable, Standard liquid, Soft case, etc.		
4.	Discrete Interval Sampler	<p>~ The Model 425 Discrete Interval Sampler provides a no-purge sampling option for collecting groundwater samples from discrete levels, and points of inflow, in wells and boreholes. It can also be used for profiling open water bodies, and for sampling above and below oil/product layers, as well as the actual product (e.g. LNAPL and DNAPL).</p> <p>~ The pump is used to apply pressure and seal the Discrete Interval Sampler before it is lowered. This prevents water from filling the sampler, until it reaches the chosen depth. Once the sampler reaches depth, the pressure is vented and hydrostatic pressure fills the sampler. Before retrieval, the sampler is repressurized to ensure there is no mixing of water from different levels on the way up.</p> <p>~ High pressure hand pump 89</p> <p>~ Model 425 Discrete Interval Sampler, 1.66" x 2 ft 327</p> <p>~ Single line natural LDPE tubing, 0.17" ID x 0.25" OD, 500 ft. Roll 90</p>	1	
5.	Sound level meter	<p>~ Measurement range: 20-140dB RMS (143.3dB peak)</p> <p>~ Total Noise floor: 19dB(A) Class 1, 25dB(A) Class 2</p> <p>~ Time weightings: Fast, Slow and Impulse simultaneously</p> <p>~ Frequency weightings: A, C and Z (un-weighted) simultaneously</p> <p>~ Timers: Duration 1s-24h</p> <p>~ Batteries: 3x AA Alkaline, 10-15 hours with backlight off</p> <p>~ Weight: 270g without batteries</p> <p>~ Size (bcWxH): 230x72x31mm inc preamp and microphone</p> <p>~ Memory: 2GB (>1 year logging when set to 1 second interval, 999 runs).</p>	1	
6.	Air quality meter	<p>~ SO₂ - 0-10 ppm,</p> <p>~ CO - 0-100 ppm,</p> <p>~ NO₂ - 0-1 ppm,</p> <p>~ O₃ - 0-0.5 ppm,</p> <p>~ PM₁₀/PM_{2.5} - 0 – 1000 ug/m³,</p> <p>~ CO₂ - 0-2000 ppm</p>	1	

Each equipment has the following documents. [Appendix 8](#)

1. Quotation - [Appendix 4](#)
2. Purchase order
3. Invoice
4. Bill, proving amount of money has been transferred from NUM-P5 to the supplier
5. Bank statement by the supplier
6. Delivery note

The study laboratory strengthening:

EU-ERASMUS+, the project and the partner's logos have been placed on the all equipment.





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Figure 1: The labelled equipment

The study laboratory is located in sixth floor of NUM library building, and used for educational process of bachelor, master and doctoral programs.

Recently, the purchased equipment are using for winter and summer field studies of different classes such as Environmental management and Urban environment that developed un der the URGENT project.





Figure 2: The equipment usage for the winter study



Figure 2: The equipment usage for the urban environment

Especially, around 150 bachelor students enroll the summer field study every year. During this period, students stay in tent, and they learn different study tools such as water, air, soil measurement.



Figure 2: Students summer camp



Figure 2: The equipment usage during the summer field study

The number of beneficiaries are about 200 students (150 bachelor students/summer + 35 bachelor student/laboratory + 15 graduate students in an academic year).