VCU Board of Visitors

ACADEMIC, HEALTH AFFAIRS AND RESEARCH COMMITTEE
April 23, 2026
The Honorable Benjamin Lambert III Board Room
1213 East Clay Street
Richmond, VA

MEETING MINUTES

COMMITTEE MEMBERS PRESENT

Dr. Dale Jones, *Chair*
Ms. Rooz Dadabhoy, *Vice Chair - virtual pursuant to Code Section 2.2-3708.3(B)(4) personal matter where the member was unable to attend the meeting due to previous commitment – Richmond, VA*
Ms. Heidi Schlicher Cook
Dr. Kenneth Lipstock
Dr. Clifton Peay *virtual pursuant to Code Section 2.2-3708.3(B)(4) personal matter where the member was unable to attend the meeting due to previous commitment – Nashville, TN*
Mr. Randolph Reynolds, Jr.
Ms. Alexis Swann - *virtual pursuant to Code Section 2.2-3708.3(B)(3) where the member's principal residence is more than 60 miles from the meeting location – Hampton, VA*
Mr. Harry Thalhimer
Ms. Ellen Fitzsimmons, *Rector*
Mr. Steve DeLuca, *Vice Rector*

COMMITTEE MEMBERS ABSENT

Hon. Siobhan Dunnavant, M.D.
Mr. Neil Amin

OTHER BOARD MEMBERS PRESENT

Mr. Anthony Bedell
Hon. Peter Farrell
Mr. P2 Sandhu

OTHERS PRESENT

Dr. Michael Rao, *President*
Dr. Arturo Saavedra, *Executive Vice President and Provost*
Dr. Marlon Levy, *Senior Vice President for Health Sciences and CEO VCU Health*
Dr. P. Srirama Rao, *Vice President for Research and Innovation*
Dr. Preetam Ghosh, *Faculty director, High Performance Research Computing Core*
Dr. Manu Gupta, *Dean, VCU Graduate School*

Dr. Sandeep Kothiwale, *Manager, AI Engineering and Product, VCU Health System Authority*
Dr. Milos Manic, *Director, VCU Convergence_AI*
Ms. Jamie Stillman, *Executive Director of Academic Operations, Office of the Provost*
Presidential Cabinet of VCU
Members of the media

CALL TO ORDER

Dr. Dale Jones, Chair of the Academic, Health Affairs and Research Committee, called the meeting to order at 1:52 p.m. The public was able to view the open session of the meeting via livestream at https://mssvideo.vcu.edu/BOV.

ACTION ITEMS

Dr. Jones asked the committee to consider approving four items that were provided in advance for review: the committee meeting minutes for February 27, 2026; a proposal to establish a Bachelor of Science in Public Health (School of Public Health); a proposal to establish a Master of Science in Pharmaceutical Engineering (College of Engineering and School of Pharmacy); and a proposal to close the Bachelor of Science in Health and Physical Education (School of Education).

On a motion duly made and seconded, the committee approved unanimously the February 27, 2026 meeting minutes and to recommend to the board the three proposals as presented.. The meeting minutes are posted at https://bov.vcu.edu/meetings/minutes/. The proposals for attached hereto as ***Attachment A*** and is made a part hereof.

CLOSED SESSION

Dr. Jones moved that the Academic, Health Affairs and Research Committee of the Board of Visitors of Virginia Commonwealth University convene a closed session under Section 2.2-3711(A)(2) and (11) of the Virginia Freedom of Information Act for the discussion of matters that would involve the disclosure of information contained in scholastic records of students and for the discussion or consideration of special awards, specifically regarding the selection of the Board of Visitors Student Scholarship recipient. The motion was seconded and was approved unanimously.

Following the closed session, the public was invited to return to the meeting. Dr. Jones called the meeting to order. On a motion duly made and seconded the following resolution of certification was approved by a roll call vote:

Resolution of Certification

BE IT RESOLVED, that the Academic and Health Affairs Committee of the Board of Visitors of Virginia Commonwealth University certifies that, to the best of each member's knowledge, (i) only public business matters lawfully exempted from open meeting requirements under this chapter were discussed in the closed meeting to which this certification resolution applies, and

(ii) only such public business matters as were identified in the motion by which the closed session was convened were heard, discussed or considered by the Committee.

