

# Lesson Plan: Laser-Etching Denim

**Ages:** 14-18

**Primary equipment needed:** Laser Cutter

**Originally taught at:** Pratt Institute STEP Program, Future of Fashion course

**Total hours of class time:** 2

## Supplies

Laser cutter(s)	4 flat magnets
Computer(s)	Sponge
Denim - 6" square per student	Bowl of water

## Prep

- Cut 6" square of denim per student
- Do test grids on laser cutter with exact material to be used
- Have a sponge in a bowl of water next to the laser cutter

## Laser presentation + demo (15 minutes)

- Gather around the laser and explain how it works, do a demo
- Presentation

## Project time (90 minutes)

- Everyone makes a design
  - Everyone pick a photo from their camera roll, or draws something to engrave with black marker and takes a photo of the drawing
- Make pairs, each pair is at a computer (Designs are individual, but students will work together to digitize and optimize them)
  - Edit files in photoshop
  - Add it to google drive
- As people finish, pairs come over to start printing
- People who are done or waiting do free crafts
  - Sewing practice
  - Paint with textile paint on aprons
  - Collaborate to make a top on the dress forms with 3D pens

# How To: Laser Etching Images into Denim

## 1. Design file in Photoshop

- Open image
- Use Threshold to make it black and white
- Adjust Threshold settings, as well as Invert, Curves, and Brightness/Contrast, to best capture the image in black and white
- Remember that the black parts will be engraved, and will look lighter, while the transparent parts will actually will be darker (it will look inverted)
- Export as .PNG with your first name as the file name
- Upload to Google Drive

## 2. Laser Software (Glowforge / Xtool)

- Download .png image file from Google Drive
- Open laser software
- Import .png file
- Arrange file size / placement, making sure it is located within the edges of the denim on the print bed
- Image should be no more than 3 inches tall, and print time should be no more than 8 minutes
- Enter settings for material thickness, speed, power, and CPI/LPI - use test grids as a reference

## 3. Printing

- Secure corners of the denim swatch on the print bed with magnets
- Use sponge to dab / wipe water onto surface of denim - add water slowly but consistently until the fabric is evenly damp throughout, but not soaked or dripping
- \*Turn on air purifier\*
- Press Print button
- Watch for flame - should be no bigger than a birthday candle