

REQUEST FOR PROPOSAL

For Procurement of Scientific Equipment

Sardar Bahadur Khan Women's University Quetta



Submission Deadline: 20th June 2017 at 10:30 AM

Tender Opening: 20th June 2017 11:00 AM

Tender Form

Vender Name: _____

Sardar Bahadur Khan Women's University Quetta. www.sbkwu.edu.pk Tel: +92 (081) 9213303-5,

1. Name & Address of the Supplier _____

2. Sale Tax Registration No: _____

3. Income Tax Registration No: _____

4. Telephone No: _____

5. Cell No: _____ **Bank Challan#** _____

1.0 Introduction

The Sardar Bahadur Khan Women's University plans to strengthen its existing Lab for Department of Botany, Chemistry, Zoology, Biotechnology and Environmental Sciences department. The main purpose of this procurement is to facilitate student and faculty to enhance research activities at SBKWU, Quetta by utilizing fully equipped labs.

2.0 Functional Requirements for SBKWU Labs

1. Supply, Installation, Integration, Testing and commissioning of all equipment and components requested in BoQ.
2. Extend the warranty/ services of the work performed as per the requirement of SBKWU.
3. At the time of installation and commissioning, vendor shall provide comprehensive documentation of system deployed
4. The selected bidder shall supply and install the equipment.
5. Terms of warranty should be clearly stated.
6. Bidders are required to quote the prices on C & F and FOR basis all equipments.

7. Trainings

Trainings for Technical staff shall be arranged by the contractor according to the requirements of equipments at SBK and for nominated members by SBKWU.

4.0 Proposal Instructions

4.1 Bidders are requested to read carefully the following terms and conditions and sign all pages of the Tender Document in token of having understood and accepted all the terms and conditions therein. All or any of the provisions of the terms and conditions may be changed/altered/modified/deleted/added or amended by the University as and when deemed suitable/necessary.

4.1 Any prospective bidder can procure the Tender Document from the office of the Purchase officer, SBK Women's University Quetta. Tender Document is available on all working days for a fee of Rs. 2000/- (non- refundable). The Tender can also be download form http://www.sbkwu.edu.pk/sbkwu_new/tenders/

4.2 The payment of equipment is coupled with installation / commissioning of equipment; therefore, supplier should make sure that bid is complete in all respects including accessories.

4.3 Telephonic / telexed / faxed / telegraphic quotation will not be entertained.

4.4 The bidders must enclose Manufacturer Authorization Certificate from their Principals or authorization certification of the Principal, failing which their offers will be rejected

4.5 Catalogs, brochures or any printed material included about manufacturer, Name of dealers and specification for required items must be provided.

4.6 The SBKWU will not be responsible for any costs or expense incurred by Bidders in connection with the preparation or delivery of bids.

- 4.7 Non-Black List Certificate (confirming that bidder has not been blacklisted by any Government / HEC.
- 4.8 All the electric/electronic appliances supplied by firms should run on 220 volts.
- 4.9 Delivery of Item will be free of charge at SBKWU during the office hours with a copy of delivery challan.
- 4.10 Part/advance payment will not be entertained; the payment will be made after complete delivery of ordered items & inspection by the authorized person.
- 4.11 All equipment should be brand new and according to ordered specification from the current production and covered under minimum manufacturer 1- **years warranty** / guarantee etc. as mention in the quote. Brochures and product details must be attached. Vendor should pass on manufacturer on year warranty. Furthermore, the vendor must sign up for SLA (Service Level Agreement) of three years. The three year SLA period will start after elapse of one year warranty period. This will include service, technical support and training of SBKWU personnel for the above mentioned period. The SLA may be further enhanced based on the satisfactory performance of the vendor.
- 4.12 In case of failure to complete the work by the agreed upon scheduled dates, SBKWU will have the right to take remedial action which may include but not limited to, imposition of financial penalties up to 2% of the component cost per week of delay and /or termination of the contract.
- 4.13 **The successful bidders will have to submit 10% performance security in the shape of CDR in favor of Treasurer SBKWU Quetta against Supply Order issued to them for period of warranty of Permanent Equipment.**
- 4.14 In case of any dispute between the purchaser and supplier, the decision of the Vice Chancellor shall be final which shall not be challenged in any court of Law.
- 4.15 Installation/training time, if any, after delivery within the 120 days.
- 4.16 Demurrage charges in case of late supply of shipping documents shall be born by the supplier.
- 4.17 Any condition mentioned by the bidder in consistent with term and conditions of the tender shall have no weightage.
- 4.18 In case of failure to complete the work by the agreed upon scheduled dates, SBKWU will have the right to take remedial action which may include but not limited to, imposition of financial penalties up to 2% of the component cost per week of delay and /or termination of the contract.
- 4.19 Country of origin should be Japan/USA/UK
- 4.20 **Venders are require to submit soft copy of Technical bid (Word Format) to the purchase office with Technical Bid**

5 SCOPE OF SUPPLY

- 5.1 The bidder shall supply/ Install/Commission equipment/items, of the specifications given in the tender document. The bidder shall also be responsible for their installation, compatibility and configuration; free service within the range of the warranty from the date of the equipment makes warranty functional. All equipment should be accompanied by service manual separately in English.

