



VIRGINIA TECH ENGINEERING **OPEN HOUSE 2023**

Engineering Open House Schedule 2023

9:05am - 9:55am

Undergraduate Admissions

Commonwealth Ballroom A | Presented by: Pedro Baiza Martinez

Overview of the Admissions Process

Aerospace & Ocean Engineering: Grand Challenges & Career Prospects

Commonwealth Ballroom B | Presented by: Ella Atkins

This presentation will introduce Aerospace and Ocean Engineering disciplines. Past achievements and current grand challenges will be described with video clips as appropriate. Career opportunities in industry, government, and academia will be overviewed.

Computer Science Information Session

Haymarket Theater | Presented by: CS Student Ambassadors

This presentation by Computer Science Student Ambassadors provides an overview of the Department of Computer Science and gives students and their loved ones an opportunity to hear about CS at VT from a student perspective.

Improving Human Safety in Transportation Using Numerical Simulations

Room 232 | Presented by: Costin Untaroiu

The human injury mechanisms in transportation have been investigated by various institutions and organizations using dummies in collision tests. These tests provide insight into crash biomechanics, but they are expensive to perform. A more cost-effective way to investigate collisions is using computer simulations. During this presentation, various human body models developed by the Computational group affiliated with the Center for Injury Biomechanics will be introduced. Additionally, various applications in Safety Transportation (e.g., vehicles, military, aerospace, e-scooters, etc.) will be presented as well.

The Digerati Living Learning Community for Students in IT Related Majors

Room 234 | Presented by: Perry Martin

In the Fall of 2023, the Center for the Enhancement for Engineering Diversity will open a new interdisciplinary Living Learning Community at Virginia Tech called Digerati. This community will host students from majors related to Information Technology and will support the academic, professional, social, and personal growth of students in these majors. This presentation will provide an overview of plans for the community and the opportunities this community will offer to students.



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Autonomous Guidance and Control for Aerial and Ground Platforms

Room 236 | Presented by: Andrea L'Afflitto

This presentation will provide an overview of several research projects performed at the Advanced Control Systems Lab, which include the guidance and control of autonomous unmanned aerial and ground vehicles involved in complex tasks such as payload delivery, mapping, and information gathering.

Metallurgical Engineering and Metal Casting

Room 300 | Presented by: Alan Druschitz

Metallurgical engineering is the practical application of metallurgy to produce materials and components. Metallurgical engineers are often teamed with mechanical engineers to develop new products. Virginia Tech has a foundry on campus to teach students the art of metal casting and to support metals research and engineering projects.

3D Concrete Printing for Affordable Housing

Room 305 | Presented by: Andrew McCoy

The Virginia Center for Housing Research (VCHR) at Virginia Tech partnered with local stakeholders to design, develop, commission and study a pilot partnership and project to build one 3D concrete-printed home in the greater Richmond Metropolitan area, which was sold to a family in need at an affordable housing price.

Autonomous Drones for 3D Mapping of Underground Mines

Room 342 | Presented by: Richard Bishop

This presentation highlights exciting new applications of autonomous drone technology to 3D map large underground mines with both lidar and photogrammetry.

Technology Support for Construction Engineering and Management

Room 343 | Presented by: Abiola Akanmu

Construction is not all about shovels and dirt. What is the role of emerging technologies in construction?

10:10am - 11:00am

Innovation and Creativity in Engineering

Commonwealth Ballroom A | Presented by: Lisa McNair

The department of engineering education offers a range of courses that students can combine to earn an interdisciplinary minor in Innovation. These include project-based courses exploring design thinking, creativity, critical thinking, service learning, and entrepreneurship. Students can also work on independent research teams for credit. Several professors will join is for our presentation.



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First Year Study Abroad Opportunities

Commonwealth Ballroom B | Presented by: Mariah Henderson

The Department of Engineering Education offers two study abroad experiences that are open to first year students--The Rising Sophomore Abroad Program and the Innovation in Europe Program. Attendees will learn about both programs and how they can enhance a student's academic career while at Virginia Tech.

Civil Engineering

Haymarket Theater | Presented by: Scott Case & Kara Lattimer

Are you interested in infrastructure? Sustainability? Climate Change? Then CEE at VT is the right place for you! This presentation will showcase the curriculum and opportunities available for students in civil engineering at VT!

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

Room 232 | Presented by: 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.

