2006.0065 ✓ PF

Warehouse requ. for misc. items

Student Technology Fee
Funding Request Form
Surplus Money Fiscal Year 2005-06
Northwestern State University of Louisiana

Prepared by: Dr. Gillian Rudd, Ifrah Jamil, and Richard Fontenot For: Lab Equipment

College or Unit: Science and Technology Campus: Natchitoches Department: Chemistry & Physics

Where will requested equipment be located/installed/housed: Bldg. Fournet Hall Room: 209 (organic lab) & 103 (physics lab)

Are property policies and procedures in place by the department for equipment requested: Yes (standard NSU procedures)

Delivery to the Student Technology office located in Watson Library, Room 113. Date_____

1. Describe target audience

This project targets all students who pass through chemistry and physics laboratories and lectures, as well as research laboratories. Students enrolled in such courses include but are not limited to SPSC 1010, SCI 1010, 1020, 1070, and 1080, CHEM 1010, 2141, 3011, 3021, 4041 and 4950, and PHYS 1010, 2030, 2031, 2510, 2511, 3301, 3291, 4900, and 4950.

2. Describe project/initiative for which you are requesting funds.

1. A rotary evaporator and its associated pump will be used in the organic laboratory for removal of large quantities of solvent from organic products. An aspirator pump is essential, because the water pressure available from a regular bench water aspirator is poor.
2. A distilled water still, which will replace an outdated and no longer repairable still. The distilled water produced will be used by all chemistry and physics laboratories.
3. An AC unit on the roof above the organic/biochemistry laboratory, room 209, which will drastically improve the air quality of this lab.
4. A new wireless computer on an existing presentation cart that will replace a six year-old computer with outdated programs. This cart is currently used by all students in giving presentations during lectures and research seminars.
5. Equipment needed to build a "soliton tank" — transparent container of size 24' x 6' x 3' with an attached system of circulation and flow provided by several electric pumps placed outside the tank, propellers, valves, and nozzles. This system will be used by students to study all fluid dynamic processes in the physics laboratory, room 103.

3. State measurable objectives that will be used to determine the impact/effectiveness of the project.

The goal of this project is to ensure that NSU has the equipment necessary to prepare students for graduate school and the workforce by encouraging them to enjoy the lab experience, participate in independent research and have hand-on experience with necessary equipment. This goal can be reached through the objectives of this project:

1. To provide functioning lab equipment for students to complete experiments in a timely fashion.
2. To ensure that students in the lab are using appropriate quantities of quality water in conducting their experiments.
3. To provide a safe and comfortable atmosphere for students conducting experiments in the lab.
4. To enhance the quality of student research and presentations by providing students with modern technology.
5. To extend the classroom to hands-on experience with modern lab and research equipment in an effort to improve the quality of learning for students.

4. State measurable objectives that will be used to determine the impact/effectiveness of the project.

Objectives 1 and 2 may be evaluated by lab instructors noting an improved quality in students' experimental data/products and timely procedures. Objective 3 will be evaluated through surveys completed by the students about the air quality in the lab as well a decrease in complaints to instructors concerning high temperatures and high fumes within the lab. Objective 4 will be evaluated based on the quality of student presentations through enhanced graphics and/or other media, quicker computer processing, and fast internet service. Objective 5 will be evaluated by instructors noticing an increased engagement of students in the classroom through special demonstrations and experiments with modern, hands-on technology, as well as the understanding of counter intuitive fluid dynamic and wave concepts through a friendly-scientific environment.

5. Provide a justification for funding the project. Estimate the number of students that will be served per academic year and in what ways. Please indicate also any unique needs of the target group.

The rotary evaporator and pump are essential pieces of equipment in chemistry laboratories. This new equipment will speed up laboratory time and avoid the end-of-lab queue time waiting to become available. Currently only two functioning rotary evaporators are available for student use in the laboratory, resulting in students staying after laboratory hours to complete their experiments.

All students who require a chemistry/physics laboratory will have distilled water on hand from the faucet, unlike the current, brown, hard water currently being used. Gallons of store bought distilled water frequently run out and students are unable to synthesize pure products and accurate data in the laboratories.

