



Mission Aerospace - Design for Flight!

This summer YOU become a problem-solving engineer!

CAMP OBJECTIVE

In aerospace engineering, every successful flight depends on careful design, testing, and teamwork. Engineers must create systems that are stable, reliable, and capable of completing their mission from launch to landing.

Students are immersed in this process through the design and development of both space-based and flight systems. Working in teams, they define a mission, design and build a functional CubeSat system, integrate sensors and computing using Raspberry Pi, and apply CAD and fabrication techniques.

In the second half of the experience, students design, build, and test model rockets, applying principles of stability, forces, and system performance. Across all activities, they move beyond guided tasks into decision-making, tradeoffs, and iterative design, mirroring real engineering work.

WHY THIS PROJECT MATTERS

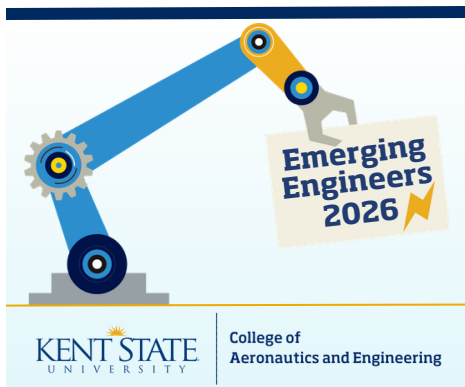
- Modern aerospace systems—from satellites to aircraft—require engineers to design complex, integrated systems that must function reliably in high-stakes environments.
- Students will experience how engineering problems are solved under real constraints, balancing performance, safety, materials, and mission goals. Through both CubeSat development and rocket design, they will see how individual components must work together within a larger system.
- This project reflects real-world engineering, where success depends on iteration, testing, and informed decision-making—not simply getting it right the first time.

WHAT STUDENTS WILL LEARN

- Systems Integration: How mechanical, electrical, and software components function together in a complete system
- Engineering Design Process: Planning, prototyping, testing, and improving designs based on data
- Aerospace Fundamentals: Forces, motion, stability, and performance in both rockets and satellites
- Computing & Sensors: Using Raspberry Pi and sensor systems to collect and interpret data
- CAD & Fabrication: Designing components and understanding how they are manufactured and assembled
- Team-Based Engineering: Collaborating to solve complex, open-ended problems and communicate solutions

Sponsored by:





Aerospace Engineering

Experience the full aerospace engineering design process through hands-on teamwork and problem-solving. Students will design, build, and test CubeSat systems using Raspberry Pi technology, CAD, and fabrication tools, then apply engineering principles to create and launch model rockets. Throughout the camp, participants will make design decisions, test solutions, and refine their work just like real engineers.

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HIGH SCHOOL SCHEDULE OF EVENTS

DAY 1: MONDAY, JUNE 22

- 8:30 a.m.** Check-In and Ice Breaker
- 9 a.m.** Welcome, Majors and Careers Overview | Dr. Maureen McFarland
- 9:45 a.m.** Introduction to CubeSats
- 10:30 a.m.** Tour of Labs
- 11:15 a.m.** Lunch
- 12:30 p.m.** Define the mission of your CubeSat
- 1:30 p.m.** Introduction to RaspberryPI and Demo Sensors
Design CubeSat Top Plate in CAD
- 3:30 p.m.** Check-Out

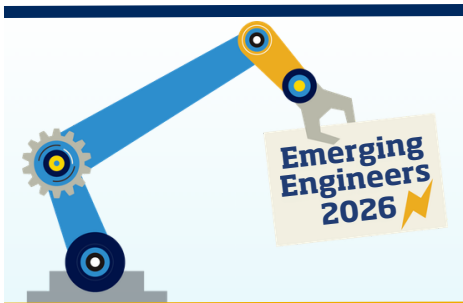
DAY 2: TUESDAY, JUNE 23

- 8:30 a.m.** Check-In and Ice Breaker
- 9 a.m.** Physical assembly of 3D printed CubeSats
- 10 a.m.** Work on Storyboard for Mission
- 11:15 a.m.** Lunch
- 12:30 p.m.** CubeSat Sensor Stack Up and System Integrations
- 1:30 p.m.** Install Sensors into the Chassis
Introduction to Node-Red
Lecture on Satellite Operations States
- 3:30 p.m.** Check-Out

DAY 3: WEDNESDAY, JUNE 24

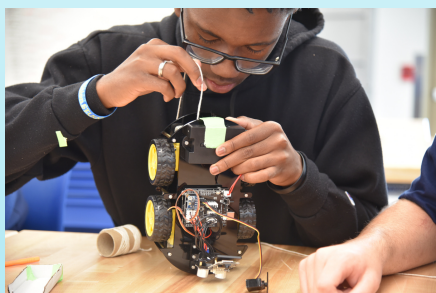
Please wear your navy Emerging Engineer T-Shirt and closed toed shoes. Comfortable footwear recommended.

- 8:30 a.m.** Check-In and Ice Breaker
- 8:45 a.m.** Define Satellite States and Program Satellite
- 10 a.m.** Camp Travel Day
- 3 p.m.** Closing Ceremony for Middle School Students
Optional for High Schoolers
- 3:30 p.m.** Check-Out



KENT STATE
UNIVERSITY

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Aeronautics and Engineering



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HIGH SCHOOL SCHEDULE OF EVENTS

DAY 4: THURSDAY, JUNE 25

- 8:30 a.m. Check-In and Ice Breaker
- 9 a.m. Build Rocket Kits
- 11:15 a.m. Lunch
- 12:30 p.m. Introduction to Rocketry
- 1:30 p.m. Open Rocket Lab
- 3:30 p.m. Check-Out

DAY 5: FRIDAY, JUNE 26

- 8:30 a.m. Check-In and Ice Breaker
- 9 a.m. Group 1: Launch Rockets
Group 2: VR/XR Lab
- 10:15 a.m. Group 1: VR/XR Lab
Group 2: Launch Rockets
- 11:15 a.m. Lunch
- 12:30 p.m. Group 1: Drones
Group 2: Air Traffic Control Lab
- 1:30 p.m. Group 1: Air Traffic Control Lab
Group 2: Drones
- 2:15 p.m. Closing Ceremony and Presentations
- 3:30 p.m. Check-Out