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 2015

College of Engineering Statistics

- Average reported GPA: 4.12
- Average SAT Scores(Math/Reading): 685/606
- Average ACT Scores(Math/English): 30.0/27.8
- Male to Female Ratio: 3.2:1
- 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
- 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

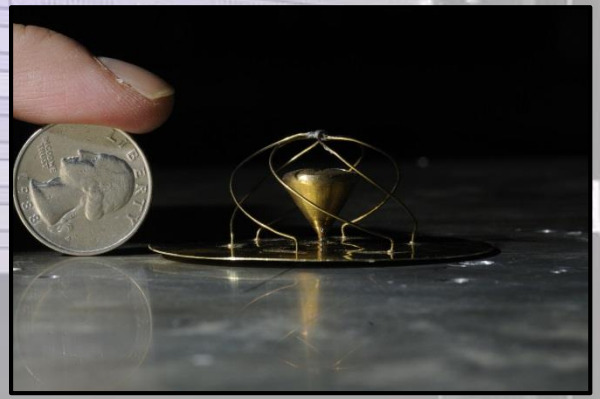
(Fall 2015)

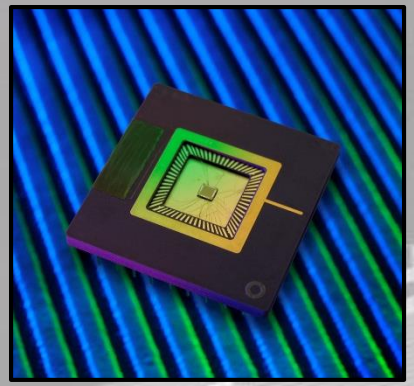
• Engineering Education	2443
• Aerospace	366
• Biological Systems	189
• Chemical	317
• Civil and Environmental	530
• Computer	450
• Computer Science	647
• Construction Engineering and Management	113
• Electrical	506
• Engineering Science and Mechanics	198
• Industrial and Systems	488
• Materials Science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

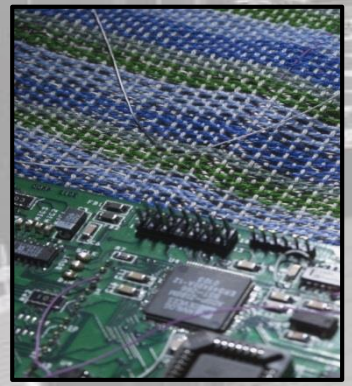
Electrical Engineering

- 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



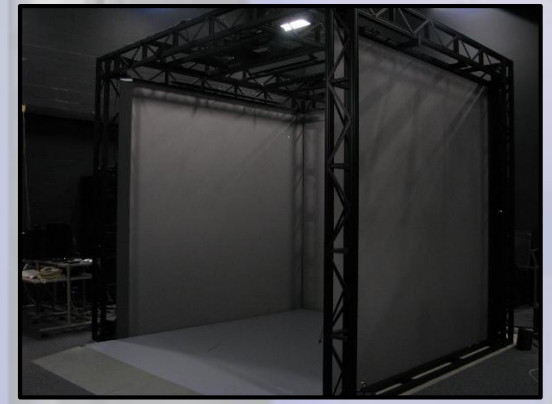




- Incorporating computing systems into everyday life
- Developing ways to make computers, faster, smaller, and more capable
- Job Types:
  - Networking
  - Hardware
  - Computer Systems
  - Security, Software & Machine Intelligence
  - Communications
- Information Session at 2pm on Mon/Fri in 340 Whittemore

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

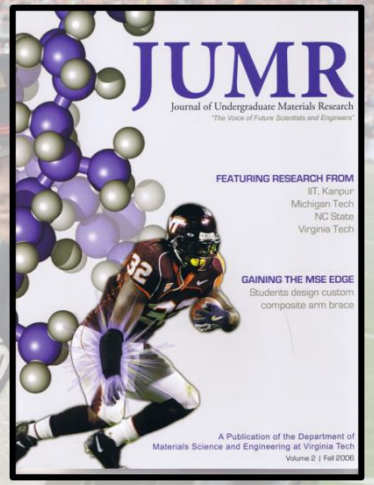
- **Areas of Focus:**
  - Biomedical Engineering
  - Biomolecular Engineering
  - Environmental Health Engineering
  - Food Engineering
  - Health Professions (pre-med, pre-vet, pre-dental)
  - Watershed Science & Engineering
- **Job Types:**
  Biopharmaceutical/Biotechnology/Biochemical/Biofuels/Biomass 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**

