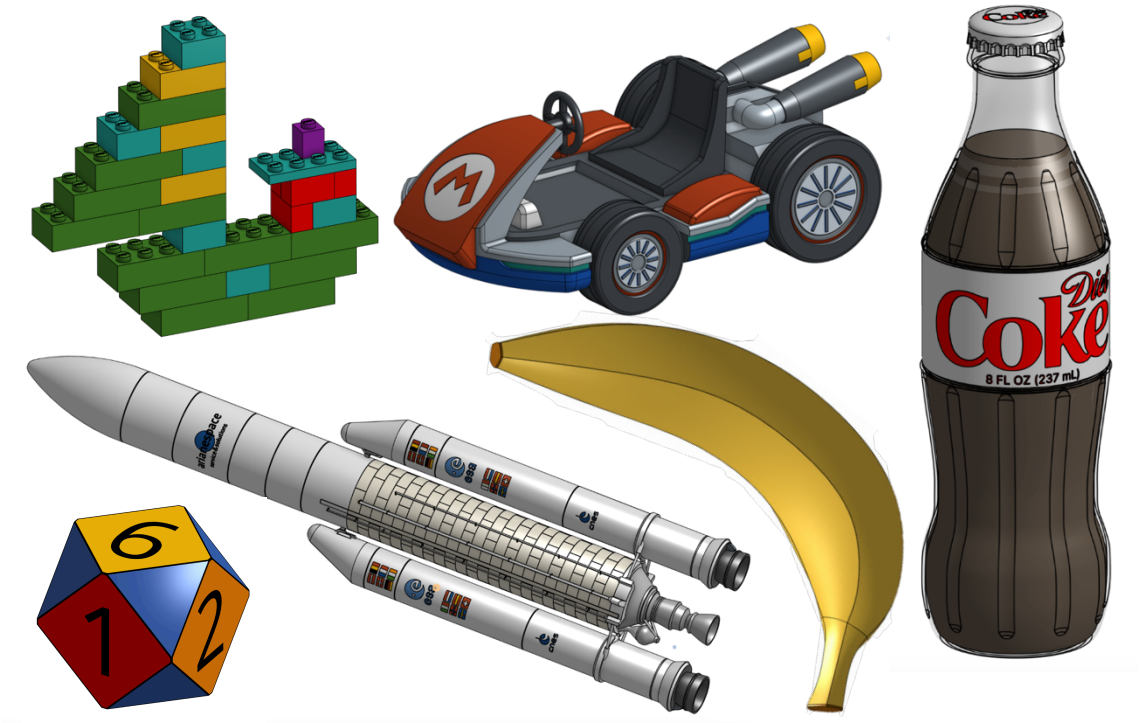
How to CAD almost anything! – Disney Edition

Summer 2025 – AeroAstro Workshop

A companion course to the original "How to CAD almost anything!" IAP 2024 workshop, this short, 3-week edition introduces students to the parametric design software Solidworks using examples sourced from the Disney universe! Although intended for students with existing CAD (computer-aided design) experience, both beginners (no experience at all) and pro-users alike are welcomed! Come learn how to CAD (computer-aided design) essentially almost anything (Disney themed)!



Yes, this could be YOU at the end of the workshop! You'll be equipped with the tools to design cool looking things such as a LEGO boat, a Mario Kart, a bottle of Coke, a banana, an Arianne V rocket, and even a 12-sided dice!

Workshop Details

Subject Title: How to CAD almost anything!

Prerequisites: Willingness to have fun and think outside the box!

Enrollment: 20.

Attendance: Participants must attend all s

Meeting Room: GIS & Data Lab (located on the first floor of the Rotch Library, 7-238).

Meeting Times: Tuesdays and Thursdays 3pm – 5pm (although may run longer).
There are a total of 6 weekly sessions, starting on 06/03/25 until 06/19/25. The sessions will take place on 06/03, 06/05, 06/10, 06/12, 06/17 and 06/19.

Instructor: Andy Eskenazi - AeroAstro PhD student (LAE), andyeske@mit.edu.

