UNIVERSITY OF LOUISIANA AT LAFAYETTE

STEP Committee

Technology Fee Application

Proposal for the Digital Fabrication Lab Computer/Software Enhancement Grant
Title

Chad Aldridge **COA Director Fabrication Facilities** **and Adam Feld** **Assistant Professor of Industrial Design**
Name of Submitter
(Faculty or Staff Only)

College of the Arts		
Organization		
Title:	Proposal for the Digital Fabrication Lab Computer/Software Enhancement Grant	Date:	7/15/2019
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ABSTRACT (250 words or less):

In the fall of 2018, the College of the Arts (COA) opened the Digital Fabrication Lab. This lab, located within Fletcher Hall, houses the 3D printers and laser cutting machines and is run in conjunction with other COA facilities, namely, the wood and metal shops. Currently the equipment (laser cutters and 3D printers) has been updated to current industry standards but the computers that run these machines as well as software to program to these machines have not causing difficulty for students and faculty with translating data and preparing files it for each machine. As computers age, less software is compatible requiring "work-a-rounds" which increases the time needed to learn and run each machine. These "work-a-rounds" need to be developed by the staff and faculty, which requires time out of their ability to teach as well as causes confusion for students. The COA has the philosophy that lab equipment (machines are computers) is student-run which better prepares them for careers after university. Students are trained in proper and safe operation of the equipment as well as the necessary computer design and modeling skills. If the students are not working with current computers or software, they have the potential to be less prepared for the professional environment. The computers and software, requested in this proposal, will enhance 3D modeling and prototyping within the College of the Arts. The new upgrades will compliment the traditional machines as well as expand the role of our digital resources.

Purpose of Grant and Impact to Student Body as a Whole
The purpose of this grant request is to enhance and improve the current computer and software capabilities within the Digital Fabrication Lab in the College of the Arts.

The goals of this request are:
1.) The current computers used in the lab are 8 years old and upgrading computers and software will extend the service life of our existing equipment as well as have operating systems with which students are familiar.

2.) The College of the Arts has four accredited degree programs that will utilize this equipment in their professional training. Upgrading will give the students and faculty, working in the Digital Fabrication Lab, an environment that has current equipment and software consistent with that utilized in standard industry applications found in commercial architectural, design and prototyping studios, other professions trained within the COA.

3.) To provide the final processes needed for the students to build scale, true to material prototypes, working models and production quality fabricated examples of their work. Knowledge of this technology is a great asset to all professional artists and designers.

3a. Impact on the Student Body

The facilities and instruction within the Digital Fabrication Lab is currently available to approximately 800 students within the School of Architecture and Design (this includes majors in Architecture, Industrial Design and Interior Design), the Department of Visual Arts (this includes students in the concentrations of Metalwork and Jewelry, Ceramics, Sculpture, Printmaking, Photography, Graphic Design, Computer Animation and Media Arts), and the students in Art Education, as well as Theatre and Performing Arts.

The Digital Fabrication Lab is unique among university Art/Design facilities. The Lab is a resource that is utilized by the School of Architecture and Design for the formal instruction of classes as well as a resource for all students in the College. This open access philosophy is unique and provides students the opportunity to work formally and informally in multiple materials, thus opening up an array possibilities for safe, supervised and comprehensive exploration.

Digital Fabrication has the potential to increase collaboration within the COA. For example, in the spring of 2018, the Industrial Design program partnered with Sculpture as well as Metals and Jewelry programs to develop a collaborative project for the 2018 Artech Fusion. In this project, students from Industrial Design partnered with students from Visual Arts to combine 3D printing and investment casting to produce a sculptural piece displayed for the event. Because of this collaboration, students were able to utilize all of the COA facilities such as, the foundry, the metal shop, the wood shop, and the 3D printers. New computers and software can encourage more students to utilize the lab thus promoting increased opportunities for collaboration.

Lastly, the equipment, requested in this proposal, will provide departments within the College of the Arts an additional recruiting advantage over other schools in the state and region. Top facilities are an important factor in attracting and keeping talented students as well as providing and maintaining consistency in the quality of work produced. An understanding and incorporation of digital technology is significant to contemporary art and design.

3b. Lifetime of Enhancement

   i.   The computers can be projected to last for 5 years of use with scheduled/semester maintenance and free updates

   ii.   Rhinoceros 6 can be projected to last for more than 5 years due it being a one-time purchase and as long as they update the version, the seats will have access to the newer versions.

   iii.   RhinoCam 2019 can be projected to last for more than 5 years. The software is written to work with Rhino 6 and as long as that software is being used, it will work. In addition, any updates for RhinoCam 2019 will be free.

   iv.   Adobe Creative Cloud will be a single year license

Expected Service Life

- Dell Optiplex 7060 MT Desktop Computers have an expected life of 5 years

- Rhinoceros 6 has an expected life of 5+ years
- RhinoCam 2019 has an expected life of 5+ years
- Adobe Creative Cloud One year license

c. Person(s) responsible for

   i. Implementation and Installation

Director Chad Aldridge will coordinate purchasing and installation. Mr. Aldridge has an MFA in Artisanry from the University of Massachusetts – Dartmouth and has been Fabrication Facilities Director here at UL for 14 years. The requested equipment in this proposal will be ordered, installed and ready for student use during the spring semester of 2020.