6 BID PRICE

- 6.1 The bidder shall indicate in his offer, list of equipment with specifications, standard accessories, make and country of origin, the unit price inclusive of all taxes and total bid price of the goods. Vender is required to submit their tenders on C&F basis on manufacturers Performa invoice
- 6.2 Price of optional accessories should be quoted separately.
- 6.3 **Taxes levied by the Government and freight charges, if any, shall be paid by the bidder and must be included in the quoted prices.**

7 CURRENCIES OF BID

- 7.1 The prices shall be quoted in Pakistani rupees in Case of FOR and payment to the successful firm will be made in the same currency.

8 BID VALIDITY

- 8.1 The bid shall remain valid and open for acceptance of the purchaser **for a period of 90 days from the specified date of opening.**

9 BID EARNEST MONEY

- 9.1 The bidder shall furnish, as part of his bid, earnest money equal to 2% of quoted price with their offer in the form of demand draft/ pay order in favor of **Treasurer, Sardar Bahadur Khan Women's University, and Quetta.** The Demand Draft shall be returned to unsuccessful bidders. The Earnest Money will be forfeited if a bidder withdraws his bid during the period of his bid validity or fails to supply the machinery / equipment ordered by the university.

10 DOCUMENTS COMPRISING OF BID

Single stage two envelops method will be adopted for this tender comprises of Technical and Financial Bid

10.1 Technical proposal

A technically eligible bidder, based on conditions listed in this document, not meeting the 70% pass marks will be rejected in Technical Evaluation, and its sealed/unopened Financial Proposal shall be returned back. All bidders scoring greater than or equal to 70% of the

marks will be accepted in technical proposal, and their financial bids will be opened. The technical proposals shall be evaluated by the technical evaluation committee in the light of following evaluation criteria:

Eligibility Criteria

1. Valid NTN No
2. Valid GST NO
3. Valid authorized Distributor/Partner/ Reseller
4. Detailed company profile

S.No	Attributes	Score	Score Distribution	Requirements
1	Authorized Distributor	20	20	
	Dealer		12	
	Reseller		8	
2	Company Office	5		
	Company office in Quetta		3	
	Offices in other cities		2	
3	Similar projects Completed (Similar projects of same scope undertaken in Pakistan – Documentary proof/evidence required)	10	10	More than 10 projects
			05	7 Projects
			03	5 Projects
			0	Less than 5 projects

4	Similar Projects in Hands	10	10	More than 10 Project
			5	More than 7 Project
			3	More than 5 Project
			0	Less than 5 projects
5	Technical Brochures / Literature of the quoted product	05	05	All supporting documents/ brochures / literature of product
			03	Documents with limited technical detail
6	Warranty Support and Service on equipment	15	15	3-Year Warranty and Services
			5	3-Year Warranty and 1-Year Services
			2	Warranty and Services for 1 year
			0	Warranty only or Less than 1 year
7	Technical Team / Company Qualified Engineers (with profiles)	15	15	More than 10 Technical Employees
			7	7 Technical Employees
			5	5 Technical Employees
			0	Less than 5

8	Compliance of Technical Quoted Items with RFP	20	20	100% Compliance
			15	75%
			10	60%
			5	50% or low Compliance
9	Financial Health Certificate of last five years	20	Attach:	
			<ol style="list-style-type: none"> 1. To-date Bank Statements 2. Copy of Financial Statements 	
	Working Capital		10	
	<ol style="list-style-type: none"> 1. To-Date Balance of Bank Account 2. Credit Facility Bank Letter if Required 		10	10

10.1 Financial Proposal

Financial Proposal comprises of rates inclusive of all taxes

S. No	Description	Quantity	Rates	Taxes	Total
1					
2					
3					
4					
Total					

Treasurer

Sardar Bahadur Khan Women's University Quetta
Procurement of Scientific Equipment

S #	Description	Specification	Quantity	Unit Price	Total
1. General Teaching Lab Equipment for Zoology Department Lab Requirement					
1	Thermo anemometer (Hot wire-CFM)	Dual line, Digital Display, Battery Operated, Air Velocity Range:40 to 3346 ft/min Resolution 1 ft/min, Accuracy 3% of reading Air Volume 0 to 999.990 cfm Temp.range:32 to 122 f.	2		
2	Zooplankton counting wheel	With standard wheel and 4 inches square base	2		
Total					
S #	Description	Specification	Quantity	Unit Price	Total
2. Lab Equipment for Chemistry Department					
1	Gas Sampler for up Gradation of Existing GC 2014	Use to introduce gas samples in the GC system .	1		
2	Chemical lab safety equipment's.	equipments . Safety Shower, First aid kit , Phone, Fire extingwisher , eye washer, Fire blanket , spill neutrilizer, Safety gloves , chemical gas mask , fischer safe glasses , safety goggles, fuming hood .	1		

