Welcome to The College of Engineering at Virginia Tech Information Session
Virginia Tech Engineering Student Traits

Are You Ready?

• Creativity
• Teamwork
• Study habits
• Interest in Math and Science
• Challenging High School Background…
  – AP and Honors Classes
  – Extracurricular Activities
Freshman Class of 2014
College of Engineering Statistics

- Average reported GPA: 4.12
- Average SAT Scores (Math/Reading): 689/616
- Average ACT Scores (Math/Reading): 30.0/27.8
- Male to Female Ratio: 2.92:1
- Under-represented Students: 30.1%
Freshman Year: General Engineering

- **Common Entry Point & Classes**
  - Details in Info Bags
- **AP/IB/CLEP Credit Accepted**
  - [www.tranguide.registrar.vt.edu](http://www.tranguide.registrar.vt.edu)
- **Curriculum for Liberal Education**
- **Select Major at end of Freshman Year**
  (3.0 guarantees first choice)
Foundations of Engineering

• Design and Teamwork
• Disciplines
• Algorithms
• Graphing
• Problem Solving
• The Future of Engineering
Approximate Undergraduate Enrollment
(Fall 2015)

- Engineering Education: 2443
- Aerospace: 366
- Biological Systems: 189
- Chemical: 317
- Civil and Environmental: 530
- Computer: 450
- Computer Science: 647
- Construction Engineering and Management: 113
- Electrical: 506
- Engineering Science and Mechanics: 198
- Industrial and Systems: 488
- Materials Science and Engineering: 216
- Mechanical: 1109
- Mining and Minerals: 159
- Ocean: 41
Electrical Engineering

• What you do:
  – Electrical Systems
  – Electronics and microelectronics
  – Electromagnetics
  – Communication systems
  – Controls

• Lab-based design projects

• Job types/industry:
  – Power and Energy
  – Microelectronics/semiconductors
  – Communications
  – Needed everywhere

• Information Session at 2pm on Mon/Fri in 340 Whittemore
Computer Engineering

- Incorporating computing systems into everyday life
- Developing ways to make computers, faster, smaller, and more capable
- Job Types:
  - Networking
  - Hardware
  - Computer Systems
  - Security, Software & Machine Intelligence
  - Communications
- Information Session at 2pm on Mon/Fri in 340 Whittemore
Computer Science

• Design and develop software from operating systems to applications

• Possible Areas of Study:
  – Human Computer Interaction
  – Systems and Networking
  – Software Engineering
  – Computational Biology & Bioinformatics

• Job Types:
  – Software Design and Development
  – Network and Computer Security
  – Mobile Applications,
  – Game Design & Development

• Information Session at 1:15 in 114 McBryde Hall
Biological Systems Engineering

• Areas of Focus:
  – Biomedical Engineering
  – Biomolecular Engineering
  – Environmental Health Engineering
  – Food Engineering
  – Health Professions (pre-med, pre-vet, pre-dental)
  – Watershed Science & Engineering

• Job Types:
  Biopharmaceutical/Biotechnology/Bioc hemical/Biofuels/Biomass Industries, Food Processing, Ecological Engineering & Watershed Management, Government Agencies, Nonprofit Organizations
Chemical Engineering

- Applications of chemistry, mathematics, physics and biochemistry
- Find solutions in fuels and energy, chemical production, environmental quality and sustainability, food, health and pharmaceuticals
- International options for summer laboratory experience (Denmark or Germany)
- Job Types: Fuels, Chemicals, Ceramics, Paper, Pharmaceuticals, Consumer Products, Consulting, etc.
Materials Science and Engineering

• Key Areas:
  – studying the properties and structure of materials
  – creating new and better materials
  – selecting appropriate materials for a wide range of applications

• Possible Areas of Study:
  – Metals
  – Polymers
  – Electronic materials
  – Nuclear materials
  – Ceramics
  – Composites
  – Biomaterials

• Hands-on laboratories (including a foundry)

• Job Types: Design, Aerospace, Automotive, Biomaterials, Metallurgical, Semiconductors, Defense
Mining and Minerals Engineering

• Areas of Emphasis
  – Exploration (finding new reserves)
  – Evaluation (determining economic potential)
  – Development (creating the mine)
  – Extraction (removing the ore)
  – Mineral Processing (recovering valuable materials from ore)
  – Reclamation (restoring the land)

• Job Types: Mine Scheduling and Supervision, Mine Design, Equipment Selection, Mineral Purification
Civil and Environmental Engineering

