Virginia Tech Board of Visitors Retreat

Agenda

Sunday, August 27, 2023
9:30 a.m. – 5:00 p.m.

W. E. Skelton 4-H Center
775 Hermitage Road
Smith Mountain Lake, Wirtz, Virginia 24184

- Orientation – Legal and Regulatory Responsibilities of the Board
- Opening Remarks by Rector Baine and President Sands
- Discussion of Generative Artificial Intelligence and Implications for Higher Education and Virginia Tech
- Session I – Top 100 Global Research University
- Session II – The Virginia Tech Advantage (Access, Affordability, and Student Success)
Legal Framework for Public Institutions

- Article VII of the Virginia Constitution
- Enabling legislation (Va. Code § 23.1-2600 et seq.)
- Title 23.1 of the Code of Virginia
  - Statutorily assigned powers and duties
  - Coordination by State Council of Higher Education (SCHEV)
- Restructuring Act/Management Agreement
External Regulation

- Federal Government
  - U.S. DOE laws and regulations (Title IX, Clery, FERPA)
  - Financial Aid Participation Agreement
  - Grants Administrations (NSF, NEA)

- Accreditation by SACSCOC
Board Directives

The Board exercises its authority through collective action:

- Majority vote
- Open Session- Freedom of Information Act requirement
- Quorum Present
Freedom of Information Act

Government in the Sunshine
Board Meetings

FOIA Requirements:

- All meetings open to the public
- 3 members discussing institutional business constitutes a meeting
- Do not hit reply all on emails
- 3 day public notice must be provided
- Minutes must be taken
- Closed sessions allowed under very limited circumstances
- Public streaming of official meeting of full board
Board Records

- Default is that all records created by Board members in the transaction of public business are accessible under FOIA.
- Application of exemptions determined at the institutional level
  - Virginia Tech has a statutorily required FOIA officer
- Members are not required to create records, but once created, records must be maintained according to the Public Records Act
- Caution smartphone, texts, meeting notes, etc. are board records
Conflict of Interests Act

- Prevent accrual of personal financial interest of $5,000 or more
  - Members are prohibited from contracting with Virginia Tech
- Avoid appearance of impropriety
- Opportunity for opinion from Ethics Advisory Council or Attorney General
Conflict of Interests Act

Compliance Requirements

- Training to be completed within 2 months of assuming office and every 2 years thereafter

- Filing of disclosure forms upon assuming office and every February 1 thereafter
Relationship with the Virginia Tech Foundation

- VTF is an independent 501C Foundation
- Mission of VTF is to support the University, but no University control
- VTF is governed by an independent Board of Directors
- While Virginia Tech has ex officio members on the Board of Directors, no other Virginia Tech control
- *Transparent GMU v. George Mason University*
  Virginia Supreme Court upheld the ability of George Mason University to operate outside the bounds of FOIA
Attorney-Client Relationship

- The primary role is to advise the Board and University President on legal issues and the management of legal risk

- Reports provided under privilege in conjunction with regular meetings
Opening Remarks
by
Rector Baine and President Sands
Discussion on Generative AI

• Introduction
  • What is Generative AI?
  • What is VT doing in this space?
• What are the implications for universities and the design of their programs?
  • A Thought Scenario
  • “Full Stack Human”
• Superpowers of the future
  • Why range and breadth are superpowers in the AI era
  • Institute for Leadership in Technology
The implications of Generative AI on Virginia Tech’s research, education and civic missions are real - and so we are proud to be leading and innovating in and around this field in a manner true to our mission.
Generative AI

• Methods to automatically generate content
  • Large Language Models (ChatGPT), MidJourney, DALLE-2

• Examples of a human acting like an LLM
  • “For breakfast this morning, I had a ____”.
  • “I arrived in Tokyo last night. For breakfast this morning, I had a ____”.
  • “My jaw accident has made it difficult to chew food. I arrived in Tokyo last night. For breakfast this morning, I had a ____”.
“The unreasonable effectiveness of data”

- What happens when you make a spelling mistake on Google?

About 208,000,000 results (0.47 seconds)

Showing results for **smith mountain lake**
Search instead for **smith montana lake**

**Smith Mountain Lake State Park**
Aug 2, 2023 — On the second largest freshwater lake in the state, this picturesque park is the water enthusiast's paradise. There are numerous water ...
Ways to think of LLMs

LLM is an auto-completor

LLM is a noisy compressor

LLM is Wilson

LLM is a stochastic parrot (courtesy Emily Bender)

LLM is a bluffer
Generative AI projects at VT

1. Report generation to support analysts decision making (DARPA)
Generative AI projects at VT

2. Generative AI for Radiology

Generative AI can be used to:
- Address instances when real data is scarce about patients with particular criteria/conditions
- Capture a diversity of patient abnormalities, imaging conditions, geography

Children's National Hospital, Virginia Tech unite to advance AI for pediatric health

Expectations are high for combining human and artificial intelligence against health problems.
3. Synthetic Data for Cybersecurity analysis (Collaboration between NSI, CCI, and Sanghani Center)
CURRENT PARTNERSHIP EXAMPLE

Virginia Tech and Amazon are partnering to advance research and innovation in artificial intelligence and machine learning. The Amazon - Virginia Tech Initiative for Efficient and Robust Machine Learning will include machine learning-focused research projects, doctoral student fellowships, community outreach, and an establishment of a shared advisory board.

“We are delighted to collaborate with Virginia Tech in launching this new initiative which brings together the top talent in our two organizations in a joint mission to achieve ground-breaking advances in robust machine learning.”
- Prem Natarajan, Vice President of Alexa AI – Natural Understanding, Amazon

Key Components of the Partnership:

- Shared advisory board (4 + 4)
- Doctoral student fellowships (with summer internships available)
- Deep, embedded ML research projects
  - Paired research groups
  - Lead to joint IP/startups
- Community Outreach
Generative AI projects at VT

4. Conversational AI (Amazon-VT Initiative in Efficient and Robust ML)
Generative AI Risks

- To data consumers
  - Output fictionality, information pollution
  - Information obsolescence

- To data owners
  - Leakage of sensitive/classified information
  - Lack of credit and compensation

- To organizations
  - Gateway to security risks
  - Value inconsistency with company policy, objectives
  - Lack of V&V processes
Generative AI in the classroom

Concerns
• What uses are admissible?
• “Watermarking” AI outputs

Opportunities
• Scaling up personalized delivery
• Rethink educational objectives in light of available tools
• Innovate new paradigms of knowledge workers
The long arm of the law is still playing catchup

**WHO IS GETTING SUED BY WHOM & FOR (c)?**

- Stability AI for (c) infringement & 1202 violations
  - Getty: Stable Diffusion’s model was trained on 12 million Getty images
  - Sarah Anderson (on behalf of a class of visual artists whose works were used as training data) claims training data = illegal copying + all outputs = infringing DWs  
    - Midjourney & Deviant Art also defendants in *Anderson*
- OpenAI for (c) infringement & 1202 violations
  - Silverman & Tremblay class action lawsuits on behalf of all authors whose works were used as training data focus on ChatGPT (claims are same as Anderson’s)
- Meta for (c) infringement & 1202 violations
  - Kadrey class action on behalf of all authors whose works were used as training data focus on LLaMA (claims are same as Anderson’s)
- Alphabet for (c) infringement & privacy violations
  - J.L. class action lawsuit on behalf of all persons whose data was used as training data focus on Bard

(slide presented by Pamuela Samelson, UC Berkeley)
Courses @ the Sanghani Center

In addition to the usual fare

• Artificial Intelligence
• Deep Learning
• Natural Language Processing
• Language Models

we emphasize

• Human-AI Collaboration and Teaming
• Ethics and Professionalism in AI/Data Science
Unpacking a GenAI application

Technology is not a monolith
Examples: AI Avatar Generation
- Permissioning of private data/photos (social contract theory)
- Use of public LLMs / Privacy issues
- Data sovereignty (international law)
- Intellectual Property (likeness of image, reuse)
- Bias in image generation (moral philosophy)

This is a fairly innocuous example. Now imagine DNA, SCADA systems for critical infrastructure, Internet of Things, connected medical devices, predictive policing with historic crime data, cyber security.
A memorable scenario

- On board the USS Blue Ridge in the South China Sea
  - US Navy’s Seventh Fleet command, responsible for fleet of 80 vessels
  - Andres Xenachis on “watch floor,” C4I, responsible
  - HYSY 981 deep-sea drilling rig into Vietnamese EEZ

- Navy War College
  - War Games, “red teaming,” or “force on force”
  - Multi-day, in-person, Jungian, experience creating consciousness
  - Finding Unknown Unknowns, human error

- Special Operations Command (SOCOM):
  - “Humans are more important than hardware. People – not equipment – make the critical difference. The right people, highly trained and working as a team, will accomplish the mission with the equipment available. On the other hand, the best equipment in the world cannot compensate for a lack of the right people.”
Harvard president Drew Faust to 800 Cadets:

- The Humanities “...teach us how to scrutinize the thing at hand, even in the thick dust of danger or drama or disorienting strangeness. It imparts skills that slow us down – the habit of deliberation, the critical eye, skills that give us capacity to interpret and judge human problems; the concentration that yields meaning in a world that is noisy with information, confusion, and change. The humanities teach us many things, not least of which is empathy – how we see ourselves inside another person’s experience.”

- Internalize this reflection today

  - We are the stewards of our own conversations and internal debates, and how we choose to guide them toward hope, rather than fear, a the future we create
Anthropology, not Tech
Ballet, not Robotics
"Studying philosophy taught me two things... I learned how to write really clearly. I learned how to follow an argument all the way down, which is invaluable in running meetings."

- STEWART BUTTERFIELD, CEO SLACK
Becoming Socratic with Machines

DATA < KNOWLEDGE < WISDOM

- Plato
Intelligence Amplification (IA)

I.A. NOT A.I.
Already True in Silicon Valley

CEO YouTube = History & Literature
COO Facebook = Economics
CEO Pinterest = Political Science
Founder Airbnb = Art & Design
Founder LinkedIn = Philosophy
Founder Paypal = Philosophy
CEO Slack = Philosophy
Founder AOL = History
Founder Reddit = History
CEO Palantir = Social Theory
CEO Alibaba = English
Founder Salesforce = English
# Full Stack Human

## Liberal Arts "Stack"

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What’s the superpower of the future?

And how might Virginia Tech ensure this notion of a “Full Stack Human” is within the reach of all?
In a world in which computing-and-commercial skills are increasingly within reach, human sensibilities are breakthrough - and build longevity for people, products and policy.
THE END OF THE ENGLISH MAJOR

Enrollment in the humanities is in free fall at colleges around the country. What happened?

By Nathan Heller
February 27, 2023
“There are people in their thirties and forties who have been stay-at-home parents, or they work. And they are committed to the humanities - they have an idea about the value of liberal-arts education…it’s a matter of life experience.

What someone who has been in the grind of life wants to learn more isn’t necessarily linear algebra.

Career studies have shown that humanities majors, with their communication and analytical skills, often end up in leadership jobs. To that extent, the value of the educated human touch is likely to hold in a storm of technological and cultural change.”

The New Yorker, March 6, 2023
What the world’s hottest MBA courses reveal about 21st-century business

Students seek hardheadedness, self-awareness and tact
“Management education involves wading through case studies, poring over financial statements and building sophisticated spreadsheets.

And, like any MBA curriculum worth its salt, the GSB’s has compulsory classes in accounting, finance and computer modelling, to be completed within the first two terms of instructions, out of a total of six.

Look at the school’s three most popular facultative courses, though, and a more interesting picture emerges of the 21st-century manager. All three require virtually no number-crunching.

Instead they aim to cultivate in students a capacity for hardheadedness, introspection and diplomacy, respectively. It is these attributes, the students appear to be saying, rather than any technical expertises, that will determine success.”

The Economist, April 8th, 2023
ADVANCING A NEW KIND OF LEADERSHIP LITERACY
WHAT’S THE SUPERPOWER OF THE FUTURE? OUR ANSWER: THE HUMANITIES

Welcome to the Virginia Tech Institute for Leadership in Technology, where we offer a one-year, low-residency fellowship to a select group of rising leaders from around the world each year. The experience, geared for mid-career professionals from across sectors and around the world, culminates in an Executive Leadership Certificate from Virginia Tech – a credential grounded in the liberal arts and humanities. Welcome to a new kind of leadership literacy for entrepreneurs, executives and evangelists in and around the technology landscape.