The Center for Injury Biomechanics: Making a Global Impact on Safety

Room 234 | Presented by: Warren Hardy

Injury Biomechanics is a discipline that examines human response and tolerance to injury events. Injury mechanisms are determined and injury risk curves are developed. Injury and injury mitigation are studied on a variety of scales using a variety model. Injury Biomechanics research pertains to all aspects of life, but strong focus is placed on transportation and military applications, which involve crash dummy design and use.

What is Materials Science & Engineering?

Room 236 | Presented by: Michelle Czamanske

Everything is made of a material! Throughout history, materials have played a major role in advancing civilization. Materials scientists and engineers focus on studying properties and structure of materials, creating new and better materials, improving existing materials and selecting appropriate materials for a wide range of applications. Every industry needs a materials scientist, come and learn more about how MSE is advancing our society.



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Green Engineering Overview

Room 300 | Presented by: Sean McGinnis

The VT Green Engineering Program works with students across all majors in the College of Engineering to quantify and minimize the environmental impacts of products, processes, and systems across their life cycle (extraction, manufacturing, use, and disposal). This presentation will provide an overview of these critical concepts as well as the Green Engineering Minor which is available to COE students.

Construction Engineering & Management (CEM) Building the Future

Room 305 | Presented by: Sharon Williams

The construction industry is captivating & anyone can be a part of it! CEM is an engineering degree that blends expertise in Building Construction, Civil Engineering & Management so students are equipped to plan, design & manage construction in four areas--residential, commercial, industrial & heavy civil projects. Our graduates are in high demand in the workforce, with a wide range of expertise specializations, companies & geographic locations to live/work during internships or after graduation. We have 100% job placement & a 100% 'pass rate' on the F.E. (Fundamentals of Engineering) exam, which leads to the P.E. (professional engineer's) license.

Galileo & Hypatia Living Learning Communities

Room 342 | Presented by: DeAnna Katey

We will discuss benefits of joining the two engineering Living-Learning Communities, Galileo and Hypatia.

Building the Built Environment

Room 343 | Presented by: Georg Reichard, Renee Ryan, & BC Ambassadors

The Building Construction (BC) degree offers a unique experience for students to engage in the creation of exemplary vertical structures, spaces, and systems with the goal of shaping the future of our built environment. With an overarching focus on business and construction management, innovation and emerging technologies, performance, and sustainability; students are prepared to enter the industry as future managers, executives, and leaders in this increasingly fast-paced industry.

11:15am - 12:05pm

Mechanical Engineering

Commonwealth Ballroom A | Presented by: Clint Dancey, Sarah Deisher

Intro to all majors within the BSME degree: ME, Automotive Engineering and Robotics and Mechatronics. Will also include the Nuclear Engineering minor.



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Chemical Engineers Change the World – Come Join Us!

Haymarket Theater | Presented by: Steven Wrenn

Professor Steve Wrenn, the head of the department of Chemical Engineering, will describe the role of Chemical Engineers in our society, the groundbreaking work they do, and how our degree is attractive for students wanting to make a difference in our world. Chemical Engineering students can choose from an Energy and Climate Change Solutions track, a Healthcare Technologies track, and a Computational and Data Sciences Track for their course of study. Chemical Engineering is quite broad and Prof. Wrenn will explain how.

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Materials Science & Engineering Demonstrations

Room 234 | Presented by: MSE Ambassadors

MSE Student Ambassadors will provide demonstrations using various materials.

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Studying Large Language Models Through the Lens of Security: Defending Against Misuse and Vulnerabilities

Room 300 | Presented by: Bimal Viswanath

Large language models (LLMs) or neural network models trained on large text datasets of human language have enabled huge advances in convincingly generating text. In this talk, I will examine applications of text generation through the lens of security, focusing on mitigating threats posed by misuse and vulnerabilities of this technology. First, LLMs can be misused for malicious purposes to generate misleading text, e.g., generating fake news articles, opinion spam. Our work investigates the effectiveness of defenses that aim to detect such synthetic text by considering real-world settings, i.e., on real-world datasets and by considering an adaptive adversary, and lays out new directions for robust detection of synthetic text. Second, we examine data poisoning vulnerabilities impacting interactive applications of LLMs, by focusing on open-domain dialog systems. We aim to systematically study such threats to understand their effectiveness, and propose mitigation strategies.

Biological Systems Engineering

Room 305 | Presented by: Priscilla Baker

BSEs connect 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. Come learn more about what we do!

