

# **UNIVERSITY OF LOUISIANA AT LAFAYETTE**

**STEP Committee**

**Technology Fee Application**

**Enhancement of the Advanced  
Systems Technology and Computer Networking  
Laboratory**

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**Cherif Aissi (PI)**  
**And**  
**Shelton Houston (Co-PI)**

**Department of Industrial Technology**  
**College of Engineering**

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<b>Title:</b>	<b>Enhancement of the Advanced Labview Simulations Systems Technology Laboratory</b>	<b>Date:</b>	<b>7-10-2016</b>
<b>Name (Contact Person):</b>	<b>Dr. Cherif Aissi</b>		
<b>Address:</b>	<b>Department of Industrial Technology, P.O. Box 42972, UL Lafayette, Lafayette, LA 70504-2972</b>		
<b>Phone Number:</b>	<b>482-6971</b>	<b>Email:</b>	<b>aissi@louisiana.edu</b>
<b>Department/College/Org:</b>	<b>Department of Industrial technology/ College of Engineering</b>		

## **2. ABSTRACT (250 words or less):**

This proposal requests funding to enhance an existing Advanced Computer Labview Simulation and Computer Networking laboratory located in Rougeau Hall, room #271. This laboratory is being used for undergraduate instructions in the Department of Industrial Technology (ITEC) in the college of Engineering. This improvement consists of replacing outdated equipment (i.e., **7-year-old** PCs that can no longer run current software such as Labview and Multisim 2015 versions as well as computer networking software) with modern PCs, new MyRIO data acquisition hardware and a printer. The Department of Industrial Technology views the funding of this proposal as critical to keep up with today's tools used in the industry. The laboratory will serve three main purposes:

- (i) To enhance our courses in the area of systems technology applications and computer networking and to acquaint students with software tools that are current practice in many industrial environments. These courses serve more than 500 students who are enrolled in the ITEC program.
- (ii) To provide a state-of-the-art facility where students can upgrade their skills and focus on learning the technical material rather than wondering why the existing outdated PCs are so slow and crash all the time and in some cases, it limit us in upgrading to a new software version.
- (iii) To allow industrial technology students to develop complex and sophisticated projects with less frustration.

The acquisition of the requested equipment will allow the Department of Industrial Technology to compete for federal funding in the areas of undergraduate education and future laboratory expansions.

### **3. Description:**

#### **3.a. Purpose of grant and impact to student body as a whole**

The purpose of this proposal is to enhance an existing laboratory in the field of Advanced Systems Technology and Computer Networking Laboratory. This laboratory was first developed by the PI using a grant funded by the Board of Regents Support Fund (BORSF) Enhancement Program in June 2000. This Laboratory served our students very well for about 6 years by providing them with the state-of-the-art equipment to develop expertise in the field of design of system technology including computer networking. Finally, in 2009 the laboratory was updated with new PCs thru a University grant. However, today the current equipment, specially the PCs, can no longer run without crashing, the latest version of Labview and Multsim, that our college of Engineering has already purchased,. The funding of this project will not only keep this advanced laboratory running but will also allow the PI and the Co-PI to enhance the ITEC department curriculum.

For instance, in the area of teaching, the department of ITEC adheres to the principle of teaching courses with hands-on equipment. When it comes to practical challenges, our students learn better and more quickly in an experimental environment with immediate feedback, rather than using theoretical approach. To enhance the ITEC curriculum, the department plans to upgrade two existing courses in advanced System Technology, ITEC422G and in computer networking ITEC 420G. Both courses will integrate real world applications. With the funding of the requested equipment, students will be exposed and trained on the current technology that most industry companies use today.

Furthermore, in the area of professional development, the proposed laboratory enhancement will benefit local economic development greatly and will impact students significantly. Graduates from this program will have more experience in advanced system technology and computer networking and can contribute better to local companies and institutions. An available skilled work force of graduates in this area will be a factor in increasing the likelihood of additional high-tech companies moving to Louisiana. For instance, local professionals who are interested in the practical application development rather than the traditional theoretical use of advanced system technology and computer technology may enroll in these courses to upgrade their skills and gain practical experience. Funding of this grant will enhance the potential for cooperation between local industry and faculty members in the department of ITEC at the University of Louisiana at Lafayette.

The requested equipment complements the existing equipment available in the department of ITEC laboratories and provides an opportunity to have the needed resources to teach high tech courses and conduct research in the field of advanced system technology and computer networking. Currently the ITEC department utilizes three electronics laboratories to support the teaching of fundamentals and advanced analog and digital electronics systems as well as integrated systems. The requested equipment will enhance

the advanced system technology and computer networking laboratory and will certainly have a significant impact on the student body in several ways:

- (1) Students can focus on learning the technical material in this updated state-of-the-art facility, rather than wondering why the existing outdated seven year old PCs are so slow and crash all the time.
- (2) Students will have an ideal environment to design complex systems and applications that combine both electronic and mechanical components to achieve improved product quality and performance in industrial, electrical and mechanical processes technology. They will also learn the tools in computer networking that are currently being used by the industry.
- (3) With the enhancement and expansion of the advanced system technology and computer laboratory lab, students will learn the entire process from the first design concept to the end result of testing the product using the most current tools.

