



**LSU** | College of Art + Design

## **Generative Fabrication**

LA 4008 & LA 7051

**Brendan Harmon**

baharmon@lsu.edu

Fall 2022 Design 304.

Monday, Wednesday, & Friday

1:30pm–5:20pm.

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## Course Description

In this studio, you will design and build a living wall for LSU's Hill Farm. The Hill Farm – an organic farm with orchards and greenhouses for teaching horticulture – has commissioned us to design and build a green wall with generous funding by the Student Sustainability Fund. This studio will explore ecological design principles, computational design strategies, digital fabrication techniques, and the use of ceramics as a building material. In this studio you will learn how to use Grasshopper to design complex structures composed of non-standard modules. You will learn how to fabricate unique components using computer numerical control (CNC) machining and clay 3D printing. As a design-build studio with a tight schedule, this will be a team project entailing group work, the design process will be streamlined, and much of the course will be spent fabricating modules of the green wall and preparing construction documents. For those who wish to see the project through and earn a salary as well as academic credit, an elective will be offered in the spring semester to install and plant the wall on site at the Hill Farm.

## Topics

Prototyping		Fabrication		Documentation	
1	Visual Programming	6	Module Design	11	Firing & Glazing
2	3D Printed Ceramics	7	Mold Design	12	3D Scanning
3	Parametric Wall Design	8	Mold Fabrication	13	Documentation I
4	Subtractive Manufacturing	9	Casting	14	Documentation II
5	Slip Casting	10	Assembly	15	Exhibition

## Projects

**Module Prototype** Build a full-scale prototype of a wall module and 3D print a scale model of the wall. Assemble the prototypes, install plants, and document their growth.

**Module Fabrication** Design and fabricate ceramic modules for the wall assembly using CNC machining and slip casting.

**Documentation** Prepare construction documents, posters, and an exhibition for the living wall. Documentation should include construction drawings, 3D scans, 3D renderings, plant lists, materials, schedules, and cost estimates.

**Course Portfolio** Collect your work in a course portfolio for the school's accreditation archive.

**Construction** The living wall will be built at the LSU Hill Farm in Spring 2023. To participate and earn a salary, enroll in our Design & Build elective.

## Grading

Module Prototype	30%	Documentation	35%
Module Fabrication	30%	Course Portfolio	5%

## Community

Discord | <https://discord.gg/eYKrsahQtW>

## Software

Rhinoceros | <https://www.rhino3d.com/> RhinoCAM | <https://mecsoft.com/>  
 Thea Render | <https://www.thearender.com/> Scene | <https://www.faro.com/>

## Equipment

FabLab | 3D PotterBot & CNC Router  
 ART 334 | 3D PotterBot Micro 9 & Kiln

## Readings

## Policies

**Accreditation Expectations** As an accredited Landscape Architecture program LSU's Robert Reich School of Landscape Architecture (RRSLA) must meet the accreditation requirements as stated by the Landscape Architectural Accreditation Board (LAAB) to ensure RRSLA is meeting the expectations of the field. The LAAB requires programs to provide digital copies of student work as part of this process. Students in this course will be expected to comply with the following requirements as 5% of their course grade: (1) Students must provide a course portfolio with work samples specified by the instructor before the end of the grading period. (2) Each student's course portfolio must be saved as a single, high resolution PDF file with multiple pages. (3) Files must follow the naming convention established by the school: department-coursenumber-semester-year-username.pdf. Example: LA7051-F2022-baharmon.pdf.

**Time Commitment Expectations** LSU's general policy states that for each credit hour, you – the student – should plan to spend at least two hours working on course related activities outside of class. Since this course is for six credit hours, you should expect to spend a minimum of twelve hours outside of class each week working on assignments for this course. For more information see: <http://catalog.lsu.edu/content.php?catoid=12&navoid=822>.

**LSU student code of conduct** The LSU student code of conduct explains student rights, excused absences, and what is expected of student behavior. Students are expected to understand this code: <http://students.lsu.edu/saa/students/code>.

**Disability Code** The University is committed to making reasonable efforts to assist individuals with disabilities in their efforts to avail themselves of services and programs offered by the University. To this end, Louisiana State University will provide reasonable accommodations for persons with documented qualifying disabilities. If you have a disability and feel you need accommodations in this course, you must present a letter to me from Disability Services in 115 Johnston Hall, indicating the existence of a disability and the suggested accommodations.

**Academic Integrity** According to section 10.1 of the LSU Code of Student Conduct, “A student may be charged with Academic Misconduct” for a variety of offenses, including the following: unauthorized copying, collusion, or collaboration; “falsifying” data or citations; “assisting someone in the commission or attempted commission of an offense”; and plagiarism, which is defined in section 10.1.H as a “lack of appropriate citation, or the unacknowledged inclusion of someone else’s words, structure, ideas, or data; failure to identify a source, or the submission of essentially the same work for two assignments without permission of the instructor(s).”

**Plagiarism and Citation Method** Plagiarism is the “lack of appropriate citation, or the unacknowledged inclusion of someone else’s words, structure, ideas, or data; failure to identify a source, or the submission of essentially the same work for two assignments without permission of the instructor(s)” (Sec. 10.1.H of the LSU Code of Student Conduct). As a student at LSU, it is your responsibility to refrain from plagiarizing the academic property of another and to utilize appropriate citation method for all coursework. In this class, it is recommended that you use Chicago Style author-date citations. Ignorance of the citation method is not an excuse for academic misconduct.