

How to CAD almost anything!

IAP 2026 – AeroAstro Workshop

A compressed yet rewarding introduction to the parametric design software [Inventor](#), for beginners (no experience at all) and pro-users alike. Come learn how to CAD (computer-aided design) essentially almost anything!



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 Spaceship Earth, a Scream Canister, a Green Alien, a Locomotive, a Mickey mug, and even a Luxo Jr. Lamp! These are all projects from the Summer 2025 "[How to CAD Almost Anything! – Disney Edition](#)".

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 sessions.

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

Meeting Times: Tuesdays and Thursdays 3pm – 5pm.
There is a total of 6 weekly sessions, starting on 01/06/26 until 01/22/26. The sessions will take place on 01/06, 01/08, 01/13, 01/15, 01/20 and 01/22.

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 is passionate about 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. Additionally, he has taught the “[How to CAD Almost Anything!](#)” series five times, on Solidworks (twice), Fusion 360, Onshape, and Siemens 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, the first half of each session will be spent learning new Autodesk Inventor skills, while the second half will see the application of these news skills through in-class activities, with a focus on reverse engineering. 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	Jan	T	01/06	<p>Session 1: Introduction to Autodesk Inventor.</p> <p><u>Objective:</u> In this session, we'll get ourselves acquainted with the Autodesk Inventor workspace, and start learning some of the most used tools. S1's goals include:</p> <ul style="list-style-type: none">• 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. <p><u>Session activity:</u> Using the tools learned on S1, we'll design a variety of items, including:</p> <ul style="list-style-type: none">• A first-generation Apple iPod Classic.• A first-generation iPod USB Power Adapter.
2	Jan	Th	01/08	<p>Session 2: Splines, Sketch Pictures and logos!</p> <p><u>Objective:</u> In this session, we'll continue exploring some of the most powerful Siemens tools. S2's goals include:</p> <ul style="list-style-type: none">• Learning how to use the spline tool.• Learning how to add a picture and sketch on it. <p><u>Session activity:</u> Using the tools learned on S2, we'll design a variety of items, including:</p> <ul style="list-style-type: none">• An MIT intramurals banner.

				<ul style="list-style-type: none"> • A keychain of your favorite sports team.
				<p>Session 3: All about symmetry, patterns and planes!</p> <p><u>Objective:</u> In this session, we'll focus our attention to symmetry, patterns and planes, and how we can leverage certain tools to simplify the design process. S3's goals include:</p> <ul style="list-style-type: none"> • 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. <p><u>Session activity:</u> Using the tools learned on S3, we'll design a variety of items, including:</p> <ul style="list-style-type: none"> • A fidget spinner! • The Taipei 101 tower.
3	Jan	T	01/13	<p>Session 4: Sweeping through the courts!</p> <p><u>Objective:</u> In this session, we'll explore two very powerful Autodesk Inventor tool, loft and sweep. This tool allows us to create complicated looking geometries, like the body of a 747 or the surface of an apple. S4's goals include:</p> <ul style="list-style-type: none"> • Learning how to use the loft and sweep commands. • Continuing to master previously explored tools, such as revolve, linear/circular patterns and plane creation. <p><u>Session activity:</u> Using the tools learned on S4, we'll design a variety of items, including:</p> <ul style="list-style-type: none"> • A Play Station 1 controller. • A banana, in honor of the banana lounge (using various plane cuts, splines and lofts).
4	Jan	Th	01/15	<p>BONUS: Let's have a 3D-modeled Coke!</p> <p><u>Objective:</u> In this session, we'll revise our previously learned commands (+ the useful wrap), to make sure we know how to properly use all of them. S4.5's goals include:</p> <ul style="list-style-type: none"> • Revising some of the previously learned commands, including loft, revolve, sweep, plane creations, patterns, filleting, and material properties. • Learning how to employ the wrap command (for engravings). <p><u>Session activity:</u> Using the tools learned on S4.5, we'll design a variety of items, including:</p> <ul style="list-style-type: none"> • A Coca Cola Light 150 ml can (with labels included). • A Star Wars X-wing fighter.
4.5	Jan	Sat	01/17	<p>Session 5: Living in a world made from plastic bricks!</p>
5	Jan	T	01/20	

			<p><u>Objective:</u> In this session, we'll move towards one of the most powerful features within CAD parametric software, which is that of making assemblies! S5's goals include:</p> <ul style="list-style-type: none"> • Learning how to make an assembly of multiple parts. • Learning how to make an exploded view of an assembly and subsequently animating it. • Learning how to create an engineering drawing of a part and assembly (including exploded views). <p><u>Session activity:</u> Using the tools learned on S5, we'll design a variety of items, including:</p> <ul style="list-style-type: none"> • A standard 2x4 LEGO block (as well as numerous others!). • A simple LEGO Tower Bridge assembly. • An engineering drawing of the bridge assembly and one of the LEGO bricks.
6	Jan	Th	<p>Session 6: Variable Tables and Equations!</p> <p><u>Objective:</u> In this session, we'll investigate two often underappreciated yet extremely useful tools, parameter tables and equations/expressions. These tools allow the user to create various configurations of the same model, depending on specific needs. S6's goals include:</p> <ul style="list-style-type: none"> • Learning how to create equations/expressions and incorporate them into a design/parameter table. • Creating configurations of the same model. <p><u>Session activity:</u> Using the tools learned on S6, we'll design:</p> <ul style="list-style-type: none"> • Multiple configurations of an airplane economy seat.