Vote	**Ayes**	**Nays**
Dr. Dale Jones, Chair	X	
Ms. Rooz Dadabhoy, Vice Chair	X	
Ms. Heidi Cook	X	
Dr. Kenneth Lipstock	X	
Dr. Clifton Peay	X	
Mr. Randolph Reynolds, Jr.	X	
Ms. Alexis Swann	X	
Mr. Harry Thalhimer	X	
Ms. Ellen Fitzsimmons, *Rector*	X	
Mr. Steve DeLuca, *Vice Rector*	X	

All members present responding affirmatively, the resolution of certification was adopted.

CLOSED SESSION ACTION ITEM

A motion was made to approve the discussions and recipient(s) of the Board of Visitors Scholarship as discussed during closed session for recommendation to the Board of Visitors.The motion was seconded and all members present responding affirmatively, the closed session action item was approved unanimously.

EXECUTIVE REPORT: LEVERAGING AI FOR VCU'S ACADEMIC ENTERPRISE

The Committee heard from Arturo Saavedra, M.D., Ph.D., executive vice president and provost, who introduced a joint report on **Leveraging AI across the VCU enterprise**. Joining him in the presentation were Marlon Levy M.D., MBA, senior vice president for health sciences & CEO of VCU Health, and P. Srirama Rao Ph.D., vice president for research and innovation. The report, which reiterated the increased complexity in which the university must function as a comprehensive organization, focused on VCU's strategic use of AI to increase functionality, productivities and efficiencies across the enterprise.

Supporting the presentation were three panelists who provided a brief overview of their efforts in implementing AI technologies across the spectrum of academics, operations and clinical work. The panelists were Dr. Milos Manic, professor in the College of Engineering and director of VCU Convergence_ AI; Dr. Preetam Ghosh, professor in the College of Engineering and faculty director of the High Performance Computing Core; and Dr. Sandeep Kothiwale, manager of AI Engineering and Products for the VCU Health System Authority. The committee encouraged the administration to continue to report on AI, including the student perspective.

Dr. Manu Gupta, dean of the VCU Graduate School, reported that, according to a recent update from a study on "Mapping the Structural Divide" at the University of Colorado, VCU is

structurally well-positioned as high capacity in terms of institutional resilience, post-college market position, and AI exposure.

A copy of this presentation is attached hereto as ***Attachment B*** and is made a part hereof.

ADJOURNMENT

There being no further business, the Chair adjourned the meeting at 3:22 p.m.

ATTACHMENT A

Contents

I. Basic Program Information

Institution (official name)	Virginia Commonwealth University
Degree Program Designation	Bachelor of Science in Public Health (BSPH)
Degree Program Name	Public Health
CIP code	51.2201
Anticipated Initiation Date	Fall 2027
Governing Board Approval Date (actual or anticipated)	April 24, 2026 (anticipated)

II. Curriculum Requirements. Address the following using appropriate bolded category headings:

- Core Coursework and total credit hours (include course descriptor/designator, name, and credit hour value). Indicate new courses with an asterisk.
- Sub Areas (e.g., concentrations, emphasis area, tracks) and total credit hours. Include brief description of focus/purpose of sub area and required courses.
- Additional requirements (e.g., internship, practicum, research, electives, thesis, dissertation) and total credit hours
- Total credit hours for the curriculum/degree program.

General Education Requirement: 30 credit hours

Core Courses (44 credit hours)

PHLT 101 Public Health: Past, Present and Future (3 credits)
PHLT 102 What Shapes Our Health? (3 credits)
PHLT 202 How the Environment Shapes Your Health (3 credits)
PHLT 203 How Health Policy and Health Systems Work (3 credits)
PHLT 204 Ethics in Real-World Public Health Decisions (3 credits)
PHLT 205 Introductory Data Science for Public Health (4 credits)
PHLT 300 Epidemiology: The Science of Public Health(3 credits)
PHLT 301 From Questions to Evidence: Research Methods in Public Health (3 credits)
PHLT 302 Health Promotion: Theory and Practice (3 credits)
PHLT 303 Ready for Practice: Professional Skills in Public Health (3 credits)
PHLT 304 Public Health Debates & Dialogues (1 credit)
PHLT 305 Health in a Global World (3 credits)
PHLT 400 Change Makers: Working with Communities for Health (3 credits)
PHLT 401 Designing Public Health Programs for Real-World Impact (3 credits)
PHLT 490 Public Health Internship (3 credits)
or PHLT 495 Public Health Research

Ancillary Requirements (6 credit hours)

Courses below will satisfy general education quantitative foundations or BOK for natural sciences and AOI for scientific and logical reasoning. Students selecting the Epidemiology and Data Analytics concentration must enroll in STAT 212.