The AC unit will improve the air quality for all students who enter the organic laboratory, an absolute necessity for students working in the lab for several hours at a time. An AC unit on the chemistry department roof will extract the outside air, cool it and pump pre-cooled air into the organic lab. In contrast, pumping in hot outside air makes everyone in the laboratory very hot and uncomfortable. An alternative dampener/thermostat system would only be an option if the physical plant could increase the departmental AC air flow enough to the organic lab to balance out the extracted air, but unfortunately, this is not possible.

The current air handler for the organic laboratory, is 23 years old (time for a replacement) and it extracts ambient air temperature and pumps it into the lab. This new AC unit will be installed in conjunction with a BOR grant for which Dr's Rudd and Flomer are the PI's; the BOR grant will enable the department to install new snorkel extractor arms to replace the outdated and inefficient overhead canopies. With $50,000 already being spent on the lab to improve the fume extraction process, it is the ideal time to also have the problem of the hot incoming air addressed. As there is only one fume hood in the organic lab, the extraction system has to be turned on for the duration of each lab period. It is our responsibility to keep our students healthy and to vent away the chemical fumes from their work

environment; however, when the outside temperature heats up, the temperature within the organic lab becomes unbearable.

The new wireless computer will replace an outdated model that is not connected to the internet and for which students cannot currently use their memory sticks (which then involves a room change until an appropriate computer can be found and thus cuts down on the amount of quality lecture/presentation time). Quicker processing of a new computer will allow students to present enhanced media that cannot be processed by the current computer.

The soliton tank is a unique and important asset to the College of Science and Technology and the area of physics research. Because nonlinear fluid dynamics and solitonic waves is an important and current field of research, the students working on this tank will have opportunities to understand modern physics' concepts. Students conducting research with such equipment may have their results presented at national level conferences, produce publications, and overall stand at the highest levels of competition of student research. This system will also be a valuable tool for recruiting through presentations and demonstrations for high school students.

The items described above are necessary pieces of equipment that will drastically improve the quality of each laboratory day for students, as well as the overall research experience and education of all students who use them. With the number of students that circulate throughout the organic chemistry and physics labs, an estimated 200-300 students will be served per academic year.

6. How will funding of the project advance the University and College/unit technology plan?

Funding this project will be fulfilling the following NSTEP objectives:

2. *To provide classrooms with updated technology and multimedia.* Modern lab equipment and computer processors will allow students to use updated multimedia within classroom lectures, labs, and other research.

7. *To establish processes that encourage technology initiatives by faculty, staff, and students.* By integrating the lab equipment into the classroom through demonstrations and experiments, students will be more encouraged to use technology in the understanding of physical science concepts.

8. *To encourage innovation and research.* By engaging students in modern technology and functioning equipment, students will be more motivated to do research and inclined to use the laboratories at NSU to do so.

7. List those individuals who will be responsible for the implementation of the project/initiative and indicate their demonstrated abilities to accomplish the objectives of the project.

All members of the chemistry and physics faculty, including Dr. Gillian Rudd, Dr. Walter Flomer, and Dr. Andrei Ludu, are fully capable of setting up the computer, water still, soliton tank, and rotary evaporator/pump. Because these faculty members will supervise student use of each initiative, with their experience, they will ensure that the project initiatives are accomplished.

8. Describe any personnel (technical or otherwise) required to support the project/initiative.

The Department of Information and Technology will be responsible for the connection of the computer to the University network/server.

Fisher International (also known as VWR) will install the AC unit, in collaboration with the work that they previously scheduled for an exhaust system in the organic laboratory.

9. Provide a schedule for implementation and evaluation.

The implementation of this project will proceed as follows:

Spring 2006	Purchase equipment
May 2006	Activation of project
June-October 2006	Installation of all equipment
November-December 2006	Full utilization of the equipment

This timeline allows for any holdups with the installation of the new AC unit in collaboration with the new snorkel extractor arms.

10. Estimate the expected life of hardware and software. Explain any anticipated equipment/software upgrades during the next five years.

All of the equipment, with proper care and maintenance, will last for at least 6 years and will come with full manufacturers' warranty(s). The computer will be outdated within 5 years but an upgrade can be made at relatively low costs.

11. Explain in detail a plan and policy that will be in place to ensure property security/controls for any equipment received. Equipment will not be purchased until an acceptable policy is in place to ensue equipment security.

The computer will be secured to the existing computer cart in a locked storage room. The rotary evaporator/pump and soliton tank will be locked away behind closed doors, only to be opened when a laboratory experiment is in session. The rotary evaporator/pump, computer, and soliton tank will be allowed for student use through a check-out system.

