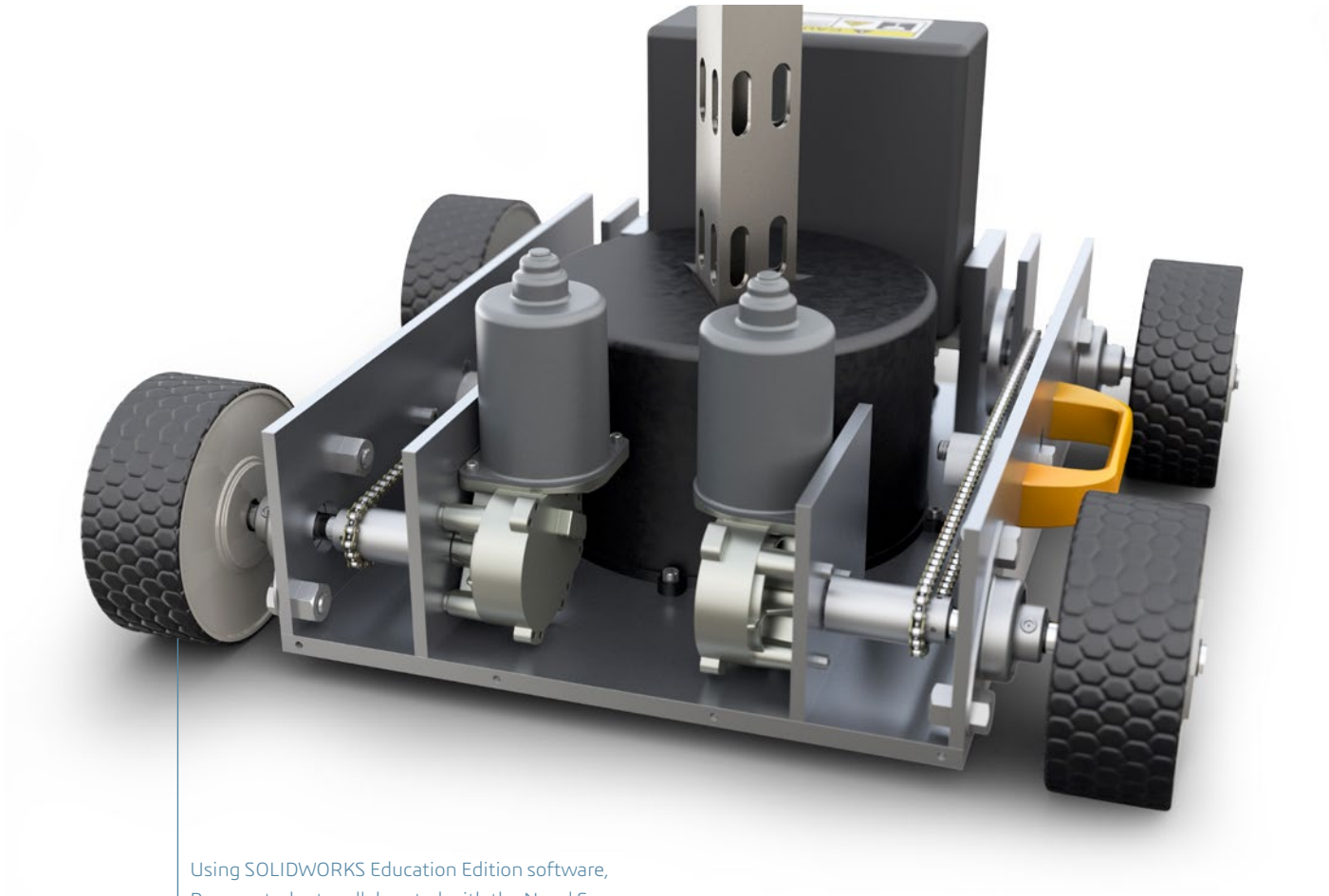
DASSAULT SYSTEMES

SOLIDWORKS

ROWAN UNIVERSITY

STUDENTS COLLABORATE WITH US NAVY USING SOLIDWORKS EDUCATION EDITION



Using SOLIDWORKS Education Edition software, Rowan students collaborated with the Naval Sea Systems Command (NAVSEA) on the development of a remotely operated robotic system for positioning a laser metrology camera to facilitate maintenance and repair of vessels at sea.

Rowan University

Challenge:
Enable mechanical engineering students to gain real-world experience working with university partners, such as the U.S. Navy, in project-oriented engineering clinics.

Solution:
Implement SOLIDWORKS Education Edition software to support the university's engineering program as well as project-oriented engineering.

Results:
- Advanced student project work
- Supported every mechanical design and analysis course
- Facilitated 16 mechanical engineering clinics annually
- Accelerated development of student CAD skills

The Rowan University College of Engineering is a leading innovator in engineering education. In addition to its focus on technical excellence, communication skills, and engineering coursework, the New Jersey-based university strives to contextually link its program to actual engineering applications. Rowan's innovative engineering clinics, which focus on real-world projects, are threaded throughout the four-year program.