BIOL 101 Biological Concepts (3 credits)
MATH 131 Introduction to Contemporary Mathematics
OR STAT 212 Concepts of Statistics (3 credits)

Concentration Areas (15-16 credit hours)
Students must select a concentration from the list of concentrations below.

Public Health Communication, Policy and Influence Concentration
MASC 311 AI in Mass Media (3 credits)
PHLT 310 Public Health Communication: Skills and Strategies (3 credits)
PHLT 410 Media, Policy, & Public Health Influence (3 credits)
PHLT 411 Evidence to Influence: Briefs, Op-eds & Infographics (3 credits)
PHLT 412 Health Policy Impact Lab (3 credits)

Epidemiology and Data Analytics Concentration
STAT 314 Applications of Statistics (4 credits)
PHLT 320 Understanding Risk: Probability and Statistics in Public Health (3 credits)
PHLT 321 Intermediate Data Science for Public Health (3 credits)
PHLT 420 Addressing Real Problems with Epidemiologic Data (3 credits)
PHLT 421 Dashboards & Interactive Visualization (3 credits)

Open electives: 30-31 credit hours

Total credit hours: 120 credit hours

III. Description of Educational Outcomes. Use bullets to list outcomes.

Students of the proposed program will be able to:

- Apply public health principles and frameworks to analyze health issues and their impact on diverse populations.
- Communicate public health information effectively to various audiences using appropriate formats and messaging strategies.
- Design and conduct public health research using appropriate methodologies and data analysis techniques.
- Assess biological and environmental factors in population health and develop evidence-based interventions to address these factors.
- Analyze the role of government policy, regulation, and healthcare systems in shaping health outcomes.
- Integrate public health theory with practice by implementing community-based projects in collaboration with public health organizations and stakeholders.
- Understand the history and philosophy of public health concepts and how public health functions across the globe and in society
- Assess ways to locate, use, evaluate, and synthesize public health information

Public health communication, policy and influence concentration-specific outcomes

- Design strategic public health communication messages.

- Analyze policy landscapes and apply communication strategies to influence public health decisions.
- Translate scientific evidence into compelling briefs, visuals, and narratives that inform and persuade diverse stakeholders.

<u>Epidemiology and data analytics concentration-specific outcomes</u>

- Apply statistical and analytic methods to analyze and interpret public health data.
- Develop audience-centered visualizations and dashboards that communicate public health insights clearly.
- Translate analytic findings into actionable insights for public health decision-making, policy, or program evaluation.

IV. Description of Workplace Competencies/Skills. Use bullets to list outcomes.

Graduates of the proposed program will be able to:

- Advocate for population health by preparing policy briefs and engaging stakeholders to influence community health decisions.
- Assess community health needs using data collection and analysis to identify priority public health concerns.
- Develop culturally responsive health education messages to improve awareness and promote healthy behaviors.
- Support the design, implementation, and evaluation of public health programs to strengthen population-level interventions.
- Apply ethical standards when handling data and working with communities to protect individual rights and public trust.
- Communicate public health findings in clear, professional formats to inform agency planning and decision-making.
- Collaborate with multidisciplinary teams and community partners to coordinate public health initiatives and services.
- Use systems thinking to analyze environmental, social, and policy factors that shape health outcomes and service delivery.

V. External Duplication. Provide information for each existing degree program at a Virginia public institution at the same degree level. Use SCHEV's degree/certificate inventory and institutions' websites.

Institution	**Program degree designation, name, and CIP code**	**Degrees granted (most recent 5-yr average)**
George Mason	BS, Community Health, 51.2208	175
Radford	BS, Public Health, 51.2208	5
ODU	BSPH, Public Health, 51.2201	11
Virginia Tech	BS, Public Health, 51.2201	97 (only 4 years of data)
William & Mary	BA/BS Public Health, 51.2201	(No data)

VI. Relationship to Existing Programs Briefly explain how proposed program is similar and distinctive from one(s) that already exists within VCU.

Some of the core coursework bears similarity to that proposed in the new Bachelor of Science (BS) degree in Health Research. The BSPH in Public Health is a population-focused program that prepares students to analyze, design, and implement public health interventions, understand health systems and policy, conduct epidemiology, and engage communities and stakeholders. In contrast, the BS in Health Research prepares students for roles in research operations, regulatory compliance, data collection and management, and research support in healthcare, clinical research, and academic settings.