The water still and AC unit are not security issues as they are not accessible to students; only the department head has a key that opens the door out onto the roof.

12. Attach a detailed budget, including: specs., description, cost, state contract and number, and vendor for each item; cost of outside support personnel; and a description of how the proposal will support University/College/unit resources (i.e., cash match, funds from other sources, or reallocation of existing hardware/software or other equipment.

1. Rotary Evaporator System		**$8714.20** done
Rotary Evaporator R-205A 24/40 VWR International	#04-987-136	$4,019.20 (actual quote)
Aspirator pump (to go with Rot. Evap) KNF Laboport Vacuum System for use with the rotary evaporator	cat # 13-878-55	$4695.00
2. Water Still Equipment		**$3809.79** ✓ done
E-Pure Water Purification System VWR International	D4641	$2396.80 ✓
Cartridge Kit VWR International	D5023	$326.20 ✓

Digital Outlet Controller VWR International	61161-342	$27.91 ✓
55 Gallon Red Closed Head Drum Reservoir Tank http://www.usplastic.com/		$108.88 ✓
Plumbing Hardware Pipe, Fittings, Pressure Gauges		$250.00 ✓
Mounting Hardware Lumber, Brackets, Fixtures, Wire		$200.00 —
Estimated shipping costs		$500 ✓
1. AC Unit for Organic Laboratory		**$58,750**
2. Wireless Computer done Computer to replace x5 year old computer on presentation cart with associated wireless components (quote from Dell website)		**$1235.45** ✓
3. Soliton Tank System done		**$6500** ✓
Oscilloscope (x1)		$800
Plexiglas sheets (x4)		$1600
Electric pumps (x4)		$700
Electro valves (x6)		$300
Actuator (x1)		$600
Aluminum angle 100 ft.		$100
Paddles material		$200
Pipes, fitting etc		$300
Miscellaneous construction		$300
Digital video camera		$600
Flow rate sensors (x8)		$1000
Total requested:		**$79,009.44**

See attached for further details.

13. Attach a letter of support for the project signed by the requesting unit's Dean, the appropriate Vice President (for non-academic units), or the SGA President from the requesting campus (for student requests).

VWR INTERNATIONAL

1.800.932.5000 http://www.vwr.com

QUOTATION: VBQ-2192278 PAGE: 1

Prepared for:
Customer #: 2010341
NORTHWESTERN STATE UNIV
CENTRAL RECEIVING

NATCHITOCHES, LA 71497 00

Requestor :DARRELL FRY
Phone: 318-357-5248
Fax: 3183574219
E-Mail:

Prepared by:

VWR INTERNATIONAL Inc.,
3745 Bayshore Boulevard
Suite D
Brisbane, CA 94005

Date: 4/5/2006

Customer Reference:
VWR Quote #: VBQ-2192278

VWR Line#	Cust Line#	Qty	UOM	Product	Net	Total
1		1	EA	26302-264 ECONOPURE RGNT SYS 4MOD 120VLT D4641	$2,396.80	$2,396.80
2		1	EA	26302-840 KIT,CART EPURE,4MOD W/ORG FREE D5023	$326.20	$326.20
3		1	EA	61161-343 VWR CONTROLLER 2X4X3 5090	$27.91	$27.91

1.800.932.5000 http://www.vwr.com

TO PLACE YOUR ORDER, PLEASE CALL
TEL: **1-800-932-5000**
FAX: 1-415-330-4224

PLEASE REFER TO
VWR QUOTATION NO: VBQ-2192278

		MERCHANDISE VALUE:	$2,750.91
TOTAL WEIGHT:	50.35		
TOTAL VOLUME:	0.02		
		GRAND TOTAL	$2,750.91

THANK YOU FOR THE OPPORTUNITY TO EARN YOUR BUSINESS.

QUOTATION VALID UNTIL: 4/26/2006

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P.O. NUMBER

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Preliminary Proposal

Trane
A Division of American Standard Inc.

Prepared For:
Dr. Walter Flomer
Northwestern State University

Date: March 31, 2006

Proposal Number: K7-23172-1

Job Name:
NSU - Fournet Hall
Natchitoches, LA

Delivery Terms:
Freight Allowed and Prepaid - F.O.B. Factory

Payment Terms:
Net 30 Days

Trane is pleased to provide the enclosed proposal for your review and approval.

