

FF

Student Technology Fee
Funding Request Form
Special Initiative Fiscal Year 2007-08
Northwestern State University of Louisiana

This document will not be accepted without complete information, detailed budget, specifications of each piece of equipment requested and pricing.

Prepared by: Darrell Fry-Assistant Professor _____ For: Chemistry _____

College: Science & Technology __ Campus: Natchitoches __ Department: Chemistry _____

Where will requested equipment be located/installed/housed: Bldg. Fournet Hall _____ Room 231 _____

Total amount requested \$ 46,298.28 ~~32,064.14~~ Any matched funds: Yes No Department _____

Are property policies and procedures in place by the department for equipment requested. __yes__

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

1. Describe target audience.

The target audience is Science and Technology majors (Chemistry, Physics, Biology, Pre-Med) & Scholar's College students taking either Quantitative Analysis Laboratory (~36 year), Instrumental Analysis Laboratory (~3 year). The target audience will have taken Freshman Chemistry Laboratory (I & II) and approximately 60% will be taking Organic Chemistry Lab I at some point. In the past chemistry departments across the nation have been slow to adopt technology rich laboratories because the technology was viewed as a play toy instead of really teaching the required material. In recent years this has changed, especially in Vernier has developed more ion-selective electrodes. The ion-selective electrodes are specifically targeted towards quantitative analysis and instrumental analysis laboratories.

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

Analytical Chemistry Laboratories (Quantitative & Instrumental) are concerned with the accurate and precise measurement of chemical species; the laboratories have a reputation for being tedious for two reasons: 1) data collection & 2) lack of real world samples. Automation of the data collection is one obvious way to alleviate some of the tedious nature of the laboratory without compromising the course material. In addition, students often find the subject matter boring because the experiments are not actual experiments they may find themselves doing in the real world. The money requested will seek to alleviate these two problems by automating data collection and providing real world samples.

Students will first learn fundamental techniques using, in part, the requested material in the safety of Fournet 231 (a laboratory). Thereafter, the students apply the knowledge to more exciting and real world measurement by collecting water samples and carrying out measurements on tissue cultures.

In short, we wish to make the Laboratories more fun without compromising the course material through automated data collection and real life measurement situations.

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

- 1) Make the laboratory more fun.
- 2) Ascertain "mastery" of subject.

4. Indicate how each project objective will be evaluated.

- 1) In order to determine effectiveness a student survey will be used. As a base line can be established by asking previous students who Dr. Fry maintains contact with (Lydia Archuleta, Ifrah and Muhammad Jamil, Ashley Dunham, Justin Rains, Seth Fournea, etc...). Depending upon the purchase date, the 2007 Analytical laboratories may complete the survey as well. The students taking the technology rich lab will also complete the survey. Thereafter, an evaluation will be performed.
- 2) Use faculty rubric for developed SACS reaccreditation to compare technology rich laboratory write-ups with non-technology rich laboratory write-ups. Blank Rubric attached.

5. Provide a justification for funding of 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.

Currently there are no technology rich laboratories in Chemistry at NSU; however, the national trend in education (and employment) is towards a technology rich data collection environment. Analytical chemistry laboratories are unique chemistry laboratories in that the technology available is precise and accurate enough to simultaneously teach the chemistry, data collection and provide a real world experience.

Approximately 39 students will be serviced a year (~36 quantitative analysis and ~3 instrumental analysis). One important subgroup will be the biology majors, which in the past have made up about 60% of the quantitative analysis course. Nearly all pre-medical students take the quantitative analysis laboratory. In general, these two sub-groups are particularly interested water measurements and tissue culture techniques that are both targeted with this proposal.

The multiple spectrometers will two students to make accurate measurements at one time. By comparison, with the current spectrometer only a single student may make a measurement at a time.

6. If funded, which NSTEP (<http://www.nsula.edu/nstep/NSTEP.pdf>) objective(s) will this funding of this project advance. How will funding of the project advance the University and College / unit technology plan?

Under III General Objectives and Justification subpoint 4) Laboratory Equipment of the three year Technology Plan for Science and Technology (http://scitech.nsula.edu/S_and_T_Technology%20Plan_2008.pdf) is the development of computer laboratories. Thus the proposed work fits within the overall objectives of the College of Science and Technology.

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.

Darrell R. Fry, Assistant Professor of Chemistry. Dr. Fry teaches the Analytical Chemistry courses. Dr. Fry has successfully completed 3 NSU enrichment funds. Moreover, Dr. Fry has administered student surveys in the past (over his performance).

