

Engineering Student Technology Committee

<http://www.engr.colostate.edu/ESTC>

College of Engineering
Colorado State University

1. Title of Proposal: Support for Student Wages and Other Needs of the 3D Printing Lab

2. Proposal Participants:

Primary Contact for Proposal

Name: David Prawel _____ E-Mail: david.prawel@colostate.edu _____

Department/Major: Mechanical Engineering _____

Check One: Faculty Staff Student

Additional proposal participants

Name: Travis Bailey _____ E-Mail: travis.bailey@colostate.edu _____

Department/Major: Chemical & Biological Engineering _____

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Additional proposal participants

Name: Chandra Chandrasekar _____ E-Mail: chandra@engr.colostate.edu _____

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Check One: Faculty Staff Student

Additional proposal participants

Name: Stu Tobet _____ E-Mail: stu.tobet@colostate.edu _____

Department/Major: Biomedical Engineering _____

Check One: Faculty Staff Student

Additional proposal participants

Name: Sue James _____ E-Mail: sue.james@colostate.edu _____

Department/Major: Mechanical Engineering _____

Check One: Faculty Staff Student

3. Proposal Abstract (limit to 100 words):

The Idea-2-Product 3D printing lab supports hundreds of students from CSU's College of Engineering. Our mission is educating students about this important new technology and empowering entrepreneurial spirit. This requires well-trained, skilled student staff, and well-maintained equipment. Students from the College of Engineering represent about 70% of the

users of the lab and all but one of the student hourly staff members. This proposal requests funding for a portion of our student hourly wages, new printers to replace those which are beyond their service life, security improvements for the lab, and to replenish our 3D printing material supply.

4. Proposal Budget

List of items to purchase and cost of each

Student Wages		\$ 28,700	<i>annual</i>		
***note: includes time to assemble 3D printers as required					
Other Requests					
Rep-rap printer material		\$2,400			
Tools		\$500			
Objet printer material		\$1,500			
2 replacement 3D printers		\$3,500			
Prox Door Scanners		\$4,000			
Subtotal Other		\$11,900			
TOTAL REQUEST		\$40,600			
Matching Funds/In-Kind Contributions					
CAMT		\$5,000			
Rotary Club		\$2,000			
Moravan Foundation		\$3,000			
student users		\$1,000	<i>(purchase own material)</i>		
TOTAL		\$11,000			
NET Request to ESTC		\$29,600			
		73%	ESTC portion of total request		

5. Full description of proposal:

Funding Request

Our 3D printing lab supports hundreds of engineering students and their projects each semester, each requiring support for at least their first few visits. College of Engineering (All Departments) represent approximately 70% of these students. I refer to my additional proposal participants, from other CoE departments to highlight the broad level of intra-departmental support we enjoy.

Student Hourly salary: To accomplish this mission, and minimize waste and cost, we maintain a trained and skilled student hourly staff ready to help them. We are fortunate to be able to hire CSU engineering students for our staff and teach them the required skills, over a relatively lengthy period. Such experience appears very well on their resumes, and they learn numerous associated skills that are highly valued in industry, such as customer service and management, project planning and management, and running a small business. In addition, our student staff helps maintain and build our 3D printing equipment. But we can only count on their service for

minimal hours/week due to academic commitments. Likewise, we have to accept relatively high turnover as our students graduate or leave the lab, and thus have to hire more staff for fewer hours and accept the inherent management and logistical challenges. In addition, we would like to increase the hours our lab is open for our student users. We can accomplish this by hiring more students and with card-scan technology for the lab doors, which would enable us to let authorized students use the lab whenever they want. This proposal requests funding for approximately 70% of our student hourly wages for the remainder of the fiscal year.

Extended Lab Hours: For students who have taken the appropriate printer training and are certified by the lab to access the printers, the lab must be able to work around the academic schedule of the students. I am requesting the necessary funds for two proximity door scanners to improve student access to the lab. This solution will also increase security of the lab.

Supplies: I am requesting support for other items essential to our lab, specifically primarily consumables. I request money for FDM printing filament. Student users of our lab purchase their own plastic filament for printing and we require that they purchase it from us so we can maintain a high quality level of material that our printers use (as we have to keep our printers running). Due to our current low level of funding, we have been forced to allow our inventories to run very low. This increases the odds that as student will not be able to purchase the exact material they wish to use, and sometimes causes delays while they wait for us to receive their ideal material.

Maintain/replace old printers: I also request funds necessary buy replacement parts and tools for repair/up-keep of some printers and the building of new printers. The tools and parts necessary for such repairs will optimize the time that the printers are in good working order.

I am also requesting funds to pay for a one year warranty extension for our best 3d printer, the Objet 30 Pro, purchased with CFT funds in January, 2013. Our current warranty expired in January but we currently lack the funds to renew it. A need for repair could come at any time, and if out of warranty would be more expensive than under warranty. I am also requesting additional material for our Objet printer. As with our FDM printers, our current inventory of Objet material is extremely low. We can conceive of many projects that could arise for which we would lack available material to complete the project.

I am also requesting funds to replace 2 of our oldest and most worn 3D printers. We run many hundreds of projects on each of our printers, and they wear like any piece of equipment. We perform selective upgrades to certain parts, but in some cases, as with the 2 we have identified, the printers needs to be taken out of service and replaced. We make these printers ourselves, so cost is minimal, and provide a prime opportunity to train our student staff.