

Senior Design Project Description

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| Company Name | ETCM | Date Submitted | 05/08/2019 |
| Project Title | Air Force Research Laboratory University Design Competition (UNCC_AFRL3) | Planned Starting Semester | Fall 2020 |

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:

| Discipline | Number | Discipline | Number |
|------------|--------|------------|--------|
| Mechanical | 3 | Electrical | 3 |
| Computer | 2 | Systems | 1 |
| Other () | | | |

Project Overview and Requirements:

The United States Air Force Research Laboratory (AFRL) Challenge seeks breakthroughs in military operations and capabilities through a goal-oriented competition that attracts, inspires and challenges the most brilliant, innovative and practical minds on Earth. The best teams of students will leverage their knowledge, creativity and business networks to serve the nation and introduce the next generation of technology solutions.

The AFRL Challenge is looking for university teams who believe they have the right combination of creativity, ingenuity and determination to introduce the concepts and technologies of the future. The philosophy is simple: the Air Force recognizes that people are naturally inspired by competition, and great ideas aren't limited to specific corporations or organizations or bounded by geographic locations. They come from individuals all over the world, who are passionate about an idea and have the vision and resources to see it to fruition.

The specifics of the 2021 Challenge will be released in August 2020. The UNCC team will develop, design, build, test their solution, then present it to a team of Air Force subject matter experts at a to-be-determined Air Force site in competition with other University teams.

Recent projects have included:

- a device to rescue an airman downed in hostile waters;
- a device to locate and deliver information on an active shooter;
- a device to help a special-ops team infiltrating an airfield transport their equipment.



UNC CHARLOTTE

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Expected Deliverables/Results:

Deliverables include:

- Implemented solution presented to AFRL judges in April
- PDR, CDR and Final Presentation to AFRL
- Final Report to AFRL

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

- CAD
- Machining
- Robotics
- Control systems
- Programming