THE ADVANCED ENGINEERING DESIGN LAB (AEDL) IS A NEW FACILITY THAT CONSISTS OF 6,500 SQUARE FEET OF SPACE. STUDENTS FROM ALL MAJORS CAN PARTICIPATE IN TWELVE COMPETITION TEAMS HOUSED WITHIN THE LAB.
The Advanced Engineering Design Lab is a joint venture between Virginia Tech’s College of Engineering and the Aerospace and Ocean Engineering department. The facility houses up to 12 undergraduate design teams in the areas of rocketry, drone technology, aircraft technology, and turbine energy. AEDL teams travel to many parts of the United States to compete in world class engineering design competitions. AEDL is managed under the Ware Lab, which facilitates similar projects in the mechanical, civil, electrical, and aerospace disciplines.

The Kevin T. Crofton Department of Aerospace and Ocean Engineering Department has been instrumental in spearheading the initiative that has made the AEDL a reality. The AOE department provides 100% funding for space rental expenses and equipment procurement. All college and university majors, in addition to AOE students, are encouraged to participate in the team activities taking place at the facility. The Advanced Engineering Design Lab is a huge step in the right direction in providing support to undergraduate engineering competitive design.
3D PRINTED AIRCRAFT TEAM
Competition: 3DPAC National, Arlington Texas
Goal: Design and build an aircraft (fixed wing or rotary wing) in which all airframe components are printed using 3D printing technology.
Website: bit.ly/3DPrintedAircraftTeam

INVENTS ROCKETRY
Competition: NASA’s Space Grant Midwest High-Power Rocket Competition, North Branch, Minnesota.
Goal: CEED affiliated robotics team utilizing cost/fuel-efficient rocket systems.
Website: bit.ly/InVentsRocketry
MARS MADNESS

Competition: NASA’s Human Exploration Rover Challenge, NASA Florida.
Goal: To build a human-powered rover suitable for rough Martian terrain.
Website: bit.ly/MarsMadnessVT

NASA STUDENT LAUNCH INITIATIVE

Competition: NASA Student Launch.
Goal: To provide relevant, cost-effective rocket propulsion systems.
Website: bit.ly/NasaStudentLaunchVT
ORBITAL LAUNCH VEHICLE TEAM

Goal: Initially to fly a rocket past the Karman Line (100 km altitude) and then to place a satellite into low Earth orbit.
Website: olvt.org

ROCKETRY@VT

Competition: Intercollegiate Rocket Engineering Competition and Spaceport America Cup, New Mexico.
Goal: To launch a 10 lb payload to 10,000 feet altitude.
Website: bit.ly/RocketryVT
ROCKSAT-X@VT
Goal: To launch a modular payload aboard a sounding rocket to advance cost-effective access to space for university student design teams.
Website: rocksat.x.aoe.vt.edu

SEDS ROCKETRY
Competition: University Student Rocketry Challenge
Goal: To design, build, and launch a multi-stage rocket to the highest possible altitude.
Website: seds.org/rocketry
MARS ICE

Competition: Moon to Mars Ice & Prospecting Challenge
Goal: Design and build prototype hardware that can extract water from simulated lunar and Martian subsurface ice.
Website: bit.ly/MarsIce

WIND TURBINE TEAM

Competition: Collegiate Wind Competition
Goal: To build, market, and select a mock implementation location for a viable wind turbine.
Website: bit.ly/WindTurbineVT
LEADERSHIP

Eric Paterson is the Department Head for the Kevin T. Crofton Department of Aerospace and Ocean Engineering at Virginia Tech. Under Eric’s leadership, the AEDL has become a reality and through AOE support will have resources necessary for the success of engineering design teams.

Dewey Spangler has been manager of the Ware Lab since 2003 and the AEDL since 2020. He is responsible for daily operation of both facilities, working with student project teams, communicating with corporate and individual sponsors, and promoting Virginia Tech to prospective students. Dewey is also responsible for safety compliance in the Ware Lab and AEDL facilities.

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Bob Schoner is the AEDL Assistant Manager, and is responsible for the daily operation of the lab, purchasing necessary equipment and materials, and enforcement of lab policy and safety rules. The Assistant Manager also works directly with student team members with project fabrication, design reviews, and testing.

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SPONSORSHIP

The Advance Engineering Design Lab wishes to thank Virginia Tech’s Student Engineer’s Council for its support of AEDL teams. AEDL seeks additional sponsorship for the purchase of equipment for our new machine shop/3D printing lab accessible to all team members working in the lab. Specifically, we are looking for support with the purchase of a drill press, band saws, sanders, a laser cutter, 3D printer, and a 4 axis carbon fiber winder.

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Teams
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- inVenTs Rocketry
- MARS MADNESS
- ORBITAL LAUNCH VEHICLE TEAM
- ROCKETRY@VT
- ROCKSAT-X@VT
- VT MARS ICE CHALLENGE

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Teams
- 3D PRINTED AIRCRAFT TEAM
AEDL WELCOMES VISITORS FROM K-12, UNIVERSITIES, INDUSTRY, HOME-SCHOOLS, PARENTS AND ANY ONE ENGAGED IN STEM RELATED ACTIVITIES. TOURS CAN BE ARRANGED BY CONTACTING THE AEDL MANAGER AT SPANGLER@VT.EDU.
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