

CAREERS THROUGH MATHS: AEROSPACE ENGINEER



JOB OVERVIEW

Aerospace Engineers in the UK design, develop, and test aircraft, spacecraft, satellites, and missile systems. On a typical day, you might be found at Airbus in Filton or Broughton running computational fluid dynamics (CFD) simulations on the next-generation wing design, or at Rolls-Royce in Derby analysing turbine blade fatigue under extreme thermal stress. Your work spans the full product lifecycle—from initial concept sketches and feasibility studies through to detailed design, prototyping, certification testing, and in-service support. For example, you could be calculating the thrust-to-weight ratio for a new short-haul jet destined for easyJet’s fleet, or determining the orbital insertion parameters for a communications satellite being built by Surrey Satellite Technology Ltd (SSTL) in Guildford.

KEY MATHS APPLICATIONS

Primary Areas:

- **Calculus (Differentiation and Integration):** ** Calculus is the backbone of aerospace engineering. When you're determining the rate of climb for an aircraft, you're differentiating altitude with respect...
- **Linear Algebra and Matrices:** ** Modern aerospace structures are analysed using the finite element method (FEM), which divides a complex structure into thousands of smaller elements, each...
- **Differential Equations:** ** The behaviour of aircraft and spacecraft is governed by ordinary and partial differential equations. The Navier-Stokes equations, which describe fluid...

ESSENTIAL SKILLS & TOOLS

SKILL	APPLICATION
CATIA V5/V6 (CAD Software)	Dassault Systèmes' CATIA is the industry standard for 3D computer-aided design in UK...
MATLAB/Simulink	MathWorks' MATLAB is extensively used across UK aerospace for numerical computing, data...
ANSYS (Finite Element Analysis)	ANSYS is used for structural and thermal analysis through finite element methods.
Python	Python has become essential for data analysis, automation, and scientific computing in UK...

TYPICAL PATHWAY

The route to becoming an aerospace engineer in the UK typically begins with strong GCSEs in mathematics (grade 6 or above) and sciences, followed by A-levels in mathematics and physics (grade B or above is typically expected for competitive university courses).

INDUSTRY DEMAND

The UK aerospace sector is growing strongly, with industry body ADS Group reporting that the sector's order book stands at over £200 billion. The Aerospace Technology Institute (ATI) forecasts that the UK will need to recruit...

REAL-WORLD IMPACT

Aerospace engineers in the UK make profound contributions to society, national security, and the economy. They design and build the aircraft that connect the UK to the world—Airbus wings made in Broughton are fitted to every Airbus...

QUICK FACTS

- **Salary:** £36
- **Education:** GCSEs in mathematics (grade 6 or above) and sciences, followed by A-levels in mathematics and p
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