Both programs address health, research literacy, epidemiology, and determinants of health; however, even where topical overlap exists, the purpose, depth, and application differ significantly. The BSPH in Public Health does not train students for research operations or compliance-oriented roles. Instead, it emphasizes environmental, social, and systemic determinants of health, rather than pharmacology or biobehavioral mechanisms. Conversely, the BS in Health Research does not train students to design interventions, conduct health promotion, or collaborate with community partners.

At the time of this proposal, the proposed BS in Health Research has not been submitted to SCHEV for consideration and does not yet exist. The deans of the CHS and SOPH have a joint letter on file with Dr. Arroyo highlighting opportunities for collaboration.

VII. Labor Market Information. Fill in the tables below with relevant information from the Bureau of Labor Statistics (BLS) and Virginia Employment Commission (VEC). Insert correct years (20XX and 20YY) to reflect the most recent 10-year projections. Add rows as necessary.

Labor Market Information: Bureau of Labor Statistics, 2024 -2034 (10-Yr)

Occupation	Base Year Employment	Projected Employment	Total % Change and #s	Typical Entry Level Education
Health Education Specialist	71,800	75,00	4% (3,200)	Bachelor's degree
Social and Community Service Managers	219,800	233,900	6% (14,100)	Bachelor's degree
Medical and Health Services Managers	616,200	759,100	23% (142,900)	Bachelor's degree

Labor Market Information: Virginia Employment Commission, 2022 -2032 (10-Yr)

Occupation	Base Year Employment	Projected Employment	Total % Change and #s	Annual Change #	Education
Health Education Specialist	1197	1296	8% (99)	133	n/a

Occupation	Base Year Employment	Projected Employment	Total % Change and #s	Annual Change #	Education
Social and Community Service Managers	3154	3568	13% (414)	299	n/a
Medical and Health Services Managers	9617	12670	21.8% (3053)	1076	n/a

☒ A complete VOEE "Degree Program Labor Market Profile" report is included.

☒ A Lightcast Labor Market Analysis is included.

VIII. Projected Resource Needs

Cost and Funding Sources to Initiate and Operate the Degree Program			
Informational Category		**Program Initiation Year**	**Program Target Year**
		20 27 - 20 28	**20 31 - 20 32**
1.	Projected Enrollment (Headcount)	25	175
2.	Projected Enrollment (FTES)	23	161
3.	Projected Enrollment Headcount of In-State Students	21	149
4.	Projected Enrollment Headcount of Out- of-State Students	4	26
5.	Estimated Annual Tuition and E&G Fees for In-State Students in the Proposed Program	$17,240	$18,661
6.	**Revenue from Tuition and E&G Fees for In-State Students Due to the Proposed Program**	$362,040	$2,780,489
7.	Estimated Annual Tuition and E&G Fees for Out-of-State Students in the Proposed Program	$40,404	$43,735
8.	**Revenue from Tuition and E&G Fees for Out-of-State Students Due to the Proposed Program**	$161,616	$1,137,110
9.	**Projected Revenue Total from Tuition and E&G Fees Due to the Proposed Program**	**$523,656**	**$3,917,599**
10.	Other Funding Sources Dedicated to the Proposed Program (e.g., grant, business, private sources, university funds)	$2,000,000	$2,000,000
11.	**Total Funding**	**$2,523,656**	**$5,917,599**

IX. Virginia Needs. Briefly indicate state needs for the degree program.

The growth of undergraduate public health education reflects a clear national need for a broader, better-prepared public health workforce. Over the past two decades, national bodies—including the Institute of Medicine—have called for all undergraduates to have access to public health education to address population-level health challenges, strengthen prevention capacity, and diversify pathways into the field.[1] Degree conferrals demonstrate surging student interest and employer demand: undergraduate public health degrees increased nearly tenfold from 1,448 in 2003 to 12,895 in 2016, with more than half awarded in just the last five years of available data, signaling rapid and sustained expansion of the talent pipeline.[2] At the same time, the U.S. public health workforce faces critical shortages, high turnover, and substantial skill gaps—particularly in areas such as epidemiology, data analysis, community health, and health communication—gaps that cannot be filled by graduate education alone. A recent report highlights that many entry-level public health roles do not require a master's degree and that employers increasingly seek bachelor's-level graduates who possess foundational public health knowledge, applied skills, and readiness for frontline practice.[3] Together, the evidence indicates a strong and growing need for undergraduate public health programs that prepare a diverse pool of students for immediate workforce entry and advanced training, ultimately strengthening state and national public health capacity.