READY TO LEARN MORE?
WHY VIRGINIA TECH?
the fuzzy and the techie
Why the Liberal Arts Will Rule the Digital World
SCOTT HARTLEY
Hokies Have Undisputed Technical Heritage

Hokies Are Local Souls with Global Goals

Hokies Believe *That We May Serve Humanity*

Hokies Can Move Fast and Entrepreneurially

Hokies Live In a Fuzzy & Techie Commonwealth

**Virginia Tech Is** A Pioneering **Global** Land Grant
WHY TECHNOLOGY?
The most-regretted college majors

Those who wish they’d chosen a different field of study, as a share of all who majored in each subject, 2021

- Humanities and arts
- Social and behavioral sciences
- Vocational and technical training
- Education
- Business and management
- Law
- Life sciences
- Health
- Physical sciences and math
- Computer and information sciences
- Engineering

Note: Includes those who attended college but aren’t currently employed.

Source: Federal Reserve Survey of Household Economics and Debt; visualizations: graphics, department of data; The Washington Post

THE TECHNOLOGY THAT CONNECTS US ALSO CONTROLS US
WHY LEADERSHIP?
MPA / MBA

A Master of Public Administration and a Master of Business Administration often appeal to a very similar audience. Understanding the unique skills and career paths associated with each can help you make the most of your graduate education.

MPA
For those seeking leadership roles in the public and nonprofit sectors

MBA
For those seeking to develop skills required for careers in business and management
EXECUTIVE EDUCATION AT PAMPLIN

The speed of business is the speed of change. Changing technologies, evolving competition, dynamic market demands, and other external factors force organizations to stay smart.
IT’S THE PEOPLE, SILLY 😊
AND WHY THE HUMANITIES?
Want to thrive in an AI world? Major in the humanities.

nytimes.com
Opinion | In the Age of A.I., Major in Being Human
How to acquire the skills no machine can have.
MISSION
To realize a world in which emerging and established leaders in technology draw on the power of the humanities in service of a higher stewardship.

In so doing, Virginia Tech will bring to life a new approach to higher learning that will inspire innovation across higher education.
FELLOWSHIP
CURRICULUM AND COMMUNITY
Religion and Development: The role of faith-based institutions in socioeconomic development

Philosophy and Code: A review of global philosophy and its role in shaping what we code

The Economics of Small Things: Shining a surprising, economic light on our daily lives

Introspective Fiction: A journey with the most memorable characters in American fictional history

Environmental Morality: An examination of the most difficult moral dilemmas in climate advocacy

The Far (Eastern) Reaches of Western Civilization: An inclusive, and global, examination of classics

Additional VT Strengths: Military/CW History, Electrical, Computer, Civil Engineering, Arts/Architecture
October Seminar
“The Humanities and a Higher Leadership”

Instructor: Professor Rishi Jaitly

How has society’s sense of what makes a good leader evolved over time and place? What role have the liberal arts played in shaping leaders we admire across contexts and communities? And what role might the humanities play in advancing a higher form of leadership in our era's technology landscape? This seminar will consist of a review of leadership as it has been understood, cultivated and practiced over time - and will feature contemporary case studies and guest speakers from the technology industry.

November Seminar
“Ancient Texts and Tales”

Instructor: Professor Sylvester Johnson

In what ways, both seen and unseen, does the expanding Western canon shape our society today? What are its limits? And at the level of faith, values and culture, what classical works from the East undergird today's leading societies of the non-Western world? This seminar entails a review of Western philosophy, an examination of the interplay between Judeo-Christian and Eastern Civilizations and a reflection on the ensuing role religion and culture have long played in social and economic development.

December Independent Paper

Prompt:
Drawing on the history we studied in our first semester together, select an episode - whether it occurred millennia or months ago - that particularly enthralled you with awe and wonder. Reflect on the nature of human leadership that manifested in this chosen context. And using the skills and sensibilities that emanate from the humanities as a guidepost, analyze and assess the leadership that surfaced in this historic moment and make an inspired argument for what an even higher kind of human stewardship might have looked like.
February Seminar
“Stories Make the World Go Round”

Instructor: Jonathan Harley

What is it about stories that have captivated the human spirit across time and place? What are the hallmarks of a compelling narrative across media types - written, oral and digital? And what is the relationship between storytelling and leadership? This module is a study - but also a skill-building seminar - centered on examining the power of storytelling in a range of human contexts: from mythmaking and movement building to motion pictures and moral debates.

March Seminar
High Humanities, High Technology

Instructor: Scott Hartley

Who are the people - the founders, the executives, the humans - that have shaped the inescapable technology landscape we live in today? What skills, sensibilities - and, indeed, superpowers - have they accumulated in their lives that have allowed them to imagine and innovate? And, looking ahead, are poets or programmers more likely to be best equipped to thrive in the world’s high-technology ecosystems? Inspired by Hartley’s book “The Fuzzy and the Techie,” this seminar entails a review of the essential role the liberal arts have long played in shaping our technology landscape in Silicon Valley and beyond - and the “full-stack” superpower role they’re poised to play looking ahead.

April Creative Work

Prompt:
Drawing on what we've learned - and practiced - together during this second semester together relating to the skills of storytelling and the superpower of being a “full-stack” humanist, produce a significant creative work that makes you proud. Whether poetry or prose, a play or portrait, be sure to work with faculty to lean into the very best of what the humanities do to us: that is, they compel us, and help us confront, all kinds of human others with awe and wonder. In so doing, they produce in us a higher power of sensitivity, storytelling and stewardship. Work independently or with your classmates as you see fit.
2023 - 2024
April 26: VT LIT Public Announcement

August 15: Finalized Initial Class of Fellows

September 19-21: Blacksburg Ignition Experience

January 23-25: Off Campus Immersion Trip

April 23-25: Northern VA Capstone and Conferral
Scott Hartley is co-founder and managing partner of Everywhere Ventures, a pre-seed venture capital firm that has invested in over 300 companies. He is the best-selling author of The Fuzzy and the Techie: Why the Liberal Arts Will Rule the Digital World, a Financial Times Business Book of the Month and Finalist for McKinsey & Company’s Bracken Bower Prize. The book is available in over a dozen versions and makes the case for human skills in the era of AI. Prior to entering venture capital in 2011, Hartley worked at Google, Facebook, and the White House as a Presidential Innovation Fellow under President Obama. He holds three degrees from Stanford University and Columbia University.

Rishi Jaitly is Professor of Practice and Distinguished Humanities Fellow at Virginia Tech where he leads the Institute for Leadership in Technology, which offers rising stars in our digital landscape the nation's first executive credential in the humanities. Jaitly has spent 20 years as an entrepreneur and executive in the technology industry: first, as speechwriter to Google CEO Eric Schmidt; later, as an early leader for Google and YouTube in South Asia; and 11 years ago, as Twitter’s first executive in Asia Pacific, overseeing the launch of businesses from the Middle East through Australia. He was also the founding CEO of Times Bridge, the country’s only venture capital firm investing in firms like Uber, Airbnb and Coursera as they expanded into India. Jaitly has devoted a significant share of his career to the public interest as well. He is the founder of both Michigan Corps and Kiva Detroit, and a former director of the Knight Foundation and College Summit. Jaitly presently serves as a board member of the National Humanities Center, Virginia Humanities and Village Capital. From 2004 to 2008, he served as a trustee of Princeton University, his alma mater, where he earned a degree in history. In 2022, the technology magazine Rest of World named Jaitly one of the world’s Top 100 Changemakers.

Naren Ramakrishnan is the Thomas L. Phillips Professor of Engineering and director of the Sanghani Center for AI and Data Analytics at Virginia Tech. He also directs the Amazon-Virginia Tech Initiative in Efficient and Robust Machine Learning. His research interests span data science, urban analytics, recommender systems, and computational epidemiology, and his papers in these areas have garnered more than ten Best Paper Awards. Ramakrishnan’s research has been supported by the National Science Foundation, the Department of Homeland Security, the National Institutes of Health, the National Endowment for the Humanities, the Intelligence Advanced Research Projects Activity, the Defense Advanced Research Projects Agency, the Defense Threat Reduction Agency, the Office of the Director of National Intelligence, the Office of Naval Research, the Army Research Office, the U.S. Naval Surface Warfare Center (NSWC), Boeing, Ford, General Motors, HP Labs, and NEC Labs.
Higher Education Rankings

BOV Retreat

Dan Sui
Senior Vice President,
Office of Research and Innovation

August 2023
AAU Membership Metrics

- Phase I
  - Competitive Federal Research Expenditures
  - Highly Prestigious Awards and National Academy Memberships
  - Citations
  - Books

Metrics are indicators of volume and quality of sponsored research and scholarship
AAU Membership Metrics

- Phase 2
  - Non-competitive Sponsored Research Expenditures
  - PhDs awarded
  - Postdocs

Metrics are correlated with volume of sponsored research and scholarship, training
AAU Membership
Metrics

- Informational
  - Pell-eligible
  - Graduation Rate
  - Pell-eligible Graduation Rate
  - Graduation Gap

Metrics are correlated with quality and accessibility of undergraduate education
Tabletop Exercise

Selecting the next AAU Member
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<td>Graduation Gap</td>
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## Beta State

### Public university

2111 faculty

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### Informational

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<tr>
<td>Pell Enrollment</td>
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<td>Graduation Rate</td>
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Beta State per faculty
## University of Delta at Omega

### Phase 1

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### Phase 2

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### Informational

- Pell Enrollment: 54%
- Graduation Rate: 62%
- Pell Graduation Rate: 61%
- Graduation Gap: 1%

Public university
1280 faculty
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<td>Phase</td>
<td>Competitive Federal Expenditures</td>
<td>Other Research Expenditures</td>
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<tr>
<td>Phase 1</td>
<td>$188M</td>
<td>$118M</td>
<td>$118k</td>
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<td>Informal</td>
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<td>Pell Enrollment</td>
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<td>Graduation Rate</td>
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<td>Pell Graduation Rate</td>
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<td>Graduation Gap</td>
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</table>
Strategies and Next Steps
GOAL

- TOP 100 GLOBAL

OBJECTIVES

- INCREASE RESEARCH EXPENDITURES
- AMPLIFY IMPACT

PRIORITIES

- FACULTY
- INFRASTRUCTURE
- CULTURE

RESEARCH FRONTIERS

- HEALTH
- SECURITY
- QUANTUM
- ARTIFICIAL INTELLIGENCE
Strategies: Phase 1

- Alignment of university budget model
- Increase research volume and impact generally
  - Research Frontiers
  - Destination Area 2.0
  - Research Development Support
- Increase awards and recognition
  - Dedicated resources, in partnership between Faculty Affairs and Research and Innovation
  - Improve university-level recognition and celebration of excellence
Strategies:
Phase 2

- Strengthen LINK, the industrial engagement team
- Improve support for postdocs
- Improve support for graduate students
Strategies:

- Informational
- Metrics

- Virginia Tech Advantage
Current Status

(Backup Slides)
Phase 1: Competitive Federal Expenditure

3 Year Average Federal Expenditure (Dollars in Thousands)

Analysis Year: 2019-21

3 Year Average Federal Expenditure per faculty (Dollars in Thousands)

Analysis Year: 2019-21
Phase 1: Prestigious Awards

Prestigious and Highly Prestigious Awards

Prestigious and Highly Prestigious Awards per Faculty
Phase 1: National Academies Memberships

Linsey C. Marr
Charles P. Lunsford Professor and University Distinguished Professor
National Academy of Engineering

Shuhai Xiao
Professor of Geobiology
National Academy of Sciences

Robert J. Bodnar
C. C. Garvin Professor of Geochemistry and University Distinguished Professor
National Academy of Sciences

Linsey C. Marr
Charles P. Lunsford Professor and University Distinguished Professor
National Academy of Engineering

Shuhai Xiao
Professor of Geobiology
National Academy of Sciences
Phase 1: Citations

Average Citations Count

- VT
- Public-LG
- Public-NLG
- Private
- New

Year: 2021

Average Citations per Faculty

- VT
- Public-LG
- Public-NLG
- Private
- New

Year: 2021
Phase 1: Books
Phase 2: Other Sponsored Research

3 Year Average Other Research Expenditure (Dollars in Thousands)

3 Year Average Other Research Expenditure per Faculty (Dollars in Thousands)
Phase 2: Postdocs and PhDs
Informational:

6yr Graduation Rate: Overall, Pell Recipients, and Graduation Gap

<table>
<thead>
<tr>
<th>Year</th>
<th>Institution Type</th>
<th>Bachelor's 6yr Graduation Rate</th>
<th>Pell Recipients 6yr Graduation Rate</th>
<th>Graduation Gap</th>
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<tbody>
<tr>
<td>2022</td>
<td>VT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td>Public-LG</td>
<td></td>
<td></td>
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<tr>
<td>2022</td>
<td>Public-NLG</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td>Private</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td>New</td>
<td></td>
<td></td>
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</table>
Full Time First Time UG Pell Awarded by Institution Type

<table>
<thead>
<tr>
<th>Institution Type</th>
<th>VT</th>
<th>Public-LG</th>
<th>Public-NLG</th>
<th>Private</th>
<th>New</th>
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</thead>
<tbody>
<tr>
<td>Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2022</td>
</tr>
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</table>
Times Higher Education (THE) Top 100 World Rankings Goal

