Have you ever wondered how NASA rockets launch astronauts and supplies to the International Space Station? Or how does a rocket with a lot of mass get off the ground verses a rocket with a smaller mass? Are you ready to investigate the relationship between force, mass, and acceleration while launching different flying models?

In this problem-base pathway you will explore the science of flight on Earth and in space by planning and carrying out investigations to answer questions and test solutions to problems using multiple variables and provide evidence to support your explanations or design solutions.

Build your own

With just a few materials, you and your team will build a paper model of the International Space Station (ISS). You will explore fun facts, simulate building the Station, and learn about the international partners. You will take on a role of international partners and/or engineers as you learn about and assemble portions of the model. You will then brief the group about your section of the model during a mock summit, and then it's time to ensure "Assembly Complete." The end result is an international, team-building experience to construct a 3-D paper model of the Station.

We know that building things may seem difficult at the beginning, but don't worry, your instructor is here to provide guidance and everything you need to successfully complete all the projects. So, put on your curiosity cap, bring on the energy, and don't forget your imagination!

Various links to multimedia experiences are included to extend your experience and further bring the Station to life. You will play a spacewalking simulation game, find out how to view the Station you're your own backyard, and see pictures of the inside of the Station using a program called Photosynth.

Identify a problem within rocket launches

In the Engineering pathway, you will use the concepts of Newton's Laws to build and launch different models of rockets and identify a problem within rocket launches. You will explore the relationship among force, mass, and acceleration and test how an equal force impacts an object's acceleration as its mass increases.

Design a solution that makes this problem better

You will also apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects. You will enjoy learning the principles of flying, and aerodynamics by engineering and flying your own models.

Share your problem and solution with others

Think about who your solution might help. Share your team idea(s) with guest speakers, researchers and other teams. Can you think of any other groups of people who might be interested in your idea? Finally, your team will prepare a presentation to share your work with a team of professional engineers, researchers, industry leaders and engineering students.

Your presentation must be live and may include posters, slideshows, models, multimedia clips, props, costumes, and more. Be creative, but make sure you introduce your problem, solution, and how you shared your idea.

The course will include a trip to The Columbia Memorial Space Center in Downey, California. You will experience the Challenger Learning Center (CLC) and be transformed into a scientist, engineer or researcher on a **simulated space mission.** From the moment of lift-off to the completion of the mission, all scholars will become critical members of a team as they work to complete their mission objectives as both mission controllers and astronauts. You will become part of the Probe team or Navigation team on the mission. The Probe Team will assemble, deploy, and monitor one or more space probes launched during the mission. The Navigation Team navigates the spacecraft on its journey and/or lands as the scenario requires.