

# ENGINEERING OPEN HOUSE

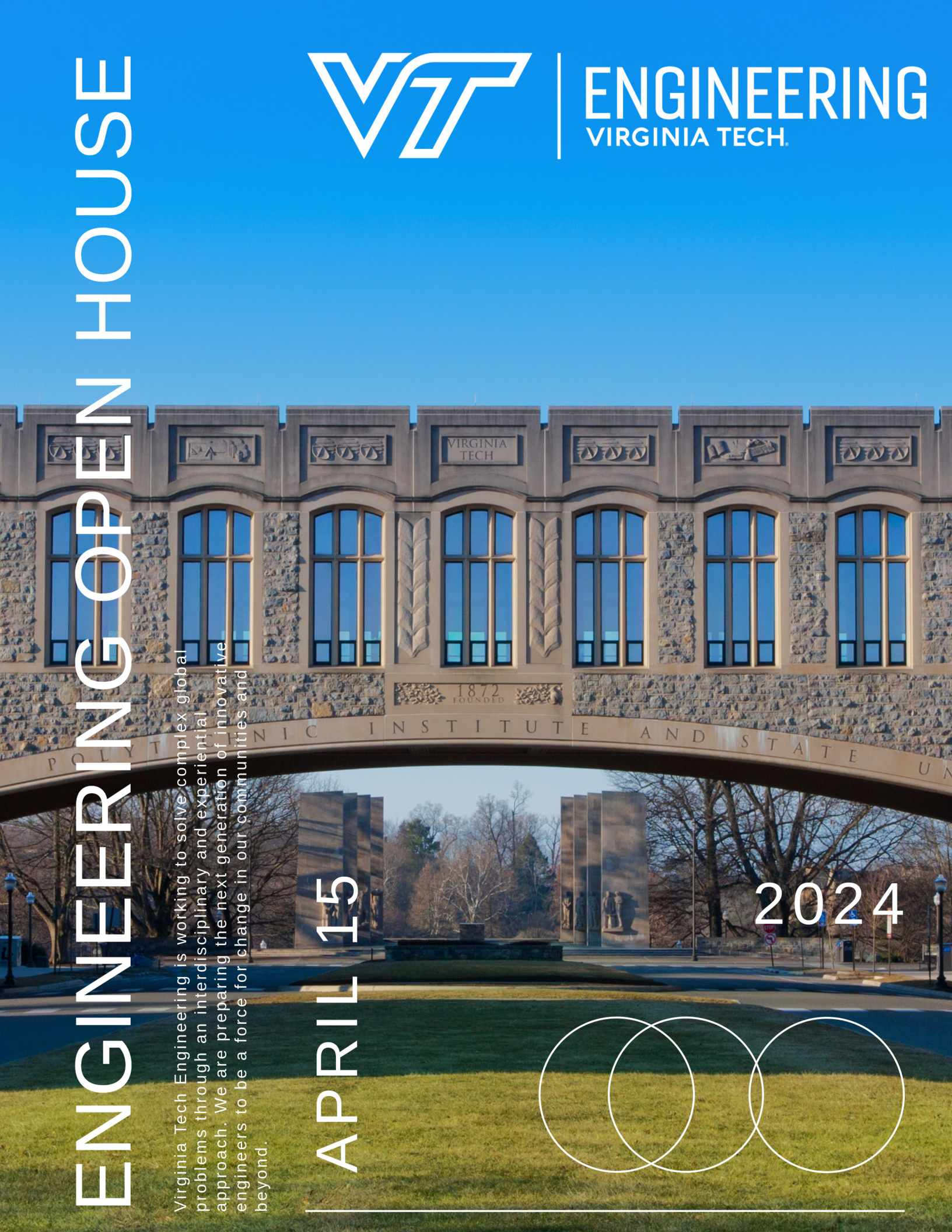
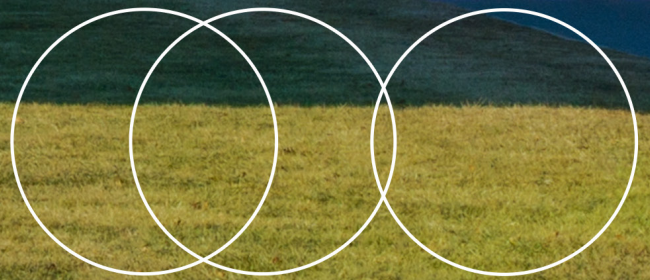


ENGINEERING  
VIRGINIA TECH.

Virginia Tech Engineering is working to solve complex global problems through an interdisciplinary and experiential approach. We are preparing the next generation of innovative engineers to be a force for change in our communities and beyond.

APRIL 15

2024





# TABLE OF CONTENTS

**03** Welcome

**04** Your Day at a Glance

**06** Squires Map

**07** Presentation Schedule with Descriptions

**17** Booth Showcase Map

**18** Booth Showcase Tables with Descriptions

**22** Where to Eat?

**23** Parking

Engineering Open House consists of three main components: Presentations, Lab Tours, and the Booth Showcase:

- Presentations will be held at 5 times throughout the day in Squires Student Center: 9:05-9:55, 10:10-11:00, 11:15-12:05, 1:25-2:15, and 2:30-3:20
- Lab Tours will be held at the same times as the presentations are and are open to students only. Tours will leave from the space in front of the Haymarket Theatre. Please attend your assigned Lab Tour only.
- The Booth Showcase will run from 11:15am-2:15pm in the Graduate Life Center, with representatives from the Engineering Departments at Virginia Tech, various offices around campus, and student run projects/organizations. This is a great opportunity to ask questions and chat with students, faculty, and advisors within the College of Engineering and Beyond!

Campus Tours are offered at 10:10am, 11:15am, and 1:25pm and will leave from the first floor lobby of Squires Student Center. These do not require registration; all you have to do is show up if you would like to attend the tour.

Lunch will not be provided at this event, but we will be glad to direct you to any of our on campus dining halls or local dining establishments around lunchtime.



Dr. Julia Ross  
Dean, College of Engineering

The College of Engineering's goal is to provide you with a challenging, exciting, and rewarding undergraduate experience accompanied by opportunities for unique experiential learning delivered by some of the best academic professionals with a broad range of expertise. In addition to learning technical engineering skills, you will develop competencies in communication, teamwork, and leadership. These educational experiences have provided our engineering students with opportunities to become national champions in a wide range of projects. These fundamental skills will be introduced to you through the Department of Engineering Education, which is your initial academic home. Here, we will provide you with an opportunity to enrich and grow your engineering skills, as well as discover and explore our degree programs.

Our nationally recognized Center for the Enhancement of Engineering Diversity (CEED) provides academic and professional development activities as well as encouragement and support, to assist you with achieving academic excellence. CEED is home to the engineering living learning communities, Hypatia and Galileo; as well as the new multidisciplinary living learning community focused on information technology, Digerati. This is truly an exciting innovation, enabling our students to interact with a diverse group of their peers to address global challenges in areas such as energy, healthcare, cybersecurity, and the environment.

You can expect excellent mentorship throughout your journey from our faculty and staff, who are consistently recognized with national and international awards of excellence in research, teaching, advising, and service. In addition to the classroom experience, we strive to provide you with experiential learning opportunities through study abroad, undergraduate research, internships, and design teams, just to name a few.

An engineering degree from Virginia Tech is extremely versatile, and our graduates are highly sought after from top industries and corporations, such as Boeing, Exxon, Accenture, General Motors, Lockheed Martin, Hercules, Ford Motor Company, American Electric Power, Raytheon, Qualcomm, Facebook, IBM, and Capital One among others. Our alumni go on to be highly successful engineers, as well as entrepreneurs, researchers, doctors, lawyers, corporate leaders, consultants, and more. To aid in your career trajectory we are extremely proud to offer Engineering Expo, which is Virginia Tech's largest career fair and one of the largest student-run career fairs in the country. The Student Engineers' Council hosts this event each fall to provide you with opportunities for internships and full-time positions.