3	Distillation unit	<p>Output: Pure water Type II (analytical grade) according ASTM D1193 Input: Tap water (Conductivity recommended < 800 µS/cm and hardness < 30 °F) Production: 10 ltr./h / with 50 liter tank. Purification process control: By microprocessor Installation requirements: 110- 220V AC Measures and weight: - Equipment 45 x 25 x 48 cm (HxWxD) / 12 kg - External pretreatment: 40 x 37 x 16 cm (HxWxD) - Tank 40 x 80 cm (diam x H), Equiped with Kit of cartridges</p>	2		
4	Calorimeter detailed information	<p>6 Channels of Measurement Large touch screen, Built-in Thermal Printer smallest foot print in industry store up to 5000 samples options include measuring air , temperature, and pressure differential Cons too heavy for easy handheld use – can be set on counter or shelf Features 0.3-10.0 Microns 1.0cfm Location Labels on Display & printout color touch screen, Runs on windows CE, battery Operated Stainless steel enclosure Technical Specification Size Range 0.3 - 10.0 µm Channel Sizes 0.3, 0.5, 1.0, 5.0, 10.0 µm Flow Rates 1.0 CFM (2.83 LPM) Counting Efficiency 50 +/- 20% (meets ISO 21501-4) Laser Source Laser Diode Zero Count Level <1 count/5 minutes (meets ISO21501-4) Spurious Count 0.3 count/cf or less Sample Time 0 second to 23 hrs 59 min 59 sec</p>	1		
5	Cathode lamps for existing Fame Atomic absorbsion spectrophotometer	Mention Model and Brand Etc, along with Lamp Model	6		

6	Bomb calorimeter	plain jacket bomb calorimeter Static Jacket Calorimetry 2 Tests Per Hour Operator Time Per Test is 25 Minutes 0.3% Precision Class 6775 Digital Thermometer Manual Oxygen Fill Manual Bucket Fill Manual Bomb Wash Dimensions (in) 8.5w x 8.5d x 11.5h Dimensions (cm) 21w x 21d x 29h	1		
7	Liquid Nitrogen Container	Capacity: 6L, Neck Diameter: 50mm, Static Evaporation 0.10 L/d, Static Holding time: 63 d, Bulk straw capacity: 0.5ml (792 ea) Number of Canisters: 6, with liquid nitrogen measuring stick and bag.	1		
8	COD	Chemical Oxygen Demand (COD) Eco series thermoreactors for COD analysis Digital display shows the temperature and time remaining An acoustic signal indicates the end of analysis Technical Data: Number of Positions : 14 Temperature regulation °C : from ambient to 160 Time settings : 0÷199 or continuous Stability : + 0.5 Signals : Temperature reached	2		

9	Portable water quality automatic sampler	<p>Improved Stormwater/Wastewater Sampler Operating Temperature: 32° to +158°F (0° to +70°C) Materials: Enclosure: Expanded UV protected PVC Bottle: Two 1 gallon polyethylene Pickup Hose: 15' reinforced PVC 1/4" ID polyethylene flexible tubing section with intake strainer Pump Tubing: Norprene 1/4" ID, 7/16" OD Sample Pump Flow Rate: 1000 ml per minute at a 4 foot head Type: Peristaltic Maximum Lift: ~20 ft (6 m) Battery Life: One Pump running continuously: ~1 hour Two Pumps running continuously: ~ ½ hour Standby: 3 months while still retaining enough power to run the pump to capacity Start Delay: 16 time settings from 0 to 12 hours Composite Interval: 15 time settings from 5 min. to 12 hours plus an External Trigger mode setting Sample Size: 15 composite sample sizes from 50 ml to 2 liters plus a Full Bottle discrete setting (Approximate sizes at 4 foot head) External Trigger Input: 250 mS minimum pulse width Switch closure or 4-24 VDC Pulse Output: 5 VDC one-second pulse 1000 ohm output impedance Bottle Switch Input: Switch closure Input Floating read switch in bottle Internal Fuse: 10A Slow-Blow</p>	2		
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10	Calorimeter	<p>Offer 6 Channels of Measurement</p> <ul style="list-style-type: none"> -Large touch screen -Built-in Thermal Printer -smallest foot print in industry -store up to 5000 samples -options include measuring air , temperature, and pressure differential <p>Cons too heavy for easy handheld use – can be set on counter or shelf</p> <p>Features</p> <ul style="list-style-type: none"> -0.3-10.0 Microns -1.0cfm -Location Labels on Display & printout -6.4 “ color touch screen - store up to 5000 samples -smallest foot print -Runs on windows CE -removable lion battery -Stainless steel enclosure <p>Technical Specification</p> <p>Size Range 0.3 - 10.0 μm</p> <p>Channel Sizes 0.3, 0.5, 1.0, 5.0, 10.0 μm</p> <p>Flow Rates 1.0 CFM (2.83 LPM)</p> <p>Counting Efficiency 50 +/- 20% (meets ISO 21501-4)</p> <p>Laser Source Laser Diode</p> <p>Zero Count Level <1 count / 5 minutes (meets ISO 21501-4)</p> <p>Spurious Count 0.3 count/cf or less</p> <p>Sample Time 0 second to 23 hrs 59 min 59 sec</p> <p>Data Storage 5,000 samples (when using standard</p>	1		
11	Platinum tripped pair of tongs .	<p>Stainless steel tongs with 99.95% platinum tips are designed for use in manipulating platinum labware.</p> <p>Tongs aid in eliminating contamination on platinum crucibles and dishes</p> <p>Maintains the optimum conditions of platinum labware</p> <p>Platinum Tipped Stainless Steel Tongs, Length: 300mm (11.8")</p>	1		
12	Soil Trimmer	Soil Instrument for 38mm to 100mm dia specimen MOQ: 10pcs ELE quality	2		
Total					

