COLLEGE OF Engineering

VIRGINIA TECH is home of the commonwealth’s leading college of engineering, known in Virginia and throughout the nation for the excellence of its programs in engineering education, research and public service. It is the state’s largest engineering college, and ranks among the top five suppliers of new B.S. degrees in the United States.

U.S. News & World Report’s “America’s Best Colleges 2011” survey ranked the Virginia Tech College of Engineering’s undergraduate program 13th among all accredited engineering schools. In the magazine’s report on “Best Graduate Schools,” the college ranks 24th. The National Science Foundation is a major contributor of grants to our college. Its latest listing of total research expenditures places our college 10th in the nation among the hundreds of engineering colleges.

Recently, the Wall Street Journal published a survey of 479 of the largest public and private U.S. companies, nonprofits, and government agencies. It showed Virginia Tech’s College of Engineering ranked as the number five pick for graduates best prepared and most able to succeed.

The College of Engineering also is known for its “Hands On, Minds On” leadership in transforming engineering education. One prime example is the Joseph F. Ware, Jr. Advanced Engineering Laboratory, where students design and construct competition projects including Formula SAE race cars, Baja SAE vehicles, human-powered submarines and airplanes, radio-controlled aircraft, and hybrid electric vehicles. In 2011, the Hybrid Electric Vehicle Team of Virginia Tech won the international EcoCAR Challenge, a three-year design competition that seeks to inspire science and engineering students to build more energy-efficient “green” automobiles. The success of all of the Ware Lab projects compelled the Student Engineers’ Council of Virginia Tech to create a $500,000 design team endowment, designed specifically to assist with engineering student projects.

Majors:
aerospace engineering
biological systems engineering
chemical engineering
civil engineering
computer engineering
computer science
electrical engineering
construction engineering & management
engineering science and mechanics
industrial and systems engineering
materials science and engineering
mechanical engineering
mining engineering
ocean engineering
HIGH SCHOOL PREPARATION & ADMISSION TO THE COLLEGE

A challenging college preparatory curriculum is your foundation for success in Virginia Tech's College of Engineering. Specifically, you must present a minimum of 18 units of high school coursework. Four units of English is the standard requirement. The university requires three units of math (including algebra I, algebra II, and geometry), but College of Engineering students must have a fourth unit beyond these three. (The fourth unit must be in a higher-level math such as trigonometry or pre-calculus.) Two units of social science are required. The university requires two years of laboratory science (biology, chemistry, or physics), but engineering students must have at least three years, with physics and chemistry preferred.

Other ways to prepare for engineering studies include taking engineering foundations, computer programming, and advanced placement courses, and participating in math and science clubs and fairs.

In addition to your transcript, SAT or ACT (plus writing) scores are required of freshman applicants.

CURRICULUM & OPPORTUNITIES

First-year students are admitted into general engineering, where they complete introductory coursework and learn the basics of design, teamwork, and technical communications.

All entering students are required to have a tablet PC. The curriculum emphasizes the use of computers in the analysis and solution of problems. Detailed specifications on the type of computer required differ from the rest of the university, and are announced in late spring. For more information, visit www.eng.vt.edu/academics/comp_require.php.

Each engineering degree requires a senior capstone design experience to allow students to draw on their creativity, imagination, and motivation, as well as their undergraduate education. Qualified students may complete a combined B.S./M.S. degree in five years.

College of Engineering students participate in a variety of activities, including projects and competitions on local, regional, and national levels. Members of student organizations coordinate events which include speakers, conferences, a college-wide open house, and an annual engineering exposition. Virginia Tech College of Engineering students are leaders in many organizations and athletic teams both on- and off-campus. Students can also participate in residential theme housing programs designed for engineering students. For more information on Hypatia or Galileo, see www.eng.vt.edu/academics/eed_learn_com.php.

All undergraduate engineering degree programs in the College of Engineering are accredited by the Engineering Accreditation Commission of the Computing Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012; phone: 410-347-7700.

FACULTY & FACILITIES

Virginia Tech is one of a handful of schools offering a formal freshman engineering program, taught by full-time faculty members whose primary responsibility is to teach and advise entering freshmen. By providing a solid foundation, this first-year program helps freshmen choose and succeed in a College of Engineering degree program.

Undergraduate students in the College of Engineering at Virginia Tech have two facilities of their own for hands-on work. In the Frith Freshman Engineering Design Lab, students participate in a variety of practical experiences involving reverse engineering, measurements, and activities ranging from robotics to fuel cells. In the Joseph F. Ware, Jr. Advanced Engineering Laboratory, undergraduates from all College of Engineering departments design and construct their own projects, including the human-powered submarine, hybrid-electric and fuel-cell-powered vehicles, Formula SAE race cars, radio-controlled airplanes, and Baja SAE all-terrain vehicles.

The computer requirement for Virginia Tech College of Engineering freshmen has been changed from a laptop to a convertible tablet PC to reflect the increased technology needs of students. Tablet PCs enable students to take their computers everywhere.

FRESHMAN CURRICULUM

All freshmen are admitted into the general engineering program in the Department of Engineering Education, allowing them to get acquainted with the different degree programs before making final decisions about a major.

After the first semester of the freshman year, students who qualify for the Dean’s List (3.40 GPA or higher) have the option of applying to the department of their choice. All other students who successfully complete their general engineering requirements may apply to the department of their choice at the end of the spring semester of freshman year. If you have questions about the freshman general engineering program, please visit www.enge.vt.edu or contact the Department of Engineering Education (540-231-6555; email: enge@vt.edu).

This schedule represents the first year as a student in the College of Engineering.

<table>
<thead>
<tr>
<th>1ST SEMESTER</th>
<th>2ND SEMESTER</th>
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<tbody>
<tr>
<td>Calculus I</td>
<td>Calculus II</td>
</tr>
<tr>
<td>Elective</td>
<td>Exploration of the Digital Future or Exploration of Engineering Design</td>
</tr>
<tr>
<td>Elementary Linear Algebra</td>
<td>Freshman English</td>
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<tr>
<td>Engineering Exploration</td>
<td>Physics + Lab</td>
</tr>
<tr>
<td>Freshman English</td>
<td>Vector Geometry</td>
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<tr>
<td>General Chemistry + Lab</td>
<td>General Chemistry + Lab (CHE majors)</td>
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<tr>
<td></td>
<td>C++ Programming (EE &amp; CPE majors)</td>
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<tr>
<td></td>
<td>Java (CS majors)</td>
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<tr>
<td></td>
<td>Elective (all other majors)</td>
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