

NQuest Workshop Menu

All workshops touch upon grade specific science standards (6th- 8th grade)



3, 2, 1 TAKE OFF WORKSHOP

For decades, NASA has been conducting research on supersonic flight, sonic booms, and noise reduction. NASA and Lockheed Martin unveiled an experimental aircraft called X-59 QueSSt ("Quiet SuperSonic Technology"). QueSSt is part of NASA's mission to demonstrate how the X-59 plane can fly supersonic without generating loud sonic booms. In this workshop, students will construct small paper X-59 planes and fly them by producing their own thrust, to examine forces on a plane and Newton's Third Law of Motion. Students will then design and build their own unique X-59 airplane.

NGSS Standards: K-PS2-1, KPS2-2, 3-PS2-2, 5-PS2-1



PLANETARY SCIENTIFIC BALLOON WORKSHOP

You might already know that NASA uses spacecraft and satellites to explore space, but did you know they also use balloons? When people think of NASA, they don't usually think of balloons. Since 1983, NASA's Balloon Program Office launches 10-15 balloons a year from locations around the world for technology development, scientific research, and education purposes. In this workshop, students will discover how NASA uses balloons to explore Earth and space and then take on a challenge to design their own balloon gondola system.

NGSS Standards: MS-ETS1-1, MS-ETS1-2, MS-ETS1-3, MS-ETS1-4
Common Core Standards: W.7.2, W.8.2, 6.NS.C.8



ROBOTIC ARM WORKSHOP

NASA uses robotic arms to accomplish tasks that are potentially too dangerous, too difficult, or simply impossible for astronauts to do. The robotic arm on the International Space Station can capture approaching cargo ships for docking or be used to assist astronauts on spacewalks. In this workshop, students will engage in the engineering design process to design, build and operate their model robotic arm. In this engineering challenge, students will test their model robotic arm to move items from one location to another.

NGSS Standards: MS-ETS1-1, MS-ETS1-2, MS-ETS1-3, MS-ETS1-4



DRONE/UNMANNED AIRCRAFT SYSTEMS (UAS) WORKSHOP

NASA is leading the nation to quickly open a new era in air travel called Advanced Air Mobility, or AAM. These new aircraft range in size from small cargo carrying drones to passenger-carrying air taxis and carry out short range missions. The vision of AAM is that of a safe, accessible, automated, and affordable air transportation system for passengers and cargo capable of serving previously hard-to-reach urban and rural locations. Student will engage in AAM mission with an engineering design challenge. They will review Newton's third law of motion and how it applies to lift and thrust; discuss how a drone's propeller (s) generate lift to counteract the force of gravity. Students will work as a team to design, build and test a propeller car.

NGSS Standards: MS-ETS1-1, MS-PS2-2, PS2.A
Common Core Standards: MP5, MP6



GAINING TRACTION ON MARS

Rovers are car-like spacecraft that NASA uses to explore the surfaces of other worlds, such as the Moon and Mars. In 1971, astronauts with the Apollo program became the first to drive around on the Moon using a lunar rover. NASA uses robotic rovers to explore Mars. In this workshop, students will work in engineering design teams to create and build a cardboard rover focusing on wheel design. They will then test their vehicle to determine which are most effective on a simulated Martian surface.

NGSS Standards: MS-ETS1-1, MS-ETS1-2, MS-ETS1-3, MS-ETS1-4, MS-PS2-2, MS-PS2-3, MS-PS2-5



WATER FILTRATION CHALLENGE

Approximately 71 percent of the Earth's surface is water-covered, and the oceans hold about 96.5 percent of all Earth's water. Water recycling programs are essential and can satisfy most water demands if it is adequately treated to ensure water quality appropriate for the use. On the International Space Station (ISS) they have achieved a 98% water recovery rate through water recycling. In this workshop, students will design and build a device that can clean a dirty water sample using materials around your home. You will follow the same design process used by NASA engineers and scientists when they developed the water filtration system for the International Space Station orbiting Earth.

NGSS Standards: MS-ETS1-2, MS-ETS1-4
Common Core Standards: MP2, MP3, MP5, MP6, 6.SP.B.5A, 6.SP.B.5.C