3. General Teaching Lab Equipment for Biotechnology Department Lab Requirement					
S #	Description	Specification	Qty	Unit Price	Total
1	Counting chamber and hemocytometer	Precision type, complete in a case - consisting of: 1 erythrocyte pipette, 1 leucocyte pipette, 2 rubber tubings with mouthpieces, 1 counting chamber, with clips, double ruled 2 optically plane cover glasses with replacement coverslips, one additional set of counting chamber.	5		
2	Thermo master cycler Polymerase chain reaction machine	96 valve Intuitive graphic programming with protocol templates for ease of use. Energy Saver: Small footprint, low energy consumption, stand-by function Screen Saver option that serves as a booking schedule. Universal block for ultimate flexibility Connect up to 2 Mastercycler with latest unit Available with 12 column gradient E-mail notification flex lid™ concept allows use of all types of consumables with automatic height adjustment of the lid Silver block for fastest heating and cooling ratesCapacity: 1 x 96-well plate, 96 x 0.2 ml tubes Comments: Standard 0.2 ml format and sample block enabled to run fast chemistry, VeriFlex™ Blocks: 25 °C (5 °C Zone-to-Zone) Dimensions: Height: 24.5cm (9.6 in.), Width: 23.7 cm (9.3 in.), Depth: 48.5 cm (19.1 in.) Display Interface: 6.5 in. VGA 32k color with touch screen For Use With (Equipment): Veriti® Thermal Cycler Format: 0.2 ml tubes, 96-well plate Instrument Memory: USB and On-board Peak Block Ramp Rate: 3.9°C/sec Product Size: 1 instrument Program Features: Auto re-start (after power outages), Program overwrite protection Reaction Speed: Fast, StandardReaction Volume Range: 10-100 µl Sample Ramp Rate: ± 3.35 °C/sec Temperature Accuracy: ±0.25°C (35°C to 99.9°C) Temperature Range (Metric): 4.0-99.9 °C Temperature Uniformity: <0.5 °C (20 sec after reaching 95 °C)	1 Set		

3	<u>PCR</u>	<p>Thermal Cycler With TFT Display , 96 Well, Universal Block for 96x0.2ml Tubes, 90 Well PCR Plates or 48x0.5ml Tube with Flat Caps. Technical Specifications: 6 Powerful Peltier elements with Long Life Technology 6 Control circuits with PT 1000 thermal probes Temperature range thermoblock : 4 to 105 °C Regulating accuracy: +/- 0.1 °C Adjustable ramping: 0.1 to 2.0 °C/s Increment/decrement time: 0:01 to 9:59 minutes Increment/decrement temperature: 0.1 to 9.9 °C Temperature range heatable lid: 70 to 120 °C Programmable lid locking PC Software for Convenient creation of PCR Programs in the Office. Up to 99 Steps per Program Auto-restart after power failure.</p> <p>Features</p> <ul style="list-style-type: none"> - Quickest running times - greatest life time - Highest precision - in all areas - Fastest ramping without overshoots - Constant self-diagnostic temperature display temp. accuracy +/-0.2c of programmed target at 90c. 	1		
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4	Gel Documentation Systems	<p>automated system Including Essential Software Camera, Motorized zoom, Ethidium Filter Darkroom D-56 with Transilluminator 8w, 312nm Filter 21x26 Chemiluminescence No Fluorescence* (stain-free imaging* and UV-excitable dyes) *requires Bio-Rad stain-free gels Colorimetry/densitometry Hardware Specifications Maximum sample size 11.2 x 15 cm (4.4 x 6 in) Maximum image area 11.2 x 15 cm (4.4 x 6 in) Excitation source Trans UVB (302 nm) Illumination control 2 modes: Trans-UV, Trans-White UV tray: 280-400 max 300 nm Blue tray: 430-460, max 440 nm White tray: visible spectra Detector CCD Image resolution 1392 x 1040 pixels (1.4megapixels) Dynamic range >3.0 orders of magnitude Pixel density (gray levels) 4,096 Instrument size (L x W x H) 43 x 28 x 38 cm (17 x 11 x 15 in) Operating Ranges Operating voltage 110/115/230/240 V AC nominal Operating temperature 10–28°C (21°C recommended) Operating humidity <70% noncondensing</p>	1		
5	Forced convection Oven	<p>Chamber Volume (L / cu ft) 60 / 2.1 x 4 Chambers Temperature Range (° / °) Amb. +10 to 200 / Amb. +18 to 392 Fluctuation 1) at 100 degree centigrade: 0.5 / 0.9 Variation 1) at 100 degree centigrade: 1 / 1.8</p>	2		