We propose to remove the existing Trane fresh air makeup unit, serving the laboratory discussed. We will install a new Trane unit as described below. We will tie the unit into the chilled water piping in the building, running the necessary chilled water piping from the chilled water riser to the unit. We will tie the unit back into the existing system controls, controlling the unit as it was controlled before (no upgrades included as none should be needed).

Equipment lead-time is currently 10 weeks
Installation would be an additional 4 weeks

Tag Data - Outdoor Central Station Air Handler Units (Qty: 1)

Item	Tag(s)	Qty	Description	Model Number
A1	TSCX-1	1	Outdoor T-Series Climate Changer air ha	TSCX014

Product Data - Outdoor Central Station Air Handler Units

Item: A1 Qty: 1 Tag(s): TSCX-1

Unit size 14 T - series climate changer - Factory painted unit - slate gray
Unit meets the original airflow characteristics
Chilled-water cooling coil
Steam heating coil
Centrifugal fan and 10 hp motor 208/60/3
Adapter curb allowing the new unit to be directly installed in place of the existing unit (no roof work required)
Factory startup, technical checkout, and commissioning
One-year parts and labor warranty

Preliminary Total Net Price *(Excluding Sales Tax)* .....$ 58,750.00

This proposal and pricing are based on shipment of all products (not including field labor) by no later than 4th quarter of 2007 year.

Trane is pleased to offer you an opportunity to maximize the value of your purchase by offering you *savings* with the Anticipation Discount Program (ADP). Contact your Trane representative for more details or an ADP discount calculation.

Sincerely,
Kurt Lyles - Trane
504 W. 67th Street Shreveport, LA 71106-3024
Phone: (318)865-5663 ext. 485 Fax: (318)861-8481

Buy Online or Call 1-800-388-8239

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Northwestern State University

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- Click the "Checkout" button to continue to the Checkout and enter order online.

View Options: View Order Summary View Order Details

Sub Total Price*: $1,235.45

	Description	Quantity	Unit Price	Item Total
1	OptiPlex GX620 SFF with Int Broadcom® GbNIC Intel® Pentium® D Processor 830 (3GHz,DC,2X1M,800MHz FSB)	1	$1,235.45	$1,235.45

Reconfigure Remove Update

Date:	Thursday, April 06, 2006 2:53:44 PM CST
Catalog Number:	25 RC982501
OptiPlex GX620 SFF with Int Broadcom® GbNIC:	Intel® Pentium® D Processor 830 (3GHz,DC,2X1M,800MHz FSB) 630SD - [221-9194]
Operating System(s):	Genuine Windows® XP Professional, SP2, with Media XPP2E - [420-4850]
File System:	NTFS File System for all Operating Systems NTFS - [420-3699]
Memory:	1.0GB DDR2 Non-ECC SDRAM,533MHz, (2DIMM) 1G2N52 - [311-5021]
Keyboards:	Dell USB Keyboard, No Hot Keys EUSB - [310-5247]
Monitors:	Dell 17 inch UltraSharp™ 1704FPT Flat Panel, Adjustable Stand, VGA/DVI 1704FPT - [320-4271]
Video Card:	PCIe 256MB ATI Radeon X600, Dual Monitor DVI or VGA 256DVI - [320-4392]
Boot Hard Drives:	80GB SATA 3.0Gb/s and 8MB DataBurst Cache™ 80S2 - [341-2247]
Floppy:	No Floppy Drive NFD - [341-2290]
Mouse:	Dell USB 2-Button Optical Mouse with Scroll USBO - [310-6609]
Lead Free Motherboard:	RoHS Compliant Lead Free Chassis and Motherboard ROHS - [341-2663]
Removable Media Storage Devices:	24X CDRW/DVD Combo, with DVD Playback 24COMBO - [313-3326]
Audio Solutions:	Integrated AC97 Audio INTSND - [313-8170]
Speakers:	No Speaker Option NSPK - [313-1416]
Resource CD:	Resource CD - contains Diagnostics and Drivers RCD - [313-7168]
Energy Star Setting:	Energy Star Enable ES - [310-4721]
Hardware Support Services:	5 Year Limited Warranty plus 5 Year NBD On-Site Service U5OS - [900-6630] [900-9224] [983-2207] [983-2217]
Installation Support Services:	No Onsite System Setup NOINSTL - [900-9987]
Dell Recycling:	Asset Recovery Services, ValueRecovery, Program Managed ARVRDKT - [980-7177]