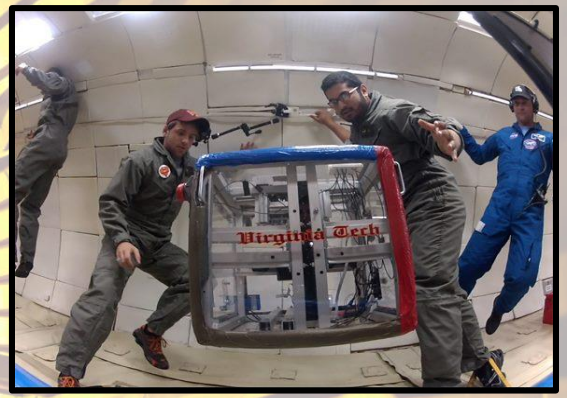
- **Job Types: Structural Engineer, Environmental Engineer, Construction Manager, Water Resources Engineer, Transportation Engineer, and Geotechnical Engineer**

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	HVAC
Aeronautics	Manufacturing
Automotive	Mechatronics
Biomedical	Nuclear
Combustion	Power Generation
CAD	Propulsion
Controls	Robotics
Energy Mgmt	Smart Materials
Fluid Mechanics	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
- HOUSE INDUSTRIAL PROJECTS, LTD. (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**

Internships and Co-Op Experiences

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

Virginia Tech Ranked 13th Overall in Wall Street Journal "The Top 25 recruiter Picks," 5th for Engineering

Among Accredited Engineering Schools Nationwide: 15th

- Aerospace 15th
- Biological 6th
- Civil 9th
- Electrical 14th
- Engineering Science 4th
- Environmental 11th
- Industrial 5th
- Materials Science 17th
- Mechanical 15th

*U.S. News & World Reports America's Best Colleges 2015

Outcomes

- **Freshman who continued to a second year in engineering:**
  - **Started in 2014: 91%**
- **After graduation:**
  - **For the Class of 2015**
    - **69% are employed**
    - **17% plan to attend graduate school OR have accepted admission**
- **Median Starting Salary: $62,500 for Class of 2015**

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

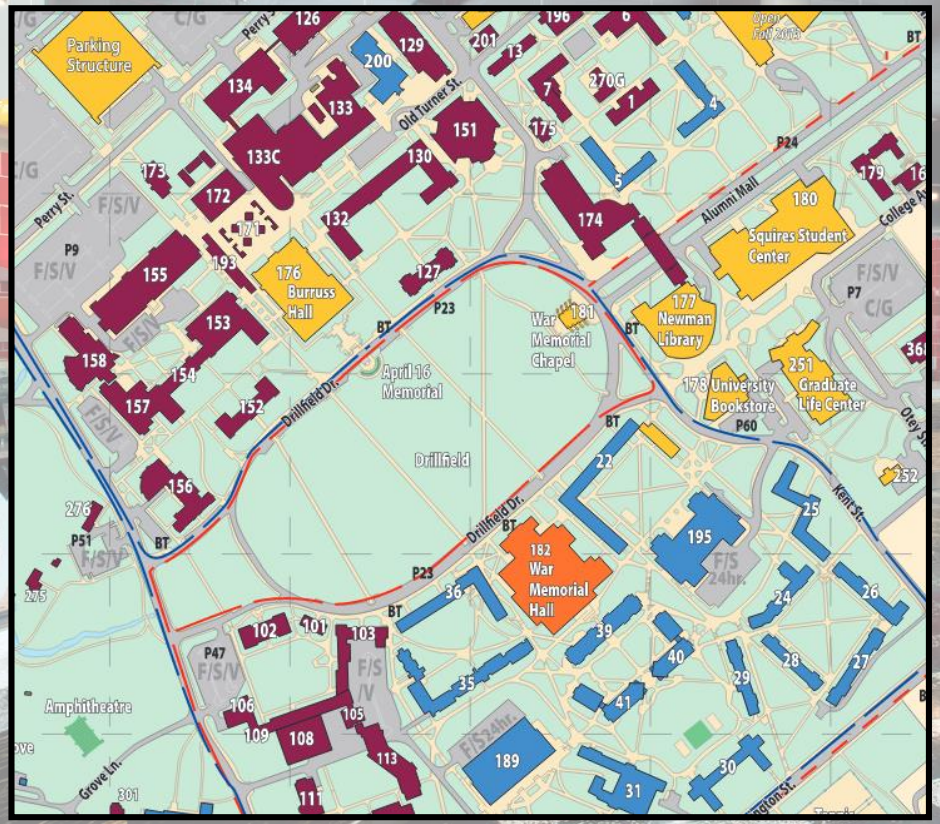
- Tablet PC OR Laptop and Windows 7/8 Slate
- Special pricing and warranty through Bookstore
- Don’t buy until summer before entering
- Benefits:
  - Digital ink for taking notes
  - Drawing diagrams
  - Writing equations
  - Submitting/grading homework

Why Did I Come to the College of Engineering at Virginia Tech?

Questions?

engrrecr@vt.edu

Where should I eat lunch?



D2

Hokie Grill

Owens

Turner Place

West End