



digital fabrication Spring '07

Digital Fabrication: How to Make Things 9 units TR 9:00 - 10:20

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We will explore, through a series of short exercises, methods and tools for making things with a variety of new media and tools, potentially including, but not limited to, laser-cutting, folding, and assembling flat materials; molding and casting plastic resins, making mechanical movement, fabric and tensile structures, and embedded electronics. Experience with computer modeling applications (e.g., Rhino, Maya, AutoCAD, Illustrator) is a plus, the course will require, but not teach, skill in using 2D and 3D design software. However, the main prerequisites for this course are enthusiasm, playfulness, and time.

[See student work from Fall 2006 mini-course](#)

See companion course: [Architectural Robotics-07](#)

Grading: 60% weekly assignments (work+portfolio); 30% project; 10% class participation

assignment #1: personal folding cube



Assignment (due Jan 23): Personal folding cube - Due Tuesday January 23

The folding cube toy consists of a larger cube made of eight smaller cubes. Each face of each smaller cube displays a fragment of a picture. The larger cube displays a whole picture on each face. The smaller cubes are hinged so as to fold together in different ways to make a larger cube. A different picture appears on each surface of cube, depending on how the smaller ones are folded together. Your task: using only cut paper (or card stock) and glue or tape, produce a version of this folding cube. Choose images to represent yourself, and print the pictures on the paper before cutting, folding, and assembling the cube. Post photographs of the cube on your Web site as well as instructions and templates for its construction. Bring the cube to class on Tuesday January 23.



assignment #2: container & display

Assignment (due Tuesday Jan 30): Container & Display.

The School of Architecture, in order to attract students to the B.Arch program, is giving away a small gift to every applicant who visits the School during the application period. You have been asked to select a small gift (cost less than \$10) and design an unusual eye-catching cardboard package that will serve as a container or carrying case for the gift as well as a display. You may use only cardboard (single-play or corrugated) and glue to make the container. You may print on or etch the surface as appropriate to showcase the gift.

Post photographs of the container and display on your Web site as well as instructions and templates for its construction. Bring the container and display to class on Tuesday January 30.



assignment #3: a slice-form lamp

Assignment (due Thursday Feb 8): a slice-form lamp

Design and fabricate a lamp, made of whatever material you wish, that consists of planar elements notched and assembled in a crosswise fashion to make a three-dimensional form. (See slice-forms under the resources-interesting stuff page). You may elect to construct a table, standing, sconce, or pendant lamp. Do not use additional hardware (such as screws or brackets) to join the pieces together. You may use whatever method of illumination you prefer: flame, incandescent, fluorescent, or LED lighting.

Post photographs of the lamp and display on your Web site as well as instructions and templates for its construction. Bring the container and display to class on Thursday February 8.

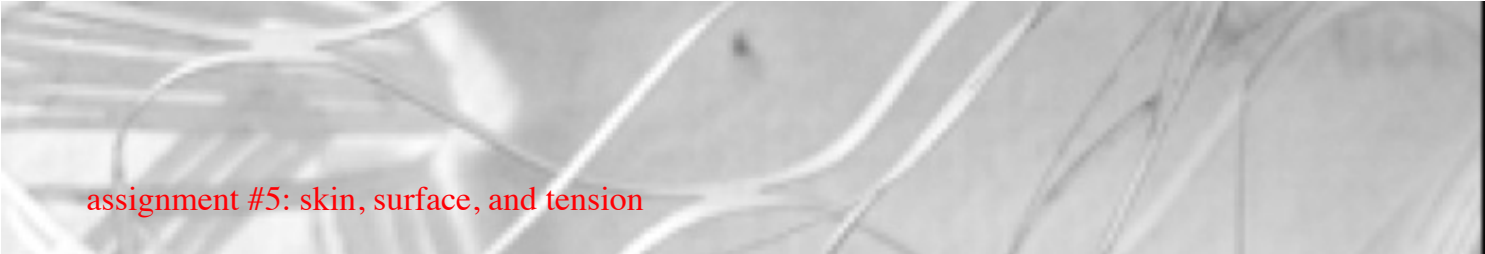
assignment #4: laminated Valentine



Assignment (due Thursday Feb 15): Design and fabricate a Valentine (gift, card, candybox, etc.) made using a laminating process. Any material is OK.

Post photographs of the Valentine and display on your Web site as well as instructions and templates for its construction. Bring the Valentine to class on Thursday February 15.





assignment #5: skin, surface, and tension

Assignment (due Thursday Feb 22): Using a flexible material as a 'skin' or screen (e.g., thin paper, Tyvek, plastic, cloth) construct a form made of surfaces. Use tension members (string, wire, etc.) to anchor or apply force to the surface; cut or perforate the surface material to generate variability in (for example) transparency, texture. You may (but need not) allow the skin to move, as a curtain or temporary tent structure.

Post photographs of the work and display on your Web site as well as instructions and templates for its construction. Bring the work to class on Thursday February 22.



assignment #6: mechanical motion

Assignment (due Thursday, Mar 1): Using any material (but basswood or balsa work well), construct a working mechanical automaton. See for example: [cabaret mechanical theatre](#), [pie exploratorium](#), [flying pig](#), Arthur Ganson's [machines](#). Your automation should include at least two different mechanisms (i.e., a cam and cam follower; a ratchet, etc.). You can find a PDF document about how to build mechanisms [here](#).

Post photographs of the work and display on your Web site as well as instructions and templates for its construction. Bring the work to class on Thursday March 1.