# YOUR DAY AT A GLANCE

## Presentation Schedule

Engineering Open House

April 15, 2024

Location/Session	9:05am – 9:55am	10:10am – 11:00am	11:15am – 12:05pm	1:25pm – 2:15pm	2:30pm – 3:20pm
Commonwealth Ballroom A	<b>Robotics and Machine Learning at Virginia Tech</b> Dylan Losey	<b>Aerospace and Ocean Engineering Challenges and Opportunities</b> Ella Atkins	<b>Mechanical Engineering</b> Sarah Deisher	<b>Introduction into the General Engineering Program</b> David Gray and James Newcomer	<b>Electrical and Computer Engineering</b> ECE Ambassadors & Virgilio Centeno
Commonwealth Ballroom B	<b>Office of Undergraduate Admissions</b> TBD	<b>Civil &amp; Environmental Engineering</b> Scott Case and Kara Lattimer	<b>Computer Science</b> CS Student Ambassadors	<b>Chemical Engineering at Virginia Tech</b> Jeremy Wilson	<b>Industrial and Systems Engineering (ISE): Where People and Engineering Interact</b> Natalie Cherbaka & ISE Advisors
Haymarket Theater	<b>Computer Science</b> CS Student Ambassadors	<b>What is Biomedical Engineering?</b> Sara Arena	<b>Biological Systems Engineering</b> Priscilla Baker and BSE Student Ambassadors	<b>Construction Engineering &amp; Management – Building the Future</b> Sharon Williams & CEM Ambassadors	<b>Study Abroad for First Year Engineers and Beyond</b> Nicole Sanderlin
Room 219	<b>Ocean Engineering: Undergraduate Program &amp; Job Opportunities</b> Stefano Brizzolara	<b>Galileo and Hypatia Living-Learning Communities</b> DeAnna Katey	<b>VT Green Engineering Program Overview</b> Sean McGinnis	<b>What is Biomedical Engineering?</b> Sara Arena	<b>Intelligent Equipment and Mine Blast Design</b> Erik Westman
Room 236	<b>Metal Casting Education and Research</b> Alan Druschitz	<b>Controlling Light(Field) Matter Interaction Using Metamaterials</b> Jordan Budhu	<b>Measuring the Winds at the Edge of Space</b> Scott England	<b>AI-ML Based Cattle Behavior Analysis</b> Sook Ha	<b>Electronic &amp; Photonic Materials and Devices</b> Mantu Hudait
Room 300	<b>Study Abroad for First Year Engineers and Beyond</b> Mariah Henderson	<b>Chemical Engineering at Virginia Tech</b> Jeremy Wilson	<b>iPhones, Electric Vehicles, and Renewable Energy – The Critical Role of Mining Engineering in Modern Society</b> Aaron Noble	<b>Industrial and Systems Engineering (ISE): Where People and Engineering Interact</b> Natalie Cherbaka & ISE Advisors	<b>Construction Engineering &amp; Management – Building the Future</b> Sharon Williams & CEM Ambassadors
Room 305	<b>Interdisciplinary Projects and Capstones</b> Lisa McNair	<b>Nature-Inspired Energy and Water Harvesting</b> Jonathan Boreyko	<b>Constructing Success: A Glimpse into the World of Building Construction</b> Georg Reichard and Renee Ryan	<b>Autonomous Drones for 3D Mapping of Underground Mines</b> Richard Bishop	<b>What is Biomedical Engineering?</b> Sara Arena
Room 340	<b>Biological Systems Engineering</b> Priscilla Baker and BSE Student Ambassadors	<b>Nature-Inspired Energy and Water Harvesting</b> Jonathan Boreyko	<b>Subsurface Imaging, Infrastructure, and the Environment</b> Joseph Vantassel	<b>CEED Pre-College Programs</b> Kim Lester	<b>Autonomous Drones for 3D Mapping of Underground Mines</b> Richard Bishop
Room 342	<b>Materials Science &amp; Engineering; everything is material</b> Michelle Czamanske	<b>Materials Science &amp; Engineering; everything is material</b> Michelle Czamanske	<b>Materials Science &amp; Engineering; everything is material</b> Michelle Czamanske	<b>iPhones, Electric Vehicles, and Renewable Energy – The Critical Role of Mining Engineering in Modern Society</b> Aaron Noble	<b>Materials Design via Informatics: What is it and Why do We Need it?</b> Pinar Acar
Room 343	<b>Safety, Convenience, Equity – Automotive Research at Virginia Tech</b> Miguel Perez	<b>Materials Science &amp; Engineering Demo</b> MSE Student Ambassadors	<b>Materials Science &amp; Engineering Demo</b> MSE Student Ambassadors	<b>Materials Science &amp; Engineering Demo</b> MSE Student Ambassadors	<b>Chemical Engineering at Virginia Tech</b> Jeremy Wilson

7:45am - Registration Opens

8:30am - Opening Remarks in Commonwealth Ballroom A

11:15am-2:15pm - Booth Showcase in the Graduate Life Center (GLC) - located across from Squires, brick structure with white pillars, exit Squires on the first floor - volunteers will guide you! Some design teams will be outside with their projects as part of the booth showcase as well.

3:30pm - End of the day! Thanks for coming!



**Do what you love. Create a better world.**

9:05am Room 304 & 11:15am Haymarket Theatre



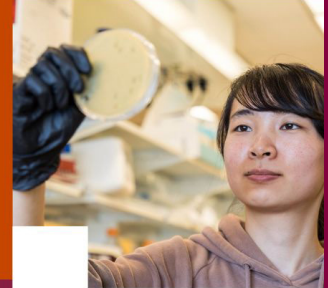
Our flexible curriculum provides focus on meaningful challenges that enhance environmental quality and health, biotechnology, and food engineering.



We are a community who connects Engineering and Biology to solve complex, critical problems that affect us all.



Our graduates succeed in large corporations, government agencies, private industries, graduate and medical schools.



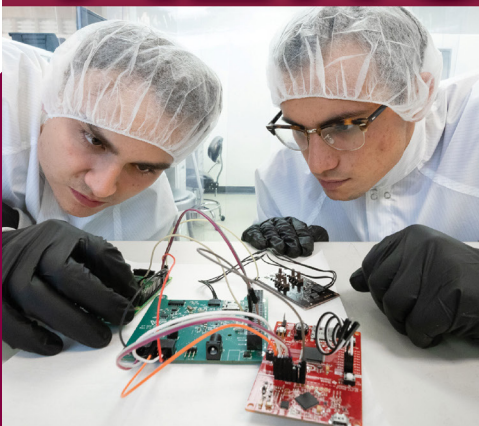
We are invested in your success and prepare you to make a difference in the the professional career path you desire.



Biological Systems Engineering  
[www.bse.vt.edu](http://www.bse.vt.edu)



# AEROSPACE *and* OCEAN engineering



"OE Program & Job Opportunities" Room 219, 9:05am

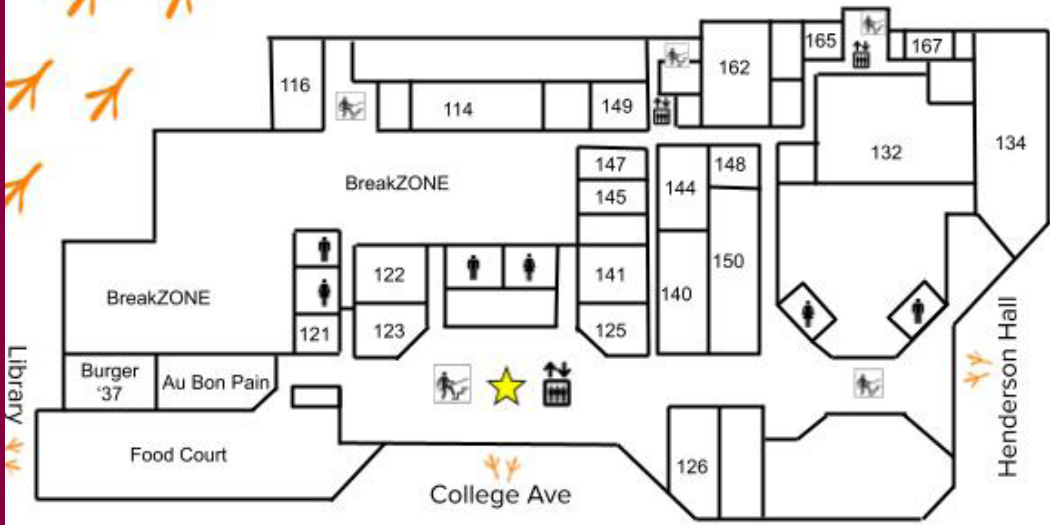
"Challenges & Opportunities" Commonwealth A, 10:10am