Mouse Pad:	Mouse Pad MPAD - [310-3559]
Asset Tag on System Chassis (CFI):	Standard Medium Asset Tag- WITHOUT Customer Name TAG4 - [365-2307]
	Sub Total Price* $1,235.45

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Top

snCT4
BG SG

Quotes from vendors for the student tech surplus grant: **Soliton Tank**
(Ref. A. Ludu)

Materials:

Specific item to be purchased	Price	Number on the list bellow
1 Oscilloscope	800 $	1 ✓
4 Plexiglas (acrylic) sheets	1600 $	2 ✓
4 Electric pumps	700$	3 ✓
6 Electro valves	300$	4 ✓
1 Actuator	600 $	5 ✓
Aluminum angle 100 ft.	100$	6 ✓
Paddles material	200 $	7 Warehouse
Pipes, fittings, etc.	300 $	8 Warehouse
Miscellanea construction	300 $	9 Warehouse
Digital videocamera	600 $	-- ✓
8 Flow rate sensors	1000 $	10 ✓
TOTAL	6500 $	

Quotes

1. Oscilloscopes vendors: 3 examples numbered 1.1, 1.2, 1.3:

1.1.
Boreal-Northwest,
399 Vansickle Road • St. Catharines, Ontario L2S 3T4
800-387-9393 • www.boreal.com • (Fax) 800-668-9106

✓General Purpose Oscilloscope: 4507700
$775.00
http://boreal.com/category.asp_Q_c_E_535985
Frequency range of AC 10 Hz to 20 Hz and DC to 20 MHz.
15 cm screen with internal graticule and high sensitivity X-Y mode, Z-axis (intensity modulation) and TV sync circuitry. Includes operation manual, 3-wire cord and plug, and test probes.
Frequency Range DC to 20 MHz (-3dB); AC: 10Hz to 20Hz (-3dB)
Sensitivity 5mV to 5V in 10 calibrated steps
Input Impedance 1 M½, 25 pF
Maximum Input Voltage 300Vp, (DC + peak AC)
Horizontal Axis
Sensitivity .2 micro seconds/Div. to .2 secs; Div. in 19 calibrated steps; 1 mV/Div x 10 mag
Frequency Range 20 Hz to 20 MHz
Input Impedance 100 k½
Maximum Input Voltage 300Vp (AC + DC)Power Requirements 108-130 V, AC, 50/60 Hz
Dimension (LxHxW) 43 cm x 14 cm x 30 cm
Weight 5.3 kg

1.2.
EXPHIL EXPRESS
(800) 282-5632
Telephone: (800) 282-5632

Fax: (631) 563-0701
Postal Address: 415 Central Ave.
Bohemia, NY 11716

Digital Storage Oscilloscopes **995$**
GDS-820 / GDS-840 Series
at: http://www.blii.com/instek/Instek_GDS-820_GDS-840_Series_Digital_Storage_Oscilloscopes.htm

150MHz / 250MHz Bandwidth with either Color or Monochrome LCD Display
125K Memory and 12 Division Horizontal Display
25GS/s Sampling Rate for Repetitive Waveforms
15 Auto Measurement Functions
Advance Trigger: Pulse Width, TV-Line, Event Delay and Time Delay
Go No/Go, Learn Mode and Auto Setup Sequence
FFT Function
Standard Interfaces: USB, RS232, Printer Port Optional: GPIB Interface

1.3.
EXPHIL EXPRESS
(800) 282-5632
Telephone: (800) 282-5632
Fax: (631) 563-0701
Postal Address: 415 Central Ave.
Bohemia, NY 11716
381295 5 MHz. Dual Channel Multiscope : **$449.95**
• Easy to Use Menu Driven Operation
• Internal or External Triggering
• Auto or Manual Setup for Horizontal and Vertical Scaling
• Single Shot Mode
• Window Freeze Locks Waveform in the Display
• Roll Mode for Slow Repetition Waveforms
• Store and Recall Up to 16 Waveforms and Setups
• Sampling Time: 25MS/s Dual Channel; 50MS/s Single Channel
• 132 x 128 Pixel Super-Twist Two Level Backlit Display
• Data Hold and Low Battery Indication
• Multimeter Functions Include AC/DC Voltage, Resistance, Continuity, Frequency, RPM, Pulse Width, and % Duty Cycle
• RS-232 PC Interface and Software for Transferring Waveforms and Data