8. Describe any personnel (technical or otherwise) required to support the project/initiative.
None

9. Provide a schedule for implementation and evaluation.

Fall 2007: Purchase Equipment, develop survey, contact former students and administer survey, administer survey to 2007 students.

Spring 2008: install equipment and complete survey.

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

In my experience, typically ion-selective electrodes last about 5 years—if properly maintained and stored. After five years, the computers will still interface ion-selective electrodes—even though the computers and software may be old, they will still work together. The UV/VIS spectrometers will have to have a new source lamp (less than 100 dollars from lab fees) about every 4 years. The incubator and tissue culture hood should last for 20 years or more.

11. Explain in detail a plan and policy that will be in place to ensure property security/controls for any equipment received through Student Tech Fee.

The computers will be tagged (regardless of price). Each student will check out the appropriate ion-selective electrode for a laboratory period and return the electrode at the end of the period. The ion-selective electrodes will be stored (while not in use) in Dr. Fry's office. Although this seems redundant, the ion-selective electrodes are about \$170 each and fragile/delicate devices and the spectrometers are about \$4,000 each and may fit in your pocket. Faculty and students will be trained in the proper maintenance/storage of the electrodes and the spectrometers. Having a single person with ultimate responsibility for these devices will insure their security. The incubator, tissue culture hood and computers are large and will not be removed from Fournet 231.

12. Attach a detailed budget, including: specs., description, cost, state contract 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. **All of the information requested must be attached or the request will not be accepted.**

13. List two individuals and their letters of support for the project. The letters needs to be from unit's Dean, the appropriate Vice President or the SGA President.

1. Austin Temple
2. SGA President

2015043

Proposed Budget

Description	Justification	Number	Amount	Vendor
Personnel computer-capable of running Microsoft Office 2007 applications.	Needed to interface with probes. Speeds up data collection and analysis.	10		
Flat Screen Monitors	The lab is space limited-twelve traditional monitors will not fit in the lab.	10		
LabPro Deluxe Water Quality Package-interface, 3 probes, 3 sensors, 4 ion sensitive electrodes & colorimeter	Needed for the experiments. By purchasing two sets of twelve, we will save \$584.	12	1557	Vernier Software & Technology. See http://www.vernier.com/pkgs/wat equality.html
Water Quality with Computers-202 pages with 16 ready-to-use experiments. Includes a CD with word processing files for experiments, so you may easily edit labs to fit your style.	Ready made labs can be easily modified or used as is.	1	45	Vernier Software & Technology. See http://www.vernier.com/pkgs/wat equality.html
Logger Pro 3-data collection & analysis. Site licenses included.	WQC-LP Software needed to run ion-selective electrodes.	1	159	Vernier Software & Technology. See http://www.vernier.com/pkgs/wat equality.html
Vernier / Ocean Optics UV/VIS portable spectrometer. SP-UV-VIS	Provides	2	3999	http://www.vernier.com/labequip ment/spectrometer.html
Tissue Culture Hood	Provides and alternate way to teach analytical chemistry which may be more interesting to biologically oriented students.	1	1952.50	VWR catalog number 97000-990
Incubator. 2300 Single Chamber.	To grow interesting biological species.	1	3225.64	VWR catalog number 35910-503.
TOTAL			32,064.14	

Office \$ 29.14

+ 10 workstations

2101922.50

\$ 13,705.00

total \$ 46,298.28



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E-quote Number: 1001418577174

Saved By: Alfred Ehlers **Phone Number:** (318) 357-6482
 ehlersa@nsula.edu **Purchasing Agent:** Diana Cobb

Saved On: Monday, August 13, 2007 **Notes/Comments:**

Expires On: Friday, October 12, 2007 **Additional Comments:**

Description



OptiPlex 745 Small Form Factor (Vista)

Date & Time: August 13, 2007 4:36 PM CST

SYSTEM COMPONENTS

OptiPlex 745 Small Form Factor (Vista) Qty 1
 Intel® Core™ 2 Duo Processor E6600 (2.40GHz, 4M, 1066MHz FSB), Genuine Windows Vista® Business, no media, 32 Edition, English Unit Price \$1,538.80