# Squires Student Center

## Engineering Open House

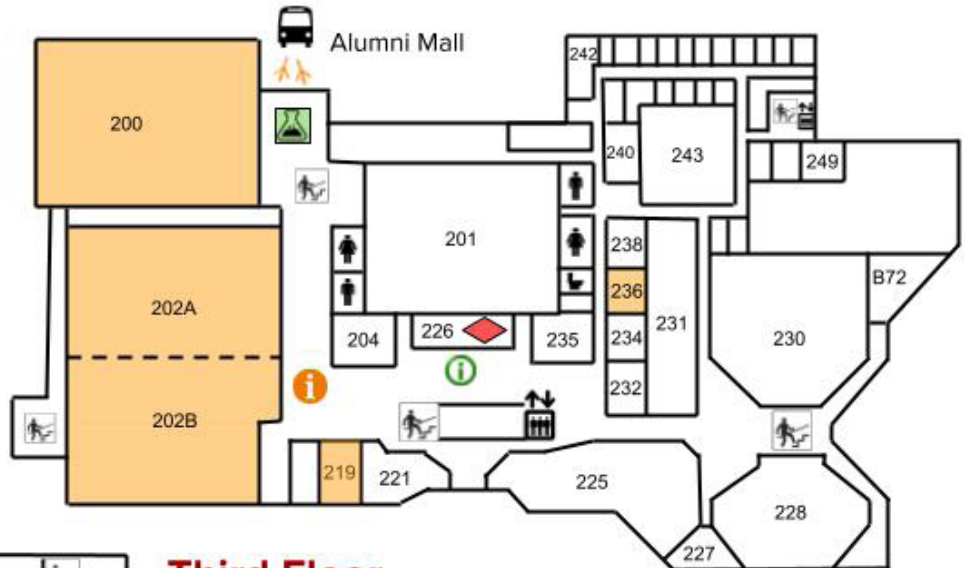
### First Floor



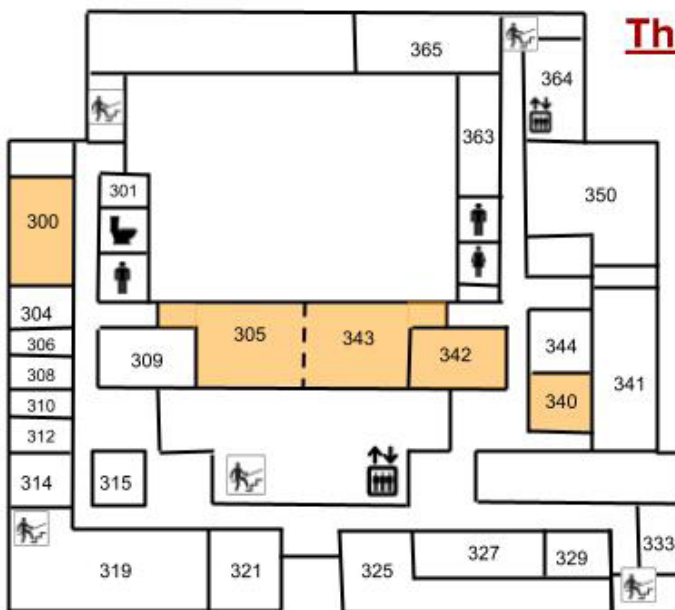
- Bathrooms
- Elevator
- Stairs
- Entrance
- Shuttle Drop-Off
- Campus Tours

### Second Floor

- Presentation Rooms
- Lab Tour Meet-Up
- Registration Booth
- Information Desk
- Lab Tour Info. Desk



### Third Floor



#### Helpful Room Names:

- 200** Haymarket Theatre
- 201** Colonial Hall
- 202A** Commonwealth Ballroom A
- 202B** Commonwealth Ballroom B
- 226** Williamsburg Ballroom
- 305** Brush Mountain A
- 343** Brush Mountain B



# Engineering Open House 2024 Presentation Schedule with Descriptions

9:05 – 9:55 am

## **Robotics and Machine Learning at Virginia Tech**

Commonwealth Ballroom A | Presented by: Dylan Losey

Robots are changing the future of our society. Self-driving cars, assistive prostheses, and surgical robots are already here --- what will be next? This presentation highlights some of the robotics and machine learning research going on at Virginia Tech, and explains how students can get involved in these topics.

## **Office of Undergraduate Admissions**

Commonwealth Ballroom B | Presented by: TBD

Admissions Overview

## **Computer Science**

Haymarket Theater | CS Student Ambassadors

Learn all about CS at Virginia Tech in this overview of the Department of Computer Science that gives students and their loved ones as opportunity to receive information from a student perspective.

## **Ocean Engineering: Undergraduate Program & Job Opportunities**

Room 219 | Stefano Brizzolara

Virginia Tech Ocean Engineering program is ranked at the top of the nation accredited programs and it prepares future ship designers and researchers for the US Navy, research labs, and shipbuilding/shipping industry. Ocean Engineering is listed in the top five engineering degrees for job opportunities right after the UG degree, The presentation gives details about the hands-on learning experience that the Aerospace and Ocean Engineering department implements in the undergraduate and graduate programs and an overview of the specialization tracks that prepare OE graduate for the profession.

## **Metal Casting Education and Research**

Room 236 | Alan Druschitz

Metal casting classes and research are conducted at the Kroehling Advanced Materials Foundry at Virginia Tech. The classes are hands-on and students learn how to make molds, melt various metal alloys (aluminum, copper, iron), and pour their own castings. Mold filling and solidification analysis classes are also available. Students are encouraged to join the American Foundry Society and participate in society conferences and activities.

## **Study Abroad for First Year Engineers and Beyond**

Room 305 | Mariah Henderson

This presentation will explore the study abroad opportunities for first-year engineering students including the award-winning Rising Sophomore Abroad Program.

## **Interdisciplinary Projects and Capstones**

Room 305 | Dr. Lisa McNair

Interdisciplinary projects are available to engineering students in both capstone courses and in first-year, sophomore, and junior levels. Project teams include engineering and students in other departments, as needed for achieving project goals. A wide range of current and future topics will be described.

## **Biological Systems Engineering**

Room 340 | Priscilla Baker and BSE Student Ambassadors

BSE connects biology and engineering to solve complex, critical problems in sustainability, environmental protection, and



human health. Our graduates develop engineering solutions that safeguard land and water resources, detect and prevent human diseases, and produce food, pharmaceuticals, and polymers.

### Materials Science & Engineering: everything is material

Room 342 | Michelle Czamanske

Materials Science & Engineering (MSE) is the center of developing the next generation of materials and improving current materials. MSE is the center of all engineering; everything is made of materials.

### Safety, Convenience, Equity – Automotive Research at Virginia Tech

Room 343 | Miguel Perez

Think about how you have traveled around Virginia Tech today. Were you in a car or bus? Did you walk? Research underway at Virginia Tech intends to make these journeys safer, quicker, more efficient, and more equitable. Come find out how!

10:10 – 11 am

### Aerospace and Ocean Engineering Challenges and Opportunities

Commonwealth Ballroom A | Ella Atkins

This presentation will describe the Aerospace and Ocean Engineering disciplines. Contemporary challenges in Advanced Air Mobility, Space Exploration, and Undersea Exploration will be presented. Opportunities in Virginia Tech student teams and research labs will be summarized along with the exciting career paths students have taken after graduation.

@vt\_ece

the best faculty

free merch

You

ECE

cool labs

WOW

COLLEGE OF ENGINEERING  
BRADLEY DEPARTMENT OF ELECTRICAL  
AND COMPUTER ENGINEERING  
VIRGINIA TECH.

Signal Processing

Electromagnetics

Chip-Scale Integration

Robotics

Machine Learning

Cybersecurity

Micro/Nanosystems

so many majors

you should def. join us



### **Civil & Environmental Engineering**

Commonwealth Ballroom B | Scott Case and Kara Lattimer

How do we build sustainably for our future? Come find out about Civil & Environmental Engineering at Virginia Tech, where we focus on infrastructure solutions for our changing world!

### **What is Biomedical Engineering?**

Haymarket Theater | Sara Arena

This presentation will give an overview of biomedical engineering, the curriculum at Virginia Tech, and opportunities for BME students. Student Ambassadors will also be available for Q&A at the end of the session.

### **Galileo and Hypatia Living-Learning Communities**

Room 219 | DeAnna Katey

This will be an information session for anyone interested in joining the Galileo and Hypatia Living-Learning Communities.

### **Controlling Light(Field) Matter Interaction Using Metamaterials**

Room 236 | Jordan Budhu

When light interacts with the atoms in natural matter, different processes such as scattering and absorption cause the object to appear as it does to the observer. Imagine being able to 'play the almighty' and design matter atom by atom as if by tweezer in order to engineer a specific response to incident light. In metamaterials and metasurfaces, matter is assembled meta-atom by meta-atom to engineer a specific response to incident electromagnetic radiation. Since the wavelength of the incident radiation is long compared to the dimensions of the meta-atoms, the individual atoms cannot be resolved, and therefore the response of the metamaterial or metasurface is an aggregate or averaged one just as how light interacts with ordinary natural matter (remember that atoms have a breadth on the order of an angstrom whereas visible light has a wavelength of approximately 600nm or 6000 times longer than the atom). Hence, the meta-atoms can be designed individually and when placed into an array with subwavelength spacing, produce the macroscopic effect of complete field and wavefront control. Being able to completely control light-matter interaction allows for the creation of electromagnetic or optical illusions where a solid object, with its surface patterned in a particular way, will appear to an observer as a completely different object. Hence, you could go to pick up the object and would fumble, as it looks like a sphere but in reality, is a small cube for example. Or, in another example, a beam can be seen to completely disappear from one location in space and reappear in another spatially dislocated place as if it had teleported. In this talk, progress toward technologies that make these kinds of phenomena possible at microwave frequencies will be presented.

