



Student Technology Fee Committee (STFC) Annual Allocation Request

ALLOCATION REQUEST DATE INFORMATION

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ALLOCATION REQUEST TITLE/DESCRIPTION

Request Title: Laser Cutter

Request Description: A request to fund a refurbished Universal Laser Systems VLS2.30 for the new Makerspace in the Learning Commons

ALLOCATION REQUEST INFORMATION

Department Name: Library

Request Code: 21A0297

Contact Names: Tim Bostelle

UW Tacoma Affiliation: Staff

UWT Email Address: tbostell@uw.edu

Phone Number: 2536924650

Title of Request: Laser Cutter for the Makerspace

Type of Request: One Time

Department Head Approval: Department Head: Justin Wadland

Annual Request Information

1. Background: Review and discuss the context of the proposed technology in detail. Explain how this proposal will be used in conjunction with an original proposal or existing technology. If applicable, how is the current technology disabled or inadequate?

In 2018, the STFC funded a 3D printer for self-directed student use in the UW Tacoma Library and so far it has been a huge success! Dozens of students have been trained on how to print their own jobs and have explored 3D design not just for fun but also for coursework.

One student spent several weeks refining a scan of motor neurons for her capstone project. She then 3D printed the final objects and created a stunning presentation.

<https://sites.uw.edu/uwtacomalibrary/2020/01/08/students-learn-3d-printing-in-the-library/>

And even during the Coronavirus lockdown, Library staff were able to accommodate (through contactless pickup) student 3D printing for John Finke's TBIOMD 410 class where students integrated 3D printed objects into their capstone projects.

The campus is renovating the Snoqualmie and Tioga Library buildings in order to create a new Learning Commons complex which will co-locate the Center for Equity and Inclusion (CE&I) and the Teaching and Learning Center (TLC) with the Library. And one of the new services that we will be able to offer is access to a custom designed Makerspace.

Located in the Snoqualmie building, adjacent to the CE&I and the Library IT help desk, we see this new Makerspace as a drop-in facility for students to explore and use maker technology and build community with like-minded makers.

We are eager to design an inclusive Makerspace which appeals to a variety of makers, from folks who are interested in fabric arts like sewing and costume making to students who want to use the laser cutter to etch and cut a robot body. We see this space as a campus-wide resource which appeals to all students from the arts to the sciences.

Technology that we would like to see included in the new Makerspace includes:

- 1. The 3D printer that STFC already funded**
- 2. Raspberry Pi kits which the STFC already funded**
- 3. A vinyl cutter which the Library funded**
- 4. A tool library which the Library will fund and make available to campus**
- 5. A Universal Laser Systems VLS2.3 laser cutter/engraver**
- 6. A Brother LB7000 Sewing and Embroidery Machine**
- 7. A poster printer**

This proposal is for the Universal Laser System laser cutter, computer and supplies, only. There will be additional proposals for the sewing machine and poster printer.

The library would like to expand maker capabilities for students on campus to include a Universal Laser Systems VLS2.3 laser cutter with attached BOFA filtration unit. Drawing on the 3D self-directed student use model, the Library will train and supervise student use of this device.

In addition, these technologies could be used together to create some pretty incredible projects. The Library offers instruction on 3D printing and other maker technologies, including the Raspberry Pi. One could create a robot using the Raspberry Pi and then laser cut the body for that robot. Or students could create some incredible art projects and cut them out and etch them in literally just a few minutes.

2. Benefit to Students: Discuss how students have benefited from the original proposal, if applicable. How will additional funding of the technology benefit students? If this was an unforeseen technology need, discuss how students will benefit from this new proposal and why the need cannot wait for annual allocation funding.

The laser cutter teaches students rapid prototyping, 3D design, and allows students from any campus unit to quickly and easily engrave, cut out parts to assemble into 3 dimensional objects, copy drawings, and cut them out to make nearly any object they can think of.

**To give some idea of the nearly limitless possibilities here is a tutorial on how to make topographical maps:
<https://makezine.com/2016/01/06/laser-cut-topographical-map/>**

A desktop laser cutter will add fun, new technology to campus while also supporting the campus goals of learning and modern demands for people to be able to design and make things from scratch. It can foster creativity and learning simultaneously.

