

ENERGY MAJORS AND RESEARCH

Renewable and Alternative Fuels
Energy and Information Systems
Mining and Minerals Engineering
Efficiency and Conservation
Energy Production and Storage



VIRGINIA TECH™



ABOUT VIRGINIA TECH

With a research portfolio of more than \$500 million, Virginia Tech is one of the world's leading research universities, where students work across disciplines with world-renowned professors. International partnerships drive many of our best programs.

As the commonwealth's most comprehensive university and its leading research institution, Virginia Tech offers 250 undergraduate and graduate degree programs to more than 33,000 students. The university fulfills its land-grant mission of transforming knowledge to practice through technological leadership and by fueling economic growth and job creation locally, regionally, and across Virginia.

HANDS-ON LEARNING

Learning to adapt to solve the world's big energy problems requires education and experience beyond the confines of traditional passive classroom boundaries. At Virginia Tech, **the horizons are limitless**. Hands-on learning includes not only global-scale research opportunities, internships and work experience, and cooperative education, but is even infused into more than a dozen residential communities where undergraduates learn inclusive collaboration, mentor one another, and become leaders.

At Virginia Tech, every undergraduate has the opportunity to **engage in research** with world-class faculty members. And not just research for the sake of discovering new things, but research that generates practical outcomes and entrepreneurial solutions for societal problems.

www.vt.edu/ready

RENEWABLE ENERGY

Virginia Tech is a leader in producing graduates who develop, promote, and implement sustainable energy technologies around the world. Our faculty members work across departments and across colleges to study methods of energy generation, such as solar, wind, hydro, tidal, and geothermal, as well as energy storage methods and energy conservation.

The Bradley Department of Electrical and Computer Engineering, for example, offers strong education and research opportunities in diverse areas, from pervasive computing to smart power systems. The department's 76 tenured or tenure-track faculty members teach more than 300 classes and develop about a dozen new courses each year on emerging technologies. Courses on electric energy stress the need for understanding the energy conversion process, economics, supply and reliability of alternate energy sources along with their integration into the electric power system grid.

Our graduates find jobs related to renewable energy in a wide range of areas, including engineering, business, marketing, finance, installation, software, legal affairs, and research.

ece.vt.edu



Once a well is drilled and oil is produced, the oil still has to be processed and refined, and that's where chemical engineers come into play.

CHEMICAL ENGINEERING

Chemical engineering involves the application of mathematics, physics, chemistry, and other natural sciences to find economic ways of using energy and materials for the benefit of humankind. While many chemical engineers serve in the traditional chemical industries of petroleum, natural gas, chemicals, paper, plastics, and consumer products, others are increasingly called upon to work in areas such as energy and alternative renewable resources, health care and biotechnology, nanotechnology and microelectronics, business consulting and financial engineering, and environmental engineering. The chemical engineering curriculum integrates studies in fluid mechanics, heat transfer, mass transfer, control, verbal and written communications, and reaction kinetics, along with professional ethics and environmental awareness.

www.che.vt.edu



GEOSCIENCES

Virginia Tech's Department of Geosciences focuses on research, education, and outreach dealing with the nature of the earth. Our students and faculty investigate earth processes at scales that range from atomic to planetary. Our growing geosciences community consists of over 70 graduate and over more than undergraduate students working with 28 professors, six adjunct faculty, 12 emeritus professors, and seven postdocs and research associates.

CHEMISTRY

The Department of Chemistry pursues multidisciplinary research within and beyond the university, to find innovative ways to instruct students, to forge partnerships with industry and government, and to establish a reputation as one of the world's highest-ranking chemistry departments. Nearly all of our research activities extend beyond conventional boundaries, embracing engineering, biology, medicine, and agriculture.



SUSTAINABLE AND SECURE ENERGY

Virginia Tech is one of the nation's foremost institutions in environmental science and resource management. Programs in electrical engineering power systems, mechanical engineering and energy management, mining and minerals engineering, and sustainable architecture link energy technologies with environmental concerns. Research in water resources, ecology, and land restoration; forestry, fisheries, and wildlife conservation; and geological sciences provides the basis for successful use of resources while minimizing damage to the environment.

RESEARCH CENTERS

- Center for Advanced Separation Technologies
- Center for Energy and the Global Environment
- Center for Energy Systems Research
- Center for Environmental Applications of Remote Sensing
- Center for Geospatial Information Technology
- Center for Geotechnical Practice and Research
- Center for Power Electronics Systems
- Conservation Management Institute
- Virginia Center for Coal and Energy Research

www.research.vt.edu

MAJORS

Chemical Engineering
Chemistry
Civil & Environmental Engineering
Electrical Engineering
Engineering Science & Mechanics
 Biomechanics
 Engineering Physics
Engineering (General)
Environmental Informatics
Environmental Policy & Planning
Environmental Resources Management
Geography
Geosciences
Materials Science & Engineering
 Nuclear Material
Mining Engineering
Natural Resources, Undecided
Natural Resources, Conservation
 Environmental Education
 Conservation & Recreation Management
 Natural Resources Science Ed.
Ocean Engineering
 Aerospace/Ocean Engineering, Double major
Sustainable Biomaterials
Water: Resources, Policy & Management



www.mining.vt.edu

MINING & MINERALS

Virginia Tech's Department of Mining and Minerals Engineering is one of the largest minerals-related programs in North America, enjoying a strong international reputation for its academic, research, and public service programs.

With 12 tenure track plus additional research and instructional faculty and expenditures in excess of \$6 million per year, our research program is stronger than ever with a broad focus on issues critical to the modern resource industries.

The department graduates 40-50 students a year who find themselves in challenging careers around the world with specialties such as mineral economics, metallurgy, geological exploration and facility design.

RESEARCH EFFORTS

- Mining, Environment, and Society
- Occupational Health and Safety
- Geoenery Engineering
- Mine Ventilation
- Mineral and Coal Processing
- Enhanced Natural Gas Recovery
- Geomechanical Applications

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LANGUAGE AND CULTURE INSTITUTE

The Virginia Tech Language and Culture Institute is a gateway for students who need to improve their English.

Our Intensive English Program is an academic preparation course designed to help students make the transition to academic life at Virginia Tech through full-time instruction in English as a second language. In addition, we educate students about U.S. culture to prepare them for success in their academic and/or professional lives in the U.S.

We also offer a conditional admission program for qualified students to gain admittance to Virginia Tech.

www.lci.vt.edu