

# EN 1-24: Engineering in the Kitchen

Fall 2020

MW 12:00-1:15pm, Sophia Gordon Hall

## Welcome to “Engineering in the Kitchen!”

In this course, we will explore engineering through the lens of food and kitchen gadgets. Although humans have been cooking for millennia, we now have countless electrified gadgets to measure, mash, melt, mix, and microwave our food. During the semester, we will disassemble every kitchen gadget we can get our hands on, learn how they work, and use our newfound skills to build a few of our own. Along the way, you’ll analyze and design basic electrical circuits, program microcontrollers to take measurements and respond to them, and connect the Things you build to the Internet. We’ll also explore some of the complex social and ethical issues at the intersection of technology and food: at what level is it appropriate to “engineer” our food? Does a cloud-connected refrigerator make us more efficient, or more lazy, or does it just result in more e-waste? And what responsibility do engineers have when working with something so deeply human as food?

## How will you and I evaluate your progress?

You’ll complete a series of four small projects over the course of the semester, roughly one every two weeks. Each project will culminate in a “show-and-tell” where you’ll have the opportunity to share what you’ve done with the rest of the class and get feedback. You’ll also submit a brief writeup describing your project, which I will grade. There are no “right answers” for the projects, so I’ll be looking for the following:

- Are you clear about what you’re trying to build or the question you’re investigating?
- Does your design work?
- Did you explain why you did things the way you did?
- Nothing ever goes quite right. Are you able to make sense of the data you collected, or the behavior of the thing you built?

Your projects and associated writeups will count for 40% of your final grade.

To help you assess your understanding of the theoretical content of the course, we will have several short in-class quizzes. I will announce the quizzes at least a week ahead of time, and will provide a study sheet to help you review. Your quiz scores will count for 30% of your final grade.

During the last month of the semester, you’ll work with a team to build some sort of new kitchen gadget. This will be an opportunity to integrate everything you’ve learned to build something new and solve a problem of your own choosing. Your final project and writeup will count for 30% of your final grade.

I want everyone to succeed in this course, and to have fun. As long as you keep up with the work and give it your best shot, you’ll receive an A. If you’re not having fun, let me know and we can talk about how to fix that!

## Communication

### Instructor:

Steven Bell <[sbell@ece.tufts.edu](mailto:sbell@ece.tufts.edu)>

Halligan 228D (Go upstairs and follow the signs for “EE/CS accounts.” I’m just a few meters down the hall from the kitchen.)

Office hours:

- Monday 2-4pm in my office
- Wednesday 2-3pm (walking office hours, see my website for details)
- I'm also available other times via Zoom by appointment, or just drop by my office any time the door is open.

To minimize distraction, I generally only check email a few times a day. However, I will make a strong effort to answer all messages within 24 hours on weekdays.

#### Teaching Assistants:

- Mels Burns <melinda.burns@tufts.edu>
- Melissa Rowland <melissa.rowland@tufts.edu>
- Joe Reese <joseph.reese@tufts.edu>
- Youssef Soliman <youssef.soliman@tufts.edu>

Most materials will be posted on the course website: <http://www.ece.tufts.edu/en/1>. Assignment submissions, grades, and Zoom recordings will be on Canvas. Announcements and class Q&A will be on Campuswire.

If you have a general question about the course content or course logistics, please post on Campuswire rather than emailing the teaching staff. You'll usually get a faster response, and everyone benefits from the answer.

## Course materials

There is no required textbook for this course.

If you feel the need to buy a book anyway, consider "The Food Lab" by J. Kenji Lopez-Alt (ISBN 978-0393081084). It's loaded with pictures of delicious food and good science, and is a lot more fun to read than most textbooks. It's also larger and heavier than most textbooks, and at \$35, it's a fraction of the cost.

## Schedule

The schedule and assignments will be posted on the course website: <http://www.ece.tufts.edu/en/1>. Since this is the first time this course is being offered, and because of the uncertainty around COVID, the schedule may be adjusted (or completely rearranged) to meet the needs of the class.

## Sick policy

Sickness happens, and I'll try to be flexible if you fall ill and are unable to come to class or complete assignments on time. However, you'll need to visit the campus health center and get a note from them in order to make up a quiz or get an extension on an assignment.

If you're required to quarantine, I will receive an automated email from Tufts almost immediately. Please get in touch with me when you're able and let me know whether and how you'll be able to continue your work on the course (e.g., still able to participate via zoom, not able to finish a lab, not able to do any course work, etc). We'll figure it out from there.

## ADA Accommodations

I want every student to succeed in this course. If you have a disability that requires reasonable accommodations, please contact the StAAR Center at [StaarCenter@tufts.edu](mailto:StaarCenter@tufts.edu) or 617-627-4539 to make an appointment with an accessibility representative to determine appropriate accommodations. StAAR will give you a letter to share with me, which describes the accommodations you're entitled to. Accommodations often take a few days to arrange (e.g., booking a separate room for a quiz) and cannot be provided retroactively, so please do this sooner rather than later.