

call (912) 757-3000; Federal Relay Service: (800) 877-8339. The first number is not tollfree, and charges may result. Information also is available from the OPM Internet site: <http://www.usajobs.opm.gov>.

Non-high school students and those wanting more detailed information should contact societies representing the individual branches of engineering. Each can provide information about careers in the particular branch. The individual statements that follow also provide other information in detail on aerospace; agricultural; biomedical; chemical; civil; computer hardware; electrical and electronics, except computer; environmental; industrial, including health and safety; materials; mechanical; mining and geological, including mining safety; nuclear; and petroleum engineering.

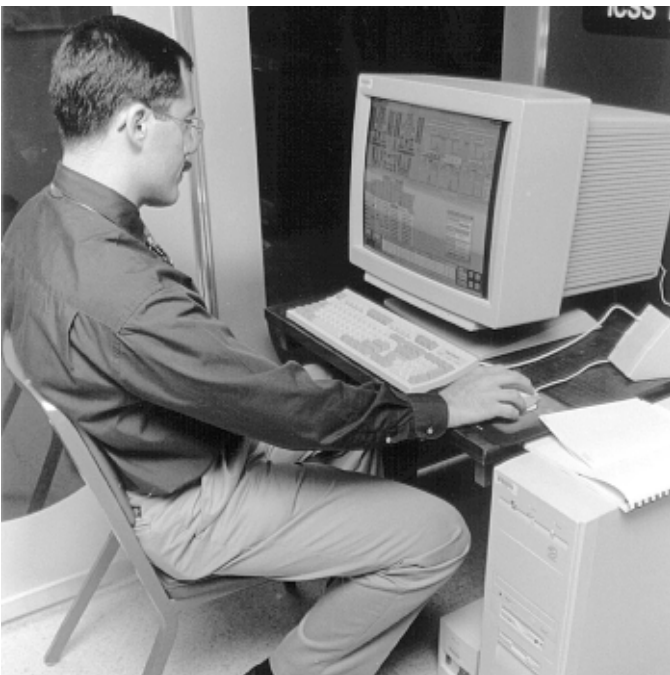
Aerospace Engineers

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Nature of the Work

Aerospace engineers are responsible for developing 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 manufacturing of these products. Aerospace engineers who work with aircraft are considered *aeronautical engineers*, and those working specifically with spacecraft are considered *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), robotics, and lasers and advanced electronic optics to assist them. 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,



Aerospace engineers use computer-aided design to develop new technologies.

thermodynamics, celestial mechanics, propulsion, acoustics, or guidance and control systems.

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

Employment

Aerospace engineers held about 50,000 jobs in 2000. Almost one-half worked in the aircraft and parts and guided missile and space vehicle manufacturing industries. Federal Government agencies, primarily the Department of Defense and the National Aeronautics and Space Administration, provided almost 15 percent of jobs. Engineering and architectural services, research and testing services, and search and navigation equipment firms accounted for most of the remaining jobs.

Job Outlook

Employment of aerospace engineers is expected to grow about as fast as the average for all occupations through 2010. The decline in Defense Department expenditures for military aircraft, missiles, and other aerospace systems has restricted defense-related employment opportunities in recent years. However, an expected increase in defense spending in these areas may result in increased employment of aerospace engineers in defense-related areas during the 2000-10 period. Demand should increase for aerospace engineers to design and produce civilian aircraft, due to the need to accommodate increasing passenger traffic and to replace much of the present fleet with quieter and more fuel-efficient aircraft. Additional opportunities for aerospace engineers will be created with aircraft manufacturers to search for ways to use existing technology for new purposes. Some employment opportunities also will occur in industries not typically associated with aerospace, such as motor vehicles. Most job openings, however, will result from the need to replace aerospace engineers who transfer to other occupations or leave the labor force.

Earnings

Median annual earnings of aerospace engineers were \$67,930 in 2000. The middle 50 percent earned between \$56,410 and \$82,570. The lowest 10 percent earned less than \$47,700, and the highest 10 percent earned more than \$94,310. Median annual earnings in the industries employing the largest numbers of aerospace engineers in 2000 were:

Federal Government	\$74,170
Search and navigation equipment	71,020
Aircraft and parts	68,230
Guided missiles, space vehicles, and parts	65,830

According to a 2001 salary survey by the National Association of Colleges and Employers, bachelor's degree candidates in aerospace engineering received starting offers averaging \$46,918 a year, master's degree candidates were offered \$59,955, and Ph.D. candidates were offered \$64,167.

Sources of Additional Information

For further information about aerospace engineers, contact:

► Aerospace Industries Association, 1250 Eye St. NW., Washington, DC 20005. Internet: <http://www.aia-aerospace.org>

► American Institute of Aeronautics and Astronautics, Inc., Suite 500, 1801 Alexander Bell Dr., Reston, VA 20191-4344. Internet: <http://www.aiaa.org>

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