

101+ AMAZING Science Project Ideas: AERODYNAMICS



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- Gives you a brief survey
- Recommends projects that are best for you

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The Swimming Secrets of Duck Feet

Do you wish that you had duck feet? Aside from being a fun Dr. Seuss story, there is a lot you can learn about hydrodynamics by looking at the feet of birds. How are the feet of birds that swim unique? Find out in this experiment.

[Difficulty](#) = 1

How Does a Hovercraft Work?

Have you ever ridden on a hovercraft? It is like gliding on a cushion of air! Make your own mini hovercraft in this experiment to test how hovercrafts work.

[Difficulty](#) = 1

Let's Go Fly a Kite!

Kites have been a source of entertainment for centuries of kids from cultures around the world. In this experiment you will have a chance to build your very own kite, a simple sled kite. Then you will use it to investigate how kites fly. Will you find out the best way to fly your kite?

[Difficulty](#) = 2

Whirl-y-bird vs. Whale-y-bird

What do whale fins, shark skin, mackerel tails, and golf balls all have in common? Explore the science of hydrodynamics and biomimicry with this fun experiment.

[Difficulty](#) = 2

Do Submarines Need Fins?

What keeps a submarine from spinning out of control? In this science project, you can investigate how submarines use stabilizing fins to move forward. You might even figure out the secrets to maneuvering a submarine!

[Difficulty](#) = 3

Milk Does Your Body and a Boat Good—Design Your Own Milk Carton Boat

Who'd have thought that drinking milk can lead to a pretty cool boat? Boat design is an important and active area of engineering. In this science fair project, which was inspired by a PBS DragonflyTV episode, you will design and build different kinds of model boats out of milk cartons. Examples of the types of designs you might test include a raft, a catamaran, and a V-shaped hull. Once the model boats are built, you will test key features, such as stability, maneuverability, and their ability to glide.

[Difficulty](#) = 3

Bottled-Up Buoyancy

Do you dream about making deep, undersea voyages? Let this project take you 20,000 leagues under the sea! Investigate how submarines dive and surface by changing their buoyancy in this

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fun project.

[Difficulty](#) = 3

[Parachutes: Does Size Matter?](#)

How does a parachute work? Do bigger parachutes work better than smaller parachutes? Find out in this experiment if the size of the parachute matters.

[Difficulty](#) = 4

[What A Drag!](#)

What makes some objects more streamlined than others? Find out which ordinary objects around your house are made to move smoothly through the water in this easy experiment. Which objects will produce the most drag when pulled through the water?

[Difficulty](#) = 4

[How Much Weight Can Your Boat Float?](#)

Have you ever wondered how a ship made of steel can float? In this project you'll investigate how much weight boat hulls of various shapes and sizes can support without sinking.

[Difficulty](#) = 4

[What Makes a Good Aerodynamic Design? Test Your Ideas with High-Performance Paper Gliders](#)

A great way to get started in exploring aerodynamics is by building high-performance paper gliders. We're not talking folded pieces of copier paper here. These gliders are built using laminated construction methods, so they look and fly much more like the real thing. The materials are inexpensive, and the building techniques are easy to learn. You can easily turn out several planes, which makes it possible to test the effects of design changes on flight performance.

[Difficulty](#) = 5 – 7

[Rocket Aerodynamics](#)

Have you ever heard the expression, "Well, it's not exactly rocket science..." ? For your science fair project, you can *be* a rocket scientist. Here's how.

[Difficulty](#) = 5 – 9

[Buoyancy of Floating Cylinders](#)

This project presents an interesting puzzle. A disk of wood will float face-up, that is, with its circular cross-section parallel to the surface of the water. A long log of wood, however, floats with the circular cross-section perpendicular to the surface of the water. If you think about it, disks and logs are *both* cylinders. Is there some intermediate length of cylinder that floats with the circular cross-section at a tilted angle? Do an experiment to find out!

[Difficulty](#) = 5 – 9

[Why Winglets?](#)

Have you ever noticed how some jet planes have small, vertical projections as the tips of the wings? They're called *winglets*. What are they there for?

[Difficulty](#) = 5 – 7

[The Wright Stuff: Using Kites to Study Aerodynamics](#)

The Wright brothers used kites extensively to test their design ideas in the years leading up to their first successful airplane flight. With this science project, you'll learn about kite aerodynamics, and then come up with your own hypothesis about building or flying a kite. You can test your hypothesis two ways: with an online kite simulation program from NASA, and outdoors with the real thing! A great feature of this science project is that it has many possible variations, so you can decide exactly in which direction you want to take it.

[Difficulty](#) = 5 – 6

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[Riding on Air—Build a Real Hovercraft](#)

Looking for an exciting new mode of transportation? In this science fair project, you will build a working hovercraft that will glide over surfaces on a cushion of air. And it's simpler to build than you might think!

[Difficulty](#) = 6

[The 'Ultimate' Science Fair Project: Flying Disk Aerodynamics](#)

Are you good at tossing a frisbee? Isn't it great when you throw a perfect, arcing curve, right on target? If you can do that, you've already trained your arm on the aerodynamics of frisbee flight. Why not treat your brain to some frisbee science with this project?

[Difficulty](#) = 6 – 7

[Why Do Aerobie Flying Rings Go So Much Further Than Frisbees?](#)

If you've played catch with both Aerobie flying rings and Frisbees, you know that the rings fly much further than the Frisbees with the same throwing effort. Why is that? Investigate the aerodynamics of flying rings and flying disks and find out!

[Difficulty](#) = 6

[Which Wing Design Creates the Greatest Lift?](#)

You're used to seeing airplanes in the sky every day, so it's nothing unusual. But if you've ever gotten a close look at big passenger plane, you might have wondered how it manages to get off the ground. In this project you can learn how those big planes fly by building your own wind tunnel and using it to test different wing designs.

[Difficulty](#) = 6 – 8

[Efficient Propeller Design](#)

How does a helicopter generate enough lift to fly? How does a speedboat get moving fast enough to pull someone on water skis? Here's a project on designing propellers to do the job.

[Difficulty](#) = 7 – 9

[Winglets in Wind Tunnels](#)

Winglets are the short vertical "fins" at the wingtips of some airplanes. Have you ever wondered why they are there? If you have access to a wind tunnel, you can build model airfoils with and without winglets and see for yourself. If you're really ambitious, you can also build your own wind tunnel (see [Wind Tunnel Construction Links](#)).

[Difficulty](#) = 10