Dell Optiplex 7060 MT Desktop Computers

   ii. Maintenance

      1. Dell Optiplex 7060 MT Desktop Computers

         i. The computers will require digital updates and will be supervised by Chad Aldridge and Jason Bienvenue as well as hired student workers for the lab.

      2. Rhinoceros 6, RhinoCam 2019, and Adobe Creative Cloud

         i. The software will require digital updates and will be supervised by Chad Aldridge and Jason Bienvenue as well as hired student workers for the lab.

   iii. Operation

Because this is a C.O.A. Lab, it will be run by: Chad Aldridge. The lab also has an advisory board with faculty from other COA majors: Prof. Adam Feld from Industrial Design, Prof. Dan DiCaprio from Metals and Jewelry, Prof. Emily Stergar from Sculpture, Prof. Corey Saft from Architecture, and Prof. Jeff Lush from Graphic Design. In addition, Jason Beinvienue will be sharing his workload with the Digital Fabrication Lab.

   iv. Training (with qualifications)

There is a current training program, including printed manuals, for the current laser cutter and 3D printers. Prof. Adam Feld currently conducts all training. This training program is in the process of being updated to work with facility as well as incorporate processes from different departments within the C.O.A. Since the computers are in the lab and are used to run the machines, they are part of the training.

      1. The current training procedure is as follows.

         a) Students are given a lecture on the use of the machine. Accompanying the lecture is a manual on the use of the specific software as well as use of the machine.

         b) Students are given an in person demonstration.

         c) Students take a certification test conducted by the professor.

         d) Students are required to run the machine with a partner until the process is mastered, usually less than 5 times.

         e) After several operations of the machine, the student is considered fully certified and will receive a card, which

allows them to use the machine during regular hours offered each week.

d. The narrative of each proposal must include the purpose and justification for each of the items listed in the Budget Proposal.

    i. **Dell Optiplex 7060 MT Desktop Computers** - These computers, having 32 Gb of RAM, a 512 GB solid state hard drive, and six Intel Core i7 processors will be able to accommodate all of the software needed for the Digital Fabrication Lab and machines. In addition, the computers come standard with Windows 10, which will be the operating system for years to come. That means that the computers will be able to have current and future software and be fast enough and stable enough to run it.

    ii. **Rhinoceros 6**, This N.U.R.B.S. three-dimensional modeler used in connection to the 3D printers, Laser Cutters, as well as the 3-Axis and 2.5-Axis Mills. Rhino6 is used heavily by the School of Architecture and Design (SoAD). Other majors do not heavily use it, however, the software is compatible with the largest amount of three-dimensional files. This means a project can be "built" in an array of different software applications and can be opened by Rhino 6 in the lab. In addition, many of the student workers come form the SoAD and with those students being heavy Rhino users, they have a greater ability to assist students from all majors. This is a one-time cost and can be continually updated.

    iii. **RhinoCam 2019**, This software is a plug in for Rhino6. It is used to program three-dimensional files for the 3-Axis CNC Mill as well as the 2.5-Axis CNC table router. Currently the lack of this software has reduce the availability of the two machines as well as created a burden for the two faculty who are able to run the machines. The Industrial Design third year studio has a component where students use the software on the professors computer but that is the only copy and requires lots of time. There is already a user manual for each machine and if there were copies of the software in the lab, more students can be educated on the proper programming and use of the machines. This is a one-time cost and can be continually updated.

    iv. **Adobe Creative Cloud**, This software package is arguably the most overarching and heavily used by all of the majors. The creative cloud is a software suite that contains multiple applications that work with the laser cutter.

Budget Proposal

1. **Equipment** $ **6,250.00**   **5 - Dell Optiplex 7060 MT Desktop Computers**

2. **Software** $ **975.00**   **5 - Seats of Rhinoceros 6, one time cost**
                         $ **3,000.00**   **2 - Seats of RhinoCam 2019, one time cost**
                         $ **1194.40**   **5 - Seats of Adobe Creative Cloud, for One year**

3. **Supplies** $ 0.00

4. **Maintenance** $ 0.00

5. **Personnel** $ 0.00

6. <u>**Other**</u> $ <u>0.00</u>

TOTAL: $ 11,419.40

1. Include any additional information relevant to your application.
   N/A

2. Discuss all previous funded STEP projects (if any).
   Mr. Aldridge received a STEP Grant in the Spring of 2006.
   Professor Adam Feld received a STEP Grant in the Fall of 2018.

<u>ONE ELECTRONIC COPY (Microsoft Word or Adobe PDF) OF PROPOSAL SHOULD BE EMAILED TO</u> <u>stepproposal@louisiana.edu</u> <u>BY DEADLINE DATE.</u>

<u>For additional submission instructions and deadlines, please visit http://cio.louisiana.edu/step-process</u>

<u>NO HARD COPY SUBMISSIONS WILL BE ACCEPTED!</u>