6	Colony counter	Digital display 3 digit LED Count 0 to 999 Dish size 50 to 90mm	5		
7	Fermenter System	Insitu sterilizable 2.5 to 3.0 L total volume, Working volume 0.75 to 1.0 L, SS Jacketed vessel with baffles and air sparger, Longitudinal sight glass assembly sealed through silicone gasket covering the working volume. Impeller rushton turbine, adjustable, Doubled locked steam sterilizable sampling/harvesting port at bottom, Motor Drive DC/AC maintenance free brushless motor, Top driven/bottom driven, Measurement & Control System Digital control/display for pH, temperature and rpm, rpm 50-1000 approx., Temperature control PID, Operating temperature 0-80oC approx., Regulated air supply (0-15lpm approx.) with prefilter, Exhaust filter with condenser, Top plate SS with handle, Autosterilizable facility with pressure measurement and control, pH and DO probes (FDA approved like Mettler Toledo, AppliSens etc.), foam and air flow measurement/display and control with pH and DO probe calibration, DO membrane kit, Control accuracy- Temperature $\pm 0.2^{\circ}\text{C}$, pH 2-14 approx. ± 0.01 , speed (rpm) ± 5 , DO range 0-100%, Peristaltic pump 4 nos. (acid, alkali, antifoam, feed), Vessel temperature maintenance- cooling (through chiller) and heating (through electric heater located in vessel), Hardware & Software SCADA based computer software with following facilities: Batch data, initializing a batch, data acquisition, set point control, manual data entry in batch information, output in	1		

	<p>graphics or text mode, compare data between (a) present and old runs (b) old and old runs (c) present/old runs between fermentors, Alarms, recipe based algorithms, data export to convenient windows based program.</p> <p>Laptop with laser printer b/w compatible with the above system and of MNC make.</p> <p>Power supply Suitable online UPS power supply to support the system for at least 2 hours in the absence of power.</p> <p>Accessories 6 sets of 250 ml feed bottle with disposable disc filter, silicone tube 50 meters, sufficient no of O-rings, septa etc required for smooth running of the system for five years.</p> <p>2 Utilities (Optional) Suitable for above specification. Chiller with circulator: 4-10oC @ 15 lpm Air compressor: Oil free, @ 0-25 lpm, can store air upto 2 bar. Steam generator (for steam sterilization): SS steam boiler, Single phase, Quick steam generation, Compatible with the system. Compatibility The quoted system should be integrated with existing utilities of 14ltr. Fermenter such as Chiller, Air Compressor and Steam Generator. The quoted price should be inclusive of all connectors, pipes, valves etc. required for integration to existing utilities. Buy Back Offer Essentially quote buy back price/offer for obsolete Scigenics 3ltr. fermentor, Model BIOFERM, August 1996. Warranty Three years from the date of installation.</p>			
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8	ELIZA System	Universal Micro plate Reader with soft ware Reads 24, 48,96 WELL MICROPLATES, 400-750nm Microprocessor Control 220V/50/60Hz Extensive on Board Data analysis Auto Plate Washer Model Elx50 220V/50Hz W/8-Channel manifold Accommod. All 96-well micro plate & strips	1		
9	Compound microscope	binocular, adjustable eye piece, additional bulbs, high resolution, inter microscope attachment	5		
10	Temp. & Humid. Chambers Plant Growth Chambers/ Light bank	With controlled and programmable temperature, humidity and light. Chamber Volume (L / cu ft): 1000 / 35.3 Control System Microprocessor PID controller Temperature: Range (C/ f) 5 to 50 / 41 to 122 - Lamp off 10 to 50 / 50 to 122 - Lamp on 20 to 50 / 68 to 122 - with humidity Fluctuation Sensor NDIR CO2 sensor Wire Shelves Perforated Shelves Recorder CO 2 Sensor Connecting tube.	1		
11	Multi Channel pipette (models)	0.1-10uL, 2-20 µL, 5-50 µL, 100-1000 µL	3		
12	Autoclave digital	Autoclave Digital Microprocessor Controlled Vertical Unit, Temperature Range 105 to 135° C Interior Chamber Stainless, steel, capacity 50 Lit interior chamber dimension 300x710	1		

13	Plant Deionizer (with four cartridges)	Chamber Volume (L / cu ft) 60 / 2.1 x 4 Chambers Temperature : Range: amp +5 to 70/ +9 to 158 Fluctuation: 0.2 / 0.36 Variation: 0.5 / 0.9 Dimension (WDH)	1		
14	Incubator Shaking	Temperature range Ambient + 5°C to 70°C Temperature display resolution 0.1°C Temperature precision ± 0.5°C Temperature fluctuation ± 0.5°C Temperature variation <0.5°C Speed range 25 to 300rpm Multi-function Shaking System Large capacity and heavy workload shaking with rapid heating and cooling performance. Dual shaking modes: orbital or reciprocating mode selectable. Adjustable and precise digital speed Digital incubating system Universal platform Universal attachments Rubber mats Spring wire racks Test tube racks Micro plate holder/ micro tube racks Conical tube rack 10ml, 15ml and 50 ml) Adjustable Funnel Clamps	2		