### **Chemical Engineering at Virginia Tech**

Room 300 | Jeremy Wilson

The presentation provides a brief summary of what chemical engineering is, what sorts of jobs a chemical engineering degree prepares you for, and how the program, is structured at Virginia Tech. Additional emphasis is placed on extracurricular opportunities for chemical engineering students

### **VT Cyber Security is a Team Sport**

Room 305 | Rudy Falana

A presentation about the College of Engineering's commitment to Cybersecurity. This will be a high-level presentation that will have a few visuals.

### **Nature-Inspired Energy and Water Harvesting**

Room 340 | Jonathan Boreyko

Nature has already solved many of the challenges that humankind faces today. In this presentation, we show how nature-inspired fog harvesters, synthetic trees, and advanced materials can harvest energy and water in effective ways.

### **Materials Science & Engineering: everything is material**

Room 342 | Michelle Czamanske

Materials Science & Engineering (MSE) is the center of developing the next generation of materials and improving current materials. MSE is the center of all engineering; everything is made of materials.

### **Materials Science & Engineering Demo**

Room 343 | MSE Student Ambassadors

Following the information sessions, MSE Student Ambassadors will give several demonstrations of various materials from electronics, metals, polymers and ceramics.

**11:15 am – 12:05 pm**

### **Mechanical Engineering**

Commonwealth Ballroom A | Sarah Deisher

Brief overview of ME department and majors/minors within. Hear from students about their experiences both on campus and in the work force.

### **Computer Science**

Commonwealth Ballroom B | CS Student Ambassadors

Learn all about CS at Virginia Tech in this overview of the Department of Computer Science that gives students and their loved ones as opportunity to receive information from a student perspective.

### **Biological Systems Engineering**

Haymarket Theater | Priscilla Baker and BSE Student Ambassadors

BSE connects biology and engineering to solve complex, critical problems in sustainability, environmental protection, and human health. Our graduates develop engineering solutions that safeguard land and water resources, detect and prevent human diseases, and produce food, pharmaceuticals, and polymers.

### **VT Green Engineering Program Overview**

Room 219 | Sean McGinnis

The VT Green Engineering Program focuses on teaching concepts and skills to understand, analyze, and design solutions for the environmental impacts of engineering practices across disciplines. This presentation will review the academic, research, and outreach opportunities for Green Engineering as well as describe the benefits for students

### **Measuring the Winds at the Edge of Space**

Room 236 | Scott England

At the boundary between Earth's atmosphere and the space around it, there is still a tenuous gas. Its motion – the winds – can be very strong and highly complex. Measuring the winds this region requires satellite observations. This talk will share how these were made, and VT's part in the design of the spacecraft and analysis of the data.

### **iPhones, Electric Vehicles, and Renewable Energy – The Critical Role of Mining Engineering in Modern Society**

Room 300 | Aaron Noble

Modern society is facing increased demand for small electronic devices, lightweight metals, and high-performance batteries. All of these essential devices require extremely specialized raw materials that are difficult and expensive to mine and extract. The Mining and Minerals Engineering Department at Virginia Tech is world renowned for its teaching and research in critical materials production and separations. This presentation will describe some of this cutting-edge research and explain how new undergraduates can get involved through undergraduate research and internships.



# WE'RE MINING THE FUTURE

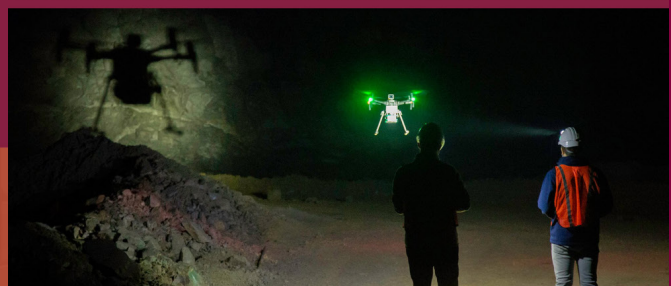
WANT TO LEARN MORE ABOUT HOW MINING ENGINEERS ARE SOLVING REAL-WORLD PROBLEMS?

CHECK OUT OUR PRESENTATIONS ON

- ⚡ CRITICAL MINERALS (NOBLE)
- ⚡ BLASTING (WESTMAN)
- ⚡ DRONES (BISHOP)



COLLEGE OF ENGINEERING  
MINING AND MINERALS  
ENGINEERING  
VIRGINIA TECH



## Constructing Success: A Glimpse into the World of Building Construction

Room 305 | Georg Reichard and Renee Ryan

During our experiential session, we'll dive into the dynamic world of construction management. Through an engaging activity and simulation, we'll unravel the complexities of construction projects and offer a glimpse into the innovative tools and technologies shaping the industry. Join us as we lay the foundation for your future success in the rewarding field of construction management!

## Subsurface Imaging, Infrastructure, and the Environment

Room 340 | Joseph Vantassel

At present most engineering characterization of the earth's near-surface (upper 100 ft) is accomplished by drilling vertical holes into the ground and visually inspecting the recovered earth material (soil and rock). However, on-going advances, make "seeing" into the earth non-invasively more feasible for engineering purposes. The presentation will discuss recent advances in subsurface imaging at Virginia Tech and their implications for monitoring and restoring infrastructure and the environment.

## Materials Science & Engineering: everything is material

Room 342 | Michelle Czamanske

Materials Science & Engineering (MSE) is the center of developing the next generation of materials and improving current materials. MSE is the center of all engineering; everything is made of materials.

## Materials Science & Engineering Demo

Room 343 | MSE Student Ambassadors

Following the information sessions, MSE Student Ambassadors will give several demonstrations of various materials from electronics, metals, polymers, and ceramics.

1:25 pm – 2:15 pm

### Introduction into the General Engineering Program

Commonwealth Ballroom A | David Grey and James Newcomer

All COE students are enrolled in the General Engineering program their first year at VT. Here we will discuss the program, including course work, lab space, advising, resources, etc. that students need to know to prepare for their first year in the College.

### Chemical Engineering at Virginia Tech

Commonwealth Ballroom B | Jeremy Wilson

The presentation provides a brief summary of what chemical engineering is, what sorts of jobs a chemical engineering degree prepares you for, and how the program is structured at Virginia Tech. Additional emphasis is placed on extracurricular opportunities for chemical engineering students.

### Construction Engineering & Management – Building the Future

Haymarket Theater | Sharon Williams and CEM Ambassadors

CEM students learn the intricate nuances of the design & construction industry. Foremost, they are problem-solvers, team players & visionaries who don't rely only on the way things have been done before. They try to make the world better by using 'green' sustainability practices, innovative technology & strong people skills on a daily basis. They work hard to turn "built environment" challenges into opportunities.

## INDUSTRIAL and SYSTEMS ENGINEERING (ISE) *where people and engineering interact*

Join us today to learn more...

1:25 PM - Squires Room 300

2:30 PM - Commonwealth Ballroom B

#### MANUFACTURING SYSTEMS ENGINEERING

Design and improve manufacturing facilities and how they are operated.



#### MANAGEMENT & SYSTEMS ENGINEERING

Design and improve management systems used in business.



#### OPERATIONS RESEARCH

Use advanced mathematical methods to help make better decisions and plans.



#### HUMAN FACTORS ENGINEERING & ERGONOMICS

Observe, evaluate and design products or systems that increase user efficiency and well-being.



**#3 Best Undergrad Engineering Program**

Industrial and Systems Engineering  
U.S. News & World Report



COLLEGE OF ENGINEERING  
GRADO DEPARTMENT OF INDUSTRIAL  
AND SYSTEMS ENGINEERING  
VIRGINIA TECH



### **What is Biomedical Engineering?**

Room 219 | Sara Arena

This presentation will give an overview of biomedical engineering, the curriculum at Virginia Tech, and opportunities for BME students. Student Ambassadors will also be available for Q&A at the end of the session

### **AI-ML Based Cattle Behavior Analysis**

Room 236 | Sook Ha

Cattle movement and posture can be significant indicators of the animal's health. Machine learning algorithms paired with computer vision can identify, classify, and link them to the symptoms of the particular problem, automatically issuing an alert

### **Industrial and Systems Engineering (ISE): Where People and Engineering Interact**

Room 300 | Natalie Cherbaka & ISE Advisors

Learn about the Industrial and Systems Engineering at Virginia Tech! Hear what you will do in the #3 ISE program in the United States and how it will provide you with a career in engineering, like no other.

### **Autonomous Drones for 3D Mapping of Underground Mines**

Room 305 | Richard Bishop

The presentation highlights the cutting edge research in the Mining Engineering department developing UAVs for autonomous 3D mapping of underground mines. The slides contain many photos and videos of large underground mines that students and parents alike will find otherworldly and interesting.