Cyril R. Clarke

August 2023
Rankings used as Proxy for Assessing Strategic Progress

THE World University Rankings
#251-300 out of 1,799 ranked institutions
#16 (tied) among land-grants

THE Impact Rankings
#92 out of 1,591 ranked institutions

<table>
<thead>
<tr>
<th>Rank</th>
<th>2023 THE WUR</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>University of California-Berkeley</td>
</tr>
<tr>
<td>2</td>
<td>48</td>
<td>University of Illinois at Urbana-Champaign</td>
</tr>
<tr>
<td>3</td>
<td>63</td>
<td>University of California-Davis</td>
</tr>
<tr>
<td>4</td>
<td>81</td>
<td>University of Wisconsin-Madison</td>
</tr>
<tr>
<td>5</td>
<td>101</td>
<td>University of Minnesota-Twin Cities</td>
</tr>
<tr>
<td>6</td>
<td>104</td>
<td>University of Maryland-College Park</td>
</tr>
<tr>
<td>7</td>
<td>106</td>
<td>Michigan State University</td>
</tr>
<tr>
<td>8</td>
<td>112</td>
<td>Ohio State University-Main Campus</td>
</tr>
<tr>
<td>9</td>
<td>127</td>
<td>Purdue University-Main Campus</td>
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<tr>
<td>10t</td>
<td>151</td>
<td>Penn State</td>
</tr>
<tr>
<td>10t</td>
<td>151</td>
<td>University of Florida</td>
</tr>
<tr>
<td>12</td>
<td>180</td>
<td>University of Arizona</td>
</tr>
<tr>
<td>13</td>
<td>181</td>
<td>Texas A &amp; M</td>
</tr>
<tr>
<td>14</td>
<td>191</td>
<td>University of Massachusetts-Amherst</td>
</tr>
<tr>
<td>15</td>
<td>201-250</td>
<td>Rutgers University-New Brunswick</td>
</tr>
<tr>
<td>16t</td>
<td>251-300</td>
<td>University of Hawaii at Manoa</td>
</tr>
<tr>
<td>16t</td>
<td>251-300</td>
<td>Virginia Tech</td>
</tr>
<tr>
<td>16t</td>
<td>251-300</td>
<td>University of California-Riverside</td>
</tr>
<tr>
<td>19</td>
<td>301-350</td>
<td>The University of Tennessee-Knoxville</td>
</tr>
</tbody>
</table>
THE Impact Rankings Metrics

1. No Poverty
2. Zero Hunger
3. Good Health and Well-Being
4. Quality Education
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
9. Industry, Innovation and Infrastructure
10. Reduced Inequalities
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
14. Life Below Water
15. Life on Land
16. Peace, Justice and Strong Institutions
17. Partnerships for the Goals
Correlation between THE WUR Metrics and AAU Membership Indicators

- Teaching Reputation
- Internationalization
- Research Productivity
- Income
- Student-to-Faculty Ratio
- Research Expenditures
- Citations
- PhDs Awarded
- Research Reputation
- Book Publications
- Post Doctoral Appoints
- Social Mobility
Role of PIBB in Incentivizing Strategic Progress

### Instructional Support
- All Student Credit Hours (SCH’s) by Course Level
- Interdisciplinary SCH’s
- Lab Course SCH’s

### Enrollment-Based Support
- All Majors

### Research & Scholarship Support
- Sponsored Expenditures
- Faculty Awards, Fellowships, & Memberships
- Book Publications
- Citations
- Doctoral Degrees Awards
- Postdoctoral Appoints

### AAU Membership Indicators
THE 2023 Impact Rankings
Selected SDGs for Submission

2. Zero Hunger
5. Gender Equality
6. Clean Water and Sanitation
7. Affordable and Clean Energy
8. Decent Work and Economic Growth
10. Reduced Inequalities
11. Sustainable Cities and Communities
12. Responsible Consumption and Production
13. Climate Action
15. Life on Land
17. Partnerships for the Goals
## Correlation between THE WUR Metrics and AAU Membership Indicators (Full Chart)

<table>
<thead>
<tr>
<th>Weight/Phase</th>
<th>Metrics</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAU</td>
<td>P1&amp;P2</td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td><strong>P1 Faculty awards/National Academy Members</strong></td>
<td>Research/Reputation</td>
</tr>
<tr>
<td></td>
<td>P1</td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td>P1 Books</td>
<td>Research</td>
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<tr>
<td></td>
<td>P2</td>
<td>Teaching</td>
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<tr>
<td></td>
<td>P2 PhDs Awarded</td>
<td>Research</td>
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<td></td>
<td>Info Pell Enrollment</td>
<td>Teaching</td>
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<tr>
<td></td>
<td>Info UG Graduation Rate</td>
<td>Teaching</td>
</tr>
<tr>
<td></td>
<td>Info Pell Grant Grad Rate</td>
<td>Teaching</td>
</tr>
<tr>
<td></td>
<td>Info Grad Rate Gap</td>
<td>Teaching</td>
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<tr>
<td>THE WUR</td>
<td>30% Citations</td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td><strong>18% Research Reputation Survey</strong></td>
<td>Research/Reputation</td>
</tr>
<tr>
<td></td>
<td>15% Teaching Reputation Survey</td>
<td>Teaching</td>
</tr>
<tr>
<td></td>
<td>6% PhD:Faculty</td>
<td>Teaching</td>
</tr>
<tr>
<td></td>
<td>6% Research Income</td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td>6% Research Productivity (# of publications)</td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td>5% Staff:Student</td>
<td>Teaching</td>
</tr>
<tr>
<td></td>
<td>3% Proportion international students</td>
<td>International Outlook</td>
</tr>
<tr>
<td></td>
<td>3% Proportion international faculty</td>
<td>International Outlook</td>
</tr>
<tr>
<td></td>
<td>3% International Collaborations</td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td>3% Industry Income</td>
<td>Research</td>
</tr>
<tr>
<td></td>
<td>2% PhD:Bach Awarded</td>
<td>Teaching</td>
</tr>
<tr>
<td></td>
<td>2% Institutional Income</td>
<td>Teaching</td>
</tr>
</tbody>
</table>
What drives research success?

• Faculty talent
  • Recruitment/retention
  • Postdoctoral fellows
  • Graduate assistants

• Research infrastructure
  • Facilities
  • Equipment
  • Pre-/post-award expertise

• Support infrastructure
  • Human resources
  • Information technology
  • Compliance

• Partnerships
  • Universities
  • Industry
  • Governmental agencies
What are the university’s strategic investment priorities?

**Destination for Talent**
Virginia Tech Advantage
Employee Recruitment and Retention

**Academic Excellence**
Tech Talent Investment-Innovation Campus
Health and Biomedical Sciences
Integrated Security
Destination Areas 2.0

**Enabling Infrastructure and Capacity**
Advancement
IT Transformation/Technology Infrastructure
Facilities Renewal

**Academic Quality and Critical Needs**
Academic Incentive-Based Funding (PIBB Model)
Annual Critical Needs Requests

Multiple fund sources will contribute to the achievement of these strategic initiatives

*March 2023 Projections*
How are our investment strategies and research goals linked?

Destination for Talent
Virginia Tech Advantage
Employee Recruitment and Retention

Academic Excellence
Tech Talent Investment–Innovation Campus
Health and Biomedical Sciences
Integrated Security
Destination Areas 2.0

Enabling Infrastructure and Capacity
Advancement
IT Transformation/Technology Infrastructure
Facilities Renewal

Academic Quality and Critical Needs
Academic Incentive-Based Funding (PIBB Model)
Annual Critical Needs Requests
How is research funded?
Fralin Biomedical Research Institute (FBRI) example

Research programs are funded by multiple sources

• University investments
  - Grants and contracts
  - Indirect cost recoveries
  - Philanthropy
  - Nongeneral funds

• State investment
  - General fund support
  - Equipment trust fund

• Self-generated revenue (e.g., service centers)

FBRI FY23 Actuals
($ in millions)

- Federal G&C, $27.7, 54%
- General Fund Research, $5.6, 11%
- Indirect Cost Recoveries, $4.5, 9%
- Equipment Trust Fund, $0.5, 1%
- Other Self-Generated Revenue, $0.6, 1%
- Non-Federal G&C, $2.4, 5%
- University E&G, $9.9, 19%

Total expenditures: $51.2 million
FBRI expansion goals will require incremental funding

30 faculty pre-expansion

<table>
<thead>
<tr>
<th>Resources</th>
<th>FY24</th>
<th>FY25</th>
<th>FY26(1)</th>
<th>FY27</th>
<th>FY28</th>
<th>FY29</th>
<th>FY30</th>
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<td>New Research Faculty</td>
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<td>16</td>
<td>19</td>
<td>23</td>
<td>27</td>
<td>31</td>
<td>35</td>
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<td>University E&amp;G Support</td>
<td></td>
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<tr>
<td>Base</td>
<td>$ 3.9</td>
<td>$ 4.3</td>
<td>$ 5.6</td>
<td>$ 6.0</td>
<td>$ 6.4</td>
<td>$ 6.8</td>
<td>$ 6.8</td>
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<td>One-time</td>
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<td>2.8</td>
<td>11.3</td>
<td>1.7</td>
<td>2.3</td>
<td>2.0</td>
<td>1.6</td>
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<tr>
<td>Subtotal University Support</td>
<td>7.3</td>
<td>7.0</td>
<td>17.0</td>
<td>7.7</td>
<td>8.7</td>
<td>8.8</td>
<td>8.4</td>
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<td>Salary Support from Grants &amp; Contracts</td>
<td>0.4</td>
<td>0.8</td>
<td>1.3</td>
<td>2.2</td>
<td>2.6</td>
<td>2.8</td>
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<td>Returned Overhead</td>
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<td>0.8</td>
<td>1.3</td>
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<td>Other</td>
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<tr>
<td><strong>Total Resources</strong></td>
<td><strong>16.6</strong></td>
<td><strong>15.2</strong></td>
<td><strong>25.7</strong></td>
<td><strong>20.4</strong></td>
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<td><strong>19.5</strong></td>
<td><strong>17.2</strong></td>
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<td>Personnel and Operating</td>
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<td>8.2</td>
<td>9.3</td>
<td>10.6</td>
<td>11.9</td>
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<td>Startup</td>
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<td>7.1</td>
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<td>5.2</td>
<td>7.3</td>
<td>7.6</td>
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<td>Space and Equipment</td>
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<td>4.5</td>
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<td>5.3</td>
<td>5.5</td>
<td>5.5</td>
<td>5.5</td>
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<tr>
<td><strong>Total Expenses</strong></td>
<td><strong>18.7</strong></td>
<td><strong>16.5</strong></td>
<td><strong>28.5</strong></td>
<td><strong>22.1</strong></td>
<td><strong>20.1</strong></td>
<td><strong>23.4</strong></td>
<td><strong>25.0</strong></td>
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<td><strong>Surplus/(Shortfall)</strong></td>
<td>$(2.1)$</td>
<td>$(1.3)$</td>
<td>$(2.8)$</td>
<td>$(1.7)$</td>
<td>$0.4$</td>
<td>$(3.9)$</td>
<td>$(7.8)$</td>
</tr>
</tbody>
</table>

(1) Includes proposed $8.8M one-time capital expenditure for expansion of space at the Children’s National Research and Innovation Campus.

(2) Shortfall largely due to additional faculty startup commitments. Additional resources will need to be identified, or expansion timeline will be adjusted.
The Virginia Tech Advantage is a university wide, multiyear commitment to offer the broad educational experience to admitted undergraduate students from Virginia. It reflects the university’s commitment to serve the Commonwealth of Virginia.
• At scale, the program will remove barriers for more than 5,500 undergraduate students from the Commonwealth with unmet financial need.

• It will provide a strong foundation for academic success through enhanced resources, a community of peers and mentors, and scholarships and emergency funds.

• It will help students enhance the value of their Virginia Tech degrees by providing opportunities for research, experiential learning, and discovery inside and outside of the classroom or lab.
Looking ahead, Virginia Tech Advantage will begin to shift from planning to implementation.

Three key implementation components include:

• Philanthropy and fundraising efforts.
• Government affairs and external stakeholder alignment and coordination.
• Internal policy and process alignment.

In the long run, we plan for each component to contribute 1/3 of the resources.
A new $500M component of the Boundless Impact Campaign

Will officially kickoff Fall 2023.

Target is $425 million in new endowment over ten years:
- $400 million in endowed scholarships.
- $25 million to support student success.

Plus $75 million in current use funds, also over ten years:
- $50 million to support scholarships.
- $25 million to support student success.
PHILANTHROPIC CAMPAIGN: Student Success Priorities

- **Basic Needs Support:**
  - Increased scholarships
  - Additional Student emergency funds
  - Added resources for The Market

- **Career Preparation:**
  - Added support for internships.
  - Coordinated project-based learning.

