

Hi.

Thanks for signing up for the Flow Visualization course! The class has plenty of room still, so tell your friends.

I want to make sure that you understand what the course will be like, and what my expectations are. If this course is not right for you, now is the time to find a different course. I want passionate students who are really interested in this topic, and are open to doing science for non-utilitarian purposes. Please don't take this course just because it fits your schedule, or just because you need an ME tech elect.

I'm working with a hybrid format: an in-person lecture, with screen-sharing on Zoom for remote students. The in-person experience will be superior to Zoom; there's no way to make it excellent for both in-person and remote students, but I do not ignore the remote students. I'll also record the lectures for you to watch later, but I expect you to come to class as much as possible; the lectures are interactive, and I hope value-added. However, our critique sessions, where you will present your work and get feedback, will be on Zoom for everybody. Remote experts from around the globe will be on hand to discuss your work. If you are a remote student, you are welcome to come to sit in the classroom any time and if you are registered in-person, you are welcome to be remote as much as you need.

This course will require a lot of 'lab' time. You'll be designing and setting up your own fluids experiments at home or in the common spaces in ITLL or Idea Forge, and *there will be no procedures for you to follow*. It will be frustrating at times; fluids experiments always are frustrating, and photographing them is harder than you think. If you are taking a heavy load of other courses, think twice about this course.

You need to provide your own camera. An appropriate camera will cost between \$200 and \$300, but you won't have to buy a textbook for the course. Most importantly, the camera must be capable of manual focus, i.e. by hand, not automatic only. It must also be capable of manual exposure, both shutter speed and aperture. If you are not sure your camera is up to spec, Zoom with me and I'll help you check it out. Be sure to download the camera's user guide first. Phone cameras can produce high quality images, and are especially good for close-up work, but it is very difficult to control the focus, and usually impossible to change the aperture. If you plan to only use automatic settings and/or a phone camera, this is **not** the right course for you. We'll spend about 1/3 of the class on photography techniques, from basic to expert level.

All students will be expected to complete 6 major assignments including creating images, both oral and written reports for your images and critiques of other students' work. There will also be a handful of smaller assignments such as short homeworks on optics, surveys and guest lecture attendance. For both grads and undergrads, there will be very little emphasis on mathematics, but a lot on physics and

imaging. You'll learn about why clouds and other fluids look the way they do. There may also be some content on the history of art, aesthetics, photography and imaging, but this is largely a technical course. [The lecture notes](#) and [lecture videos from 2022](#) are available so you can see what topics we'll cover. However, the course is designed for non-engineers to understand and enjoy.

I have high expectations of students signed up for the MCEN graduate section. These students will be expected to perform technical literature research (i.e. find and read reviewed journal articles and texts) on their own for each assignment (although I'm happy to help point you in the right direction), and to analyze the physics of their flows based on their readings. Each of your reports must be of publishable quality, with plausible physics and multiple references. But this is a low-stakes environment to practice in.

Similarly, if you are in an ATLS section I expect you to have some hands-on and/or web experience. If you are not in any of these categories, I expect you to be willing to learn (Flow Vis is for everybody) and to commit the time to do so. Everybody in the class will be put into mixed 'pods' for discussions and critiques, and you'll be expected to bring your background skills and knowledge to the table to contribute. In any case, keep in mind that this is an upper division course, not suitable for first or second year students. This lets me treat you all as adults: you will be responsible for your own learning. *What you get out of this class depends on what you put in.* I delight in providing resources for you to do so, but in the end it's up to you.

Grading will not be based on a quantitative scale. I'm going to match your performance up against my general expectations for students in each section; grad, undergrad, engineers, CTD and film students. The TA will be checking for completion of assignments. If you complete all assignments with a reasonable level of effort you will get an A. If you need more defined grading procedures, i.e. x points for each assignment, then this course is not for you. In fact, you will get little to no official feedback from me on your work outside of the class critique sessions, although I'm always happy to see what you're working on and give comments. Critiques will be on zoom in small groups and you will be expected to comment constructively on everyone's work live, online in the course website, plus additional in-depth, substantive critiques.

The website for this course is fantastic (imho) and I require you to give me publication rights to your images and reports for the website and for academic purposes (I write articles about the course). All of your work will be published on the Flow Vis website, <http://flowvis.org>. This is a very high visibility site. Just Google 'flow visualization' and see. This means that your work for this course will become part of your online identity. In future years, your reports and image for this course may come up first when a potential employer Googles your name. If this makes you uncomfortable, do not take this course.

The FlowVis.org website is a WordPress site, and we will be making a user login for you soon, so watch for an email that will let you reset your initial password. You will be posting your public work there, and also submitting archival files through Canvas. You will have to deal with all the fussy details to make your posts work within the site; correct file and post formats, video upload rules, tagging correct categories, and meeting deadlines. It is painful, but required.

On the plus side, this course is a unique and amazing opportunity to see the world around you in a new way, and to contribute to your online professional portfolio. You might even have your work displayed in the Engineering Center hallways someday, or even published as an example in a textbook. In particular, this semester you can optionally participate in a little competition for artwork for the recent MCEN renovation in the Engineering Center. The winning work will be produced as a window film for the study area, a 6 foot X 36 foot long expanse of windows.

If you have more questions, do check out the website, <http://flowvis.org> . You'll find past syllabi, lecture notes and galleries of student work. Or feel free to request a Zoom chat with me.

I look forward to meeting you!

Jean Hertzberg