15	Heating Mantle	For beakers /flasks 450°C 50 - 1000ml 50-750 rpm built-in stirrer and heating controller aluminium case 230V	5		
16	Inoculating Chamber	BacteriAL and fungal free environment Germicidal UV light, built in incubation facility Glove free : cuff based handling 13.7 cu. ft. work space with a 300 Petri-plate capacity incubator, with spare cuffs and essential accessories	4		
17	Micrometers	Stage and ocular for measurment of any object/ cell.Stage and ocular for measurment of any object/ cell. Stage Scale Length: 1mm Division : 200mm Pitch:0.005mm Ocular 10mm / 200div / pitch0.05mm	5		

18	Microlab Chemical Analyser with test kits (cholesterol, urea, glucose, vitamin D, calcium and etc.)	<p>Metal detection and blood analysis LIGHT source</p> <p>Ce</p> <ul style="list-style-type: none"> • Quartz-halogen lamp 12v -20W. <p>WAVELENGTH RANGE</p> <ul style="list-style-type: none"> • automatic by 12 positions filterwheel; • 6 standard interference filters: 340, 405, 505, 546, 578 and 620 nm; • 6 positions for optional filters. <p>PHOTOMETRIC RANGE</p> <ul style="list-style-type: none"> • -0.1 to 2.3 absorbance. <p>DETECTOR</p> <ul style="list-style-type: none"> • Photo diode (320-1000 nm). <p>BLANKING</p> <p>automatic zero setting.</p> <p>Membrane keyboard, for direct function and alpha-numeric entry;</p> <p>optional external keyboard;</p> <p>High contrast graphical LCD display;</p> <p>real time clock, 24 hours system.</p>	1		
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19	Water Distillation Machine	capacity 4-8 l/hr ASTM water grade Type II pH 6.0-7.0 wall mounted made in Germany or equivalent	5		
20	Hybridizer	Dimensions Height 146mm (5 5/16 inches) Width 228 mm (8 5/16 inches) Depth 451 mm (17 3/4 inches) Weight 8.5 kg (18.7 lbs) Capacity 12 slides Processing Time Programmable 0 to 100 hours Continuous mode Power 120 VAC at 3A 240 VAC at 1.6A Temperature Control Programmable 30-99°C Ambient Operating Temperature 5-40°C (41-104°F) Ambient Operating Humidity 20-80% relative	2		
21	System for Karyotyping and FISH	Microscope with attached camera, LCD monitor, Karyotyping and FISH software licence, Filter blocks and system compatible computers Software Microscope Digital cameras Slide loader or motorized stage Bar code reader and oiler Application options Monitor System architecture (1 to 9 stations) System architecture (10 or more stations) UPS 11 Review station for on-screen analysis CytoVision 7.0 using Windows 7 operating system	1		

		<p>Karyotyping FISH MFISH CGH Flexible Karyotyping 24" or 22" LCD flat panel software license for review station User-provided computer (subject to minimum specification) Standard capture station with on-screen analysis manufacturer microscopes subject to specification 1300 x 1024 pixels Karyotyping FISH MFISH CGH Flexible Karyotyping 24" or 22" LCD flat panel Internal domain server SQL CaseBase Data archive: 0.5TB using internal 1TB RAID1 array External domain server SQL CaseBase Data Server: 2TB using 4TB RAID5 array Option</p>			
22	Seechi disk	200 mm in diameter	5		
23	Zooplankton sieve	60 µm mesh size, stainless steel, diameter 8 inches and depth 2 inches	6		
24	Micro pipettes	0.5-10ul ,	5		
		2-20ul			
		5-50ul			
		10-100ul,			
		100-1000ul			
Total					

4. General Teaching Lab Equipment for Botany Department Lab Requirement				
1	Ultra Centrifuge	Max speed (rpm): 100,000 Max RCF (xg): 803,000 (P100AT2) Speed control accuracy: +/-2rpm (1,000rpm – max. speed) Set Speed Range: from 1,000rpm to max. speed with 100rpm increments Timer: from 1min to 999hours 59min (with 1min increments) with Hold function Set Temperature Range: from 0°C to 40°C with 1°C increments (Accuracy: +/- 0.5%) Vacuum System: Oil rotary vacuum pump and oil diffusion pump Cooling System: Thermo-module cooling system (CFC/HCFC/HFC-free) Control Panel: Touch sensitive color LCD panel (6.5 inch) Power Supply: 220Volts, 50/60Hz Fixed Angle Rotor: Nominal Capacity (ml x tubes): 6.5 x 8	2	
2	Compounds Portable Pocket spectrometer soil analyzer	Water 0.1pm, Soil 1ppm Solvent Perchloroethylene, S-316, Freon-113 Method Complies: ASTM D7066, EPA 413.2, EPA 418.1 Method Compares: EPA 1664, ISO 9377-2 Volatile Components Includes Internal Data Capture Internal Data Storage Date Export Multiple Calibrations Touch Screen Display Password protection Internal Battery	2	

