Welcome to 20.S947: 3D scientific Rendering

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# Introduction

Welcome to 20.S947! This course is designed to progress students from beginners to confident users of modern 3D rendering software with a focus on biological and chemical scenes. The course will provide an overview of 3D modeling, realistic materials, and scene composition. By the end of the course, students will feel comfortable rendering realistic scenes for scientific figures, journal covers, presentations, and community outreach.

While the course will be offered in person, all lectures will also be provided asynchronously to fit a wide range of schedules. In addition, the class will follow a live demo format, where students can follow along and ask questions as they familiarize themselves with increasingly complex scenes. The course will use Blender, the leading open-source software for 3D rendering, used across science, animation, video game development, and virtual reality.

# Details

**Prereq**: None

**Units**: 1-0-1

**Room**: 56-154

**Schedule**:

* JAN 18, 2023 - 10:30-11:30AM
* JAN 23, 2023 - 10:30-11:30AM
* JAN 25, 2023 - 10:30-11:30AM

# Course Schedule

## The 3D Viewport and Lighting

*JAN 18, 2023 - 10:30-11:30AM*

The first class will focus on navigating the 3D viewport, while exploring the basics of lighting. By the end of the class, you will have made your first full render!

* Course Intro - 10 min
* Navigating the viewport - 10 min
* Importing and manipulating a molecular structure - 10 min
* Adding lighting - 10 min
* Preparing and rendering the scene - 10 min

## Scene Composition

*JAN 23, 2023 - 10:30-11:30AM*

In this class, we will draw from the previous class and compose and render a 3D biological scene as if it were a journal cover.

* Importing a protein structure - 10 min
* Environmental lighting - 10 min
* Realistic textures - 10 min
* Scene composition - 10 min
* Preparing and rendering the scene - 10 min

## Movies and Animations

*JAN 25, 2023 - 10:30-11:30AM*

In this final class, we will render a movie of two proteins binding using cinematic lighting and compositing effects.

* Importing protein structures - 10 min
* Lighting and texture setup - 10 min
* Scene Composition - 10 min
* Timeline - 10 min
* Animation - 10 min

# Contact

[kastner@mit.edu](mailto:kastner@mit.edu)

<https://github.com/davidkastner/3DScience>

[www.3dscience.org](http://www.3dscience.org)

**Office Hours**

I am free to meet anytime! I am happy to meet in person at 66-263 or through zoom at my personal zoom link: <https://mit.zoom.us/my/davidkastner>. Let me know if you would like to talk about the class lessons or if you have a personal project that you would like help with.