



AIAA UH

**AMERICAN INSTITUTE OF AERONAUTICS
AND ASTRONAUTICS
UNIVERSITY OF HOUSTON**

SPONSORSHIP PACKAGE

2019 - 20

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OVERVIEW OF AIAA-UH

The American Institute of Aeronautics and Astronautics at the University of Houston (AIAA-UH) is a non-profit, professional engineering organization dedicated to the expansion of the presence of the aerospace field at the University of Houston. AIAA-UH was re-established in 2015, and we are the only organization to represent the aerospace field at our university. We provide networking opportunities for our members by hosting speaker events with professionals from the aerospace industry. AIAA-UH also provides opportunities to gain technical experience of aerospace concepts through our engineering projects.



Figure 1: Test Plane Created by Space City UAV Team



Figure 2: Space City Rocketry at Spaceport America Cup 2019 Competition in Las Cruces, NM.

Space City Rocketry and Space City UAV Team are the engineering projects supported by AIAA-UH. Both teams focus on the designing, manufacturing, and testing of their respective flight vehicles, and provide students the opportunity to gain experience with working on a team with other engineers. Our engineering projects have been in existence for only a few years, but during that time they have come to fully establish themselves through their many successes and accomplishments. By supporting these engineering projects, AIAA-UH is ensuring that the presence and interest in the aerospace field will continue to grow for many years to come.

OUR MISSION & OUTREACH

As the only aerospace focused organization on campus, we strive to promote aerospace both at the University of Houston and in the surrounding community. Our primary avenue toward reaching our goal of establishing an aerospace community at UH is connecting our members with professionals in the field at our general meetings. We have hosted employees of NASA, United Airlines, LZ Technology, and a former Lockheed-Martin Skunk Works engineer, among others.



Figure 3: John Scott, NASA Chief Technologist, Propulsion and Power.



Figure 4: John Scott and AIAA-UH students in a group photo.



Figure 5: Eryn Beisner, Extra Vehicular Activity Flight Control Engineer with AIAA-UH students.



Figure 6: Inaugural Aerospace Professional Committee, in which professionals talk to AIAA-UH students.

To reach out to our community, we co-host several events on campus. To inspire the next generation of aerospace enthusiasts we hold the Mars Rover Celebration, where elementary and middle school students compete for the best Mars rover design. As part of the event, we have set up demonstrations to teach the students about lift and drag through the construction of paper airplanes. We also annually participate in Chevron's "Girls Engineering the Future!" event, where we run a booth to teach 4-8th grade girls about the basics of rocketry and flight through model rocket launches.



Figure 7: AIAA-UH officers talking to students at the UH Beginning of Semester Party.



Figure 8: AIAA Alumni Bowling Social, where current AIAA members networked with AIAA alumni who are now working in the aerospace industry.



Figure 9: AIAA-UH officers at annual Mars Rover Celebration at UH.



Figure 10: Daniel Kolodziejck, AIAA-UH President, with young women at Chevron Girls in Engineering event.

AIAA-UH PROJECT TEAMS

SPACE CITY ROCKETRY



The Space City Rocketry teams' mission is to provide an opportunity for students interested in rocketry to gain experience by working with other engineers to design a rocket. Space City Rocketry also serves to garner interest in the professional side of AIAA and increase the technical skills of our members.

The Space City Rocketry team will compete in the Intercollegiate Rocket Engineering Competition (IREC) for the third time in 2020. IREC is hosted annually by the Experimental Sounding Rocket Association (ESRA) in Las Cruces, New Mexico where over 50 schools launch their rockets. Teams are judged based on competency, research and development and flight performance. Rockets are expected to reach a target altitude of either 10,000ft or 30,000 feet, carrying a payload of 8.8 lbs. Space City Rocketry will be reusing and improving their competition rocket from last year, Oberon, in the hopes of creating a reliable platform for developing exciting new systems.

Space City Rocketry spent three years of fundraising, planning, and designing of their first rocket, Prometheus, raising over \$10,000 and spent many painstaking hours planning team organization. AIAA-UH owes its existence to the dedicated members of the first three years of Space City Rocketry, the inaugural team and creators of the Prometheus rocket.

