



Department Project Information

Department Name	<i>ETCM</i>	Date Submitted	<i>05/14/2021</i>
Project Title	<i>Air Force Research Laboratory (AFRL) University Design Competition 2022 (UNCC_AFRL4)</i>	Planned Starting Semester	<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:

Discipline	Number	Discipline	Number
Mechanical	<i>4</i>	Electrical	<i>3</i>
Computer	<i>1</i>	Systems	<i>1</i>
Other ()	<i>0</i>		

Project Overview:

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.

Project Requirements:

The specifics of the 2022 Challenge will be released in August 2021. 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 autonomously place cameras on buildings and poles
- 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

Expected Deliverables/Results:

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

Disposition of Deliverables at the End of the Project:

Hardware developed is the property of the mentor and department.

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

- DoD Veterans or ROTC cadets
- CAD
- Machining
- Robotics
- Control systems
- Programming