### **CEED Pre-College Program**

Room 340 | Kim Lester

The Center for the Enhancement of Engineering Diversity offers a wide range of pre-college programs from middle to high school including both academic year and summer programs.

### **iPhones, Electric Vehicles, and Renewable Energy – The Critical Role of Mining Engineering in Modern Society**

Room 342 | Aaron Noble

Modern society is facing increased demand for small electronic devices, light weight metals, and high-performance batteries. All of these essential devices require extremely specialized raw materials that are difficult and expensive to mine and extract. The Mining and Minerals Engineering Department at Virginia Tech is world renowned for its teaching and research in critical materials production and separations. This presentation will describe some of this cutting-edge research and explain how new undergraduates can get involved through undergraduate research and internships.

### **Materials Science & Engineering Demo**

Room 343 | MSE Student Ambassadors

Following the information sessions, MSE Student Ambassadors will give several demonstrations of various materials from electronics, metals, polymers and ceramics.

**2:30 pm – 3:20 pm**

### **Electrical and Computer Engineering**

Commonwealth Ballroom A | ECE Ambassadors & Virgilio Centeno

The presentation will provide an overview of the ECE Department and discuss the 12 unique majors offered by the department.

### **Industrial and Systems Engineering (ISE): Where People and Engineering Interact**

Commonwealth Ballroom B | Natalie Cherbaka & ISE Ambassadors

Learn about the Industrial and Systems Engineering at Virginia Tech! Hear what you will do in the #3 ISE program in the

United States and how it will provide you with a career in engineering, like no other.

### **Study Abroad for First Year Engineers and Beyond**

Haymarket Theater | Nicole Sanderlin

COE's GEER office will present options for engineering students to gain a global experience. Students are able to study abroad (short-term or a full-semester), have a research experience abroad or participate in international service work. Planning ahead is key for engineers to have a global experience that enhances their degree program and keeps them on track for graduation.

### **Title: Intelligent Equipment and Mine Blast Design**

Room 219 | Erik Westman

Machine learning has been used with data from a smart drill rig to better map the differences in rock hardness. With this information, blast engineers can design blasts that break the rock evenly.

### **Electronic & Photonic Materials and Devices**

Room 236 | Mantu Hudait

Shrinking feature sizes of silicon (Si) transistor has enabled increase in transistor densities and this rising number of transistors increases the power consumption in microprocessor. Currently, Apple iPhone 15 pro max has 19 billion and Apple watch ultra 2 has about 9 B tinny transistors. With the explosion of data transfer for the ever-growing demand in computing driven by high-performance cloud services, AI, Big Data, and internet-of-things (IoT), Cu (copper)-based electrical interconnects are rapidly becoming inefficient in meeting bandwidth requirements. Optical interconnects are highly desired for both inter- and intra-chip communications, where large volumes of data can be transferred at high speeds. Photons are excellent at carrying information at high speeds, while electrons are excellent at information processing. The question remains; can we integrate monolithically electronics with photonics? In this talk, I will present the recent development on the research work from our group that has the capacity for ultra-low power transistors and photonic devices on a single platform soon. There are many challenges one needs to overcome to achieve this long-standing dream.

### **Construction Engineering & Management – Building the Future**

Room 300 | Sharon Williams

CEM students learn the intricate nuances of the design & construction industry. Foremost, they are problem-solvers, team players & visionaries who don't rely only on the way things have been done before. They try to make the world better by using 'green' sustainability practices, innovative technology & strong people skills on a daily basis. They work hard to turn "built environment" challenges into opportunities.

### **What is Biomedical Engineering?**

Room 305 | Sara Arena

This presentation will give an overview of biomedical engineering, the curriculum at Virginia Tech, and opportunities for BME students. Student Ambassadors will also be available for Q&A at the end of the session

### **Autonomous Drones for 3D Mapping of Underground Mines**

Room 340 | Richard Bishop

The presentation highlights the cutting edge research in the Mining Engineering department developing UAVs for autonomous 3D mapping of underground mines. The slides contain many photos and videos of large underground mines that students and parents alike will find otherworldly and interesting.

### **Materials Design via Informatics: What is it and Why do We Need it?**

Room 342 | Pinar Acar

This presentation will provide an overview of the importance of materials design for building next-generation engineering structures. I will briefly introduce some computational techniques, including AI/ML, that we use to perform computational



design of materials for various applications.

## Chemical Engineering at Virginia Tech

Room 343 | Jeremy Wilson

The presentation provides a brief summary of what chemical engineering is, what sorts of jobs a chemical engineering degree prepares you for, and how the program is structured at Virginia Tech. Additional emphasis is placed on extracurricular opportunities for chemical engineering students.



COLLEGE OF ENGINEERING  
MYERS-LAWSON  
SCHOOL OF CONSTRUCTION  
VIRGINIA TECH.

### BUILDING CONSTRUCTION

## Building Futures; One Student at a Time

We prepare students to become tomorrow's **construction professionals**. With a heavier focus on the people side of construction than the design, our mix of construction, business, technology, and professional skill elements provides students with the skills they need to become successful in all aspects of the industry.

#### ABOUT US:

- ▶▶ **Experiential Learning**
- ▶▶ **Small Student Faculty Ratio**
- ▶▶ **Construction Career Fairs**
- ▶▶ **Paid Internships**
- ▶▶ **Earn to Learn Co-op Experiences**
- ▶▶ **Strong Industry Connections**
- ▶▶ **Multiple Job Offers**
- ▶▶ **100% Job Placement**
- ▶▶ **High Starting Salaries**



#### Contact & Connect

Gary Kinder  
gkinder@vt.edu

Shelton Norwood  
snorwood@vt.edu





### Bridging the gap between traditional medicine and technology

Biomedical Engineering is a multidisciplinary field, using engineering principles and design concepts to advance healthcare treatment and find innovative solutions.



- Biomechanics
- Biomedical Devices
- Cell and Tissue Engineering
- Biomedical Imaging



COLLEGE OF ENGINEERING  
BIOMEDICAL ENGINEERING  
AND MECHANICS  
VIRGINIA TECH.

beam.vt.edu

# GALILEO



HYPATIA

AN ENGINEERING LIVING-LEARNING  
COMMUNITY AT VIRGINIA TECH®

GALILEO AND HYPATIA ARE LIVING-LEARNING COMMUNITIES FOR ENGINEERING STUDENTS UNDER THE CENTER FOR THE ENHANCEMENT OF ENGINEERING DIVERSITY (CEED)

THIS COMMUNITY IS DESIGNED TO:

- HELP STUDENTS TRANSITION FROM HIGH SCHOOL TO COLLEGE, AND FROM COLLEGE TO CAREER

- EXPLORE PROFESSIONAL DEVELOPMENT AS AN ENGINEER WITH A FOCUS ON TOPICS OF DIVERSITY

- BUILD A POSITIVE COMMUNITY OF ENGINEERS



## VT VIRGINIA TECH i INVENT STUDIO

APPLY CONCEPTS TO HANDS-ON PROJECTS IN YOUR RESIDENCE HALL!

OFFERED TRAININGS IN:

- POWER TOOLS
- SOLDERING
- LASER CUTTING
- CNC MILLING

3D PRINTING AVAILABLE!



SCAN TO LEARN MORE!

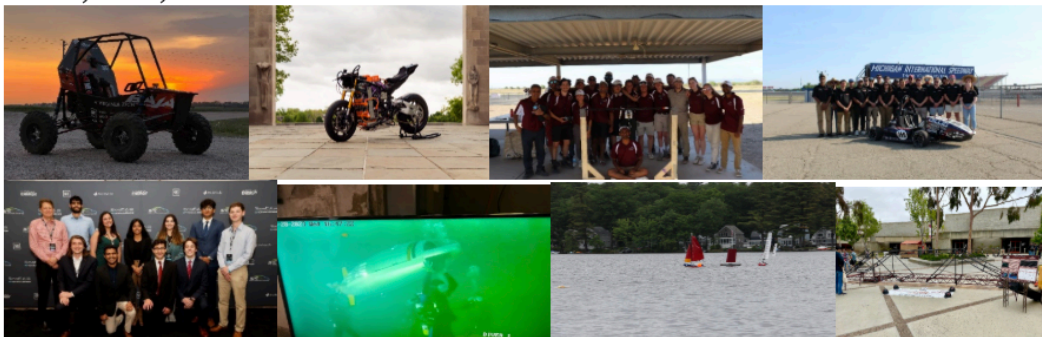


## Ware Lab - College of Engineering

Ware Lab is home to 10 undergraduate teams in the College of Engineering including:

- *Astrobotics* – autonomous moon rover,
- *Baja SAE* – off road, all-terrain vehicle,
- *Battery Operations Land Transport (BOLT)* – electric motorcycle street racer,
- *Concrete Canoe* – the name says it all!
- *Design Build Fly (DBF)* – remote control aircraft,
- *Formula SAE* – High performance racer,
- *Hokie Electric Vehicle Team (HEVT)* – enhanced GM all EV vehicle,
- *Human Powered Sub* – self-propelled, single person, submarine,
- *SailBOT* – autonomous water surface craft, and
- *Steel Bridge* – 20ft span, modular steel bridge.

