

OAKWOOD SCHOOL (CA)

A Space Odyssey

Posters featuring inspirational quotes about shooting for the moon and landing among the stars are standard fare in classrooms. Oakwood School (CA) took this space-focused motivation a few steps further by allowing students to build their very own satellite and launch it into the great unknown.

During the 2019–2020 school year, Oakwood initiated a “Year in Space,” which coordinated interactions between students and the International Space Station. Engineering instructor Michael Lyle discovered a strong interest in aeronautical engineering among students, leading to the creation of a Spacecraft Systems Engineering elective (SSE) where students designed a satellite named NyanSat.

In the inaugural 2021 class, students decided to design, build, and launch a satellite into orbit. They began with the mission design for NyanSat—a type of research spacecraft called a CubeSat, which is shaped like a cube and weighs less than 5 pounds. Students fabricated the spacecraft components in their classroom’s machining center and designed circuit boards. Given its shape, NyanSat is named after a popular internet meme called “NyanCat,” which features a cartoon cat with a rectangular pop-tart body, a rainbow trail, and stars in the background.



Students in Oakwood’s Space Systems Engineering course work on their nanosatellite, NyanSat.

In 2023, Oakwood applied to NASA’s CubeSat Launch Initiative, which gives U.S. schools and nonprofits a chance to put their technology on NASA launches. Oakwood was the only PK–12 institution selected this year. Since then, the 2024–2025 SSE class of 15 students has been working diligently to complete its nanosatellite in time for an expected 2025 launch. The satellite will feature groundbreaking technologies, including an acoustic spacecraft mapping system. Once the nanosatellite is completed, students will collaborate closely with NASA crew members aboard the

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International Space Station and plan to communicate with the spacecraft via radio each time it passes over the school.

“Once NyanSat is in orbit, our radio ground station will allow us to monitor its operation and send it commands,” says 11th grader Ryan Beaulieu. “Our school is part of a worldwide network called SatNOGS, which allows us to use ground stations around the world to communicate with NyanSat, and, in return, other teams can use our school’s ground station.”

About 40 Oakwood students in grades nine through 12 have participated in this project since the SSE class began. Many alumni, some of whom are studying engineering in college and hold leadership roles in their universities’ space research laboratories, continue to stay involved.