Catalog Number: 25 E1778_VISTA

Module	Description	Show Details
OptiPlex 745 Small Form Factor	Intel® Core™ 2 Duo Processor E6600 (2.40GHz, 4M, 1066MHz FSB)	
Operating System(s)	Genuine Windows Vista® Business, no media, 32 Edition, English	
Memory	2.0GB DDR2 Non-ECC SDRAM, 667MHz, (2DIMM)	
Keyboard	Dell USB Keyboard, No Hot Keys, English, Black	
Monitors	Dell 20 inch UltraSharp™ 2007FP Flat Panel, Adjustable Stand, VGA/DVI	
Video Card	128MB ATI Radeon X1300 (1 DVI/1 TV-out), low profile	
Boot Hard Drives	80GB SATA 3.0Gb/s and 8MB DataBurst Cache™	
Floppy Drive and Media Card Reader Options	Dell 13 in 1 USB Media Card Reader	
Mouse	Dell USB 2-Button Optical Mouse with Scroll, Black	
Lead Free Motherboard	RoHS Compliant Lead Free Chassis and Motherboard	
Removable Media Storage Devices	8XSlimDVD+/-RW Roxio™ Dell Edition, Cyberlink™ for Vista Home Basic/Bus	
Speakers	No Speaker	

Resource CD	No Resource CD
Dell Energy Smart	Dell Energy Smart Enable
Security Hardware	Chassis intrusion switch option
Hardware Support Services	4 Year Limited Warranty plus 4 Year NBD On-Site Service
Installation Support Services	No Onsite System Setup
Mouse Pad	Mouse Pad
Labels	Vista Premium Sticker

TOTAL:\$1,538.80



OptiPlex 745 Small Form Factor (Vista)

Date & Time: August 13,2007 4:36 PM CST

SYSTEM COMPONENTS

OptiPlex 745 Small Form Factor (Vista)

Qty 9

Intel® Core™ 2 Duo Processor E6600 (2.40GHz, 4M, 1066MHz FSB), Genuine Windows Vista® Business, no media, 32 Edition, English
Unit Price \$1,351.80

Catalog Number: 25 E1778_VISTA

Module	Description	Show Details
OptiPlex 745 Small Form Factor	Intel® Core™ 2 Duo Processor E6600 (2.40GHz, 4M, 1066MHz FSB)	
Operating System(s)	Genuine Windows Vista® Business, no media, 32 Edition, English	
Memory	2.0GB DDR2 Non-ECC SDRAM, 667MHz, (2DIMM)	
Keyboard	Dell USB Keyboard, No Hot Keys, English, Black	
Monitors	Dell 17 inch UltraSharp™ 1708FP Flat Panel, Adjustable Stand, VGA/DVI	
Video Card	128MB ATI Radeon X1300 (1 DVI/1 TV-out), low profile	
Boot Hard Drives	80GB SATA 3.0Gb/s and 8MB DataBurst Cache™	
Floppy Drive and Media Card Reader Options	Dell 13 in 1 USB Media Card Reader	
Mouse	Dell USB 2-Button Optical Mouse with Scroll, Black	
Lead Free Motherboard	RoHS Compliant Lead Free Chassis and Motherboard	
Removable Media Storage Devices	8XSlimDVD+/-RW Roxio™DellEdition,Cyberlink™for VistaHomeBasic/Bus	
Speakers	No Speaker	
Resource CD	No Resource CD	
Dell Energy Smart	Dell Energy Smart Enable	
Security Hardware	Chassis intrusion switch option	
Hardware Support Services	4 Year Limited Warranty plus 4 Year NBD On-Site Service	
Installation Support Services	No Onsite System Setup	

Mouse Pad

Mouse Pad

Labels

Vista Premium Sticker

TOTAL:\$12,166.20

	Total Price
Sub-total	\$13,705.00
Shipping & Handling	\$0.00
Tax *	--
State Environmental Fee *	--
More Info	
Total Price *	--

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Northwestern State University

Natchitoches, LA 71497

Purchase Order No. _____

REQUEST FOR PURCHASE ORDER

Vendor

Name Software House International
Address 7485 Elliot Road
City Baton Rouge St LA ZIP 70817
Phone 225-755-6947

Ship To

Name _____
Address _____
City _____ St _____ ZIP _____
Phone _____

QTY	LINE	DESCRIPTION	EACH	TOTAL
10		Office Professional Plus 2007 All Lng MVL Part Number 79P-01195 Product Type: Standard	\$52.91	\$529.14
		ACADEMIC MASTER ENROLLMENT # 5194538 LAICU ENROLLMENT# 9546959		