- **Transformative Experiences:**
  - Study abroad opportunities.
  - On- and off-campus research experiences
Senior campus leaders and staff in the Office of Government and Community Relations will:

• **Work at the state level** to expand resources for underserved students in the commonwealth.

• **Coordinate efforts** at the federal level to expand Pell resources.

Virginia’s Appropriation Act includes $5.5M of new state general funds for Virginia Tech students in FY 2023-24.
As noted in the June meeting, we will pursue strategies to ensure internal alignment with overall objectives:

- Complete a **full policy audit** (financial and academic) to identify and remove institutional barriers to undergraduate student success.

- Pursue **curricular alignment** to support four-year graduation across all degrees.

- **Review** existing **scholarship usage** and, where possible, modify language to expand award criteria in existing fund agreements.
VIRGINIA TECH ADVANTAGE

Dr. Rachel Holloway
on behalf of Student Experience Working Group
Co-Chairs Dr. Frances Keene and Dr. Ellington Graves
Americans' Confidence in Higher Education Down Sharply

Gallup.com

% Great Deal of Confidence

2015  2018  2023

28
23
17
Americans Are Losing Faith in College Education, WSJ-NORC Poll Finds

Confidence in value of a degree plummeted among women and senior citizens during pandemic

Wall Street Journal, March 31, 2023

% COLLEGE ISN'T WORTH THE COST

<table>
<thead>
<tr>
<th>Year</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>2013</td>
<td>40</td>
</tr>
<tr>
<td>2017</td>
<td>47</td>
</tr>
<tr>
<td>2023</td>
<td>56</td>
</tr>
</tbody>
</table>
“At the core of our findings was a fascinating insight that alumni who reported strong skill development were earning more money and had more positive assessments of the value of their education, including feeling the education helped them achieve their goals, was worth the cost, and had a positive impact on their career and life.

There was another very important thread to our findings: Equity gaps persist.”
Essential Skills

INTERPERSONAL SKILLS
- Teamwork, Leadership

SPECIALIZED SKILLS
- Data analysis, Math, Digital literacy, Project management

GENERAL SKILLS
- Critical thinking/problem solving, Writing, Creativity, Verbal communication, Ability to learn new things
Alums who rated their skill development as “high” were more likely than those who rated skill development as “low” to rate their post-completion outcomes as high.
What’s the “secret sauce” in undergraduate education?
Holistic, Experiential Education

An integrated, intentional, and inclusive educational environment, both curricular and co-curricular, designed to promote a student’s intellectual and personal development around critical competencies needed to flourish in work and life.
“Structured Flexibility”

“Inescapable Opportunity”
Student Experience
Working Group Findings

• Personal and financial reasons lead to breaks in enrollment.
• Financial challenges increase student stress.
• Financial shortfalls and emergencies disrupt academic performance.
• Costs associated with transformational experiences create barriers for low-income students.
• Additional cost shapes co-curricular participation.
• University structures and practices may increase the cost of education.
“Money is time.”
168 hours in 7 days

<table>
<thead>
<tr>
<th>Activity</th>
<th>Allocation</th>
<th>Your Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep</td>
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<td>Eating</td>
<td>21</td>
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<td>Life Maintenance (e.g., Personal Hygiene; Laundry)</td>
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<tr>
<td>Travel to/from campus and between classes</td>
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<tr>
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<tr>
<td>Down Time</td>
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<td>TOTAL</td>
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<td>TUE</td>
<td>WED</td>
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</tr>
<tr>
<td>10:00</td>
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<td>10:00</td>
</tr>
</tbody>
</table>

**HABITS**

- M
- T
- W
- F
- S
- S

**NOTES**

- Return drive to campus.
- West End Dinner Shift
- Undergraduate Student Senate
- Class 6:30 – 9:00
- West End Dinner Shift

**Dietric Breakfast Shift includes breakfast**

**Asynchronous class work time**

**Drive home for work**

**Working at job at home**
Scholarship Basics

• Remain continuously enrolled.
• Maintain a cumulative GPA of 3.0 or higher. (GPAs are checked at the end of the spring semester.)
• Enroll full time (12 hours) during Fall and Spring terms.
• Earn at least 30 credits hours each academic year. Credits earned during fall, winter, spring and upcoming summer sessions count toward the 30 hours.
• Grades of “W” do NOT count as earned hours.
First Semester

A new first year student was awarded a scholarship that covers about 50% of cost of attendance.

• The student has an on-campus job for 10 hours per week.
• She travels home most weekends to continue working at a well-paying job she held through high school.
• The student is just meeting expenses with this work plan.

A week before the deadline to drop classes, the student is feeling overwhelmed and struggling in at least two classes.

• She knows she must remain full-time.
• She must earn 15 credit hours to stay on track for her scholarship
• Some courses are prerequisites for courses she needs to take in the next semester.
• She’s worried about the GPA requirement.
What would you advise?

• Stay in the classes. “W” grade option is available.
• Drop one class to focus on the second. W grade option is available.
• Stay in the classes. Find other financial resources for the end of the semester to stay focused on academics after Thanksgiving.
• Others?
## Outcomes and Impact

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1225</td>
<td>4</td>
<td>C+</td>
</tr>
<tr>
<td>CHEM 1035</td>
<td>3</td>
<td>D-</td>
</tr>
<tr>
<td>CS 1114</td>
<td>3</td>
<td>W</td>
</tr>
<tr>
<td>ENGL1105</td>
<td>3</td>
<td>A-</td>
</tr>
<tr>
<td>ENGE 1215</td>
<td>2</td>
<td>A-</td>
</tr>
</tbody>
</table>

**Attempted Hours:** 15  
**Earned Hours:** 15  
**CUM GPA:** 2.18

---

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1225</td>
<td>4</td>
<td>W</td>
</tr>
<tr>
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<td>D-</td>
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<td>CS 1114</td>
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<td>Drop</td>
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<tr>
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<td>A-</td>
</tr>
<tr>
<td>ENGE 1215</td>
<td>2</td>
<td>A-</td>
</tr>
</tbody>
</table>

**Attempted Hours:** 15  
**Earned Hours:** 12  
**CUM GPA:** 2.24

---

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tr>
<td>CHEM 1035</td>
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<td>D-</td>
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<td>CS 1114</td>
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<td>D</td>
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<tr>
<td>ENGL1105</td>
<td>3</td>
<td>A-</td>
</tr>
<tr>
<td>ENGE 1215</td>
<td>2</td>
<td>A-</td>
</tr>
</tbody>
</table>

**Attempted Hours:** 15  
**Earned Hours:** 15  
**CUM GPA:** 2.18
## Outcomes and Impact

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 1225</td>
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<td>W</td>
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<tr>
<td>Chem 1035</td>
<td>3</td>
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<tr>
<td>CS 1114</td>
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<td>W</td>
</tr>
<tr>
<td>ENGL1105</td>
<td>3</td>
<td>A-</td>
</tr>
<tr>
<td>ENGE 1215</td>
<td>2</td>
<td>A-</td>
</tr>
</tbody>
</table>

- **Attempted Hours**: 15
- **Earned Hours**: 8
- **Term GPA**: 2.57
- **CUM GPA**: 2.57

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ECE 1004</td>
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<td>C+</td>
</tr>
<tr>
<td>Phys 2305</td>
<td>4</td>
<td>C+</td>
</tr>
<tr>
<td>MUS 1104</td>
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<td>A</td>
</tr>
<tr>
<td>ENGL1106</td>
<td>3</td>
<td>A</td>
</tr>
<tr>
<td>ENGE 1216</td>
<td>2</td>
<td>A-</td>
</tr>
</tbody>
</table>

- **Attempted Hours**: 15
- **Earned Hours**: 15
- **Term GPA**: 3.16
- **CUM GPA**: 2.96

23 earned hours
2.96 overall GPA
What to do?

- Needs 9 additional hours to exceed 30 credit hours and move forward in degree.
- Needs 3.1 Term GPA in 9 VT credit hours to reach 3.0 CUM GPA

<table>
<thead>
<tr>
<th>9 hours for In-State</th>
<th>VCCS at home</th>
<th>VT courses; on-campus housing and dining</th>
<th>VT courses, off-campus housing and dining</th>
<th>VT tuition and fees, virtual campus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and fees</td>
<td>$1500</td>
<td>$5,070</td>
<td>$5,070</td>
<td>$4,630</td>
</tr>
<tr>
<td>Housing and Food</td>
<td>Free</td>
<td>@ $6,000</td>
<td>@ $6,000</td>
<td>Free</td>
</tr>
<tr>
<td>Work</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
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<tr>
<td></td>
<td>$1,500</td>
<td>$11,000</td>
<td>$11,000</td>
<td>$4,630</td>
</tr>
</tbody>
</table>
## Is it Worth It?

<table>
<thead>
<tr>
<th>Extending time to degree by one year</th>
<th>In-state</th>
<th>Out-of-State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of attendance, continuing student, off-campus residence</td>
<td>$33,422</td>
<td>$54,940</td>
</tr>
<tr>
<td>Lost earning for one year (Computer Engineer)</td>
<td>$72,000</td>
<td>$72,000</td>
</tr>
<tr>
<td>Total Cost</td>
<td>$105,422</td>
<td>$126,940</td>
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</table>
EXECUTIVE SUMMARY

In support of the strategic initiative of degree embedded experiential learning, specifically the implementation of the Bridge Experience Program as the Quality Enhancement Plan (QEP) for Virginia Tech, the Center for Excellence in Teaching and Learning (CETL) has been sourcing data from multiple points to establish baselines of student experience participation most likely to lead to a successful graduates’ first destination based on educational research. As part of the Bridge Experience Program, faculty design teams are provided data to identify participation gaps and are challenged to proactively address participation inequities by student subgroup. Career and Professional Development shared First Destination survey data to inform this work merged with demographic data and financial aid data with the help of several data support offices.

Several questions of experiences predicting successful first destination of Virginia Tech graduates are directly addressed by this bridge experience data work with some additional results that may be of interest. Not only can we identify participation gaps, but we can also draw some conclusions about the association between a student’s experiences and next steps after graduation. These results highlight the importance of paid opportunities for students in all disciplines. However, to thoroughly answer some of the questions and test for results showing statistical significance, we are continuing our work to enhance data sourcing and aggregation.

To inform preliminary planning of the development of the VT Advantage initiative, early analyses examining participation gaps in career-related experiences, successful first destination placements, as well as starting salaries are presented descriptively for students who would be identified as VT Advantage compared to non-VT Advantage, in-state students.

**WHAT PERCENTAGE OF OUR BACHELOR’S GRADUATES HAD A PAID INTERNSHIP?**

For 2021-22 graduates (the 2023 graduate data will be available at the close of the fall 2023 semester), 55% reported a paid internship, and 20% reported an unpaid internship. According to surveys, graduates reported 65% internship participation regardless of pay.

**DO ALL STUDENTS HAVE THE SAME OPPORTUNITIES?**

Transfer and first-generation students had fewer placements, lower starting salaries, and fewer paid internships than their peers. Gaps for transfer students were systemic across the university, and gaps for first-generation students were increasing. Paid internship participation varied across the Commonwealth, with graduates from counties surrounding D.C. reporting the most participation and rural graduates reporting the least. Students often named housing costs as a primary barrier.
ARE THERE LARGE DIFFERENCES ACROSS DISCIPLINES?

Equity will not be achieved without addressing **systemic disciplinary differences in paid internship** participation. Colleges cluster into high and low internship participation groups. Agriculture, liberal arts, and science disciplines had fewer paid internships (20 to 50%) and fewer students with 1st destination placements. Yet, business and engineering disciplines had 75 to 90% participation. Virginia Tech has a reputation as a business and engineering school, and employers seek those graduates for internships and full-time work. Addressing the demand gaps for our students enrolled in disciplines outside of engineering and business (~55% of students) is necessary to achieve parity of successful first destination outcomes.

HOW DOES EXPERIENCE RELATE TO CAREER OUTCOMES?

**Work:** In six out of seven colleges, paid internships were the only experience positively correlated with work placements. Virginia Tech graduates with a paid internship were at least 30% more likely to have a work placement within 6 months of graduation. Engineering students with co-ops were also more likely to secure work placements.

**Continuing education:** Paid internships were also associated with acceptance into graduate or professional schools across colleges. Undergraduate research was linked with continuing education in STEM and liberal arts disciplines but not in business. In some cases, specialized volunteering was associated with continuing education, such as shadowing for professional schools.

DATA SOURCES

**SELF-REPORTED DATA**

All placement and participation data were self-reported from Career and Professional Development’s [First Destination Survey](#), with the most recent data for the 2021-22 graduating cohort. Equity gaps were calculated using a 3-year aggregate when not presented by year. The 2019-20 survey was affected by the COVID-19 pandemic, resulting in a lower response rate and an overall improvement in outcomes (note: since beginning this data work, higher response rates are connected to lower 1st destination placement rates). Margins of error were supplied for a 95% confidence interval. All university values were weighted averages based on the total number of graduates per college.

