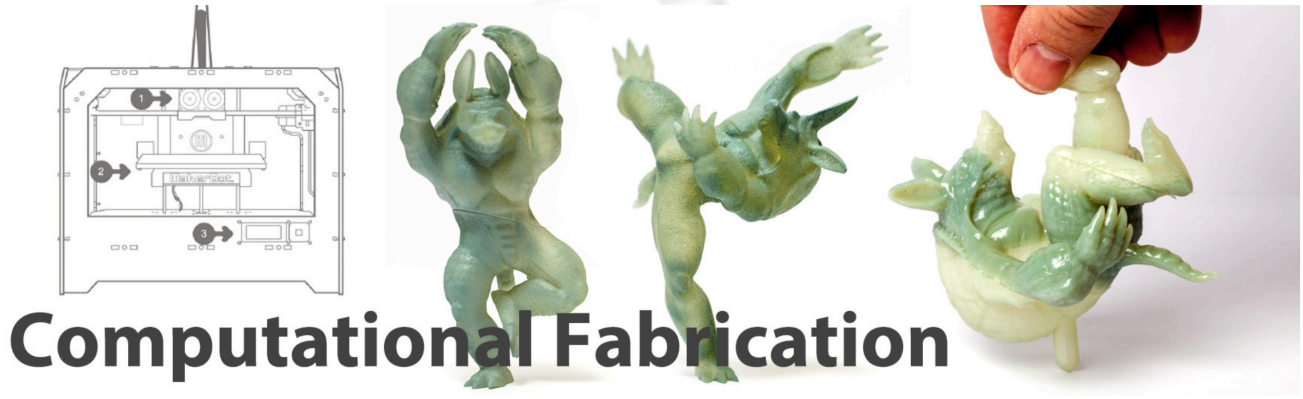
Computational Fabrication

DESCRIPTION



In this advanced level seminar course, you'll learn about 3D printing technology and fundamental computational tools for creating physical prototypes from geometric models. In reading group style, we will explore the range of applications, such as furniture design, spinning toys, and sculpting. Paper selections will cover cutting-edge research from prominent Computer Graphics conferences including SIGGRAPH, UIST, and Eurographics. The coursework will culminate in a final project. In small teams, projects will be a focused study, involving a computational component and physical prototyping of the final results.

COURSE INFORMATION

Prerequisites: This is an upper-level undergraduate/graduate course and requires the following skills:

- Working knowledge of programming and data structures (CAS CS 112, or equivalent)
- Familiarity with linear algebra (CAS CS 132 or MA 242, or equivalent)
- Recommended: Computer Graphics (CS 480/680, or equivalent)

Logistics:

- Lectures: Tue/Thu 2:00 - 3:15pm / Location: MCS B19
- Labs: Mon 10:10 - 11:00am (Section A2), 11:15 - 12:05pm (Section A3) / Location: CAS B06A
- Instructor: Emily Whiting <whiting@bu.edu> / office hours: Wed 4-5pm in MCS 295A
- TF: Zezhou Sun <micou@bu.edu> / office hours: Mon 5-6pm, Wed 5:30-6:30pm in MCS 204
- Piazza: piazza.com/bu/spring2019/cs581

Special Events:

- (Tentative Date) May 2: Poster Session and Final Presentations

POLICIES

Grading: The main graded work for the course is the design project and reading group. The project is team-based and all team members will receive the same grade on the project deliverables (except for the initial pitch which is individual). It is the responsibility of the group to ensure workload is distributed fairly among team members. There will also be several assignments including programming, class presentations, and other activities. Given the seminar nature of this course, attendance at all class meetings and events is mandatory (unless otherwise noted) and a participation component is included in the final grade. The grade breakdown is as follows:

Design Project (50%)

- Pitch 1%
- Proposal 5%
- Midterm 15%
- Final 29%

Reading Group (25%)

- Paper selection 1%
- Paper Presentation 15%
- Paper Discussions 9%

Assignments (20%)

- Programming assignments 17%
- Mini-assignments (Fabrication in the news, tutorials, lab safety test) 3%

Participation & Attendance (5%)

(Disclaimer: grade breakdown is subject to slight adjustments)

Late Policy: Late work will incur the following penalties: 20% off per day, up to 2 days.

Academic Honesty Policy: Academic honesty is taken very seriously. Cheating, plagiarism and other misconduct may be subject to grading penalties up to failing the course. Students enrolled in the course are responsible for familiarizing themselves with the detailed BU Academic Conduct Code. In particular, plagiarism is defined as follows and applies to all written materials, presentations, and software, including material found online:

> *III.B. Plagiarism: Representing the work of another as one's own. Plagiarism includes but is not limited to the following: copying the answers of another student on an examination, copying or restating the work or ideas of another person or persons in any oral or written work (printed or electronic) without citing the appropriate source, and collaborating with someone else in an academic endeavor without acknowledging his or her contribution. Plagiarism can consist of acts of commission-appropriating the words or ideas of another-or omission failing to acknowledge/document/credit the source or creator of words or ideas (see below for a detailed definition of plagiarism). It also includes colluding with someone else in an academic endeavor without acknowledging his or her contribution, using audio or video footage that comes from another source (including work done by another student) without permission and acknowledgement of that source.*

Collaboration is an integral part of this course for the design project. Students must uphold standards of academic conduct for all materials presented in experimental results and reports, and follow the rules governing teamwork. Violations include but are not limited to:

> *III.C. Misrepresentation or falsification of data presented for surveys, experiments, reports, etc., which includes but is not limited to: citing authors that do not exist; citing interviews that never took place, or field work that was not completed.*

> *III.K. Violation of the rules governing teamwork. Unless the instructor of a course otherwise specifically provides instructions to the contrary, the following rules apply to teamwork: 1. No team member shall intentionally restrict or inhibit another team member's access to team meetings, team work-in-progress, or other team activities without the express authorization of the instructor. 2. All team members shall be held responsible for the content of all teamwork submitted for evaluation as if each team member had individually submitted the entire work product of their team as their own work.*

Religious Observance: Students are permitted to be absent from class, including classes involving examinations, labs, excursions, and other special events, for purposes of religious observance. In-class, take-home and lab assignments, and other work shall be made up in consultation with the student's instructors. More details on BU's religious observance policy are available here.