Pictured below (CW from top left): **Baja SAE, BOLT, DBF, Formula SAE, Steel Bridge, SailBOT, DBF, and HEVT.**





# EOH Showcase

11:15 am - 2:15 pm

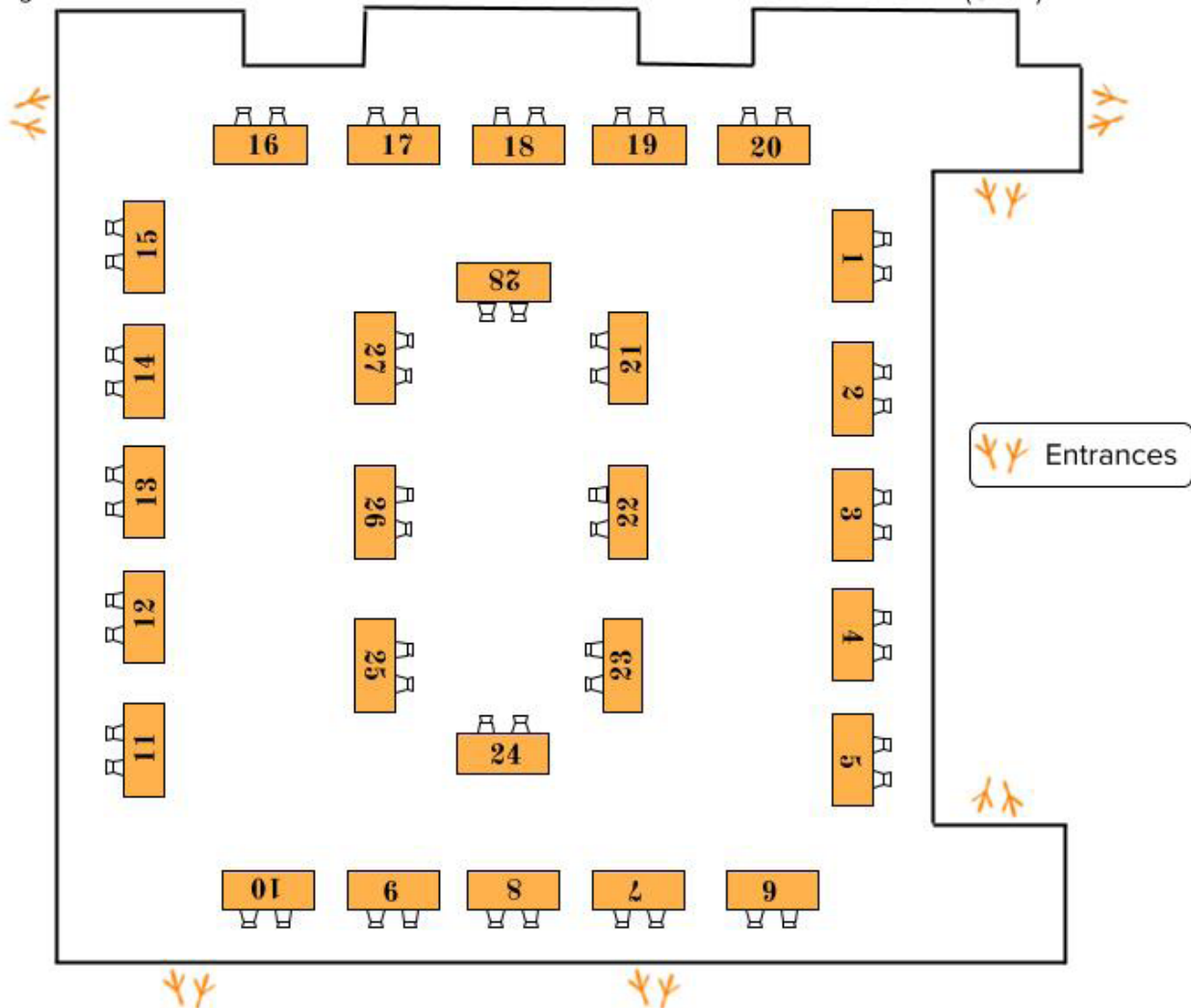
## Departments

- 6 Biomedical Eng. and Mechanics (BEAM)
- 7 Biological Systems Eng. (BSE)
- 8 Aerospace & Ocean Eng. (AOE)
- 9 Electrical and Computer Eng. (ECE)
- 10 Chemical Eng.
- 11 Mining and Minerals Eng.
- 12 Industrial and Systems Eng.
- 13 Computer Science (CS)
- 14 Civil and Environmental Eng. (CEE)
- 15 Construction Engineering & Management (CEM)
- 16 Building Construction

- 17 Engineering Education
  - 18 Mechanical Engineering (ME)
  - 19 BEAM/ICTAS - VT Helmet Lab
- Student Orgs.**
- 21 American Society of Civil Eng. (ASCE)
  - 22 RoboGrinder at VT
  - 23 Engineers without Borders
  - 26 Institute of Electrical and Electronic Engineers at VT
  - 27 Society of Women in Eng. (SWE)
  - 28 Global Engineering Ambassadors

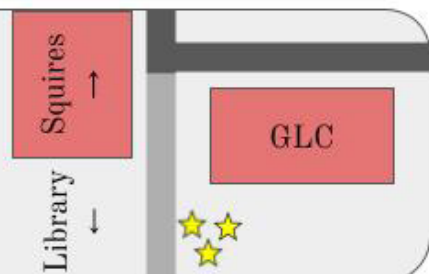
## General

- 1 Career and Professional Development
- 2 Undergraduate Admissions
- 3 Rec Sports
- 4 Dean of Students Office
- 5 The Marching Virginians
- 24 Military Affairs (Corps of Cadets)
- 25 Army ROTC
- 20 Center for the Enhancement Of Engineering Diversity (CEED)



## Additional Booths Between Squires and GLC:

- ★ BOLT Electric Motorcycle
- ★ Human Powered Submarine
- ★ Formula SAE



# Engineering Open House 2024 Booth Showcase Tables with Descriptions

## **Biomedical Engineering and Mechanics**

Undergraduate program for biomedical engineering

## **Aerospace & Ocean Engineering**

The Kevin T. Crofton Department of Aerospace and Ocean Engineering is home to two majors: aerospace engineering and ocean engineering. At our booth AOE Ambassadors will be present to talk to prospective students/families about what it is like to be an undergrad in our department.

## **American Society of Civil Engineers (ASCE)**

Virginia Tech has one of the largest ASCE collegiate chapters in the nation with membership of over 200 students. VT ASCE has been actively involved with the campus and surrounding community since our foundation in 1923. We seek to create an environment that fosters communication and interaction between civil engineering students, faculty, and practicing engineers. We aim to do this through professional and social events, providing a variety of meetings and gatherings for our members.

## **Army ROTC**

Army ROTC program within the Corps of Cadets

## **BEAM/ICTAS - VT Helmet Lab**

VT Helmet Lab

## **BOLT**

BOLT is a student-run organization at Virginia Tech in the Ware Lab where students design, build, and race an all-electric superbike.

## **BSE**

we connect biology and engineering to solve complex, critical problems in sustainability, environmental protections, and human health.

## **Building Construction**

Department of Building Construction within Myers-Lawson School of Construction.

## **Career & Professional Development**

Career and Professional Development helps Hokies explore potential careers and major, find internships, and tailor résumés for future employment. We aim to help students explore career options, seek real-world experiences, secure post-graduation employment, and plan for graduate or professional school.

## **Center for the Enhancement of Engineering Diversity**

Since 1992, the Center for the Enhancement of Engineering Diversity (CEED) has provided encouragement and support to engineering students, focusing on the under-represented population. Our office recognizes that Virginia Tech students are among the best and brightest, and assists them in achieving excellence. Come learn more about our pre-college summer camps and undergraduate support programs!

## **Chemical Engineering**

Chemical engineers make and move the molecules that the world needs. Chemical engineering students learn to skillfully and creatively apply the principles of chemistry, biochemistry, biology, mathematics, and physics to problems involving ener-



gy, food, health, electronics, consumer products, and environmental quality. Optional technical tracks in Climate and Energy Solutions, Computational and Data Sciences, and Healthcare Technologies allow students to focus their technical electives toward a particular industrial field.