About: Hailing from the capital of Tango, Steak and Football, Andy is currently a PhD student at MIT AeroAstro trying to make aviation more sustainable. Outside of research, he loves all things mechanical design. Previously, at the University of Pennsylvania, Andy TAed "MEAM 101: Introduction to Mechanical Design" for 6 semesters, where he estimates having taught, directly or indirectly, approximately 300 students. At MIT, he has taught the "How to CAD Almost Anything!" series three four times, for Solidworks, Fusion 360, Onshape and Siemenx NX.

Workshop Description

Ever wondered how are objects from our daily lives designed? How can we generate a computer 3D model of a mug, a bottle of Diet Coke, or a Saturn V rocket? What about designing the blades of a jet-engine? A test dummy? How about making an animation of a LEGO house building itself? Or making a realistic render of a bowl of fruit? In this AeroAstro workshop, you will learn the skills to design all of these, and much more!

Split into 6 2-hour long sessions, this course acts as a companion edition to the "How to CAD almost anything!" IAP 2024 workshop on Solidworks. The first two sessions will be focused on reviewing Solidworks skills, primarily intended for students that did not attend the IAP 2024 workshop. The latter four sessions will be focused purely on modeling, working together to produce the planned (advanced) CAD model for the session. In contrast to traditional mechanical design courses, this workshop places greater emphasis on the design process itself, understanding how we can plan and best leverage our available tools to arrive to our desired result. Thus, the sessions are less about following the instructions on an engineering drawing, but about independent thinking and strategizing, reverse engineering an object into a 3D model.

Workshop Schedule

#	Month	Day	Date	Outline and Objectives
1	Jun	T	06/03	**Session 1**: Introduction to the Solidworks – Disney Universe. Objective: In this session, we'll get ourselves acquainted with the Solidworks workspace and start learning some of the most used tools. S1's goals include: • Creating sketches (using basic shapes, construction lines, smart-dimensioning, sketch relationships) and understanding planes. • Understanding what it means for a sketch to be fully defined. • Locating and using the different elementary feature commands (boss extrude, boss cut, fillet, chamfer). • Editing sketches and features after creating them. • Coloring parts and changing material properties. • Learning how to use the spline tool and the wrap command. • Learning how to add a picture and sketch on it. Session activity: Using the tools learned on S1, we'll design a variety of items, including: • A Sorcerer Mickey mug. • A commemorative Mickey coin for Disneyland Paris.
2	Jun	Th	06/05	**Session 2**: Pixar! Objective: In this session, we'll continue exploring some of the most powerful Solidworks tools. S2's goals include:

				• Understanding how to create a sketch for a revolve. • Learning how to make use of the mirroring and circular patterns tools, both as a sketch and as a feature. • Learning how to create planes, at different angles. • Learning how to make an assembly of multiple parts. • Learning how to make an exploded view of an assembly and subsequentially animating it. • Learning how to create an engineering drawing of a part and assembly (including exploded views). Session activities: • A Luxo, Jr. lamp. • A Monsters, Inc. Scream Canister.
3	Jun	T	06/10	**Session 3**: Disney Trains - EPCOT! Session activities: • EPCOT's Toy Monorail. • EPCOT's Toy Train Tracks.
4	Jun	Th	06/12	**Session 4**: Disney Trains - Magic Kingdom! Session activities: • Magic Kingdom's Toy Locomotive. • Magic Kingdom's Toy Wagons. • Magic Kingdom's Toy Train Tracks.
4.5	Jun	Sat	06/14	**Session 4.5 (online-only)**: Disney Trains - Stations. Session activities: • Combined Train Station. • Hybrid Magic Kingdom & EPCOT park layout to place the models from S1 through S6.
5	Jun	T	06/17	**Session 5**: Mickey and the Genie! Session activities: • The Genie's lamp. • A Mickey statue.
6	Jun	Th	06/19	**Session 6**: Tomorrowland! Session activities: • EPCOT's Spaceship Earth. • Magic Kingdom's Astro Orbiter. • Placing the S1 through S6 models in the park layout.