The university's engineering clinics provide a hands-on approach to engineering education. These team-oriented endeavors involve an outside partner whom students collaborate with on a specific project. The experience gives students opportunities to apply mechanical engineering principles to actual challenges.

To support its mechanical engineering courses—and give students a robust platform for participating in clinics—Rowan University needs an easy-to-learn 3D CAD system, according to Dr. Thomas L. Merrill, associate professor of mechanical engineering. "Our engineering environment must empower rather than overwhelm," Merrill explains. "Gaining valuable experience working on partner projects is part of the core DNA of the school. Our approach demands a 3D CAD system for which students don't need their hands held to learn it and use it."

Since 1998, Rowan has relied on SOLIDWORKS® Education Edition software as the foundation of its mechanical engineering program. The university has standardized on SOLIDWORKS software because students can pick it up quickly, utilize its advanced communication and visualization tools, and leverage its integrated simulation and analysis capabilities. The university's site license annually supports about 220 engineering students on Rowan computers, as well as remotely on laptops via cloud access.

"SOLIDWORKS is an important part of our program because we don't have to spend a lot of time on CAD training and can focus on the application of engineering principles," Merrill stresses. "SOLIDWORKS has continually improved the software, making it easier to use and adding more features. The SOLIDWORKS tutorials are truly world-class, and there are more and more online instructional videos available every year. With SOLIDWORKS, it's easier for students to become proficient with the software and use it to obtain valuable experience."

DESIGN, BUILD, TEST, AND ANALYZE

Using SOLIDWORKS Education Edition software, Rowan provides its engineering students with more than CAD skills. Mechanical engineers create designs, solve physical problems, and build things. Because the motto of Rowan mechanical engineering is "Design, Build, and Test," the university expects every graduate from the program to be able to do all three, and SOLIDWORKS facilitates achieving this goal.

> **"The utility of SOLIDWORKS tools is incredible. It allows us to take students far beyond model creation. With SOLIDWORKS Simulation capabilities, students can analyze and learn about complex physical behavior, so they can improve design performance."**
>
> — Dr. Thomas L. Merrill,
> Associate Professor of Mechanical Engineering

"The utility of SOLIDWORKS tools is incredible," Merrill emphasizes. "It allows us to take students far beyond model creation. With SOLIDWORKS Simulation capabilities, students can analyze and learn about complex physical behavior, so they can improve design performance. They get to work with actual production equipment such as milling machines and lathes to make and test prototypes. SOLIDWORKS gives them the ability to design, build, and test, which has become critical to the successful completion of our engineering clinics."

SUPPORTING ENGINEERING CLINICS

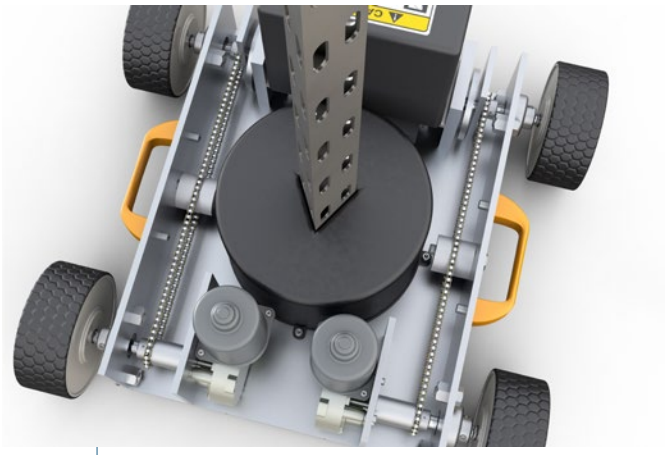
Rowan's engineering clinics enable students to use SOLIDWORKS software to learn through experience. The Freshman Clinic focuses on engineering measurements and reverse engineering. The Sophomore Clinic concentrates on engineering design and communication. In Junior and Senior Clinics, students work in small teams on actual projects, which are funded by industry or government agencies.

"Our clinics are analogous to internships or co-op programs," Merrill says. "We work with a range of partners, who sponsor the projects, on specific engineering challenges. Our students gain experience and our partners benefit from the work. SOLIDWORKS helps us conduct 16 individual clinics in mechanical engineering each year."

DEVELOPING A ROBOTIC SYSTEM FOR THE US NAVY

Working with the Naval Sea Systems Command (NAVSEA), Rowan students collaborated on the development of a remotely operated robotic system for positioning a laser metrology camera, which scans an interior space and creates a virtual model. The U.S. Navy uses these models to facilitate maintenance and repair of vessels at sea. The robotic system is necessary for reaching areas on ships and submarines that are difficult or impossible to access. Using SOLIDWORKS, the student team developed a functional prototype of a viable robotic system.

"The team leveraged SOLIDWORKS at each stage of the project," Merrill notes. "They designed the robot in SOLIDWORKS, ran some motion simulations and stress analyses, and built and tested the prototype. This is exactly the type of real-world experience that we want our students to have, and SOLIDWORKS helps us make it happen."



With SOLIDWORKS Education Edition software, Rowan students developed a functional prototype for a laser metrology positioning robot that can reach areas on ships that are difficult or impossible to access.

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