Opportunity Title: Mechanical / Aerospace Engineering Summer Internship: U.S. Naval Air Warfare Center
Opportunity Reference Code: ERDC-ITL-2023-0018

Organization U.S. Department of Defense (DOD)

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How to Apply Click on *Apply* at the bottom of the opportunity to start your application.

Description

The Naval Air Warfare Center Aircraft Division (NAWCAD) Air Vehicle Engineering scientists and engineers provide the technical excellence to support the maritime engineering needs related to technology development, system acquisition, and product support of all naval aviation air vehicle engineering. Air vehicle engineering consists of the following functional areas: aeromechanics, structures, materials engineering, subsystems, and aerial vehicle engineering science and technology.

Project: Use Computation Fluid Dynamics analysis tools commonly exercised in the Applied Aerodynamics Branch at NAWCAD Patuxent River and apply them to a research problem. The research will investigate the effects of turbulence modeling and other numerical parameters on boundary layer separation from smooth surfaces and drag, with application to a Navy store.

What will I be doing?

Under the guidance of a mentor, you will engage in various research activities, including:

- Learn Kestrel and other software tools, including Capstone (for mesh generation) and ParaView (for visualization), as well as instruction on how to utilize the HPC supercomputing resources if needed.
- Run cases to evaluate how aerodynamic outputs such as drag and pitching moment of one or more Navy stores are affected by numerical parameters.
- Produce flowfield visualizations from the CFD solutions to relate the aerodynamic outputs to flow behavior, especially boundary layer separation.
- Investigate how the physics of boundary layer separation and drag are related to numerical parameters that are relevant to any CFD solver.
- Participate in monthly meetings including both branches, you will have the opportunity to share your progress, ask questions, and learn about the projects other engineers are working on.

Why should I apply?

This fellowship provides the opportunity to independently utilize your skills and engage with experts in innovative ideas to move the proposed research forward.

Where will I be located? Patuxent River, Maryland

What is the anticipated start date?

Exact start dates will be determined at the time of selection and in coordination with the selected candidate. Applications are reviewed on an ongoing basis and internships will be filled as qualified candidates are identified.

What is the appointment length?

This appointment is a summer research appointment, with the possibility to be renewed for additional research periods. Appointments may be extended depending

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on funding availability, project assignment, program rules, and availability of the participant.

What are the benefits?

You will receive a stipend to be determined by the sponsor. Stipends are typically based on a participant's academic standing, discipline, experience, and research facility location. Other benefits may include the following:

- Health Insurance Supplement (*Participants are eligible to purchase health insurance through ORISE)*
- Relocation Allowance
- Training and Travel Allowance

About ORISE

This program, administered by Oak Ridge Associated Universities (ORAU) through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and DoD. Participants do not enter into an employee/employer relationship with ORISE, ORAU, DoD or any other office or agency. Instead, you will be affiliated with ORISE for the administration of the appointment through the ORISE appointment letter and Terms of Appointment. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE. For more information, visit the ORISE Research Participation Program at the U.S. Department of Defense.

Qualifications

The qualified candidate should be pursuing or having earned a degree in Mechanical or Aerospace Engineering.

Highly competitive applicants will have education and/or experience in one or more of the following:

- Background in aerodynamics and have completed at least an entry-level aerodynamics course during their study.
- Experience with Computational Fluid Dynamics via coursework and/or including basic or applied research projects at the undergraduate or graduate level.
- Experience with Unix or Linux command-line computer operation.

Security Investigation: Applicants should be able to pass a National Agency Check and Inquiries (NACI) security investigation should they be selected and accept the internship offer.

Application Requirements

A complete application consists of:

- Zintellect Profile
- Educational and Employment History
- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- Transcripts/Academic Records - Please upload a copy of a official transcript for

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your current or most recent degree program that meets the disciplinary qualifications of the opportunity. Click here for detailed information about acceptable transcripts.

- One recommendation. Your application will be considered incomplete and will not be reviewed until one recommendation is submitted. We encourage you to contact your recommender(s) as soon as you start your application to ensure they are able to complete the recommendation form and to let them know to expect a message from Zintellect. Recommenders will be asked to rate your scientific capabilities, personal characteristics, and describe how they know you. You can always log back in to your Zintellect account and check the status of your application.

If you have questions, send an email to usace@orise.orau.gov. Please list the reference code of this opportunity ERDC-ITL-2023-0018 in the subject line of the email. Please understand that ORISE does not review applications or select applicants; selections are made by the sponsoring agency identified on this opportunity. All application materials should be submitted via the “Apply” button at the bottom of this opportunity listing. Please do not send application materials to the email address above.

Connect with ORISE...on the GO! Download the new ORISE GO mobile app in the Apple App Store or Google Play Store to help you stay engaged, connected, and informed during your ORISE experience and beyond!

Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Bachelor's Degree, Master's Degree, or Doctoral Degree received within the last 60 months or currently pursuing.
- **Overall GPA:** 3.00
- **Academic Level(s):** Graduate Students, Post-Bachelor's, Postdoctoral, Post-Master's, or Undergraduate Students.
- **Discipline(s):**
  - **Computer, Information, and Data Sciences** (17 👁)
  - **Engineering** (27 👁)
  - **Mathematics and Statistics** (11 👁)
  - **Physics** (16 👁)
- **Age:** Must be 18 years of age
- **Veteran Status:** Veterans Preference, degree received within the last 120 month(s).