Oscilloscope Specifications
Bandwidth DC -5 MHz,
Maximum Sample Rate 25 MS/s (dual channel) 50 MS/s (single channel)
Record Length 512 single shot: 256 all other modes
Max Verticle Sensitivity 50mV
Max Input Voltage 600V DC or AC rms
Trigger Modes Auto, Normal, Single
Trigger Source Channel A, Channel B, External
Trigger Coupling AC, DC
Timebase 1uS to 5S
Input Impedance 1 Megohm
Multimeter Specifications
DC Voltage 0.001V to 1000V (0.3% basic accuracy)

AC Voltage 0.001 to 750V (50-20kHz bandwidth)
Resistance 0.001k ohm to 5 Megohm
Continuity Test Voltage 1.7V: threshhold 100 digits
Frequency 0.01 Hz to 10MHz
RPM 240-60,000
Pulse Width 2uS to 500mS
Duty Cycle 25% to 75%
Dimensions 7.7x3.5x1.6" (195x90x40mm)
Weight 16.2 oz. (260g)
Power 4.8V Ni-MH Battery/120V 60Hz adapter/charger

Ordering Information
Instek 381295 ...5 MHZ...Dual Channel Multiscope

2. Plexiglas and acrylic sheets

2.1.
USP - United States Plastic Corporation
Customer Contact Number: 1-800-809-4217
1390 Neubrecht Rd. Lima, Ohio 45801-3196
Phone: 1-800-809-4217 Fax: 1-800-854-5498

44397 Acrylic Sheet 48" x 96" 3/4" (.750) Thick
Qty 2: 5% off; Qty 4: 10% off; Qty 12: 15% off; Sheet On Order
$436.40
4 sheets with 10% discount about 1700 $

Acrylite® Acrylic plast sheet is completely transparent, flexible, and exhibits great resistance to breakage. Acrylic is excellent material to use in place of glass for windows, skylights, doors, partitions, etc. It is lightweight, half the weight of glass, and it is virtually unaffected by nature. It can take temperatures from -40° F to 180° F (intermittant to 200° F). Fabrication is easy, as it can be sawed with fine tooth blades, drilled with plastic drills, sanded and polished. Also, it can be cemented with Acrylic cement. It meets FDA standards, is UV stabilized, and has a UL 95 Flammability rating. Supplied with protective film mask. The forming temp is 350° F. Applications include inspection windows, sight gauges, windshields, meter faces, protective covers, safety shields, tanks, desk tops, displays, trays, and chair pads. UL 94 Flammability Rating. Tolerance +/- .125 per side.

2.2

3. Electric pumps

3.1.
USP - United States Plastic Corporation
Customer Contact Number: 1-800-809-4217
1390 Neubrecht Rd. Lima, Ohio 45801-3196
Phone: 1-800-809-4217 Fax: 1-800-854-5498

March® MDX-MT3 and MDK-MT3 Metal-Less Magnetic Drive Pump-Model
94001 Ryton® Metal-Less Pump MDX-MT3
Qty 2: 5% off; Qty 4: 10% off; Qty 12: 15% off; Each Yes 7.5 Max GPM; 115V; 3450 RPM; 1/25 HP; 1/2" MPT Inlet; 1/2" MPT Outlet
$160.22 **.....4 pumps= 700 $**

3.2.
PumpBiz, Inc.
1935 Shermer Av.
Northbrook, IL 60062
www.pumpbiz.com
1-800-PumpBiz (786-7249), 847-291-1357, 847-291-1358
Fax 847-589-3935

3.3
Goulds Pumps Water Systems and Wastewater Products
Phone: (315) 568-7123
Goulds Pumps, Commercial Products
Phone: (315) 568-7100
Goulds Pumps, ITT Industries
2881 East Bayard Street
Seneca Falls NY 13148

3.4
A-C Fire Pump Systems
www.acfirepump.com
8200 N. Austin Ave.
Morton Grove, IL 60053
Phone: 847-966-3700
Fax: 847-966-1914