3	Fermenter System	<p>Complete Thermostat Fermentation System for 5L Double Jacketed Air Lifter Vessel, 220V Thermostat System Controller Built-in rotameter 4 x built-in pump head Air lifter vessel (includes glass body, head plate, draft tube, T handing bar, 2 probe adaptors) Condenser assembly Micro sparger assembly 1 x pH probe and 1 x pH cable 1 x DO probe and 1 x DO cable 1 x temperature probe and 1 x temperature cable 1 x foam/level sensor and 1 x foam/level sensor cable Control panel: 10.4" Colorful touch-screen interface Communication port: Remote control through Ethernet (SCADA) Data export through USB port RS-485 port for system extension Program storage: Up to 59,994 process programs Log data storage: Up to 10 process monitoring data files Cabinet material: ABS front panel and painted iron housing Aeration:- Inlet gas flow-meter: 0, 1-10 LPM Tube: Adjustable draft tube Sparger: Micro-sparger</p>	1		
4	Centrifuge Microprocessor	<p>Speed: 500-15,000 Rpm (1 Rpm steps) Rcf Max: 22,000 G, Power Temp. Variable -9°C to +40°C with stand by cooling Supply: 230V, 50/60Hz, Rotor type: 24 x 2ml, Maximum Speed Rpm: 15,000. Maximum Rcf (G): 22,000. Autoclavable (frequency): 121°C (10). CE marked and ISO 9001 regulated and IVD certified, Centrifuge comply to all relevant EU standards of quality and medical devices IEC 61010 and CE conformity test marks emission, immunity to EN/IEC 61326-1, Class B</p>	4		

5	Numerical Soil Compaction Instrument	1.Numerical Soil Compaction Instrument 2.Compacting number 30/min 3.High performance product 4.Engine 370W 380V 1400t/min	1		
6	Soil Analyzer	(soil analyzer mineral Tester,portable gold tester) 1.Weight:1.35KG Handheld 2.Precision 0.001%~0.01% 3.Analysis element:M	1		
7	soil nutrient test Kit	Soil Nutrient Test Kit; Macronutrient, Micronutrient, and pH Test Range Calcium150-2800 ppm Test Range Chloride25-500 ppm Test Range Humus (organic)1-1/2-8% Test Range Iron (ferric)5-125 lbs/acre Test Range Magnesium5-150 ppm Test Range Manganese4-40 ppm Test Range Nitrogen (ammonia)5-150 ppm Number of Tests Humus (organic)50 Number of Tests Iron (ferric)50 Number of Tests Magnesium50 Number of Tests Manganese50 Number of Tests Nitrogen (ammonia)50 Number of Tests Nitrogen (nitrate)50 Number of Tests pH100 Number of Tests Phosphorus50 Number of Tests Potassium50 Number of Tests Sulfate50	1		
8	PROTEIN SEQUENCER Protein	Sequencer PPSQ-31A (200V) Startup kit, PPSQ Non dangerous goods STARTUP, PPSQ FROZEN PTFE filter, D16 (50 pieces) Rotor Assy Disk, precolumn filter (10 pieces) Plunger seal D2 lamp, light source	1		

9	Air condenser Ceiling Cassette	Zone Heat Pumps 2014.model M12yj. Cooling Capacity 12000 (Btu/hr) colony counter Digital display 3 digit LED Count 0 to 999 Dish size 50 to 90mm USB 2x USB 2.0 Screen Size 15" Brightness 250 lumens/m2 Resolution 1024 x 768 Touch screen technology Resistive 5 levels	1		
10	Ceiling Cassette	Multi-Zone Heat Pumps 2014.model M12yj. Cooling Capacity 12000 (Btu/hr) colony counter Digital display 3 digit LED Count 0 to 999 Dish size 50 to 90mm USB 2x USB 2.0 Screen Size 15" Brightness 250 lumens/m2 Resolution 1024 x 768 Touch screen technology Resistive 5 levels	1		
11	Refrigerated Centrifuge	"Specifications:Max Speed: 15000rpm, Max RCF: 21382xg, Max capacity: 4 x 100ml, Temperature range: -20 to +40C, Timer: 1-99min or continuous, Short cycle: impulse key for short cycleAngle Rotors: Capacity: 8 X 50ml Falcon tubes, 32 x 15ml falcon tubes, speed: 4500rpm,RCF: 3283xgAngle Rotor: Capacity: 24 x 1.5ml, speed: 15000rpm, RCF: 21382xgFalcon Tubes: 16 NosTubes: 30 Nos (1.5/2.0ml)"	1		
12	Micrometers Stage	100 separate and distinct divisions, 10µm per division Ocular Micrometer Size: 19mm round 10mm linear scale divided to 100 parts Every fifth line of the scale is numbered Permanently etched scale, wear-free Clean with tissue paper Packing in round plastic box	15		

5. General Teaching Lab Equipment For Environmental Sciences					
S #	Description	Specification	Quantity	Unit price	Total
1	Distillation Unit	<p>Output: Pure water Type II (analytical grade) according ASTM D1193</p> <p>Input: Tap water (Conductivity recommended < 800 μS/cm and hardness < 30 $^{\circ}$F)</p> <p>Production: 10 ltr./h / with 50 liter tank.</p> <p>Purification process control: By microprocessor</p> <p>Installation requirements: 110- 220V AC</p> <p>Measures and weight:</p> <ul style="list-style-type: none"> - Equipment 45 x 25 x 48 cm (HxWxD) / 12 kg - External pretreatment: 40 x 37 x 16 cm (HxWxD) - Tank 40 x 80 cm (diam x H), Equiped with Kit of cartridges 	3		
2	Thermo anemometer	<p>Thermo anemometer (Hot wire-CFM)</p> <p>Dual line,4-digit LCD, power six AAA batteries,dimensions:2 13/16" WX 7" X 1 1/3 D, Air velocity range:40 to 3346 ft/min, resolution 1 ft/min, accuracy 3% of reading, air volume 0 to 999.990 cfm,temp.range:32 to 122 f.</p>	2		