### **Civil and Environmental Engineering**

The Charles E. Via, Jr. Department of Civil and Environmental Engineering is ranked among the top 10 accredited departments in the United States. The mission of our department is to provide a high-quality learning environment and create opportunities for students to develop skills to advance engineering principles and practices.

### **Computer Science**

Academic department

### **Dean of Students Office**

Interfaith Initiative and First-Generation Student Success

### **Electrical and Computer Engineering**

The ECE department offers two undergraduate degrees - BS Computer Engineering and BS Electrical Engineering - with 12 major options.

### **Engineering Education**

Home of the first-year engineering program

### **Engineers Without Borders**

Engineers Without Borders is an international non-profit organization. At the Virginia Tech Chapter we have three active projects: Uganda, Kenya, and Nicaragua. We focus on sustainable solutions to problems communities in need have. Right now Uganda and Kenya's projects involve helping with water supply. Nicaragua is focused on food supply.

### **Formula SAE**

VT Motorsports is a student design team dedicated to designing, manufacturing, and racing both combustion and electric formula-style race cars. With a burning desire for innovation and excellence, the team strives not just to compete but to win, fueled by our ambition to secure victories on the track.

### **Global Engineering Ambassadors**

The Global Engineering Ambassadors are a group of enthusiastic engineering students who help the Global Engineering Office (GEER) promote study abroad and global experiences for Virginia Tech's engineering students.

### **Human Powered Submarine at Virginia Tech**

Human Powered Submarine at Virginia Tech designs and builds a fully flooded submersible over the course of a two year cycle. We compete in a competition every two years at NSWCCD Carderock where we drag race the submarine at a depth of 20 feet against colleges from all over the world!

### **Industrial and Systems Engineering**

The Grado Department of Industrial and Systems Engineering (ISE) at Virginia Tech has a wide breadth of studies ranging from areas in manufacturing systems, human factors and ergonomics, management systems, and operations research. It is ranked #3 ISE program in the nation!

### **Institute of Electrical and Electronic Engineers at Virginia Tech**

The Institute of Electrical and Electronics Engineers (IEEE) at Virginia Tech student branch is composed of students from the Virginia Tech Computer Science (CS) and Electrical and Computer Engineering (ECE) Department. We aim to create

## **Institute of Electrical and Electronic Engineers at Virginia Tech**

The Institute of Electrical and Electronics Engineers (IEEE) at Virginia Tech student branch is composed of students from the Virginia Tech Computer Science (CS) and Electrical and Computer Engineering (ECE) Department. We aim to create a strong community within the department and help ECE and CS students develop professionally, academically, and socially! We have devoted our energies towards bringing hands-on, practical experiences to engineering students throughout the

campus, as well as creating opportunities for the students to interact with industry professionals and students interested in

related fields. Throughout the year, IEEE @ VT will have regular meetings, employer events, technology-related activities, social events, and more! Everyone from all majors are welcome!

## **ME**

Mechanical Engineering (including majors in Automotive and Robotics & Mechatronics, Nuclear Engineering minor)

## **Military Affairs (Corps of Cadets)**

The Corps of Cadets is a leader development program/Living Learning community within Virginia Tech, augmenting the three ROTC programs to produce officers for the military. Navy & Air Force ROTCs, in particular are seeking engineering majors.

## **Mining and Minerals Engineering**

If it's not grown, it's mined. The sustainable development, extraction, and production of critical minerals and energy resources fuels the technologies of the future, from electric vehicles to green energy. Virginia Tech's Department of Mining and Minerals Engineering trains its graduates to help lead the world.

## **Myers-Lawson School of Construction (MLSoC) - Construction Engineering & Management**

MLSoC students are problem-solvers, team players & visionaries who don't rely just on how things have been done before. They try to make the world better by using 'green' sustainability practices, innovative technology & strong people skills to turn challenges into opportunities.

## **Rec Sports**

## **RoboGriner at Virginia Tech**

RoboGrinder is an undergraduate engineering design team at Virginia Tech that competes in the DJI RoboMaster University Championship 7v7 competition in Shenzhen, China, and the DJI RoboMaster University League 3v3 competition in North America. The competition involves designing terrestrial and aerial robots that are teleoperated or fully autonomous. The team members of RoboGrinder strive to solve complicated mechanical, electrical, and computer vision problems.

## **Society of Women Engineers**

The Society of Women Engineers (SWE) is an international community of women that strive to Aspire, Advance, Achieve as women in the field of Engineering. SWE at VT contributes to the campus, the community, and its members. SWE participates in many service projects aimed at encouraging young women to consider a career in engineering as well as projects that help the environment and the New River Valley community. SWE creates a network of women engineers throughout Virginia Tech and demonstrates the value of diversity on this campus. SWE also offers scholarship, career advice, mentoring, and professional, social, and service opportunities for its members.

## **Undergraduate Admissions**





## WHY ARMY ROTC?



Army ROTC's mission is to educate, train, and commission college students to be officers and leaders of character in all of the army's components. Whether it be active duty or national guard/reserve duty, our program will provide an unrelenting level of dedication to YOUR personal development. Will you meet the challenge and **Be all you can be?**

**?**  
**DID YOU KNOW?**  
Active Duty is guaranteed at Virginia Tech for all qualifying graduates.



### UNIQUE PROGRAM

Virginia Tech is one of six Senior Military Colleges in the nation with a dedicated leadership development program through the Virginia Tech Corps of Cadets (VTCC), that is accompanied by a vibrant civilian experience. It strikes the perfect balance between the regular student life and the rigor of both the VTCC and Army ROTC. You will build lifelong bonds with the friends you make here.



### TRAIN WITH THE BEST

The Department of Defense ranked our program as the #1 ROTC in the nation in 2023. All of the instructors at both Virginia Tech and Radford Army ROTC possess a wide variety of experience and expertise. Not sure what you want to do in the Army? We will help you answer that question. You will be challenged to think critically and push yourself academically and physically.



### ARMY SCHOOLS

Regardless of school, our program is afforded slots every single year to send cadets to Airborne, Air Assault, and even schools such as Jungle or Mountaineering. Embrace the chance to soar to new heights and face unique challenges, distinguishing yourself among your peers and developing your career before you commission.



### SCHOLARSHIPS

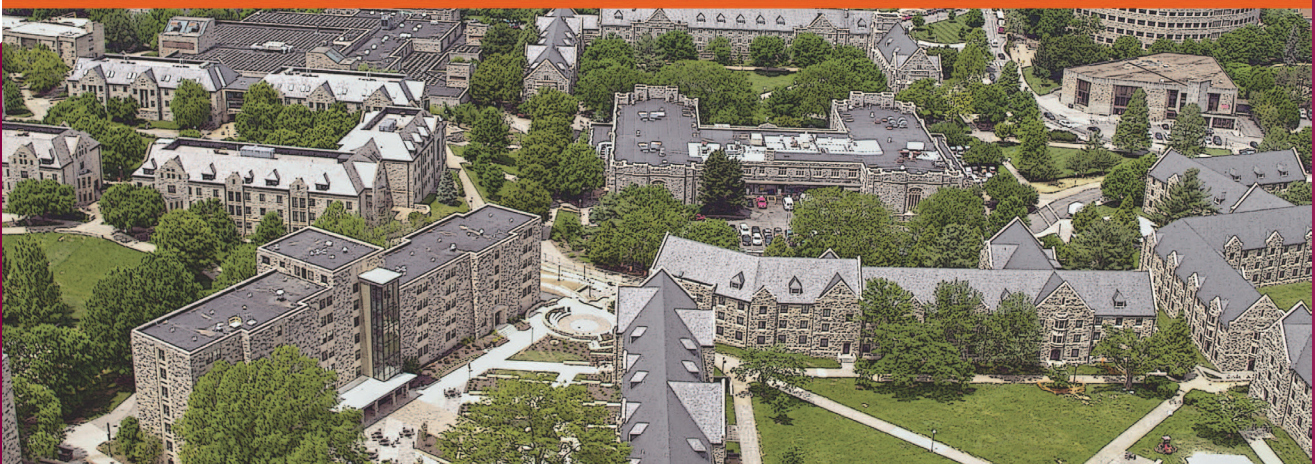
The full college experience can be yours with less debt and a fulfilling career in the Army upon graduation. Even if you don't receive a national scholarship, both Virginia Tech and Radford University offer on campus scholarships. Radford in particular offers a truly affordable education with their tuition promise.