The requested equipment will greatly enhance and expand the capabilities of the Industrial Technology Department. The impact of funding this STEP proposal will be substantial in aspects of curriculum development, instruction, research, industry, and community involvement.

### **3.b. Projected lifetime of enhancement**

It is expected that this equipment enhancement will have a lasting impact for at least the next five years. The requested PCs will allow us to run updated software that is currently being used in the industry. The latest version of the updated 2015 software which includes both Multisim and Labview have already been purchased by the college of engineering. In addition all supplies will be purchased by the ITEC department as needed. With the funding of the requested PCs, students will have a better learning environment.

### **3.c. Person(s) responsible for**

#### **(i) Implementation**

Drs. Cherif Aissi and Shelton Houston are responsible to implement the enhancement and the changes made in this IST lab. They are responsible to place purchasing orders as well as ensuring a timely delivery of the equipment. The PI and Co-PI are currently taking all preparations to meet this objective. They will hire a graduate teaching assistant (GTA) to assist him.

#### **(ii) Installation**

Drs. Aissi and Houston and (Mr. Harvey Ozbirn, the computer system administrator) will install and test the PCs. Drs. Aissi and Houston and Mr. Harvey Ozbirn are responsible to setup the IST laboratory. The GTA will assist

in testing both the hardware and software equipment.

**(iii) Maintenance**

The Department of ITEC is responsible to maintain all its PCs. Mr. Harvey Ozbirn is a member of its faculty and has provided the maintenance of all the PCs , including the hardware and general software.

**(iv) Operation**

Drs. Aissi and Houston will be running this enhanced lab to conduct their laboratory classes. Dr. Aissi and Dr. Shelton Houston (department head) will monitor this laboratory operation.

**(v) Training**

Drs. Aissi and Houston have run this laboratory for the last 10 years. They have provided training for all graduate teaching assistants and faculty members who are interested in this field. Thus no training is requested.

**3.d. Purpose and justification for each of the items listed in the Budget Proposal**

- 21 Standard PCs are needed to replace old outdated computer that can no longer run new software versions without crashing. The requested PCs include Windows and Microsoft Office.
- The standard laptops are needed for the PI and Co-PI to develop applications and to demonstrate them to students as a learning tool. It will also help the PI and Co-PI to conduct their lectures in a more efficient manner where simulations and lectures are presented at the same time.

**Timeline/ Implementation schedule**

**During Year 1:**

Order all equipment and other items needed for installation and operation. Install equipment and start using it.

**During Year 2:**

Maintenance and update installation

**During Year 3:**

Maintenance and update installation

**During Year 4:**

Maintenance and update installation

**During Year 5:**

Maintenance and update installation

The funding is request for only the first year. No funds are requested for the remaining years.

## **4. Budget Proposal**

<b>1. Equipment</b>	<b>\$20,370.00</b>
<b>21 Standard PCs (each \$970.00 )</b>	
<b>Optiplex 3020</b>	
<b>2 Standard Laptops (each \$1,025)</b>	<b>\$2,050.00</b>
<b>2. Hardware: 21 MyRio 782692-1DAQ</b>	<b>\$ 10,500</b>
( <b>academic discount @ \$500 each</b> )	
<b>3. Supplies</b>	
<b>Secure lock boxes \$59.00 each</b>	<b>\$1,239</b>
( <b>to secure MyRIO on the table</b> )	
<b>4. Maintenance</b>	<b>\$0.00</b>
<b>5. Personnel</b>	<b>\$0.00</b>
<b>6. Other</b>	<b>\$0.00</b>
<hr/> <b>TOTAL:</b>	<b>\$34,159.00</b>

## **5. Include any additional information relevant to your application.**

It should be clear that the funding of this STEP proposal is to purchase the requested equipment. Other funds are matched by the college of Engineering and the ITEC department. For instance, the college of Engineering has already purchased a license for the 2015 version of Multisim and Labview software and the ITEC department will provide the needed supplies and maintenance.

### **Qualifications:**

Dr. Aissi (PI) has a doctoral of science degree in Electrical Engineering. He is a professor in the college of Engineering and has over 30 years of experience in developing and managing laboratories in the field of electronics, and control systems.

Dr. Houston (Co-PI) has a Ph.D. degree in Higher Education. He is a professor and Department Head of the Department of Industrial Technology in the college of Engineering. He has over 30 years of experience in developing and managing laboratories in the field of electronics, automation and computer networking.

**6. Discuss all previous funded STEP projects (if any).**

Dr. Aissi has received funding for the following step projects to enhance laboratories in the Industrial Technology Department.

- Principal Investigator, “Enhancement of the Integrated Systems Technology Laboratory,” STEP grant, May 2013, \$12,957. The main objective of this proposal is to enhance the integrated system Laboratory for teaching and research
- Principal Investigator, “Enhancement of the Microprocessor control system Technology laboratory,” STEP grant June 2011, \$14,306. The main objective of this proposal is to enhance the microprocessor control system Laboratory for teaching and research