

### International Space Station, 1998–present

Greatly expanding Skylab's venture in space habitation, the International Space Station, a low earth-orbiting laboratory with living quarters, is built to support astronauts for months at a time; and research, for years. ISS is a joint venture between America, Russia, Canada, Japan and the European Space Agency (seventeen member states)—a total of twenty-one nations. Assembly began in 1998 with Russia placing the first section into orbit, followed by the space-shuttled delivery of the first node. The station has been continuously inhabited since 2000 and NPS graduates have manned three of its sixteen expeditions. The first NPS ISS inhabitant was **Dan Bursch** on Expedition 4, who shared the US spaceflight-endurance record of 196 days till **Michael Lopez-Alegria** reached 215 days as commander of Expedition 14. **Jeffrey Williams** was the ISS flight engineer and science officer on Expedition 13 in 1996 (183 days). **Marcos Pontes** ('98), a Brazilian astronaut, flew to the ISS with Williams on the Russian Soyuz TMA spacecraft, returning nine days later.

### Astronaut Michael J. Smith, CAPT, USN and Astronaut William C. McCool, CDR, USN Astronautics Award

The NASA Michael Smith Chair Professorship was created by NASA and NPS to honor Astronaut Smith's memory, and an annual award was established to recognize the outstanding graduate of NPS's Space Systems curricula. This prestigious award was expanded to include commemoration of Astronaut McCool, and is now designated the "Astronaut Michael J. Smith, CAPT, USN and Astronaut William C. McCool, CDR, USN Astronautics Award."

*Captain Michael J. Smith, USN, earned an MS in aeronautical engineering from NPS in 1968. Selected as an astronaut candidate in 1980, his initial flight, on Challenger, ended in tragedy on January 28, 1986, shortly after launch. Commander William McCool, USN, received his MS in aeronautical engineering from NPS in 1992 and reported to NASA for astronaut training in 1996. After seventeen days in space on his first mission, piloting Columbia, he perished with his crew shortly before landing, February 1, 2003.*

### Space Systems Academic Group

NPS's Space Systems Academic Group was established in 1982 in response to increasing defense reliance on space systems for navigation, communications, and intelligence gathering. Supported by robust, hands-on research, this highly interdisciplinary curriculum has two tracks: space-systems engineering and space-systems operations. These curricula represent the primary avenue by which Navy and Marine Corps officers become space professionals and an alternative path for Air Force and Army officers on their way to space.



*Orion rendezvous with ISS (artist's conception). Before moon journeys, the new Orion crew capsule could be used to ferry crew and cargo to the ISS.*

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## NPS ASTRONAUTICAL TIMELINE

NPS has been preparing future astronauts through space-related research and technology since 1961.



**The Naval Postgraduate School** has graduated thirty-three astronauts, more than any other graduate school in the country. A few of their accomplishments are cited here.

### Early years: Mercury, Gemini, and Apollo (1961–1972)

With President Kennedy's 1961 speech declaring his intention to put a man on the moon within the decade, NASA's focus shifted from low earth orbit to a lunar landing. The Gemini program was an important step on the way to the moon as NASA learned more about rendezvous and docking, mission aspects that were critical to the success of the Apollo program. **Eugene Cernan** ('64) copiled Gemini IX in 1966 and became the first NPS graduate in space. He was also the second US astronaut to complete a spacewalk. As Apollo 10's pilot in May 1969, Cernan orbited the moon and tested the lunar module for the Apollo 11 landing two months later. He later became the last man to walk on the moon, on the final Apollo mission (Apollo 17, December 1972). From terra firma at Johnson Space Center, **Jack Lousma** ('65) was crucial in bringing the wounded Apollo 13 home in 1970. As capsule communicator, it was to Lousma that "Houston we've had a problem" was addressed. **Edgar Mitchell** ('61) was the lunar-module pilot for Apollo 14, the first science mission, in 1971; the crew moonwalked two kilometers collecting samples, toting their equipment in a "lunar rickshaw," the first wheeled vehicle on the moon. Two NPS graduates were on Apollo 17: accompanying Cernan was command-module pilot **Ronald Evans** ('64). The fruit of the Mercury, Gemini, and Apollo programs was a staggering collection of engineering, scientific, and medical data. Many count the Apollo program as mankind's greatest technological achievement.

### Skylab (1973–1974)

Skylab, an American space station launched in 1973, was designed to explore extended human habitation in space. Skylab's three missions, carried out by three-man crews—each with an NPS graduate—clocked a total of 171 days on the orbiting station and completed some 300 experiments. NASA's plans to lift Skylab into a higher, safer orbit by means of the space shuttle never materialized; her orbit slowly deteriorated and the abandoned spacecraft reentered the atmosphere over the Indian Ocean and Australian outback in July 1979. Skylab astronauts holding an NPS master of science are **Paul Weitz** ('64) first

manned mission, twenty-eight days, 1973; **Jack Lousma** ('65): second mission, fifty-nine days, 1973; and **Gerald Carr** ('61): third and final mission, eighty-four days, 1973–74.

### Space Shuttle Program (1981–present)

Since the first space-shuttle launch in 1981 to date (October 2007), there have been 119 missions, ranging widely from microgravity experimentation, Hubble Space Telescope repair, launching and retrieval of satellites, and most recently, building the International Space Station (ISS). NPS-educated astronauts have flown on forty-eight of these missions and seven missions had two graduates aboard.

**Jack Lousma** ('65) was spacecraft commander of *Columbia* for the first extended shuttle flight (seven days) in 1982. **Robert Overmyer** ('64) piloted the first fully functional shuttle flight. **Paul Weitz** ('64) commanded *Challenger's* maiden flight and was the first to spacewalk from a shuttle. **Michael Coats** ('79) piloted *Discovery* (1984) on his way to three shuttle flights and is currently the director of NASA's Johnson Space Center. **Jon McBride** ('71) piloted *Challenger's* sixth voyage in 1984, which included **David Leestma** ('72) as mission specialist.

By 1985, after twenty-four flights, shuttle flights seemed routine—until the *Challenger* STS-51L disaster in 1986, in which the entire crew, including pilot **Michael Smith** ('68) perished. The program was suspended for two years while engineers redesigned the solid rocket boosters, and resumed with a *Discovery* launch crewed by NPS shuttle veteran **David Hilmers** ('78). Since then, NPS grads on the space shuttle include **Scott Altman** ('90), **Dan Bursch** ('91), **Robert Curbeam** ('90), **Christopher Ferguson** ('92), **Stephen Frick** ('94), **John Herrington** ('95), **Brent Jett** ('89), **Mark Kelly** ('94), **Michael Lopez-Alegria** ('84), **William McCool** ('92), **Carlos Noriega** ('90), **Lisa Nowak** ('92), **Ken Reightler** ('84), **Kent Rominger** ('87), **Winston Scott** ('80), **Robert Springer** ('71), and **Jeffrey Williams** ('87). Other NPS graduates scheduled to fly in the near future include **Mike Foreman** ('86), **Ken Ham** ('96) and **Al Poindexter** ('95).

**William McCool** was the pilot of *Columbia*, STS-107, in 2003 when all hands were lost during entry, due to wing damage. Once again, flights were suspended for over two years.