3	HPLC System	<p>Ultra Fast Low pressure Gradient System Comprising of Dual Pump, UV/PDA Detector:, Elements 512, D2 Lamp, Measuring wavelength range 190-800nm, wavelength accuracy ± 1nm, element resolution 1.2nm/elements, slit width 1.2nm, 8nm, slit switching possible, Auto Injector: Max operating pressure 35 MPa, Inj volume setting 0.1 to 100 μL, No. of proceed samples 175 (1mL vials) – 50 (4mL vials), Inj volume precision RSD 0.3%, operating pH range pH 1 to pH14, operating temp range 4°C to 35°C</p> <p>Column Oven: forced air circulation type, temp control range, (Ambient + 10°C) to (85°C), temp control precision ± 0.1°C, ambient temp range 4 to 35°C,</p> <p>Solvent Mixer: SUS applicable for all mixing configurations, variable mixing volume 0.5ml, 1.7ml, 2.6ml for analytical and semi-micro conditions.</p> <p>Degassing: Unit, Reservoir Tray, and Databased software</p> <p>Pump Specification: Pump Type: Double reciprocating plunger pump Pumping Methods: Constant flow delivery and constant pressure delivery Constant Flow Pumping: Flow Rate Setting Range: 0.001-5mL/min [1.0-40MPa] 5.001-10mL/min [1.0-20MPa] Flow Rate Accuracy: $\pm 2\%$ or $\pm 2\mu$L/min, whichever is the greater. Flow Rate Precision: $\pm 0.3\%$ (RSD0.1% and below) Constant Pressure Pumping: Pressure Setting Range: 1.0-40MPa [0.1MPa steps] Pressure Accuracy: $\pm 10\%$ or 1.0MPa, whichever is the greater. Pressure limits function: Upper and lower limits Suction Filter: 10μm Line Filter: 5μm mesh, capacity 30μL 3,000,000</p>	2		
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4	Digital Arsenic test kit	Wagtech digital Arsenator kit: portable digital arsenator system, tri-filter Arsenic gas trap 5x Arsenic collection filter holders (black) 5x Arsine gas removal filter holders (red) 10x Hydrogen sulphide removal filters 420x reagent A1 (dry powder sachet) 420x tablet A2 420x Arsenic gas removal filters, color comparison chart (less then 10 to 500 ppb) dilution tube spare battery waste disposal bags gloves and tweezers Rugged carry case with instruction manual.	2		
5	Oven	Capacity: 155 Liters , Heater Power: 1.6 kW, Temp. Range: Ambient Temperature +5degC to 250degC Temp. Fluctuation: +0.3deg C at 100deg C, +0.5deg C at 150deg C Temp. Variation: +1degC at 100 degC, +2deg C at 150deg C Temp. Sensor: PT 100 Control Resolution: +0.1deg C Timer: 99hr 59 min (delay/continuous function), Shelves: 2ea of Stainless steel Wire Shelves	2		
6	Digital Density/Specific gravity meter	Temp range: 32 to 104 F , temp. accuracy : 0.2, battery life 90 hrs, temp. resolution 0.1 F, sample volume 2ml power: twp 1.5V AAA batteries: interference kit (digital density/specific gravity meter), replacement batteries: 1.5 V AAA, pack of 12.	1		
7	Wisconsin plankton net sampler	Two hoop, 80 um nylon net support system.	3		
8	Water quality meter kits(multi parameter meter)	For pH, Conductivity, TDS and Temperature, pH Range: -2.000~16.000pH Accuracy: ±0.002pH Calibration Points: 2 points Temperature Compensation: 0~100oC, Conductivity Range: 0~200mS/cm, Accuracy: ±0.5% F.S, Temperature Coefficient: 0~3.9% per oC, Temperature Compensation: 0~50oC Cell Constant: K=0.1, 1, 10 TDS Range: 0~Max.20, Accuracy: ±1% F.S, TDS Factor: 0.01~1.00 Memory: 99 data sets with Date/Time stamping Output: USB communication interface	1		

<p>9</p>	<p>Indoor Air Analyzer (portable) Indoor Air Analyzer</p>	<p>Min CO2 (ppm)0 Max CO2 (ppm)5000 Max Temperature (° F)131 Min Temperature (° F)23 Max Temperature (° C)55 Min Temperature (° C)-5 Min Humidity (RH)0 Max Humidity (RH)99.9 Min CO (ppm)0 Max CO (ppm)50 CO2 Accuracy±2% over range at 68°F (20°C), 1 bar DisplayMultiline alphanumeric LCD, backlit OutputUSB PowerThree AA rechargeable NiMH batteries or AC adapter Battery Life12 to 14 hours</p>	<p>1</p>		
<p style="text-align: center;">Total</p>					