<table>
<thead>
<tr>
<th>Year</th>
<th>Responses (n)</th>
<th>Percent of graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019-20</td>
<td>2,489</td>
<td>34%</td>
</tr>
<tr>
<td>2020-21</td>
<td>5,196</td>
<td>67%</td>
</tr>
<tr>
<td>2021-22</td>
<td>4,359</td>
<td>60%</td>
</tr>
<tr>
<td>Total</td>
<td>12,044</td>
<td>54%</td>
</tr>
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</table>
DEMOGRAPHIC DATA

Demographic data were obtained through the IT Service Catalog for student analytics and were consistent with university definitions. The rural classification was based on the location of the student’s high school and was categorized using the Education Demographic and Geographic Estimates Program of the National Center for Education Statistics. The location categories are visualized here. Descriptive analyses for VT Advantage and Pell-eligible students were based on data provided by the Office of Financial Aid.

WHAT PERCENTAGE OF OUR BACHELOR’S GRADUATES HAD A PAID INTERNSHIP?

Paid internship participation was best assessed by the First Destination Survey because most students with internships did not enroll in courses. For the most recent graduates (2021-22), 55% reported a paid internship. Twenty-seven percent reported multiple paid internships, which was a decrease from prior years. When aggregating paid and unpaid internships, participation increased to 64%. Co-op participation was small and was primarily in engineering.

DO ALL STUDENTS HAVE THE SAME OPPORTUNITIES?

Participation data were disaggregated by transfer status, underserved student status, first generation, URM, in-state, and rural. Transfer and first-generation students were less likely to have work placements and paid internships than their peers, with 8 to 10% fewer placements and 13% fewer co-ops or paid internships. This disparity was systematic for transfer students, as 75% of undergraduate degree programs had fewer transfer students with co-ops or paid internships than first-time students.

For students who had successful 1st destination placements, transfer students earned $4,000 less and first-generation earned $5,500 less than their peers’ starting salaries. Students who were both transfer and first-generation were 11% less likely to have a successful 1st destination placement and 20% less likely to have a co-op or paid internship than first-time, continuing-generation students. Transfer or first-generation students had fewer placements and less participation in employment-related experiences if they were also from in-state or rural areas. Out-of-state students, both urban and rural, have higher rates of participation in employment-related experiences than in-state students. Although there were smaller and less consistent gaps for other subgroups, disparities in experience participation and 1st destination placement should be monitored.
Transfer students had variable 1st destination placement gaps and consistent experience participation gaps, while the gaps for first-generation students show an increase. This trend is particularly concerning as Virginia Tech focuses on enrolling more first-generation students. Without intervention, the decreasing number of placements and paid internships for first-generation students will have a larger impact on the university's overall career-placement performance in the future. To address inequities, increasing paid internship participation is important, because paid internships were connected to post-graduation employment in all disciplines.

Co-op and paid internship participation was least for rural, in-state students and most for urban, out-of-state students. Within Virginia, graduates from counties surrounding the D.C. area reported the most participation in paid internships. These students could have better access to opportunities while living at home during the summer as students consistently reported housing costs as a primary barrier to engagement in employment-related experience. On the other hand, the New River Valley, Richmond, and Virginia Beach regions had less participation than the university's average of 56%. Note that a student's region was defined by their high school location, and the location of the internship was unknown.
Disciplinary differences present the largest equity gap at Virginia Tech. Colleges had a 45% range in paid internship participation. Unpaid internships were less variable across colleges and were consistent over time. Students may choose to engage with employers, such as local government or small, non-profit organizations, that historically do not pay interns.

The three colleges (PCOB, COE, AAD) with the most paid internships had at least 35% of graduates reporting multiple paid internships. This value was greater than the total paid internship participation in two colleges (CALS, COS). In COE, 21% of graduates reported having 3 or more paid internships. Not only were there differences in overall participation, but disciplines also differed in the number of paid internships. To highlight the importance of these differences, graduates were more likely to have placements if they had more paid internships.
Overall, paid internship participation increased slightly over the past 9 years, as shown above by the university average in black. Internship participation decreased with COVID-19 and was beginning to rebound based on the 2021-22 graduates. Colleges tend to cluster into high and low internship participation groups, except for CNRE, which has shown a substantial increase over time.

Ensuring equitable post-graduation outcomes relies on equal access to internship opportunities across all disciplines. At Virginia Tech, approximately 75% of undergraduates report they intend to work after graduation (this statistic is stable over several years). Below are the percentages of graduates who secured work placements and those who were still seeking employment (excluding continuing education). The percentage of students with paid internships was comparable to the percentage of students with work placements. Paid internships were the only experience consistently, and statistically, associated with work placements. Colleges with fewer paid internships often had higher amounts of faculty-mentored undergraduate research, but these research experiences were not correlated to work placements at graduation (although they are connected to continuing education in some colleges).
HOW DOES EXPERIENCE RELATE TO CAREER OUTCOMES?

Analyses were conducted at both the university- and college-levels to examine the experiences statistically linked to post-graduation placements. The data was disaggregated by 1st destination to conduct two separate analyses for students who were (1) working or (2) continuing their education after graduation because of distinct differences in these career paths.

Data were analyzed with generalized linear mixed models for the university and generalized linear models for the colleges. All analyses used the baseline model below, with the addition of any significant interactions or demographic variables (gender, URM, transfer, first-generation). Placement was a binary response variable showing if a student reported a post-graduation placement. Degree program was a random effect for the university and fixed effect for the college analyses.

\[ \text{Destination Placement}_{ijklm} = \sum_{i=1}^{8} \text{Experience}_i + \text{Year}_j + \text{College}_k + \text{Degree program}_l + e_{ijklm} \]

(1) WORK PLACEMENTS: UNIVERSITY-LEVEL ANALYSES

Data were analyzed to show the experiences associated with having a work placement across all degree programs (n = 8,555 graduates). The response variable was if a student reported a work placement (work or military) or was still looking for a placement.

Paid internships were modeled as 0, 1, 2, or 3 or more. Unpaid internships were modeled as 0 or at least 1. Effects in the model and p values are shown to the right. The interaction between paid internships and volunteering was kept based on fit statistics.

<table>
<thead>
<tr>
<th>Effect</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paid internship x volunteer</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Co-op</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Research</td>
<td>0.06</td>
</tr>
<tr>
<td>Summer job</td>
<td>0.33</td>
</tr>
<tr>
<td>Unpaid internship</td>
<td>0.39</td>
</tr>
<tr>
<td>Part-time job</td>
<td>0.81</td>
</tr>
<tr>
<td>Field study</td>
<td>0.88</td>
</tr>
<tr>
<td>College</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Year</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Transfer</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Gender</td>
<td>0.02</td>
</tr>
</tbody>
</table>

*Interaction effects of paid internship and volunteering.* If students had a co-op, they were 16% more likely to report a work placement (1.86 times greater odds, P < 0.01). Paid internships were positively associated with work placements, and the interaction between volunteering and paid internships was significant. Conclusions based on these contrasts follow.

1. Students with multiple paid internships were more likely to have work placements. If students did not volunteer, they were 44% more likely to have work placements if they had a paid internship rather than none.
2. If students volunteered, they were 27 to 52% more likely to have a work placement if they had at least one paid internship.
3. If students had 1 or more paid internships they were just as likely to have a work placement if they did or did not volunteer.
4. When students had the same number of paid internships, volunteering had little effect on work placement.
### WORK PLACEMENTS: COLLEGE-LEVEL ANALYSES

Paid internships were significantly associated with work placements in every college. In six out of seven colleges, paid internships were the only experience that had a positive correlation with work placements. In COE, co-ops and field studies were also associated with work placements. Paid internships show a significantly positive benefit for employment outcomes all disciplines.

### STARTING SALARY

For graduates with work placements, those who had a co-op or paid internship reported $11,700 higher starting salaries than their peers who did not have these experiences. Graduates in every college reported higher starting salary, possibly resulting from the types of employers and industries where graduates were ultimately employed. Based on the literature, a $5,000 increase in starting salary led to an added $600,000 in lifetime earnings (Marks and Harold, 2011). Note: all salary results were descriptive statistics.

### Salary gap by college: If students had a co-op or paid internship

<table>
<thead>
<tr>
<th>College</th>
<th>Gap</th>
<th>Salary with experience</th>
<th>Salary without experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAD</td>
<td>$13,800</td>
<td>$53,400</td>
<td>$39,600</td>
</tr>
<tr>
<td>CALS</td>
<td>$10,200</td>
<td>$42,300</td>
<td>$35,000</td>
</tr>
<tr>
<td>CLAHS</td>
<td>$6,900</td>
<td>$49,100</td>
<td>$42,200</td>
</tr>
<tr>
<td>CNRE</td>
<td>$7,800</td>
<td>$46,700</td>
<td>$38,900</td>
</tr>
<tr>
<td>COE</td>
<td>$10,100</td>
<td>$75,700</td>
<td>$65,600</td>
</tr>
<tr>
<td>COS</td>
<td>$26,100</td>
<td>$71,100</td>
<td>$44,300</td>
</tr>
<tr>
<td>PCOB</td>
<td>$6,300</td>
<td>$63,200</td>
<td>$56,800</td>
</tr>
<tr>
<td>University</td>
<td>$11,600</td>
<td>$66,700</td>
<td>$49,900</td>
</tr>
</tbody>
</table>
(2) CONTINUING EDUCATION: UNIVERSITY-LEVEL ANALYSES

Data were analyzed to show the experiences associated with having a continuing education placement across all degree programs (n = 4,435 graduates). The response variable was if a student reported a continuing education placement (graduate or professional school) or was still looking for a placement.

Paid internships were modeled as 0, 1, or multiple. Unpaid internships were modeled as 0 or at least 1. Effects in the model and p values are shown to the right. The interaction between paid internships and volunteering was kept based on fit statistics.

<table>
<thead>
<tr>
<th>Effect</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research x volunteer</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Paid internship</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Co-op</td>
<td>0.19</td>
</tr>
<tr>
<td>Summer job</td>
<td>0.21</td>
</tr>
<tr>
<td>Part-time job</td>
<td>0.25</td>
</tr>
<tr>
<td>Unpaid internship</td>
<td>0.41</td>
</tr>
<tr>
<td>Field study</td>
<td>0.57</td>
</tr>
<tr>
<td>College</td>
<td>0.07</td>
</tr>
<tr>
<td>Year</td>
<td>0.05</td>
</tr>
<tr>
<td>First generation</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Transfer</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Gender</td>
<td>&lt; 0.01</td>
</tr>
</tbody>
</table>

Effects of paid internships. Paid internships were positively associated with continuing education placements. Graduates were 41 to 62% more likely to secure more education if they had multiple paid internships. This result could be confounded with GPA because high-achieving students might be more likely to pursue more education and have multiple experiences. At this time, student GPA is not included in our data or analyses.

<table>
<thead>
<tr>
<th>Contrast</th>
<th>P value</th>
<th>Odds ratio</th>
<th>Risk ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 paid internship / no paid internship</td>
<td>0.05</td>
<td>1.28</td>
<td>1.15</td>
</tr>
<tr>
<td>2+ paid internships / no paid internship</td>
<td>&lt; 0.01</td>
<td>2.68</td>
<td>1.62</td>
</tr>
<tr>
<td>2+ paid internships / 1 paid internship</td>
<td>&lt; 0.01</td>
<td>2.10</td>
<td>1.41</td>
</tr>
</tbody>
</table>

Effects of research and volunteering. Graduates were more likely to secure continuing education if they had research, volunteer, or both experiences than graduates who had neither experience. Although both were positive, graduates with research experience were 33% more likely to secure more education than graduates with volunteer experience. Having either research or volunteer experience was no different than having both experiences. Hence, students pursuing more education should do at least 1 research or volunteer experience, with research being more beneficial.

<table>
<thead>
<tr>
<th>Contrast</th>
<th>P value</th>
<th>Odds ratio</th>
<th>Risk ratio</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volunteer / neither</td>
<td>&lt; 0.01</td>
<td>1.80</td>
<td>1.43</td>
<td>Volunteer better than no experience</td>
</tr>
<tr>
<td>Research / neither</td>
<td>&lt; 0.01</td>
<td>3.62</td>
<td>1.96</td>
<td>Research better than no experience</td>
</tr>
<tr>
<td>Both / neither</td>
<td>&lt; 0.01</td>
<td>2.97</td>
<td>1.81</td>
<td>Research and volunteering better than no experience</td>
</tr>
<tr>
<td>Research / volunteer</td>
<td>&lt; 0.01</td>
<td>2.01</td>
<td>1.33</td>
<td>Research better than volunteering</td>
</tr>
<tr>
<td>Both / volunteer</td>
<td>0.15</td>
<td>1.65</td>
<td>1.24</td>
<td>No evidence for both differing from only volunteering</td>
</tr>
<tr>
<td>Both / research</td>
<td>0.74</td>
<td>0.82</td>
<td>0.92</td>
<td>No evidence for both differing from only research</td>
</tr>
</tbody>
</table>
CONTINUING EDUCATION: COLLEGE-LEVEL ANALYSES

Paid internships were also associated with acceptance into graduate or professional schools across colleges. Undergraduate research was linked with continuing education in STEM and liberal arts disciplines, but not in business. Other experiences were college-specific including volunteering in CALS, unpaid internships in COE, and field study in COS.