It is particularly notable that this technology will have appeal to STEM and art/humanities focused students, and perhaps lead to interdisciplinary collaboration.

3. Access: Describe who will be using or will have access to the resources being proposed. If the access has changed since an original proposal, be sure to note that here. In addition, all previous requestors, please provide historic data highlighting the usage and accessibility of technology. All new requestors, please provide user need data.

The laser cutter is intended for UW Tacoma student use only. As described above, 37 students so far have completed the safety course for 3D printing and are able to print on their own. Those students have kept the printer busy for 58 days 22 hours and 10 minutes of total print time and used 1399.77 meters of filament so far.

Of those students, four of them have enthusiastically endorsed this new laser cutter program.

The Library will limit access to the Laser cutter in the same way that we have done with the 3D printer: students will be required to complete a safety workshop prior to being authorized to use the machine. In addition, the Library will require students to make an appointment to use the machine and meet with a staff member prior to their appointment to make sure that they are using authorized materials only.

4. **Timeline:** Provide a timeline showing how the proposed technology can be completed during the requested period. Describe when you would like to see this proposal initiated and completed, and why.

The Library will purchase the laser cutter as soon as funds are available. Over the summer, the Library will design an instruction course and safety procedures for using the laser cutter and by fall quarter will begin teaching students how to use the laser cutter.

5. **Resources/Budget:** Discuss available financial, personnel and space resources devoted to the proposed technology and level of support. Proposal must detail all the items/resources requested to be purchased. This includes filling out the Item Detail in next section.

The UW Tacoma is renovating the Snoqualmie building and the Tioga Library building in order to create a new, technology rich, space for students. This new space, called the Learning Commons, will be a shared space between the Center for Equity and Inclusion, the Library and the Teaching and Learning Center.

The new Learning Commons space will have a true collaboration between the Center for Equity and Inclusion, the Library, and the Teaching and Learning Center. Each of these units will have a front desk which they will staff and who can provide front-line support for equipment in the complex.

In addition, the Library staffs an IT Help desk in the Learning Commons. The students and staff at this desk provide support for all of the student equipment in the complex. And the Head of Library IT works with UW Tacoma Campus IT and all collocated units to help provide more advanced support and work to ensure campus infrastructure is secure and in good working condition.

The Library is also asking the STFC to fund a student employee who will provide support for this device in a separate proposal. The two proposals are not contingent upon one another. This proposal is only for the Laser Cutter, a computer to run the cutting software, and a small budget for supplies.

Computer: OptiPlex 7080 Small Form Factor with monitor: \$1,321

Supplies: a small supply of wood for testing and demonstrations along with a small budget to pay for replacements parts such as filters (for the air cleaner): \$500

- 1 VLS2.30DT 12" x 16" Laser System with Coaxial Air Assist and 2.0" Focusing Lens (Remanufactured 2 Year Warranty) - \$10,000.00
- 1 30-watt ROHS Compliant CO2 Laser Source \$5,500.00 value, zero cost
- 1 12" x 16" Downdraft Cutting Table \$420.00, \$0.00 cost
- 1 Back Sweep for VLS2.30/3.50 \$230.00, \$0.00 cost
- 1 BOFA AD 350 Fume Extractor (New) \$2,039.00, \$0.00 cost
- 1 Onsite Installation and Operator Training up to 8 hours \$1,250.00, \$0.00 cost

Funding Request Items

Item	QTY	Cost Per Item	Shipping Fee	Tax Per Item	Subtotal
OptiPlex 7080 Small Form Factor plus monitor	1	\$1,321.00	\$0.00	\$135.00	\$1,456.00
Supplies budget	1	\$450.00	\$0.00	\$50.00	\$500.00
VLS2.30DT 12" x 16" Laser System with Coaxial Air Assist and 2.0" Focusing Lens (Remanufactured 2 Year Warranty)	1	\$10,000.00	\$0.00	\$1,020.00	\$11,020.00
OVERALL TOTAL:					\$12,976.00

