



## STUDENT SUSTAINABILITY COMMITTEE

### Funding Application – Step I

#### Funding Criteria

##### A. General Rules

1. Students, faculty, and staff are encouraged to submit requests for funding. Student-led projects require a faculty or staff sponsor in order to have funds awarded.
2. Funding can only go to university-affiliated projects from students, faculty, staff, and departments.
3. All SSC projects must make a substantial impact on students. All SSC funding is 100% from student green fees, so the projects funded by the students must benefit them.

##### B. Things SSC Can Fund, On A Case-By-Case Basis

1. SSC can fund feasibility studies and design work; however, it must work toward ultimately addressing a sustainability need on campus.
2. SSC can fund staff positions that are related to improving campus sustainability. Strong preference will be given to proposals receiving matching funding from departments and/or plans for maintaining continuity of the position after the end of the initial grant.
3. SSC can fund outreach events with a central theme of sustainability, provided their primary audience is the general campus community.
4. SSC discourages requests for food and prizes but will consider proposals on a case by case basis.
5. SSC can fund repairs and improvements to existing building systems as long as it works toward the goal of improving campus sustainability.
6. SSC can provide departments with loans for projects with a distinct payback. Loans will require a separate memorandum of understanding between SSC and departmental leadership pledging to repay the award in full and detailing the payback plan.

##### C. Things SSC Will Not Fund:

1. SSC will not fund projects with a primary end goal of generating revenue for non-University entities.
2. SSC will not fund personal lodging, food, beverage, and other travel expenses.
3. SSC will not fund any travel expenses.
4. SSC will not fund tuition or other forms of personal financial assistance.

#### Instructions

Submit this completed application and one map, graphic, or picture to [Sustainability-Committee@Illinois.edu](mailto:Sustainability-Committee@Illinois.edu). Please adhere to the session word counts. The committee holds the right to decline applications over the designated word counts. If you have any questions about the application process, please contact the Student Sustainability Committee Coordinator at [sustainability-committee@illinois.edu](mailto:sustainability-committee@illinois.edu).

**Project Name:****Total Amount Requested from SSC:****Primary Project Leader Name & Email:****Project Abstract:** In less than 100 words, briefly describe your project.

This project seeks to introduce innovative sustainable methods and materials to the 3D printing processes used on campus. 3D printing is now a ubiquitous tool, becoming commonplace in student entrepreneurial and design-focused work for the production of prototypes and design iterations. This project will salvage and recycle waste material already produced on campus through a closed-loop zero-waste system to supplant the use of plastic in these processes. Workshops and trained lab technicians will familiarize the student body with these techniques, instilling in them sustainable sensibilities surrounding fabrication, and enabling their own innovation through the use of open-source kits.

	Education	Energy	Food & Waste	Land & Water	Transportation
<b>Project Category</b>			Food and waste		

**Project Team Member List** (student projects must include their faculty/staff advisor's information)

Name	RSO/Department	Email Address
Efrain Araujo		earauj2@illinois.edu
Andrew Foster		ajfoste2@illinois.edu
Dipayan Ghosh		dipayan3@illinois.edu

Questions	Yes	No
Is this a student-led project?	X	
If applicable, have you received approval from Facilities & Services and/or site manager?	N/A	
Do you have a plan for ongoing funding beyond SSC? (SSC cannot guarantee ongoing financial support)	X	
Beyond SSC, do you have sources contributing funding or support (ex. staff time, external grants, etc.) to this project?	X	
Have you applied for SSC funding previously?		X

**Project Timeline**

SSC funding agreements remain active for two years. Please list your project's timeline and/or milestones.

<b>March 2020</b>	- <b>Material and Binder Testing</b>
<b>April - May 2020</b>	- <b>Prototype testing with different Binders and Material on Zprint</b>
<b>Summer 2020</b>	- <b>Engage Community with Demonstration and Workshops</b>
<b>Fall 2020</b>	- <b>Exhibition and Promotion</b>

**Post Fall Break - Workshop and Training for Volunteers, development of Lab Techs**

**Spring 2021 - Offer services for Printing / Develop ecosystem for further research**

### **Project Description**

In 250 words or less, describe your project. What does your project hope to accomplish? What are your project's deliverables? Bullet points welcome.

We are looking at a closed-loop zero-waste additive manufacturing for the college of fine and applied arts. Our project aims at taking advantage of the workshop waste that is produced in the different labs in the College of FAA and apply that to additive manufacturing. We are currently collaborating with Professor Brakke on an old Zprinter 310plus with powder-based manufacturing. The goal is to reuse the waste generated from the workshops for a medium like the Zprinter. The 310 plus is a 12-year-old machine developed by MIT for prototyping powder-based printing but the machine is relatively fragile and prone to frequent breakdowns. We aim to develop a platform from open source DIY kits to scale up the process. With the workshop and community training, we hope to encourage students to develop their own platforms and take advantage of upcycling instead of the plastic-based printer. This project aligns with the comprehensive zero waste goal of the university, partnering with the community fabrication lab can raise awareness among students as well as the city. Some of us will be on campus looking at the project throughout the summer and the following semester. One graduate student on the team has a year of experience in this project and will be leaving campus next year. Another graduate student will take over the project when the first leaves. Finally, an undergraduate student will participate in the project and will continue to advance the project during the pursuit of a Master's degree.

### **Environmental Impact**

In 200 words or less, how does your project increase environmental stewardship at UIUC? If applicable, what is the carbon, water, waste, and/or energy savings? Does your project relate to the iCAP? Bullet points welcome.

The waste being produced in our fabrication shops in the College of Fine + Applied Arts is not being properly utilized, rather than just sending these potential materials to landfills we propose recycling them into components for additive manufacturing. Within one week, one of our woodshops can produce roughly 30 cubic feet of sawdust. By converting this waste into components for different mixtures or powders we would turn them from waste into new fabrication materials. Instead of relying on plastics for fabrication methods like 3D printing we could properly utilize the sawdust that the woodshop already produces as 3D printing materials, producing zero waste when 3D printing. We have been collaborating with Professor Brakke, who has experience with additive manufacturing, as well as community groups like the Fablab when conducting our research until now.

### **Student Impact**

In 200 words or less, how will this project benefit students? How will students be involved with this project? What educational components are in your project? Bullet points welcome.

1. The rollout of this project will involve a number of workshops offered to the student body, introducing students from an array of disciplines to the use of these innovative 3D printing materials and methods. This process will strengthen the link for future students between additive manufacturing and principles of sustainability, reinforcing the direct connection between fabrication techniques and a consciousness of the need for sustainable practices.

2. The offering of services to students by staffed lab technicians will further assist the movement towards a more sustainably-minded fabrication process, eliminating fears surrounding unfamiliar new techniques and materials. Altogether, this project will normalize sustainable practices in fabrication and will help a new generation of makers to fully embrace sustainability-conscious production principles.
3. Student exposure to these techniques and sensibilities will also encourage an individual departure from traditional, unsustainable 3D printing techniques. With access to an array of open-source kits, students will follow the lead of the model of fabrication demonstrated by the workshops and lab services to innovate individually. This will create an environment that incubates innovation in sustainable additive manufacturing, catalyzing more and more student advancement in the field of sustainably-minded fabrication practices.

Potential mixtures and results from this project



Printing with Sawdust



Printing with Ceramic Mix



Printing with Sugar



Printing with Sand