

**UNIVERSITY OF LOUISIANA
AT LAFAYETTE**

STEP COMMITTEE

Technology Fee Application

Enhancing Technology Laboratory by Implementing 3D printers

Title

Dr. G. H. Massiha and Mr. Harvey Ozbirn

(Submitter)

Department of Industrial Technology

Organization

ABSTRACT PAGE

Title: Enhancing Technology Laboratory by Implementing 3D printers

Date: 01/15/2020

Name (Contact Persons): Dr. G. H. Massiha

Address: Department of Industrial Technology, P.O. Box 42972, University of Louisiana at Lafayette, Lafayette, LA 70504

Phone Number: 482-5719

Email: massiha@louisiana.edu

Dept/College: Departments of Electrical & Computer Engineering, Industrial Technology and Mechanical Engineering in the College of Engineering

Number of Faculty Impacted: 10

Number of Students Impacted: 1500 (graduate and undergraduate)

Abstract

This proposal is being submitted to improve the manufacturing technology laboratory in the Department of Industrial Technology (ITEC) and Mechanical Engineering Department in the College of Engineering. The courses offered in this laboratory serve over 1500 students in the College of Engineering and Departments of Industrial, Mechanical, and general engineering programs. Funding this project will provide large pool of students' access to state of the art hardware and software intended to improve their productivity in areas of manufacturing and product.

A. Purpose of Grant

With the way Departments of ITEC and MCHE are set up students think more on application and less about theory. Many ITEC and MCHE classes could benefit from the addition of 3D printers in the department. Classes such as ITEC and MCHE 480 and already have thermoplastics in the curriculum; this would have a seamless integration into the class. Also when it comes to ITEC480 the class normally makes a project using thermosets, this is costly and is not always available. With a 3D printer a part could be made in thermoplastic and would

cost less than the thermoset. This process could be used to give compression between the two types of composite matrixes. Some of the other classes that could use the printers are ITEC207/370; with the CAD software that is used in these classes students could make a project in the class. The technology of 3D printers has made leaps and bounds in the past 10 -15 years, the printers available to the consumer today are better than the printers only available to industry 10 years ago. The price for a high-end printer can be less than \$3000.00 per unit and the price for the filament is around \$50.00 per K/g. This price for filament can be augmented by the use of recycling the filament.

Multiple departments that include Industrial Technology (ITEC) and Mechanical Engineering (MCHE) can utilize this laboratory for instruction of manufacturing and automation application using 3D printers.

Impact on Student Body

This initiative will impact students in the following ways:

1. Addition of one 3D printer system helps large nhe number of engineering and technology students interested in new technologies has increased rapidly.
2. The laboratory upgrade will also benefit the University as a whole, by supporting an energy management system hibernation, which the current computer systems do not support due to their age. **This will provide savings for the University in future years.**

B. The Projected Lifetime of Enhancement

This equipment will be an effective tool in student recruitment and retention that will last a minimum of 5 years.

C. Person(s) Responsible for Project

- a. **Implementation:** Dr. G.H. Massiha, Department of Industrial Technology
- b. **Installation:** Dr. Massiha and Mr. Harvey Ozbirn, College of Engineering
- c. **Maintenance:** Dr. Massiha and Harvey Ozbirn, College of Engineering
- d. **Operation:** College of Engineering faculty (Drs. Massiha, Houston) will monitor the operation for this laboratory classroom.
- e. **Training:** N/A

Qualifications:

Dr. G.H. Massiha is a professor in the college of engineering. He has more than twenty years of experience in teaching and research in automation and control. His research specialties include microprocessors, automation; advanced electronics control devices, robotics and integrated circuits.

Harvey Ozbirn is the computer systems manager for the College of Engineering, and is on the faculty of the Department of Industrial Technology. He holds master degrees in Business Administration and Engineering Technology & Management from the University of Louisiana at Lafayette.

D. Budget Category Descriptions



Quote: 1628877000018501333

Quote Date: 07/09/2018 03:04 PM

Valid Until: 04/30/2019

Quote Stage: Draft

Robert Bosch Tool Corporation
1800 W Central Rd
Mt Prospect, IL 60056
Phone: 224.232.2000

Website: Dremel3d.com

Customer Billing Address

University of Louisiana at Lafayette
Dr. G.H. Massiha

(337) 482-5719

Customer Ship To Address:

University of Louisiana at Lafayette
Dr. G.H. Massiha

(337) 482-5719

Dremel Sales Person	Carrier	Shipping From
Andrew Ortman	UPS	

Model #	Description	Part number	QTY	List Price (\$)	Discount	TOTAL
3D45-01	3D45-01 DIGILAB 3D Printer, 10% EDU Discount	F0133D45AA	1	\$1,619.10	\$0.00	\$1,619.10
DF06-01	DF06-01 - Filament - Dremel Blue, Filament -10%	26153D06AB	10	\$26.99	\$0.00	\$269.90
DF03-01	DF03-01 - Filament - Racecar Red, Filament -10%	26153D03AB	10	\$26.99	\$0.00	\$269.90

SUBTOTAL \$2,158.90

Terms & Conditions
Tax Exemption Certificate required or sales tax will be applicable to final sale.

TAX	\$0.00
OTHER	\$0.00
TOTAL	\$2,158.90

If you have any questions about this Quote, please contact:
Andrew Ortman, 224-232-3029, andrew.ortman@us.bosch.com

Timeline:**Year 1:**

Order all equipment. Set up equipment.

Year 2:

Maintenance & general upkeep

Year 3:

Maintenance & general upkeep

Year 4:

Maintenance & general upkeep

Year 5:

Maintenance & general upkeep

Previously Funded STEP Grants

Dr. Massiha has not had any funded STEP Grants.

Budget Proposal

Length of Implementation (In years)	1	2	3	4	5
1. Equipment (two 3D Printers)	2 x \$2,160	\$0	\$0	\$0	\$0
2. Two PCs	\$4,000	\$0	\$0	\$0	\$0
3. Supplies	\$500	\$0	\$0	\$0	\$0
TOTAL:	*\$8,820	\$0	\$0	\$0	\$0

*Dr. Massiha and Mr. Ozbirn will gladly accept funds for one printer if the committee is short on budget (\$4,660).