

Aerospace Engineers

SOC: 17-2011 • Career Profile Report

■ Key Facts

\$134,830

Median Salary

71,600

Employment

+6.0%

Growth Rate

■ Requirements & Salary Range

Education: Bachelor's degree

■ Automation Risk Assessment

Low Risk - 17.0% probability of being automated in the next 10-20 years.

This job is relatively safe from automation due to its creative, social, or complex problem-solving requirements.

■ Work-Life Balance

8.2/10 - Excellent work-life balance

■ Personality Fit (RIASEC)

Higher scores indicate better personality fit for this career type.

Realistic	8.2/10	Investigative	8.8/10
Artistic	6.4/10	Social	5.2/10
Enterprising	5.8/10	Conventional	6.6/10

■ Top Skills Required

Analytical skills, Business skills, Communication skills, Interpersonal skills, Math skills, Problem-solving skills

✓ Strengths

- High Demand
- Flexible Work
- Continuous Learning

■ Challenges

- Burnout Risk
- Rapid Technological Change

■ What They Do

Aerospace Engineers are advanced engineering professionals who design, test, and improve **aircraft, spacecraft, satellites, missiles, and related systems**. Their work supports aviation, space exploration, national defense, and emerging aerospace technologies by ensuring vehicles can operate safely, efficiently, and reliably under extreme conditions. This role blends physics, mathematics, materials science, and systems engineering at the highest technical level.

This career is well suited for individuals who enjoy complex problem-solving, advanced science, and working on cutting-edge technology that pushes the limits of flight and space travel.

What Do Aerospace Engineers Do?

Aerospace engineers apply engineering principles to the full lifecycle of flight and space systems, from concept through testing and production.

Common responsibilities include:

- Designing aircraft, spacecraft, propulsion, or control systems
- Analyzing aerodynamics, structural integrity, and thermal performance
- Developing and testing prototypes and components
- Using computer simulations and modeling tools
- Evaluating performance, safety, and reliability
- Troubleshooting design or operational issues
- Collaborating with multidisciplinary engineering teams

Areas of Aerospace Engineering

Aerospace engineers often specialize in specific technical domains:

- Aeronautical Engineering: Focuses on aircraft that operate within Earth's atmosphere.
- Astronautical Engineering: Concentrates on spacecraft and space systems.
- Propulsion Engineering: Designs engines, rockets, and fuel systems.
- Structures and Materials: Ensures airframes can withstand stress, vibration, and temperature extremes.
- Avionics and Control Systems: Develops navigation, guidance, and flight control systems.
- Systems Engineering: Integrates complex subsystems into cohesive designs.

Skills and Abilities Needed

Aerospace engineers combine advanced technical knowledge with analytical rigor.

Core Professional Skills

Personal Qualities That Matter

Education and Training Pathway

Becoming an aerospace engineer requires rigorous formal education:

- Bachelor's Degree: In aerospace engineering or a closely related field
- Advanced Mathematics and Engineering Coursework: Core to professional practice
- Internships or Co-op Programs: Gaining real-world aerospace experience
- Master's Degree (common): For advanced technical or research roles
- Professional Development: Ongoing learning as technology evolves

Where Do Aerospace Engineers Work?

Aerospace engineers are employed across public and private sectors:

- Aerospace and Aviation Companies

- Space Exploration and Satellite Organizations
- Defense and National Security Agencies
- Research Laboratories and Universities
- Commercial Aircraft and Engine Manufacturers
- Advanced Technology and R&D; Firms

Work environments are typically office-based, laboratory-focused, or at testing facilities.

How Much Do Aerospace Engineers Earn?

Earnings vary by specialization, experience, and employer:

- Entry-Level Aerospace Engineers: Typically earn strong engineering salaries
- Experienced or Specialized Engineers: Often earn higher pay with expertise
- Senior Engineers or Technical Leads: May earn more with leadership responsibility

Compensation often includes benefits and long-term career stability.

Is This Career Difficult?

Aerospace engineering is intellectually demanding and technically rigorous. Engineers must master complex physics, manage tight tolerances, and design systems where failure is not an option. The challenge lies in solving problems that operate at extreme speeds, temperatures, and forces while meeting strict safety and performance standards.

Who Should Consider Becoming an Aerospace Engineer?

This career may be a strong fit if you:

- Enjoy math, physics, and engineering challenges
- Are fascinated by aircraft, space, or advanced technology
- Like solving complex, high-impact problems
- Are detail-oriented and safety-focused
- Want to work on systems that push technological boundaries

How to Prepare Early

- Take advanced math and physics courses
- Study engineering, robotics, or aviation fundamentals
- Learn computer modeling and simulation tools
- Participate in engineering clubs or competitions
- Explore aerospace engineering degree programs and internships

Aerospace engineers make flight and space exploration possible by transforming scientific principles into reliable, high-performance systems—advancing aviation, space travel, and technological innovation through precision, creativity, and engineering excellence.