OBERON (2018 - 2019)

The Oberon rocket successfully launched in the 2019 IREC and placed 11th in the 10 thousand ft category, 14th in flight performance, and overall 22nd out of 121 teams. The rocket reached an altitude of 11193ft and was recovered safely with minimal damage.



Figure 12: Oberon on the rail ready to launch.



Figure 11: The team carrying Oberon to the launch site.

Oberon was Space City Rocketry's second successful launch and their first successful recovery, carrying a student capstone project payload testing the effects of high acceleration on the brain. Egg white was used to simulate human brain fluids while plastic beads were placed in the egg white to act as brain matter. The position of the beads was measured before the launch and their displacement was measured after the flight. This experiment could potentially help with concussion studies.



Figure 13: A photo of a successful launch.

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Figure 14: Group photo of the Space City Rocketry 2017-2018 with Prometheus

PROMETHEUS (2017 - 2018)

The Prometheus rocket launched successfully in the 2018 IREC and placed 60th overall, reaching an altitude of 7185 ft.

Prometheus was Space City Rocketry's first IREC rocket launch and surpassed the performance of veteran teams. However due to a parachute cord tangle, the rocket did not have nominal recovery performance and the nose cone was damaged upon landing, but telemetry data was able to be recovered.

Prometheus carried a faculty research project that tested the effects of high acceleration on experimental, flexible lithium batteries. The batteries were designed and manufactured by UH PhDs and PhD students, and are still being studied as potential power sources for astronaut or military flight equipment. Each battery is only a few millimeters thick and can be folded, bent, and twisted. Prometheus' payload contained six of the experimental batteries and three conventional coin cell batteries as a control group. Three of the flexible batteries were stored in a bent or arched posture while the other three were stored in a neutral state alongside the three-coin cell batteries.



Figure 15: Prometheus on the rail ready to launch.

LEADERSHIP, 2019 -2020

PROJECT MANAGER

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SPACE CITY UAV



The UAV team at UH strives to bring together students with an interest in aviation, autonomous vehicles, and machine learning to gain experience by creating competition drones. The UH UAV team hopes to further the autonomous aviation industry with unique features of its vehicles.



Figure 16: Space City UAV team members talking about the payload.

The UH UAV team will attempt to create a vehicle for the 2020 SAE Aero Design competition in Dallas, Texas. The vehicle must be able to be autonomously fly through several waypoints. There are three categories to SAE AERO; the team will compete in the basic category in addition to a sub-team working on the aspects of the advanced category in preparation for the use of the technology for next year.

The UH UAV team manufactured two manually controlled aircraft with cameras mounted on the underside of the vehicles. The team was also able to achieve live object tracking through their tensor flow model, allowing for the recognition of alphanumeric and colors from video taken by the team's camera.



Figure 17: The SCUAV team talking about the drone.