VT ADVANTAGE: PRELIMINARY REVIEW OF DATA

The following descriptive analyses represent a preliminary snapshot of students who would be included in the VT Advantage population. These data and visualizations are shared to spark planning discussions focused on improving equity in students’ ability to participate in career-relevant experiences associated with improved career-placement success. Within the first destination survey data, VT Advantage is coded as in-state and Pell or VGap eligible at any point during undergraduate enrollment. VT Advantage students represent 12% of all students responding to the first destination survey. Gaps for VT Advantage are relative to other in-state students. Note: VT Advantage data do not have ME and are not weighted university averages.

SUBGROUP CHARACTERISTICS OF VT ADVANTAGE STUDENTS COMPARED TO UNIVERSITY AVERAGE

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>VT Advantage (%)</th>
<th>University (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer</td>
<td>22</td>
<td>13</td>
</tr>
<tr>
<td>First Generation</td>
<td>66</td>
<td>16</td>
</tr>
<tr>
<td>URM</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Rural High School</td>
<td>56</td>
<td>47</td>
</tr>
</tbody>
</table>

DESTINATIONS: PERCENT BY SUBGROUP

<table>
<thead>
<tr>
<th>First destination</th>
<th>VT Advantage</th>
<th>In-state, not VT Advantage</th>
<th>Out-of-state</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Work</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pursue work</td>
<td>77.2</td>
<td>74.9</td>
<td>73.7</td>
</tr>
<tr>
<td>Have work</td>
<td>54.7</td>
<td>59.0</td>
<td>58.3</td>
</tr>
<tr>
<td>Looking for work</td>
<td>22.5</td>
<td>15.9</td>
<td>15.4</td>
</tr>
<tr>
<td><strong>Continuing education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pursue education</td>
<td>21.8</td>
<td>24.0</td>
<td>25.5</td>
</tr>
<tr>
<td>Have education</td>
<td>15.9</td>
<td>19.3</td>
<td>20.4</td>
</tr>
<tr>
<td>Looking for education</td>
<td>5.9</td>
<td>4.6</td>
<td>5.1</td>
</tr>
</tbody>
</table>

*Pursuing work = have work + looking for work. Work includes entering the military.
**Pursuing education = have education placement + looking for education placement.
WORK PLACEMENT AND EXPERIENCE PARTICIPATION
(CO-OP, PAID INTERNSHIP, OR UNDERGRADUATE RESEARCH)
AND AVERAGE STARTING SALARY BY STUDENT SUBGROUP

The data below includes students who reported a work-pathway only. The first table shows the mean starting salaries based on co-op or paid internship participation. The second table shows the mean salary gaps for VT Advantage compared to non-VT advantage.

Note: Data is not interpreted as results are not adjusted by discipline, and disciplines with greater experience participation have higher starting salaries. More data analysis is needed to more effectively calculate salary gaps taking into account discipline and inform interventions most likely to improve participation and successful 1st destination placement.

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>Work Placement</th>
<th>Experience Participation</th>
<th>Mean salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer</td>
<td>68.2</td>
<td>53.9</td>
<td>$54,300</td>
</tr>
<tr>
<td>First-time</td>
<td>77.7</td>
<td>68.4</td>
<td>$58,500</td>
</tr>
<tr>
<td>Gap</td>
<td>-9.6</td>
<td>-14.5</td>
<td>-$4,200</td>
</tr>
<tr>
<td>First-generation</td>
<td>70.0</td>
<td>54.8</td>
<td>$53,300</td>
</tr>
<tr>
<td>Continuing-generation</td>
<td>77.8</td>
<td>68.9</td>
<td>$58,900</td>
</tr>
<tr>
<td>Gap</td>
<td>-7.7</td>
<td>-14.1</td>
<td>-$5,500</td>
</tr>
<tr>
<td>URM</td>
<td>73.9</td>
<td>63.1</td>
<td>$54,800</td>
</tr>
<tr>
<td>Traditionally represented</td>
<td>77.0</td>
<td>67.2</td>
<td>$58,400</td>
</tr>
<tr>
<td>Gap</td>
<td>-3.1</td>
<td>-4.1</td>
<td>-$3,600</td>
</tr>
<tr>
<td>VT Advantage</td>
<td>71.5</td>
<td>60.1</td>
<td>$54,400</td>
</tr>
<tr>
<td>In-state, not VT Advantage</td>
<td>79.3</td>
<td>69.8</td>
<td>$59,800</td>
</tr>
<tr>
<td>Out-of-state</td>
<td>78.7</td>
<td>72.2</td>
<td>$60,800</td>
</tr>
</tbody>
</table>

STARTING SALARY GAPS BY EXPERIENCE PARTICIPATION
VT ADVANTAGE VS COMPARISON SUBGROUPS

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>With experience</th>
<th>Without experience</th>
<th>Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>VT Advantage</td>
<td>$64,300</td>
<td>$46,400</td>
<td>-$17,900</td>
</tr>
<tr>
<td>In-state, not VT Advantage</td>
<td>$67,500</td>
<td>$50,300</td>
<td>-$17,200</td>
</tr>
<tr>
<td>Out-of-state</td>
<td>$66,900</td>
<td>$53,300</td>
<td>-$13,600</td>
</tr>
<tr>
<td>All students</td>
<td>$66,700</td>
<td>$49,900</td>
<td>-$16,800</td>
</tr>
</tbody>
</table>
CETL is working with IT Procurement on a no-cost solution to access LinkedIn profile data. This product would enable systematically tracking profile information such as internship employer, dates, and location and post-graduation career trajectories and we would be able to go beyond self-report data. Currently, this contract is in negotiations.

Future statistical analyses will include

1. weighted analyses for VT Advantage;
2. factors associated with starting salary;
3. relationship between work-based experiences and time to degree; and
4. relationship between experiential learning course enrollments and retention, graduation, and time to degree.

**DATA SOURCES**

**SELF-REPORTED DATA**

All placement and participation data were self-reported from Career and Professional Development’s First Destination Survey, with the most recent data for the 2021-22 graduating cohort. Equity gaps were a 3-year aggregate when not presented by year. The 2019-20 survey was affected by the COVID-19 pandemic, resulting in a lesser response and an overall improvement in outcomes. Margins of error were supplied for a 95% confidence interval. All university values were weighted averages based on the total number of graduates per college.

<table>
<thead>
<tr>
<th>Year</th>
<th>Responses</th>
<th>Percent of graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019-20</td>
<td>2,489</td>
<td>34%</td>
</tr>
<tr>
<td>2020-21</td>
<td>5,196</td>
<td>67%</td>
</tr>
<tr>
<td>2021-22</td>
<td>4,359</td>
<td>60%</td>
</tr>
<tr>
<td>Total</td>
<td>12,044</td>
<td>54%</td>
</tr>
</tbody>
</table>

**DEMOGRAPHIC DATA**

Demographic data were obtained through the IT Service Catalog for student analytics and were consistent with university definitions. The rural classification was based on the location of the student’s high school and was categorized using the Education Demographic and Geographic Estimates Program of the National Center for Education Statistics. The location categories are visualized [here](#).
Virginia Tech Board of Visitors Meeting

Information Session

Monday, August 28, 2023
1:45 p.m.

Room G102 A/B
Fralin Biomedical Institute at VTC, Roanoke, VA

Virginia Tech’s Commitment to Health and Biomedical Sciences
- Dr. Michael Friedlander, Vice President for Health Sciences & Technology
- Dr. Lee Learman, Dean, Virginia Tech Carilion School of Medicine

Constituent Reports
- Mr. William Storey, Undergraduate Student Representative to the Board
- Ms. Emily Tirrell, Graduate Student Representative to the Board
- Ms. LaTawnya Burleson, Staff Representative to the Board
- Dr. Janice Austin, Administrative and Professional Faculty Representative to the Board
- Dr. Joseph Merola, Faculty Representative to the Board
Virginia Tech’s Commitment to Health and Biomedical Sciences

FBRI and VTCSOM
Roanoke

Michael J. Friedlander, Ph.D.
VT Vice President for Health Sciences and Technology
Executive Director, Fralin Biomedical Research Institute at VTC
Senior Dean for Research, VTC School of Medicine

Professor, Biological Sciences, COS
Biomedical Engineering (core faculty), COE
Psychiatry and Behavioral Medicine, SOM

Children’s National Research and Innovation Campus
Washington DC

VT main campus
CALS, CLAHS, CNRE, COE,
COS, CVM, FLSI

VT Innovation campus
Sanghani Center for AI and data analytics

Carilion Clinic
Roanoke
The Roanoke Health Sciences Enterprise: a public-private partnership

- Nationally ranked integrated private not-for-profit healthcare system
- Over $2.0 billion in annual revenue
- 13,000 employees, 1,000 employed providers
- 7 hospitals (48,000+ discharges)
- Level 1 Trauma Center
- 226 practices (1.5 million+ encounters)
- Next generation ACO Model
- 25 residency & fellowship programs;

---

Mike Friedlander

- Global leader in brain research
- 38 research teams; 500+ employees and students
- $173 million active research grant portfolio
- National award for innovative graduate education
- Most highly cited researchers in the world
- Major foci on brain, heart, cancer research
- National center for pediatric neurorehabilitation

---

Lee Learman

- Patient-Centered Curriculum
- Research-intensive curriculum
- Offers MD + PhD option
- Educates physician thought leaders through inquiry, research and discovery
- Nearly 100% match rate in residency programs
- Screens over 7,000 applicants for 49 positions
- Many students have extensive research experience/degrees

---

Global leader in brain research

25 residency & fellowship programs;

Research-intensive curriculum

Nearly 100% match rate in residency programs

Public-private partnership
UVA Health

Chief Executive Officer, UVA Health
Executive Vice President for Health Affairs
Dean, UVA School of Medicine
Chief Health Affairs Officer

VCU Health

President, VCU and VCU Health System
Senior Vice President, VCU Health Sciences
Interim CEO, VCU Health System
President, VCU Medical Center
FBRI research focus areas: making and translating discoveries for patients

Cardiovascular Disease
*Over 800,000 Annual Deaths, Cost = $200 Billion Annually*
Arrhythmias, Sudden Cardiac Death, Heart Failure, Ischemic Heart Disease, Viral Myocarditis

Brain Disorders
*Affects 75 Million People, Cost = $2.0 Trillion Annually*
Addiction, Traumatic Brain Injury, PTSD, Depression, Intellectual Disabilities, Parkinson’s, Alzheimer’s

Children’s health
*15 million (of 74 million) children have ongoing major health issues*

Cancer
*600,000 deaths annually*
2 million new cases per year
*Over $200 Billion annually*
Brain, lung, liver, pancreas

Obesity
*40% of adults; 20% of children; 300,000 deaths per year, Cost = $160 Billion Annually*
Most FBRI Faculty have:
• primary appointment at FBRI (financial, space, administrative and technical support)

• tenure track homes in 8 departments in 5 colleges:
  - College of Agriculture and Life Sciences; Human Nutrition, Foods and Exercise
  - College of Engineering: Biomedical Engineering and Mechanics
  - College of Liberal Arts and Human Studies: Human Development and Family Sciences
  - College of Science: Biology, Neuroscience, Physics, Psychology
  - College of Veterinary Medicine: Biomedical Sciences and Pathobiology

• Secondary appointments in VTC School of Medicine
FBRI personnel - FY23 (n=470)

38 primary faculty research team leaders
135 full time salaried research faculty and staff
43 central administrative/technical support
22 postdoctoral fellows
78 graduate students**
67 medical students
65 undergraduate students
22 high school students

** Graduate students from 9 VT programs:
  Translational Biology, Medicine and Health (TBMH)
  Biology (COS)
  Biomedical Engineering (COE) Biomedical Sciences/Pathobiology (CVM)
  Human Development (CLAHS)
  Human Nutrition, Foods & Exercise (CALS)
  Neuroscience (COS)
  Psychology (COS)
  Statistics (COS)
Translational Biology, Medicine and Health

- First class admitted in 2014
- 76 graduates to date (68 PhD; 6 MS; 1 MD/PhD; 1 MD/MS)
- Recognized by AAMC for Innovation in Graduate Biomedical Education

