



1926 Goddard Rocket (Replica)

In 1926, Robert Goddard tested his rocket - the first liquid-fueled rocket in Auburn, Massachusetts. This rocket reached an altitude of 41 feet, and traveled at 60 mph. The test flight lasted 2 seconds. By the mid 1930s, Goddard's rockets had surpassed the sound barrier at 741 mph and reached heights of 1.7 miles. Robert Goddard is considered to be the father of modern rocketry.



McDonnell Mercury Capsule

Project Mercury was the United States' first human spaceflight program, and it ran from 1958 to 1963. The capsule was created by McDonnell Aircraft and carried one day's worth of food, water, and oxygen. 20 Mercury capsules were built, and several of them were tested. The Mercury flights were launched from Cape Canaveral, FL. Their success laid the foundations for the Gemini missions.

North American X-15A-2 (Mockup)



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Three X-15s were built and made 199 flights between 1959-1968. The X-15 was an important step in the development of spaceflight in the 1960s. It was the first piloted aircraft to reach hypersonic speeds (more than 5x the speed of sound) and would fly for about 10 minutes. It would be launched by a B-52 at 45,000 feet in the air. Neil Armstrong also piloted an X-15.



North American Rockwell Apollo (Mockup)

The Apollo Command Module was the "mothership" of lunar missions from 1968 to 1972. The Apollo command module was a modification of the Mercury and Gemini Programs. The module was larger to make space for three astronauts. 35 command modules were built, and 15 were used on manned missions into space, 11 being the Apollo missions.



Space Shuttle Program Fixed-base Simulator

This fixed-base Guidance and Navigation Simulator is one of three simulators used to train astronauts for NASA's Space Shuttle Program. These simulators were used to recreate mission tasks and specific exercises. Built in the late 1970s, it was originally designed to only test the guidance system. The *Challenger* accident prompted NASA to upgrade the Simulator to a full fixed-base crew training simulator.





UAVs

There are many UAVs on display in the Aerospace Gallery. A UAV (or drone) is an unpiloted aerial vehicle, or remotely piloted aircraft. UAVs, or drones, have found their primary use in the military. However, they have also seen extensive use in the civilian sector, such as in the film-making industry, search and rescue operations, and delivering medical supplies to remote regions. Here are some you will find here:



Globe KD6G-2 Firefly

The first UAVs made their appearance in World War I. Later, in World War II, the development of UAVs continued. The Globe KD6G-2 target drone was produced after WWII for the Navy and it was radio-operated. Its mission was to train anti-aircraft gunners. The Firefly was the most produced version of this drone. They were phased out in the 1960s. <u>(You</u> can see a WWII drone hanging in the back of the Gallery - picture above).



Sikorsky UH-60MU Black Hawk Helicopter

<u>UAVS can take many forms.</u> This is only one of two Black Hawks to be used as an unmanned UAV. As part of the MURAL program, these helicopters could be operated remotely during resupply missions, so to allow military personnel to focus on more sensitive operations. The Sikorsky UH-60MU first flew in 1974 and was adopted by the US military and foreign militaries.

General Atomics MQ-1B Predator



This is a type of UAV that is armed and is employed primarily to gather intelligence data. Because of its advanced technology, it is an extremely accurate weapon when conducting attack, reconnaissance, combat search and rescue, combat air support, and many other operations. It is worth to take a moment to compare this UAV with the Globe KD6G-2 to notice the evolution of UAVs.



MMIST CQ-10A Snow Goose

This is a low-cost resupply UAV used by the United States Special Operations Command (USSOCOM). This UAV was designed as a selfpropelled autonomous GPS-navigated parafoil delivery system. It can be launched from a moving Humvee or from a cargo plane. When airborne, it flies like a recreational glider. The Snow Goose can carry up to 600 pounds and the mission's flight is uploaded with a laptop.





Rocketdyne SE-10 Engine Bell Nozzle Mockup

This engine was one of two designed for the descent stage of the Apollo Lunar Lander. It is an important piece of technology, because it is the first engine with controllable thrust. It was liquid-fueled and its thrust rate was between 1,080 and 10,500 pounds of thrust. However, the Rocketdyne SE-10 was never used, as NASA chose another competitor.



Phoenix Mars Lander

Are we alone in the Universe? The Phoenix Mars Lander's goal was to "scout" for volatiles, such as water and other molecules in the ice-rich soil of the Martian arctic. To study the composition of the soil, Phoenix used a combination of a chemistry lab, a microscope, a probe, and cameras. The mission was completed in August 2008, after three months of exploration. The Lander was active for two more months before turning off.



Daedalus Solar Powered Race Car

The Daedalus is a competition race car and this is one of the first designs. It raced in 1999 with the University of Arizona during an annual inter-university competition on solar technology. The body is made of air foil and plywood, and its shape keeps the car close to the ground, minimizing friction. The solar panel's cells all face the same direction, maximizing energy production.



Moon Rock (Inside The Arizona Hall of Fame)

This is an original Lunar rock sample brought back from the astronauts of Apollo 16. The mission lasted 71 hours, 20 of which were used to explore the Lunar surface. During this mission, the crew collected 211 pounds of Lunar material to bring back to Earth. This sample was donated to the Museum by Gemini 7 and Apollo 8 astronaut Frank Borman, a Tucson native.





Tucson Ring Meteorite Cast

This is an exact replica of the meteorite ring found in the Santa Rita mountains in the late 1700s. The ring weighed around 1,400 pounds and is 92% iron and 8% silicate materials. After being used as an anvil and later abandoned, the Smithsonian Institution bought it, and can now be seen displayed in Washington, D.C.