



# Alabama Research Experience for Undergraduate (ALREU)

---

**Project Title:**

Software and Hardware Development for A 2U CubeSat to make plasma density measurements in the ionosphere.

**Project Reference Code:**

USA-Spencer

**Hosting Institution:**

University of South Alabama

**Hosting Institution Location:**

Mobile, AL.

**Project Description:**

We will be developing electronic hardware, instrument electronics, software and simulating the behavior of a small satellite in the ionosphere. The interaction of the satellite with the plasma environment will affect measurements being made by an impedance probe, a specialized device that measures plasma parameters through perturbing the ambient plasma around a spacecraft. You will be assisting in the design, development and testing of the entire satellite under the mentorship of USA professors and graduate students. This includes the electrical power system, solar panels, sun sensors, attitude dynamics system, reaction wheels, magnetorquers, the impedance probe instrument board, control and data handling subsystem, as well as the integration with communications equipment.

**Disciplines:**

Electrical engineering, Computer Engineering, Computer Science, Math, Physics, Mechanical engineering, Aerospace engineering and related areas.

**U.S. citizenship required to participate in this project.****Name(s) of Mentor(s) and contact information:**

Dr. Edmund Spencer, [espencer@southalabama.edu](mailto:espencer@southalabama.edu)

Dr. Saeed Latif, [slatif@southalabama.edu](mailto:slatif@southalabama.edu)

**Internship Coordinator/ HR manager:**

Dr. Edmund Spencer, [espencer@southalabama.edu](mailto:espencer@southalabama.edu)

The name and contact information of personnel at the hosting is provided for further assistance with questions regarding the hosting institution or the project.

Interns will not enter into an employee/employer relationship with the Hosting Site. No commitment with regard to later employment is implied or should be inferred.