



Educational Topic

Computational Fluid Dynamicist

Related Job Titles:

Aerospace Engineer, Aeronautical Engineer, Fluid Mechanics Engineer

Job Description:

Computational Fluid Dynamicists mainly perform research-related tasks. They are given complex air-flow problems and asked how the air-flow around a particular object can be changed to increase the aircraft's aerodynamic performance. The research is performed in an office building or aeronautical high-computing lab facility using sophisticated computer workstations and computer visualization tools. Dynamicists design test procedures and coordinate with computer software engineers to develop software programs that measure the fluid flow around an aircraft or a part of an aircraft. The dynamicist runs the test, examines the results and writes a report that identifies how the design is flawed and how it should be modified to maximize its flight potential. When models are tested they are "flown in a computer" using sophisticated computational fluid dynamics visualization software. These researchers spend a lot of time looking up and reading over documents with aeronautical information. They work with complex equations, use computers to run simulations and discuss their research with colleagues.

Interests / Abilities:

- Do you have very quick recall on most things, especially when working with numbers?
- Can you work a lot of mathematical equations in your head and still get the correct answer?
- Do you enjoy finding more than one way to solve a problem?
- Do you like playing board games that require you to have a strategy and plan your moves in advance (for example, chess)?
- Can you spend many hours working through lots of details to solve a problem or get a task done?

Suggested School Subjects / Courses:

- Physics
- Aeronautics
- Chemistry
- Database software programs
- Mathematics (geometry, trigonometry, calculus)
- English composition

Education / Training Needed:

The minimum education required for this position is a bachelor's degree in Aeronautics, Aeronautical Engineering, Aerospace Engineering, Fluid Dynamics, Thermal Dynamics, Computer Science or another appropriate subject from an accredited college or university. To perform research, Master's level to Ph.D. in Aeronautics, Aeronautical Engineering, Aerospace Engineering, Fluid Mechanics is necessary.

Areas of expertise:

- *Aerodynamics*
- *Aeronautics*
- *Computational Fluid Dynamics (CFD)*
- *Aircraft structure and function*
- *Aircraft propulsion systems*
- *Fluid mechanics*

