
Aerospace Engineers

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Nature of the Work

Aerospace engineers create extraordinary machines, from airplanes that weigh over a half a million pounds to spacecraft that travel over 17,000 miles an hour. They design, develop, and test aircraft, spacecraft, and missiles and supervise the manufacture of these products. Aerospace engineers who work with aircraft are called *aeronautical engineers*, and those working specifically with spacecraft are *astronautical engineers*.

Aerospace engineers develop new technologies for use in aviation, defense systems, and space exploration, often specializing in areas such as structural design, guidance, navigation and control, instrumentation and communication, or production methods. They often use computer-aided design (CAD) software, robotics, and lasers and advanced electronic optics. They also may specialize in a particular type of aerospace product, such as commercial transports, military fighter jets, helicopters, spacecraft, or missiles and rockets. Aerospace engineers may be experts in aerodynamics, thermodynamics, celestial mechanics, propulsion, acoustics, or guidance and control systems.

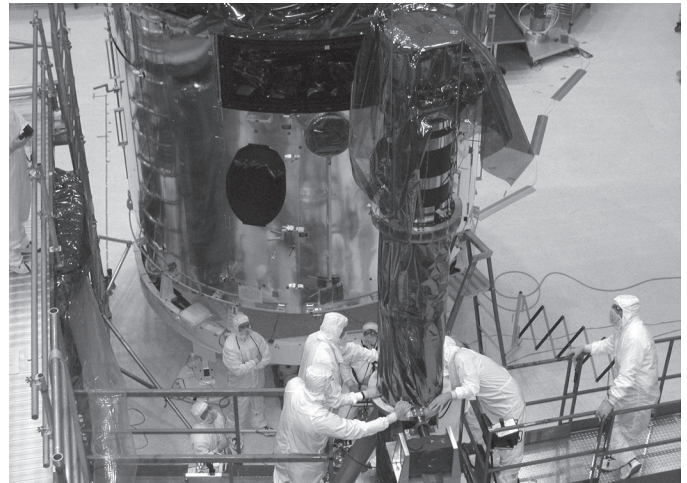
Aerospace engineers typically are employed in the aerospace product and parts industry, although their skills are becoming increasingly valuable in other fields. For example, in the motor vehicles manufacturing industry, aerospace engineers design vehicles that have lower air resistance and, thus, increased fuel efficiency.

Employment

Aerospace engineers held about 78,000 jobs in 2002. Most worked in the aerospace product and parts manufacturing industries. Federal Government agencies, primarily the U.S. Department of Defense and the National Aeronautics and Space Administration, provided 10 percent of jobs. Architectural, engineering and related services, scientific research and development services, and navigational, measuring, electromedical, and control instruments manufacturing industry firms accounted for most of the remaining jobs.

Job Outlook

Employment of aerospace engineers is expected to decline over the projection period. Foreign competition and the slowdown in air travel will limit the number of new jobs for aerospace engineers related to the design and production of commercial aircraft over the projection period. Despite the expected decline in employment, favorable opportunities are expected for aerospace engineers through 2012 because the number of degrees granted in aerospace engineering has declined greatly over the last decade due to the perceived lack of opportunities in this occupation. The decline in degree production has reached the point that the number trained in aerospace engineering may not be adequate to replace the large numbers of aerospace engineers who are expected to leave the occupation, especially due to retirement, over the 2002-12 period. Some employment opportunities also will occur in industries not typically associated with aerospace, such as motor vehicle manufacturing.



Aerospace engineers prepare a space vehicle for launch.

Earnings

Median annual earnings of aerospace engineers were \$72,750 in 2002. The middle 50 percent earned between \$59,520 and \$88,310. The lowest 10 percent earned less than \$49,640, and the highest 10 percent earned more than \$105,060. Median annual earnings in the industries employing the largest numbers of aerospace engineers in 2002 were:

Federal government.....	\$81,830
Architectural, engineering, and related services	74,890
Aerospace product and parts manufacturing	70,920

According to a 2003 salary survey by the National Association of Colleges and Employers, bachelor's degree candidates in aerospace engineering received starting salary offers averaging \$48,028 a year, master's degree candidates were offered \$61,162, and Ph.D. candidates were offered \$68,406.

Sources of Additional Information

For further information about careers in the aerospace industry, contact:

- ▶ Aerospace Industries Association, 1250 Eye St. NW., Suite 1200, Washington, DC 20005-3924. Internet: <http://www.aia-aerospace.org>
- ▶ American Institute of Aeronautics and Astronautics, Inc., 1801 Alexander Bell Dr., Suite 500, Reston, VA 20191-4344. Internet: <http://www.aiaa.org>

See the introduction to the section on engineers for information on working conditions, training requirements, and other sources of additional information.