<table>
<thead>
<tr>
<th>Graduates in postdoctoral positions at:</th>
<th>Graduates in industry and government positions at:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baylor College of Medicine</td>
<td>Astra Zeneca</td>
</tr>
<tr>
<td>Boston Children’s Hospital</td>
<td>Alinera Sciences</td>
</tr>
<tr>
<td>Brigham and Women’s Hospital</td>
<td>Gausman and Moore</td>
</tr>
<tr>
<td>Dartmouth</td>
<td>Carilion Clinic</td>
</tr>
<tr>
<td>Duke</td>
<td>Inova Novartis</td>
</tr>
<tr>
<td>Emory</td>
<td>CDC</td>
</tr>
<tr>
<td>Harvard</td>
<td>Decibcel Therapeutics</td>
</tr>
<tr>
<td>Johns Hopkins</td>
<td>Icagen</td>
</tr>
<tr>
<td>Mayo Clinic</td>
<td>New Amsterdam Genomics</td>
</tr>
<tr>
<td>MIT</td>
<td>The Aspen Institute</td>
</tr>
<tr>
<td>Penn State</td>
<td>Walter Reed Army Medical Center</td>
</tr>
<tr>
<td>Stanford</td>
<td></td>
</tr>
<tr>
<td>U. Michigan</td>
<td></td>
</tr>
<tr>
<td>UC San Francisco – Gladstone Institute</td>
<td></td>
</tr>
<tr>
<td>UNC</td>
<td></td>
</tr>
<tr>
<td>UVA</td>
<td></td>
</tr>
<tr>
<td>Vanderbilt</td>
<td></td>
</tr>
<tr>
<td>VT</td>
<td></td>
</tr>
<tr>
<td>Yale</td>
<td></td>
</tr>
</tbody>
</table>

- Time to graduation: 5.01 years
- (National Average = 5.40 years)
- PhD completion rate: 86.6%; national average = 49.4%
- Yield rate from recruitment, incoming 2023 class = 68%
- Average GPA: 3.61
Three Translational Biology, Medicine, and Health (TBMH) students awarded American Heart Association fellowships
May, 2023

Megan Sedovy, Kari Stanley, and Kenneth Young
Some recent graduate student national awards

Gabriela Carrillo NIH F99/K00 pre/postdoctoral fellowship
Postdoc – Harvard

Hassan Farah
NIH F31 predoctoral fellowship

Rachana Somaiya
NIH OSNAP Award
Postdoc – UC Berkeley

Paras Patel NIH F31 predoctoral fellowship
Postdoc - Yale

Rachel Padget
NIH F31 predoctoral fellowship
Postdoc - UCSF

Ubadah Sabbagh NIH F99/K00 pre/postdoctoral fellowship
Postdoc - Harvard
Contributing to global 100

5 year FBRI research scholarship
728 peer reviewed publications
99 in high impact (impact factor = 10-40) journals (top 2%)
Average impact factor per publication increased from 4.5 to 7.8
Citations = 110,420
Top 0.1% of world’s most highly cited researchers in all fields
FBRI’s Warren Bickel for cross-field interdisciplinary research
Nobel Mini-symposium: Dopamine as a neural substrate of reward prediction and psychopathology

The symposium brings together researchers that first proposed that dopamine neurons signal reward prediction errors with some influential researchers that have developed this idea further. The research has both important preclinical and clinical implications.

FBRI at VTC’s Read Montague
The Jacobæus Prize is the oldest prize of the Novo Nordisk Foundation.

“Our vision is to improve people’s health and the sustainability of society and the planet”

$94 billion USD in assets

The Jacobæus Prize is the oldest prize of the Novo Nordisk Foundation.

2022 winner of the Novo-Nordisk Foundation Jacobaeus prize - FBRI’s Zhen Yan
FBRI’s Robert Gourdie named senior member of the National Academy of Inventors
February, 2023
Jennifer Munson, Biomedical Engineer at the Fralin Biomedical Research Institute at VTC receives the national: Ben & Catherine Ivy Foundation Emerging Leader award to further her study of patient-specific therapies for deadly brain tumors.
FBRI Extramural Grant Funding

**Annual Awards**


**Total Project Awards**

## NIH Funding Comparisons – FY23

<table>
<thead>
<tr>
<th>University</th>
<th>Annual NIH Funding</th>
<th># Faculty in the Medical School/Research Institute</th>
<th># NIH Funded Projects at the University</th>
<th>Average Annual NIH Funding per Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>UAB</td>
<td>$333M*</td>
<td>1,689</td>
<td>1411</td>
<td>$189K</td>
</tr>
<tr>
<td>VCU</td>
<td>$84M</td>
<td>1,403</td>
<td>233</td>
<td>$361K</td>
</tr>
<tr>
<td>UVA</td>
<td>$165M</td>
<td>1,315</td>
<td>401</td>
<td>$411K</td>
</tr>
<tr>
<td>U Maryland</td>
<td>$163M</td>
<td>1,364</td>
<td>423</td>
<td>$466K</td>
</tr>
<tr>
<td>U Maryland</td>
<td>$163M</td>
<td>1,364</td>
<td>423</td>
<td>$466K</td>
</tr>
<tr>
<td>UNC</td>
<td>$359M</td>
<td>2,001</td>
<td>453</td>
<td>$792K</td>
</tr>
<tr>
<td>VT</td>
<td>$47M</td>
<td>873</td>
<td>137</td>
<td>$343K</td>
</tr>
<tr>
<td>FBRI at VTC*</td>
<td>$27M</td>
<td>38</td>
<td>66</td>
<td>$409K**, ***</td>
</tr>
</tbody>
</table>

* 80% from SOM
* Does not include NIH sub-contracts
** $711K per faculty member
*** $964K per FBRI NIH funded faculty member

Top NIH funded institutions
#1 – UCSF - $751M
#2 – Stanford - $584M
#3 – Wash U. - $567M
#4 – Johns Hopkins - $563M
#5 – UPenn - $551M
Fralin Biomedical Research Institute faculty start up companies

**FirstString Research Inc.**
Tiny Cargo Company
Protecting and delivering heart therapies on target

**Rob Gourdie**
Spencer Marsh

**BEAM Diagnostics, Inc.**
Behavioral Economics as Advanced Methodological Diagnostics
Shining light on the future of precision medicine

**Warren Bickel***

**Samy Lamouille**

**ACOMHAL RESEARCH**
FIGHTING CANCER AT ITS SOURCE

**Zhi Sheng**

**BioTairapeutics**
precision peptidic medicine

**Jennifer Munson**

**Cairina**
Predicting brain tumor growth & optimal treatment

**Kernyll**
Software analytics for human health

28 invention disclosures by 35 FBRI faculty, students and staff over last 5 years
Children’s Health Research at FBRI

FBRI Neuromotor Research Clinic
National NIH Pediatric Rehabilitation Resource Center, headquartered at Fralin Biomedical

• FBRI collaboration with PT and OT researchers

• Opportunities for VT-Radford enhanced collaboration in allied health sciences
video
Moving forward

Physical growth of the HS&T campus in Roanoke
- New VTCSOM building to accommodate expanded class size
- Back-renovation of original VTCSOM to accommodate FBRI growth
- VTC partnership recruitment of physician scientists
- Build on global reputation in brain and cardiovascular research
- Major growth of cancer research
UPDATE ON THE
VIRGINIA TECH CARILION SCHOOL OF MEDICINE
LEE A. LEARMAN, M.D., PH.D.
DEAN

Virginia Tech Board of Visitors
Information Session
August 28, 2023
Among the first of 32 MD-granting schools initially accredited from 2007-2022 (with 6 more on the way)

Groundbreaking 2008
Dean Cynda Johnson
Carilion CEO Ed Murphy
Governor Tim Kaine
VT President Charles Steger
Our Academic Health Center’s Primary Institutional Collaborations

**Healthcare delivery**
- Hospitals and Clinics
- Physicians, Physician Assistants (PAs)
- Nurses, Nurse Practitioners (NPs)
- Other health professions and staff

**Health professions education**
- Medical students, residents, fellows
- Nursing, NP and PA students
- Respiratory, physical and occupational therapists, others
- Biomedical research trainees
- Undergraduates considering health professions

**Biomedical research and innovation**
- Basic and preclinical studies
- Clinical trials
- Dissemination and implementation science
- Community-based and public health research
VTCSOM Curriculum: 4 Value Domains

Standard MD Curriculum (competent physician)

VTCSOM Differentiators (scientist physician, system citizen)

Basic Science
Clinical Science
Research
Health Systems Science and Interprofessional Practice
VTCSOM’s First MD/PhD Students

Class of 2019/2023
- Oscar Alcoreza, MD, PhD
- Katelyn Stebbins
- Andrew Strohman
- Noah Oakland

Original Class of 2024
- Original Class of 2023
- Kenneth Young
Redefined Vision and Mission 2020

VISION
We will be a destination for innovators who aspire to establish the nation’s premier model of 21st century medical education.

MISSION
Prepare physician thought leaders through innovations in medical education and cutting-edge discovery to improve the health of our communities and transform health care.
“The medical school's project is focused on developing health system citizens — physicians attuned to systems complexities impacting patient health, who operate effectively and collaboratively in a team, and who strive for continuous improvement of the system. The project, which received $150,000 of funding over two years, will apply a modern measurement paradigm to develop instruments that more precisely measure and evaluate students’ clinical abilities as health system citizens.”
You cannot change the human condition, but you can change the conditions in which humans work.

–James Reason, PhD

People generally come to work to do the right thing. If they don’t or can’t, its our job to figure out why.

–Robert Wears, MD, PhD

Every system is designed to achieve exactly the results it gets.

- Don Berwick, MD; many others
What is implementation science?

• how evidence-based practices, interventions, and policies are effectively translated to and used in real-world settings like hospitals, schools, and communities
“...the promise of a cure requires an additional step: Patients must receive the treatments promptly and properly... we spend far more money on inventing new treatments than on research into how to deliver them...”

“All breakthrough, no follow through”
Implementation Science Puts Knowledge to Work

What is the T0 to T4 Translational Research Continuum?

- Discovery of best implementation practices
- Design and testing of implementation
- Operational implementation of best practices
- Sustainability of best practices
Health Systems Implementation Science (HSIS)

- Academic department formed and chair recruited (Parker)
- University tenure at VTCSOM approved by BOV
- Research faculty and space for HSIS
  - 2 junior faculty hired + 2 tenure/tenure-track lines in recruitment
  - Physician-scientist cost-sharing model under review
  - VT IRB eligibility for Carilion-employed researchers
  - Carilion-adjacent space for program expansion (financial analysis)
- Transdisciplinary research teams bridging VT-VTCSOM-Carilion
- Center for Future Work Places and Practices at VT Institute for Creativity, Arts and Technology
- Destination Area 2.0 Human-Systems Integration proposal
Vision for the VTCSOM Implementation Science Program

Center for the Science of Healthcare Delivery

Health Challenge 1

• High-value, High-quality Healthcare
• Social Dimensions of Health
• Innovative Community Health Models
• Informatics and Technology
• Health Policy and Economics

T3/T4 research center goals
• Discovery of best implementation practices
• Design and testing of implementation
• Operational implementation of best practices
• Sustainability of best practices

This research center goals
• Intersect research and application
• Address general and health system specific needs of relevance to this community
• Provide foundational expertise to be used and deployed
• Create unique T3-T4 partnerships to improve the health of the community

Cross-cutting HSS topics
• Human Centered Design
• Implementation Science Methods

Health Challenge 3

Health Challenge 4

Health Challenge 2
Goal One: Strengthen Innovative and Collaborative Research to Positively Impact the Health of our Communities and Beyond

Extramural Research Expenditures

- Primary VTCSOM
- Secondary VTCSOM (FBRI at VTC)

Peer-Reviewed Publications

- FY21: 492
- FY22: 521
The transformation of an industrial brownfield into a rapidly growing health science and technology campus over the past decade is a remarkable success story for the Roanoke-Blacksburg region and the commonwealth as a whole,” says Virginia Tech President Tim Sands. “We are excited about the next phase of growth for VTCSOM.”

Small yet mighty

VTC is state’s most competitive medical school

PUBLISHED MAY 30, 2023  BY SYDNEY LAKE

Return to Roanoke

Roanoke may not always be the first place VTC graduates practice medicine, but it’s often a final destination. Both Tate and his wife, VTC alum Dr. Megan Whitham, pursued residencies elsewhere before returning to Roanoke to work at Carilion Clinic.

Whitham works in maternal fetal medicine, while Tate practices family medicine. Originally from Carroll County, Tate was “psyched” to get to study medicine near home and Southwest Virginia’s Appalachian Mountains, a region negatively affected by a shortage of doctors.