4. Electro-valves

5. Electric Actuators

5.1.
NOOK INDUSTRIES, INC. CONTACT INFORMATION
Corporate Headquarters

http://www.nookind.com/Info/Contact.cfm

CORPORATE HEADQUARTERS
Nook Industries, Inc.
4950 East 49th Street
Cleveland, Ohio 44125-1016
phone: (216) 271-7900 | (800) 321-7800
fax: (216) 271-7020
ENGINEERING:
phone: (216) 271-7900 | (800) 321-7800
fax: (216) 271-7020
SALES / CUSTOMER SERVICE
phone: (216) 271-7900 | (800) 321-7800
fax: (216) 271-7020

1 actuator.....**$ 500**

5.2.
Motion Systems Corporation
600 Industrial Way West
Eatontown, New Jersey 07724 USA

Tel. (732) 222-1800, Fax. (732) 389-9191
E-Mail to Applications Engineer@motionsystem.com
670$

5.3.
Industries, Inc.
25570 Rye Canyon Road Unit J
Valencia, Ca. 91355
Ph. (661) 257-4995
Fax (661) 257-4993
Inertial actuator IFX-10-200 **775$**

6. Aluminum frames

6.1.
MetalsDepot, the retail division of Ledford Steel Company
https://www.metalsdepot.com/index.phtml?aident=
4200 Revilo road
Wynchester, KY 40391
Phone: 859-745-2650
FAX:859-745-0887

✓A33418 3/4 X 3/4 X 1/8 Aluminum Angle 6061-T6 Aluminum Structural Angle 8.0 Ft. 1 In Stock **$9.36**

6.2.
Brake-Funderburk Enterprises
12855 Philips Hwy
Jacksonville, FL , 32256-3704
Address Map
Phone: 904-268-5531
FAX: 904-260-0283

✓7. Paddles

8. Pipes, fittings, hoses, etc…

8.1.
USP - United States Plastic Corporation
Customer Contact Number: 1-800-809-4217
1390 Neubrecht Rd. Lima, Ohio 45801-3196
Phone: 1-800-809-4217 Fax: 1-800-854-5498

✓34102 1/2" Clear Rigid PVC Pipe
Qty 50: 5% off; Qty 100: 10% off; Qty 300: 15% off; Foot Yes $1.27
Total……$ 300

8.2
Home Depot, Lowe's, Stein, etc
About $ 300

9. Miscellanea for construction: Walmart, Home Depot, Lowe's, Stein's

✓ Screws, nuts, bolts, glue, electric wires, etc……..$ 300

10. Flow rate sensors

✓ 10.1
Vernier Software & Technology
13979 SW Millikan Way
Beaverton, OR 97005-2886
phone 888.837.6437
fax 503.277.2440
email info@vernier.com
Flow rate sensor **129$**
http://www.vernier.com/probes/flo-bta.html

10.2.
PASCO
10101 Foothills Blvd.
Roseville, CA 95747
USA 1-800-772-8700
1-916-786-3800
http://www.pasco.com/
PASPORT Flow Rate/Temperature Sensor PS-2130
150 $ one sensor

10.3.
Proteus Industries
340 Pioneer Way
Mountain View CA 94041
Phone 650-964-4163
FAX 650-965-9355
e-mail info@ proteusind.com
One sensor **800$**
4000 Series Metering Flow Switch Price List
FluidVision® 4000 Flow, Temperature & Pressure Measuring Instruments

10.4.
Universal Flow Monitors, Inc.
1755 East Nine Mile Road
PO Box 249
Hazel Park, MI 48030
USA
$ 500 one sensor
Phone: (248) 542-9635
Fax: (248) 398-4274

Provost & Vice President for Academic Affairs

A Member of the University
of Louisiana System

Telephone (318) 357-5361
FAX (318) 357-4517
E-mail vpaa@nsula.edu
www.nsula.edu/provost/

Northwestern State University
Natchitoches, Louisiana 71497

April 4, 2006

NSU Student Technology Committee
Natchitoches, LA 71497

RE: Letter of Support – Chemistry/Physics Technology Request

I am please to support the request of the Department of Chemistry and Physics for funding of a Student Technology Fee Grant.

The grant will assure that students taking Chemistry and Physics classes will be provided with the resources needed to promote optimal learning. With the funding of the grant, the Department of Chemistry and Physics will enhance students' educational experiences, fulfilling the University Vision and Mission.

Sincerely,

Thomas Hanson

Dr. Thomas Hanson
Provost and Vice President
for Academic Affairs

TH/s

Cc: Dr. Austin Temple,
Dean, College of Science and Technology