

# The first dedicated 3D printing program for future doctors



*"The aim of the program is to teach future doctors to design devices, spaces and services in healthcare. And it is doing more than that; it is teaching them to become creative problem solvers."*

— Dr. Bon Ku, Emergency Medicine Clinician and Professor, Thomas Jefferson University and Hospital, Director of JeffDESIGN

The Jefferson Health Design Lab is a first-of-its-kind design certificate program that encourages innovation and introduces creative problem-solving methods and mindsets alongside a traditional medical curriculum.



**Company**  
JeffDESIGN

**Industry**  
Medical

**Challenge**  
Make a difference in how health professionals are trained by encouraging creativity, design thinking and the spirit of initiative among medical school students.

**Solution**  
JeffDESIGN is a unique design program for future doctors housed inside the Health Design Lab, the first health makerspace within a medical school.

**Results**

- Enables medical students to invent their own solutions to healthcare challenges
- Helps to tighten design cycles, so that better medical devices are completed in less time
- Provides powerful learning aids for future physicians

## **JeffDESIGN - Introduction**

The JeffDESIGN medical school design certificate program is at the heart of several efforts in the Jefferson Health System to foster innovation in healthcare. Through this effort and the Health Design Lab, JeffDESIGN hosts the annual Independence/ Jefferson Health Hack, helps physicians take inventions to market through JeffSolves; conducts design thinking workshops throughout the health system to foster creative problem solving; engages in community educational outreach with local schools and organizations; and develops unique, diverse, and collaborative educational experiences.

*"We work on real healthcare problems," says Dr. Ku. "We approach the problems using design-thinking methodology. We try to have students work with their hands as much as possible, and build physical devices, objects, and prototypes. We do that by having our students participate in interactive hands-on workshops where we partner with device designers, engineers, architects, and industrial designers."*

## Challenge

Both Dr. Bon Ku and Dr. Rob Pugliese are practicing Emergency Medicine clinicians as well as professors within Thomas Jefferson University and Hospital. They observed firsthand the gap between the skills and level of preparation of recent medical school graduates and the challenges that face them immediately within hectic, real-world hospital environments. The two considered how they might make a difference in how health professionals are trained by encouraging the creativity, on-the-spot problem solving, and spirit of initiative that is asked of physicians.

## Solution

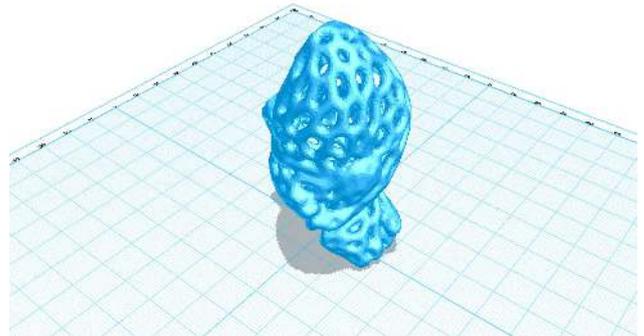
JeffDESIGN is the first design program housed in the Design Lab, an adaptable and functional prototyping space that supports collaboration between the technology industries surrounding healthcare, clinicians, and other healthcare professionals. After exploring available desktop 3D printing options, the JeffDESIGN team found Ultimaker printers not only offer precision and reliability to compete with the high-cost industrial additive manufacturing tools typically purchased by a hospital system, but the user experience and clean, professional appearance give busy health professionals the confidence to roll up their sleeves and engage with the tool and design challenges.

## Results

The program format involves interactive workshops co-facilitated by designers, architects and device makers. Dr. Bon Ku and Dr. Rob Pugliese invited doctors and researchers to present their pain points in medicine and took these ideas as a basis for a real working prototype six months later. They rapidly sped up the process of designing the device by combining design thinking principles and the use of 3D printers to accelerate the prototyping process. The products these students are producing are tightly directed towards producing better health outcomes and draw from their training and experience with actual patients. Participants strive to make a real difference in the quality of care of patients for future generations.



JeffDESIGN is aimed to boost innovation in the healthcare sector



An Anatomical Voronoi Heart model



A 3D printed heart model wired with Neopixels and connected to an Arduino powered heart rate monitor to create a heart rate visualizer. Created by: Dr. Robert Pugliese  
Download and print the model for free:  
<https://www.youmagine.com/designs/anatomical-voronoi-heart>

## About Ultimaker

Since 2011, Ultimaker has grown to become a leading brand, creating accessible, professional desktop 3D printers. The company has offices in the Netherlands, New York and Boston, with production facilities in both the U.S. and Europe. With a growing team of over 200 employees, plus over 24,000 active community members, Ultimaker strives to deliver the highest-quality 3D printers, software and materials without compromise.

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**Ultimaker**  
It's in the making