Contact Mr. Buck Kellogg for more information: 540-231-4804 or rotc@vt.edu

# Safety, Convenience, Equity Automotive Research at Virginia Tech

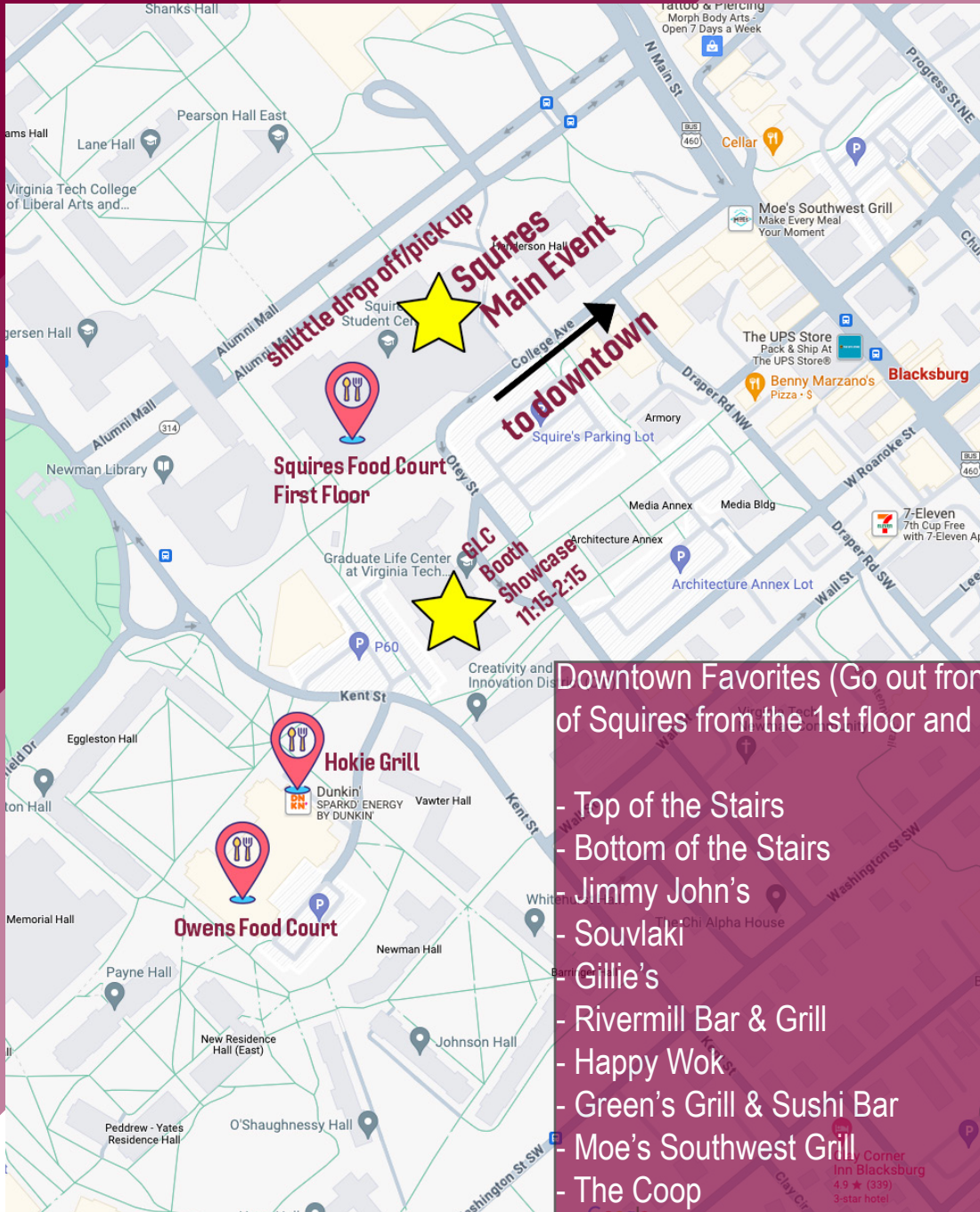
Think about how you have traveled around Virginia Tech today.  
Were you in a car or bus? Did you walk?

Research underway at Virginia Tech Transportation Institute intends to make these journeys safer, quicker, more efficient, and more equitable. **Come find out how!**





# WHERE TO EAT?

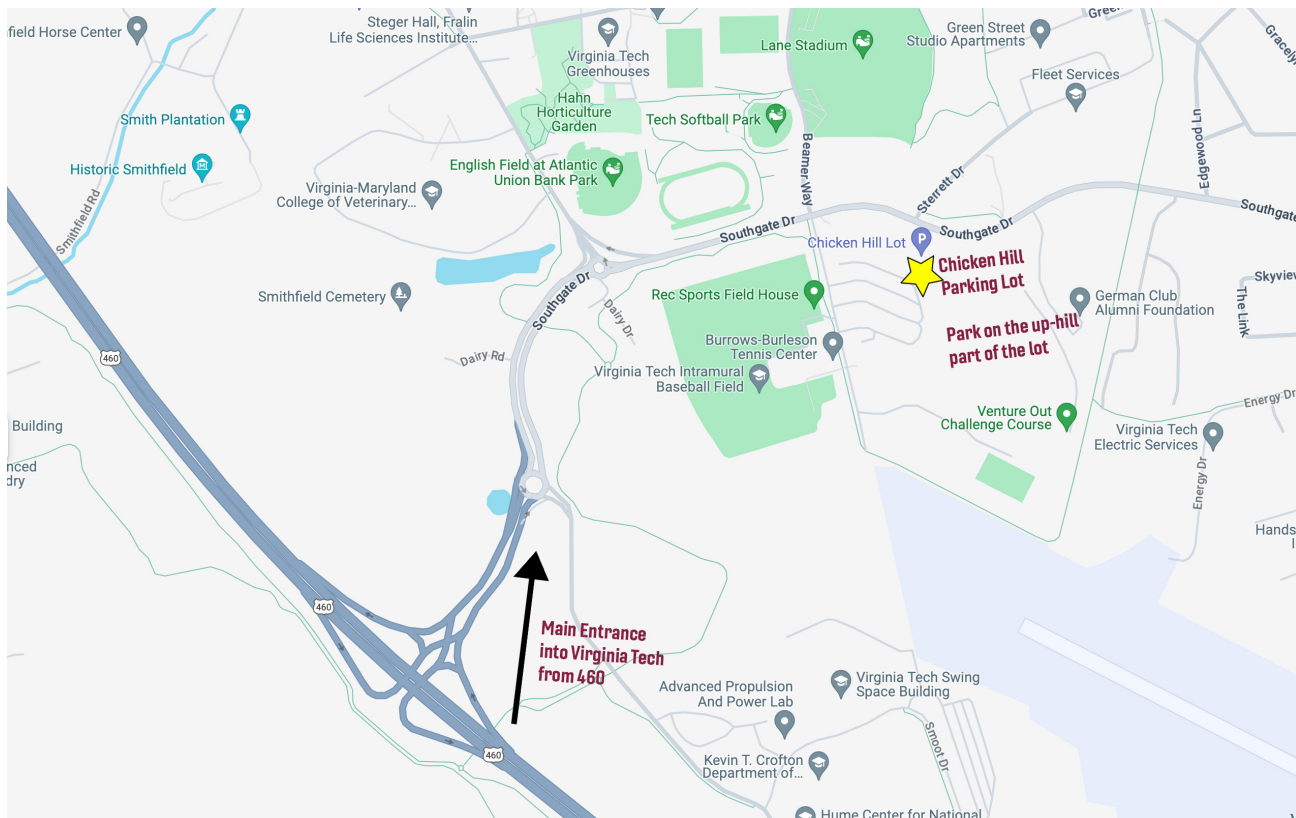


Downtown Favorites (Go out front/main door of Squires from the 1st floor and turn left)

- Top of the Stairs
- Bottom of the Stairs
- Jimmy John's
- Souvlaki
- Gillie's
- Rivermill Bar & Grill
- Happy Wok
- Green's Grill & Sushi Bar
- Moe's Southwest Grill
- The Coop
- Sharkey's
- Joe's Diner
- The Cellar
- The Maroon Door
- PKs Bar & Grill
- Benny's



# PARKING



Parking will be provided and is available on campus at the Upper Chicken Hill lot located at the corner of Southgate Drive and Tech Center Drive. An address for GPS purposes is: 927 Southgate Dr, Blacksburg, VA 24061. Shuttles will be running between Chicken Hill lot and Squires Student Center on Monday, April 15th from 7:30am-4:00pm continuously. There is a small area along alumni mall near the second floor entrance to Squires for you to quickly unload/reload if needed. Towing may occur if you are parked in an unauthorized area.

If you do not follow these guidelines, your vehicle will be subject to ticketing. The College of Engineering will not be held responsible for your vehicle and will not pay your ticket if one is issued to you.

Alternatively, you can opt to pay for a visitor pass for possible closer parking - There are several options for visitor parking on the Virginia Tech campus. The ParkMobile app is a convenient way to park in most lots on campus. Please visit <https://parking.vt.edu/parking/parkmobile.html> for more information. Additionally, daily parking permits are available for purchase. Please visit <https://virginiatech.t2hosted.com/Account/Portal> for daily permit information.