

**Company Information**

<b>Company Name</b>	<i>Fleet Readiness Center – East / NAVAIR</i>	<b>Date Submitted</b>	<i>04/20/2021</i>
<b>Project Title</b>	<i>Design of a MIL-STD-1553 Bus Analyzer (NAV_BUS)</i>	<b>Planned Starting Semester</b>	<i>Fall 2021</i>

**Senior Design Project Description**

**Personnel**

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project.

Please provide your estimate of staffing in the below table. The Senior Design Committee will adjust as appropriate based on scope and discipline skills:

<b>Discipline</b>	<b>Number</b>	<b>Discipline</b>	<b>Number</b>
Mechanical	1	Electrical	3
Computer	1	Systems	
Other (                    )			

**Company and Project Overview:**

The Naval Air Systems Command (NAVAIR) provides materiel support for aircraft and airborne weapon systems for the United States Navy. It is one of the Echelon II Navy systems commands (SYSCOM), and was established in 1966 as the successor to the Navy's Bureau of Naval Weapons.





NAVAIR's mission is to provide full life-cycle support of naval aviation aircraft, weapons and systems operated by Sailors and Marines. This support includes research, design, development and systems engineering, acquisition, test and evaluation, training facilities and equipment, repair and modification, and in-service engineering and logistics support.

**Project Requirements:**

The team will be tasked with designing a robust MIL-STD-1553 communication bus analyzer capable of capturing bus communications in real time for either 1553A or 1553B protocols. The design must be passive to the overall system and not interfere with normal operation. The design must be ruggedized such that it can operate in any environment and be transported by a single individual. The overall design must use MIL-STD connectors, hardware and connect to an existing 1553 via interface cabling. The bus analyzer must be capable of storing the captured bus communication and have the information accessible via a standard USB connection.

**Expected Deliverables/Results:**

- Complete technical data package for the overall design. To include a complete manufacturing level drawing package, schematics, any and all software required for operation (both source and compiled), and parts list.
- Prototype design that is capable of meeting minimum projects requirements proven via technical demonstration at the end of the project.

**Disposition of Deliverables at the End of the Project:**

FRC-East / NAVAIR expects to delivery of all project deliverables at the conclusion of this project.

**List here any specific skills, requirements, specific courses, knowledge needed or suggested (If none please state none):**



- Students and mentor must be US Citizens
- Must be willing (entire team, no exceptions) to travel to Cherry Point NC to gather data for project. Note mileage for travel will be reimbursed according to ISL procedures
- ECGR 3123 Data communication and networking as a Prerequisite is required for ECE students
- Mechanical design of the unit will be limited, so ME's applying must also have electrical skills to help with the ECE side of the design. Alternately, an ECE student with ME skills could do the ME part of the project.
  - Students should be willing to learn and complete some self tutorials from website such as
- [http://www.altadt.com/support/tutorials/?gclid=EA1aIQobChMItuXS\\_orW8AIV\\_zizAB123Qn\\_EAAYASABEgJ5OPD\\_BwE](http://www.altadt.com/support/tutorials/?gclid=EA1aIQobChMItuXS_orW8AIV_zizAB123Qn_EAAYASABEgJ5OPD_BwE)
- ECGR 4187 Data Communication and Networking II Course as a pre or co-requisite in fall 2021.