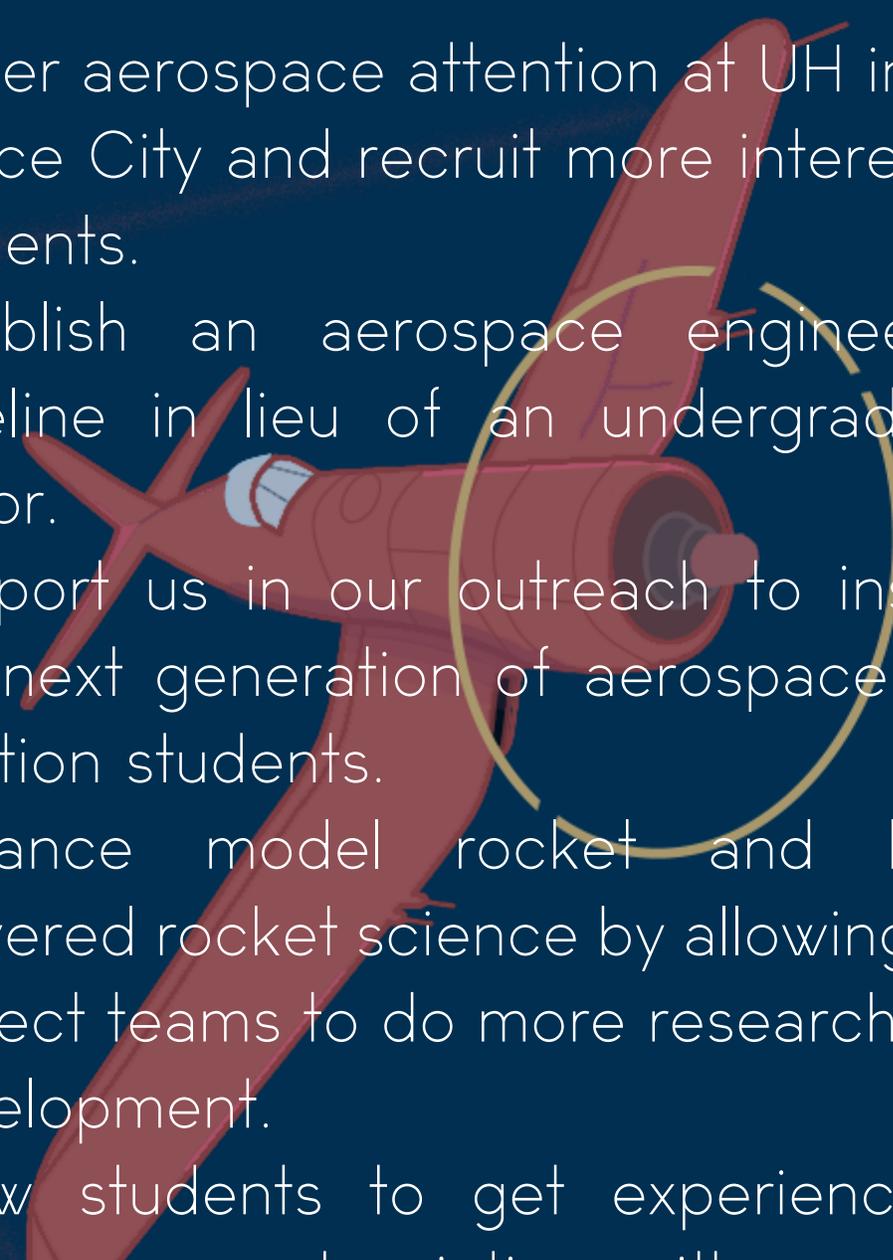
LEADERSHIP, 2019 -2020

PROJECT MANAGER

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WHY CONTRIBUTE

BY CONTRIBUTING TO AIAA-UH, YOU WILL:

- Foster aerospace attention at UH in the Space City and recruit more interested students.
 - Establish an aerospace engineering pipeline in lieu of an undergraduate major.
 - Support us in our outreach to inspire the next generation of aerospace and aviation students.
 - Advance model rocket and high-powered rocket science by allowing our project teams to do more research and development.
 - Allow students to get experience in aerospace and aviation with practical and workplace knowledge.
- 

SPONSORSHIP TIERS

COSMOS

- Large Logo on Vehicle
- Personalized Video
- Presentation to students
- T-Shirt logo (large)

\$2500+

SUPERSCLUSTER

- Logo with link on website
- T-Shirt logo (small)
- Sponsorship page with logo
- Medium logo on vehicle
- Volunteer event on behalf of company

\$1000+

GALAXY

- Get on sponsorship page
- Small logo on vehicle
- Logo on flyer

\$500+

SOLAR SYSTEM

- Social Media Shout out
- Shout out at General Meetings

\$100+

EARTH

- Standard Thank You email
- AIAA-UH picture

\$99 OR LESS



SPONSORS

2018 – 2019



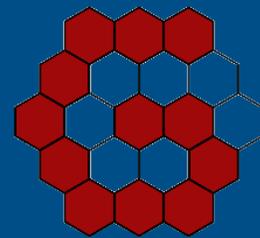
DRONE PARKS
WORLDWIDE



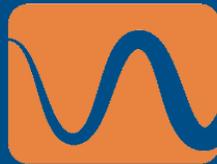
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FMIW
FASTENERS



Graphenoil



Cosine ADDITIVE



ZORRO

CONTACT US

For more information about AIAA-UH, Space City Rocketry, or Space City UAV Team, feel free to visit our website www.aiaa-uh.com, or email us at aiaacoogs.uh@gmail.com.



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**WE
THANK
YOU.**