Payment Details

- Check
- Cash
- Account No.
- Credit Card

Name _____
CC # _____
Exp Date _____

SubTotal	\$529.14
Shipping & Handling	
Taxes State	
TOTAL	\$529.14

Shipping Date

Approval

Date _____
Order No _____
Sales Rep Laurie Conrad
Ship Via _____

Notes/Remarks

DEPARTMENT OF CHEMISTRY AND PHYSICS
Evaluation of Student Laboratory Report

<i>Assessment criteria →</i> <i>Quality merits ↓</i>	I Presentation of scientific and technical information resulting from lab experimentation	II Accurate measurements from scientific instrumentation, interpretation of results, reasonable conclusions	III Critical thinking, problem solving and data analysis skills, application of fundamental principles to results	IV Show mastery of discipline
Insufficient Reject 1	No scientific information communicated, very unclear, fuzzy, foggy.	Ambiguous or absence of data in report, no clear sources, wrong units, mistakes.	No logical stream, disorganized, no model used, just words.	Show some fundamental mistakes, not understanding the basics
Hardly Acceptable Need major improvement 2	There are some pieces of information, but presentation confusing and unclear.	Incomplete results/data, only data from literature are presented/used. No overlap between model and data. No interpreting of results.	There is a stream of logic, some vague model, but doesn't actually prove that something was solved. No criticism or analysis.	Attempted in good faith but not enough background. Mistakes. Unclear statements and conclusions.
Good Can be improved with extra work 3	Enough correct scientific information communicated, but presented incompletely (unclear, disordered). Also, not quite convincing. Weak presentation, inappropriate tables or graphics.	Experiments and collection of original data good enough. Limited comparison with other experiments or models. Appropriate units.	There is a model, basically good, but not very convincing. Lack of consistency. Some clarity in the analysis process.	Has knowledge but not sure in using it. Inconsistent, yet no major mistakes.
Very good Minor observations 4	Enough information presented, written in a clear and ordered way. Not necessarily complete in the discussion of results/methodology. Clear presentation in graphical form.	Good, accurate experiments and collection of data from sources. Agreement (or open questions concerning) with model. Discussion of uncertainties in experimental data. Draws conclusions from data. Comparison with other experiments, critical discussions.	Good model, logical and consistent, not all steps touched, not quite but close to convincing scientifically.	Masters the content, correctness. Not quite updated on novel things and open questions.
Exquisite Use it as a model, propose for research 5	Clarity of expression and communication of valuable, interesting ideas, discussion of concepts, readability. Novel approach. Very attractive form of graphic presentation.	Accurate and precise in all experiments. Use of up-to-date installations (or very innovative procedures). Advanced error calculations. Error analyses appear on graphs. Discussion includes analysis of how uncertainties may affect results and be minimized. Agreement with model(s) or new feasible model proposed. Draws conclusions from data. Plausible final results, comments and criticism.	Clearly stated frame and question addressed. Logical reasoning, use of theory, very critical with sources and own work.	Master the content, can explain the core of the subject, understands the basic trends and questions, related to modern questions and trends, no mistakes.



STUDENT GOVERNMENT ASSOCIATION

NORTHWESTERN STATE UNIVERSITY

A Member of the University of Louisiana System

Natchitoches, Louisiana

318.357.4501

August 13, 2007

Student Technology Advisory Team:

I fully support the efforts of the Chemistry Department to seek and obtain funding from the Student Technology Fund for the purchase of new equipment for a long needed upgrade to the chemistry lab in room 231. This project would be most beneficial to our students and will allow our students better access to updated lab technology as well as keep our school competitive and attract more students.

Respectfully Yours,

Shayne Creppel

President

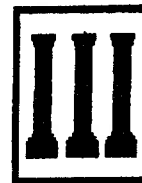
Northwestern State University

Student Government Association

FOR THE DEMONS!



COLLEGE OF SCIENCE & TECHNOLOGY
OFFICE OF THE DEAN



To Whom It May Concern:

This is a letter of support for the Department of Chemistry and Physics proposal to the Student Technology Fees Special Initiative. The proposal strengthens the lab curriculum in Chemistry by bringing more advanced technology to the student. Moreover, the proposal seeks to maintain academic standards within the department. The proposal seeks funds for the analytical chemistry laboratories (instrumental analysis and quantitative analysis).

Please give the proposal your full consideration.

Warmest Regards,

Austin Temple
Dean College of Science and Technology
Northwestern State University