• Design, build, and maintain infrastructure

• Areas of Emphasis:
  - Construction
  - Environmental
  - Land Development
  - Water Resources
  - Transportation
  - Geotechnical
  - Materials
  - Structures

• Job Types: Structural Engineer, Environmental Engineer, Construction Manager, Water Resources Engineer, Transportation Engineer, and Geotechnical Engineer
Construction Engineering and Management

- Plan, direct, and coordinate construction projects (residential, commercial, public works, etc)
- Integration of Civil & Environmental Engineering, Building Construction, Business
- Engineering with construction and business management
- Job Types: Project Engineer, Field Engineer, Assistant Project Manager, Field Planner, Estimator, & Construction Manager
Aerospace and Ocean Engineering

- Aerodynamics, hydrodynamics, structures, propulsion, flight mechanics, design optimization, flight control, etc.
- Wind tunnels (including stability, open-jet, cascade, supersonic, hypersonic, etc.)
- Double Major with Aerospace and Ocean Engineering available
- Job Types: Structural Analysis, Design Engineering, Control Engineering, Naval Architecture, Underwater Vehicle Development, etc.
Mechanical Engineering

- Apply principles (motion, energy, heat, force) to design, construct, and operate machines or devices
- Topic Areas include:
  - Acoustics
  - Aeronautics
  - Automotive
  - Biomedical
  - Combustion
  - CAD
  - Controls
  - Energy Mgmt
  - Fluid Mechanics
  - HVAC
  - Manufacturing
  - Mechatronics
  - Nuclear
  - Power Generation
  - Propulsion
  - Robotics
  - Smart Materials
  - Vehicle Dynamics
Engineering Science and Mechanics

- Three main pillars:
  - Fluid Mechanics
  - Solid Mechanics and Structures
  - Dynamics

- Concentrations in:
  - Biomechanics
  - Physics

- Emphasis of engineering fundamentals to provide a strong mathematical background applicable to any field

- Job Types: Biomedical, Civil, Nuclear, Aerospace, Mechanical, and many more!
Industrial and Systems Engineering

- Analyze, design, implement, and improve integrated work systems

- Areas of emphasis:
  - Human Factors and Ergonomics
  - Manufacturing Systems
  - Management Systems
  - Operations Research

- (Senior Design):

- Job Types: Health Care, Transportation, Manufacturing, Cost Analysis, Optimization, Product Design and Evaluation, Consulting
Opportunities Available

• **Engineering Minors:**
  – Computer Science
  – Cybersecurity
  – Green Engineering
  – Microelectronics
  – Naval Engineering
  – Biomedical Engineering
  – Scieneering

• **Study Abroad**

• **Undergraduate Research**

• **Engineering Professional Societies & Organizations**
Support: Inside & Outside of Class

Career Fairs

CEED Mentoring

STEP

Hypatia/Galileo
Hands-On, Minds-On

- Programming Competitions
- Autonomous Teams
- All-Terrain Mini Baja Team
- Blind Driver Challenge
- Concrete Canoe
- Design, Build, Fly
- Formula SAE
- Fuel Cell Team
- Houses for the Future
- Human Powered Submarine
- Human Powered Aircraft
- Hybrid Electric Vehicle
- Solar Powered Car
- Steel Bridge
VT Engineering Rankings


- Aerospace 14th
- Biological 6th
- Chemical 20th
- Civil 9th
- Computer 15th
- Electrical 15th
- Engineering Science 4th
- Environmental 11th
- Industrial 5th
- Mechanical 14th

*U.S. News & World Reports America’s Best Colleges 2014
Outcomes

- Freshman who continued to a second year in engineering:
  - Started in 2011: 87%

- After graduation:
  - By April before graduating (Class of 2013)
    - 65% had a job offer
    - 17% plan to attend graduate school
    - 82% had firm plans after graduation

- Median Starting Salary: $60,600 for Class of 2013
Scholarships

• **Freshmen**
  – Davenport Leadership Scholar
  – Pratt Engineering Scholarship
  – Financial Aid
  – Leo A. Padis Scholarship
    • VCCS transfer students

• **Upper Class Students**
  – College of Engineering Funds
  – Departmental Scholarships
  – One Application!
Computer Requirement

- Tablet PC OR Laptop and Windows 7/8 Slate
- Special pricing and warranty through Bookstore
- Don’t buy until summer before entering

Benefits:
- Digital ink for taking notes
- Drawing diagrams
- Writing equations
- Submitting/grading homework
Why Did I Come to the College of Engineering at Virginia Tech?
Questions?
engrrrecr@vt.edu
Where should I eat lunch?

D2
Hokie Grill
Owens
Turner Place
West End