

**UNIVERSITY OF LOUISIANA
AT LAFAYETTE**

STEP COMMITTEE

Technology Fee Application

Enhancing Industrial Manufacturing Technology Laboratory
Using 3D Printer

Title

Dr. G. H. Massiha

(Submitter)

Department of Industrial Technology

Organization

ABSTRACT PAGE

Title: Enhancing Industrial Manufacturing Technology Laboratory Using 3D Printers

Date: 07/10/2018

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

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Dept/College: Departments of Industrial Technology, System Technology Program, and Mechanical Engineering in the College of Engineering

Number of Faculty Impacted: 10

Number of Students Impacted: 1200 (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 1200 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

Many students with the Departments of ITEC and MCHE are interested in application of science and engineering and working with equipment that enhance their marketability. Many ITEC and MCHE courses could benefit from the addition of 3D printers in the department. Courses such as ITEC and MCHE 480G (material engineering) is an undergraduate course that master students also take for credit and already have thermoplastics in the curriculum; this would have a seamless integration into the class. Students in 480G course are required to design a project and

parts using the metals in machine shop which could be costly and the machine shop is not available at all time due to scheduling conflict. With a 3D printer a part could be made in thermoplastic and would cost less than the one from metal in less time. 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 ITEC 207/370; 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 few years, the printers available to the consumer today are better than the printers only available to major industry just a few years ago. The price for a high-end printer can be less than \$2,000.00 per unit and the price for the filament is around \$30.00 per filament. 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 printer.

Impact on Student Body

This initiative will impact students in the following ways:

1. Addition of two 3D printer systems help large 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 about 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 (Dr. Massiha) 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.

Budget Category Descriptions



Quote: 1628877000018501333

Quote Date:	07/09/2018 03:04 PM
Valid Until:	12/31/2018
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 Andrew Ortman	Carrier UPS	Shipping From
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Model #	Description	Part number	QTY	List Price (\$)	Discount	TOTAL
3D45-01	3D45-01 DIGILAB 3D Printer,	F0133D45AA	1	\$1,799.00	\$0.00	\$1,799.00
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 **\$2,338.80**

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

TAX	\$0.00
OTHER	\$0.00
TOTAL	\$2,338.80

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. 2 Printer 3D	\$4,680	\$0	\$0	\$0	\$0
2. 2 PCs	\$4,000	\$0	\$0	\$0	\$0
3. Supplies	\$0	\$0	\$0	\$0	\$0
TOTAL:	\$8,680	\$0	\$0	\$0	\$0