“We both loved being here during school and made many important connections,” says Dr. Adam Tate, who practices at Carilion with his wife and fellow VTCSOM graduate Dr. Megan Whitham. Photos by Don Peterson
## Averting Virginia’s Future Physician Workforce Shortage

### Applications from Virginia (AAMC data)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Did Not Matriculate</td>
<td>484</td>
<td>498</td>
<td>541</td>
<td>524</td>
<td>554</td>
<td>587</td>
<td>541</td>
<td>563</td>
<td>591</td>
<td>630</td>
</tr>
<tr>
<td>Matriculated in US</td>
<td>738</td>
<td>793</td>
<td>842</td>
<td>833</td>
<td>786</td>
<td>851</td>
<td>866</td>
<td>860</td>
<td>1057</td>
<td>962</td>
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</tbody>
</table>

### Of 630 Virginians admitted to US medical schools in 2022-23, only 263 are attending Virginia medical schools.

### Applications per position

<table>
<thead>
<tr>
<th>School</th>
<th>Annual admissions</th>
<th>Applications per position</th>
</tr>
</thead>
<tbody>
<tr>
<td>VTC</td>
<td>49 (50)</td>
<td>138</td>
</tr>
<tr>
<td>East Virginia</td>
<td>151</td>
<td>51</td>
</tr>
<tr>
<td>VCU</td>
<td>186</td>
<td>40</td>
</tr>
<tr>
<td>UVA</td>
<td>150</td>
<td>39</td>
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</table>

### # Schools

<table>
<thead>
<tr>
<th>Annual admissions</th>
<th># Schools</th>
</tr>
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<tbody>
<tr>
<td>50 or less</td>
<td>4</td>
</tr>
<tr>
<td>51-100</td>
<td>29</td>
</tr>
<tr>
<td>101-150</td>
<td>53</td>
</tr>
<tr>
<td>151-200</td>
<td>46</td>
</tr>
<tr>
<td>201 or more</td>
<td>23</td>
</tr>
</tbody>
</table>
# Retaining Physicians Trained in Virginia

## Virginia State Physician Workforce Profile

<table>
<thead>
<tr>
<th></th>
<th>VA</th>
<th>VA Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pct. Physicians Retained in State from UME, 2016</td>
<td>32.5%</td>
<td>32</td>
</tr>
<tr>
<td>Pct. Physicians Retained in State from GME, 2016</td>
<td>39.1%</td>
<td>41</td>
</tr>
<tr>
<td>Pct. Physicians Retained in State from UME + GME, 2016</td>
<td><strong>64.3%</strong></td>
<td><strong>29</strong></td>
</tr>
</tbody>
</table>

Recent data show wide disparities in funding among Virginia’s public medical schools

<table>
<thead>
<tr>
<th>FY 22 AAMC Annual Financial Questionnaire, $ in millions</th>
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</thead>
<tbody>
<tr>
<td><strong>State Appropriations</strong></td>
</tr>
<tr>
<td>VT</td>
</tr>
<tr>
<td>$0.0</td>
</tr>
<tr>
<td><strong>Gross Tuition and Fee Revenues</strong>&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>VT</td>
</tr>
<tr>
<td>$10.0</td>
</tr>
<tr>
<td><strong>University (Parent) Support</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
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<tr>
<td>VT</td>
</tr>
<tr>
<td>$5.7</td>
</tr>
<tr>
<td><strong>Hospital Support</strong>&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>VT</td>
</tr>
<tr>
<td>$3.4</td>
</tr>
<tr>
<td><strong>Philanthropic Support</strong></td>
</tr>
<tr>
<td>VT</td>
</tr>
<tr>
<td>$0.5</td>
</tr>
</tbody>
</table>

1 Gross tuition and fee revenues does not reflect impact of tuition waivers, scholarships or other discounting. VTCSOM’s discount rate is approximately 20% or $2M annually.

2 University (parent) support for VTCSOM includes the $3.4M in annual contributions as part of the 50-50 split between the university and Carilion Clinic plus central university funding for incremental salary and fringe benefit adjustments.

3 Hospital support excludes funding for Graduate Medical Education (GME). For VTCSOM, this reflects the annual $3.4M contribution from Carilion Clinic.
## THE FUTURE: Enrollment Growth and In-State Support

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<tbody>
<tr>
<td><strong>Enrollment Capacity Analysis</strong></td>
<td>Capacity determined</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Capital Planning</strong></td>
<td></td>
<td>Planning grant, building permit</td>
<td>Building construction</td>
<td></td>
<td></td>
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<tr>
<td><strong>Accreditation Approval</strong></td>
<td></td>
<td>Proposal prepared, submitted</td>
<td>Growth approved</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>In-State Tuition Support</strong></td>
<td>Request</td>
<td>Request</td>
<td>Request</td>
<td>Request</td>
<td>Request</td>
<td></td>
</tr>
<tr>
<td><strong>Total Enrollment</strong></td>
<td>196</td>
<td>196</td>
<td>196</td>
<td>196</td>
<td>196</td>
<td>First larger class</td>
</tr>
</tbody>
</table>
Thank You
Constituent Report by Undergraduate Student Representative to the Board, William Storey, will be presented at Monday’s Information Session.
Rector Baine, members of the Board of Visitors, President Sands, Provost Clarke, administrators, and guests. Thank you for this opportunity to speak with you all about the graduate and professional students today.

Thank you for the incredible opportunity to serve in this role. I am eager to get started and to collaborate closely with you throughout my term. My name is Emily Tirrell, and I am the Graduate and Professional Student Representative for the 2023-2024 year! I am a second year Ph.D. student in the Translational Biology, Medicine, and Health program and conduct research in the Robotics and Sensorimotor Control Lab in the Biomedical Engineering and Mechanics Department. I have been fortunate to be a student at Virginia Tech twice, and completed my undergraduate degrees in Biological Science and in Clinical Neuroscience. During my first few months as the Graduate and Professional Student Representative, I have connected with student leaders throughout the Virginia Tech community and connected with the deans of the graduate school, the medical and veterinary schools, and the different state - wide campus associate deans and representatives.

During my term I will give a voice to the graduate and professional student perspective, and impact how the board and university might improve our experiences here at Virginia Tech. First, I would like to share the complexities behind what a graduate and professional student really is. Our location for this board meeting provides an excellent opportunity for me to stress the importance of our graduate and professional students, the direct impact that we have, and the value we bring to our community and to the Virginia Tech brand. The Virginia Tech Carilion School of Medicine (VTCSOM) and Fralin Biomedical Research Institute (FBRI) combine in one of three thematic institutes associated with Virginia Tech, the others are the Virginia Tech Transportation Institute (VTTI) and the Virginia Tech National Security Institute (VTNSI). The Fralin Biomedical Research Institute (FBRI) and Virginia Tech Carilion School of Medicine (VTCSOM) alone house approximately 2% of graduate and professional students (approximately 145 students) and in FY22, brought in approximately 48% of Virginia Tech's research enterprise grants and contracts (approximately 173 million dollars according to the FY22 Financial Report). These research institutes not only provide space for faculty and students to develop
formative research questions and answers, but space for Virginia Tech to grow into the surrounding commonwealth environment. I want to emphasize the importance of the institutes for Virginia Tech's strategic plan to achieve excellence as a comprehensive global land - grant university, and to specifically draw attention to the important role that graduate and professional students have in achieving that commitment.

So what is a graduate and professional student? We are first and foremost individuals and students of the university. We are also an extraordinary tool, resource, and contributor that the university has to promote its strategic plans and grow its research enterprise success. Our thematic institutes, departments, and research labs would not function or be productive without the work of graduate and professional students. In terms of rankings, when compared to our peer Land Grant Institutions, Virginia Tech ranked 16/112 overall in Fall of 2022, and recently gained recognition with a CASE 50 membership, acknowledging our value, quality, and fundraising excellence. These are both prodigious achievements, however, in Fall of 2022, Virginia Tech placed in the 251-300 range for the global ranking based on research excellence on a global scale. I segway into this comparison for one main reason: With the commitment to achieving excellence as a comprehensive global land - grant university, it is imperative that we attract and retain highly skilled graduate and professional students to increase our research enterprise success. Graduate and professional students will push Virginia Tech into achieving these goals and continue to raise our ranking. Two main topics impact graduate and professional student attraction and retention and I would like to focus on these throughout my term: student financial wellness and overall student engagement and wellbeing.

I am pleased to report that there have been great strides at the various campuses to improve student financial wellness. The DC Area Campus is installing a new metro pass initiative, partnering with the Washington Metropolitan Area Transit Authority, to introduce the U-Pass to our graduate students. This pass allows full-time students unlimited Metrobus and Metrorail access to travel for about $1 per student per day. This helps alleviate pressures to live close to campus, and encourages students to live in more affordable areas while still having direct access to campus. The Roanoke Area Campus has initiated a new "StarCard" reward program for students to get discounts at local restaurants and local establishments to offset some of the cost of living expenses. The Town of Blacksburg has provided free public transportation with the Blacksburg Transit Bus System. However, students are still struggling financially. To combat this and provide some financial relief, I am working with the Dean of the Graduate School and the Dean of
Students to find additional sources of funding, using the student emergency fund, to help provide additional support to our students. I ask that the board continue to discuss the financial wellbeing of graduate and professional students, and support these initiatives.

There have also been great strides at the various campuses to improve engagement with campus resources and overall student wellbeing. “TimelyCare”, a virtual health and well-being platform available to all Virginia Tech students, has been utilized at all of our campuses. “TimelyCare” offers flexibility for students to be seen at off-hours and reduces barriers to accessing mental health care. With 4.69% of our graduate and professional students (approximately 333 students) utilizing this resource, “TimelyCare” has been an incredible success. However, students still report a great disconnect between campus resource availability and need, and previous campus polling shows that upwards of 21% of graduate and professional students (approximately 1,491 students) need additional access to campus resources. I am working with the Vice President of Student Affairs, Cook Counseling, and Hokie Wellness to promote campus resources to all students and to increase resource availability to combat accessibility difficulties that our students are facing. I ask that the board continue to discuss the engagement and overall wellbeing of graduate and professional students, and support these initiatives.

Overall, I am working with student leaders, the graduate school, the medical and veterinary schools, and campus partners to provide support to our graduate and professional students, to increase retention and to attract talent to the university. I ask that the board consider student financial wellness and student wellbeing and engagement when discussing future university initiatives, and to consider the impact that graduate and professional students have on the Virginia Tech enterprise as a whole.

On behalf of the graduate and professional students, thank you for listening today. I appreciate your attention and I thank you again for this opportunity to share. I look forward to sharing my ongoing progress in this role and collaborating with you all to make this an amazing year serving Virginia Tech! Go Hokies!
Rector Baine, members of the Board of Visitors, President Sands, administrators and guests. Thank you for the opportunity to speak to you today about staff at Virginia Tech.

It is one of the best times of the year for Hokies everywhere with the start of the fall semester and the season opener of Virginia Tech football just a week away. It is a time of excitement, hope and new beginnings; for Staff Senate it comes with a renewed commitment to be strong advocates for all staff at Virginia Tech.

The senate met with President Sands this past June in a hybrid format for the first time since 2019. We had a very productive meeting which shed light on many issues we face and brought forth a suggestion from Dr. Sands that he meets more than once a year with the Staff Senate and we, in turn, send a quarterly report to him on our activities. Staff Senate appreciates Dr. Sands continued interest in and support of staff activities.

One goal for this year’s Senate is to increase the participation of staff in governance and professional development opportunities. Many staff have shared they do not have the support of their immediate supervisor to attend governance meetings and participate in professional development opportunities. The Staff Senate Executive Team is planning a road show to visit colleges and departments either in person, virtually or hybrid as a way of increasing communication with all staff and ensuring awareness of the many opportunities offered. The President’s Office and the Department Human Resources are partnering with us in this effort by sharing messaging with Administration. This messaging will also be highlighted on the staff senate website to increase visibility and to reach all staff members.

A second goal is to thoroughly study leave discrepancies and compensation issues that staff face, with increasing the $500 per year supplement and increasing the threshold a priority. This will be done by working closely with our Human Resources colleagues, who have been receptive and collaborative with us as we dig in on this work.

Thirdly, we will focus on education; it is the reason we are all here. The Staff Senate will welcome members from strategic affairs who reached out to us to discuss the Beyond Boundaries Vision and we appreciate that they are including us in this important work. Dr. Sands spoke to staff about the Virginia Tech Advantage Initiative which should have such an important impact on the commonwealth. Staff Senate would also like to see investment and thought given to increasing the faculty/staff dependent scholarship fund so that it might be more impactful to the dependents of Virginia Tech employees.
In closing on behalf of the Staff Senate Executive Committee, Staff Senate and all staff at Virginia Tech, I thank you again for this opportunity to not only speak to you today, but for our inclusion in Governance at Virginia Tech. I look forward to collaborating with you, sharing successes and providing ongoing support to this wonderful university.

Respectfully submitted,

LaTawnya L. Burleson

President, Staff Senate
Constituent Report by President of Administrative and Professional Faculty Senate, Janice Austin, will be presented at Monday’s Information Session
Constituent Report by 
President of Faculty Senate, 
Joseph Merola, 
will be presented at Monday’s 
Information Session