Grado Department of Industrial and Systems Engineering (ISE)

Room 342 | Presented by: Eileen Van Aken & ISE Academic Advisors

Learn about the Grado Department of Industrial and Systems Engineering. It is a top-ranked program, offering a B.S. in Industrial and Systems Engineering (BSISE). Career opportunities for ISEs have never been better, and our graduates work for manufacturing facilities, distribution warehouses, hospitals, airlines, railroads, banks, amusement parks, management consulting, military, and federal government organizations. One of the primary aims of the ISE is to create value for organizations by improving performance of integrated systems, for example, improving quality, productivity, costs, efficiency, worker safety, and/or customer satisfaction. The depth and breadth of the BSISE curriculum at Virginia Tech prepares our graduates to contribute to any organization in any industry.



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1:25pm - 2:15pm

Introduction to General Engineering at Virginia Tech

Commonwealth Ballroom A | Presented by: David Gray

We will introduce the concept of general engineering, review the basics of the first year program, and highlight some of the interdisciplinary program offerings of the ENGE department.

Construction Engineering & Management (CEM) Building the Future

Commonwealth Ballroom B | Presented by: Sharon Williams

The construction industry is captivating & anyone can be a part of it! CEM is an engineering degree that blends expertise in Building Construction, Civil Engineering & Management so students are equipped to plan, design & manage construction in four areas--residential, commercial, industrial & heavy civil projects. Our graduates are in high demand in the workforce, with a wide range of expertise specializations, companies & geographic locations to live/work during internships or after graduation. We have 100% job placement & a 100% 'pass rate' on the F.E. (Fundamentals of Engineering) exam, which leads to the P.E. (professional engineer's) license.

Electrical & Computer Engineering Information Session

Haymarket Theater | Presented by: Jamie De la Ree

In this presentation we will review the Electrical and Computer Engineering Department. We will discuss both the electrical and computer engineering degrees and the thirteen majors available to students within the degrees.

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Biomedical Engineering Student Research & Projects

Room 300 | Presented by: Sara Arena & BME UG Students

Current undergraduate BME students will share their research and senior design projects!

Galileo & Hypatia Living Learning Communities

Room 305 | Presented by: DeAnna Katey

We will discuss benefits of joining the two engineering Living-Learning Communities, Galileo and Hypatia.

Industrial and Systems Engineering Undergraduate Programs & Experimental Learning Opportunities

Room 342 | Presented by: ISE Ambassadors

Learn from the ISE Ambassadors about the Grado Department of Industrial & Systems Engineering (ISE)! They will explore the undergraduate curriculum and experiential learning opportunities available, including: internships, co-ops, undergraduate research, and study abroad.

Autonomous Drones for 3D Mapping of Underground Mines

Room 343 | Presented by: Richard Bishop

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2:30pm - 3:20pm

How Do Robots Learn?

Commonwealth Ballroom A | Presented by: Dylan Losey

Discussion of robotics research at Virginia Tech. We will focus on how robots can learn from humans. This includes learning from human examples, trying to identify the human's objective, and asking humans questions. Ideas are explained at a high-level with videos of humans and robots interacting.

Biomedical Engineering Information Session

Commonwealth Ballroom B | Presented by: Sara Arena

Overview of the undergraduate biomedical engineering program and department research areas

Engineering Study Abroad

Haymarket Theater | Presented by: Mariah Henderson, Nicole Sanderlin, & Lindy Cranwell

The Department of Engineering Education offers two study abroad experiences that are open to first year students--The Rising Sophomore Abroad Program and the Innovation in Europe Program. Attendees will learn about both programs and how they can enhance a student's academic career while at Virginia Tech.

CEED Pre-College Programs

Room 232 | Presented by: Kim Lester

The Center for the Enhancement of Engineering Diversity offers a range of programs for middle to high school students during both the summer and academic year. This presentation will describe these programs including activities, dates, costs and application deadlines.

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Biological Systems Engineering

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Intelligent Machinery, Data Analytics, & Mine Blast Optimization

Room 300 | Presented by: Erik Westman

Today's new heavy equipment collects data that can be used to improve the safety and productivity of mining and quarrying operations. This presentation will discuss how machine learning is used to better predict the geology and to then optimize the blasts that are used to initially break the rock.

Ocean Engineering: Academic Offerings and Job Opportunities

Room 305 | Presented by: Kevin Wang

I will start with explaining what is Ocean Engineering, then talk about the courses and research projects offered by our department --- in particular, the Ocean Engineering undergraduate program. I will also talk about the job opportunities for our graduates.

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