The program also responds to clear employer demand. Labor-market analyses from the Bureau of Labor Statistics, the Virginia Employment Commission, the Virginia Office of Education Economics, and Virginia GO Region 4 consistently project strong growth in public health–aligned occupations, with double-digit increases expected across both state and regional forecasts. Lightcast data further indicate a typical posting intensity of about 2:1, reflecting steady employer efforts to recruit for these roles. By preparing graduates with applied skills in epidemiology, health communication, data literacy, and program evaluation, the BSPH in Public Health is well aligned to meet this documented workforce demand.

X. Return on Investment. Information for existing similar degree programs in Virginia. Fill in the table below with relevant information from The Foundation for Research on Economic Opportunity https://freopp.org/roi-in-higher-education/. If the Foundation does not have information on the discipline of the proposed degree program, contact Academic Affairs.

Institution	Field of Study	Earnings (1 year)	Earnings (10 years)	ROI (on time completion)	ROI (non-completion)
George Mason University	Public Health	$38,566	$58,551	$151,547	$90,691

[1] https://journals.sagepub.com/doi/10.1177/0033354918784911

[2] https://journals.sagepub.com/doi/10.1177/0033354918784911

[3] https://ajph.aphapublications.org/doi/full/10.2105/AJPH.2024.307871

VOEE Degree Program Labor Market Profile

Degree Program Labor Market Profile

Introduction

The Virginia Office of Education Economics (VOEE) prepared this analysis to support the degree program approval process outlined by the State Council of Higher Education for Virginia (SCHEV). The report provides insights into how the proposed degree program aligns with state and local labor markets, focusing on the jobs graduates are likely to secure upon entering the workforce. The report examines the growth prospects for these jobs in the state and the production of similar existing degree programs statewide. Additionally, the report reviews online job postings data to identify common job titles, employers, and skills for occupations aligned with the proposed degree program of study. All supporting data are referenced throughout the report and detailed in Appendix A.

Degree Program Proposal

Virginia Commonwealth University has proposed a new **BS in Public Health** (**CIP code: 51.2201 Public Health, General**).

Proposer Contact Information

Name: Rob Direnzo

Title: Associate Director of Academic Planning & Programs and SCHEV Liaison

Institution: Virginia Commonwealth University

Department and College: Office of the Provost

Phone Number: (804) 828-0100

Section 1: Proposed Degree Program and the Workforce in Virginia

Section 1 provides an analysis of the occupations most aligned to the proposed degree program, including the five-year projected job demand and the most common job titles and skills advertised by employers for the selected occupations. Only occupations that typically require a degree at the same level as the proposed degree program are included. See Appendix C for more information about the identification of aligned occupations.

Section 1A: Workforce Projections

Tables 1a and 1b and Tables 2a and 2b include workforce projections for the Standard Occupational Classification (SOC) occupations most closely aligned to a BS in Public Health. Tables 1a and 2a include state-level data. Tables 1b and 2b include data for the Growth and Opportunity (GO) Virginia region of the institution. Appendix B includes a map of the GO Virginia regions.

Tables 1a and 1b: Five-year Workforce Projections by Occupation

1a) Statewide

Occupation	Workforce 2024	Workforce 5 Year Projection	Workforce Change 5 Year Projection	Workforce % Change 5 Year Projection
Medical and Health Services Managers	10,982	12,913	1,931	17.6%
Health Education Specialists	1,100	1,186	86	7.8%
State Total	**12,082**	**14,099**	**2,017**	**16.7%**

Source: Lightcast 2025 Q4 Dataset

1b) Growth and Opportunity (GO) Virginia Region 4

Occupation	Workforce 2024	Workforce 5 Year Projection	Workforce Change 5 Year Projection	Workforce % Change 5 Year Projection
Medical and Health Services Managers	1,935	2,219	284	14.7%
Health Education Specialists	231	241	10	4.2%
Region Total	**2,166**	**2,460**	**294**	**13.6%**

Source: Lightcast 2025 Q4 Dataset

Tables 2a and 2b: Annual Workforce, Growth, and Replacement Projections for Aligned Occupations

2a) Statewide

Metrics	2024	2025	2026	2027	2028	2029
Employee Count	12,082	12,623	13,085	13,490	13,846	14,099
Growth	547	466	409	361	258	314
Replacements	888	927	960	989	1,015	1,033
Total Openings	**1,434**	**1,393**	**1,369**	**1,351**	**1,273**	**1,347**

Source: Lightcast 2025 Q4 Dataset

2b) Growth and Opportunity (GO) Virginia Region 4

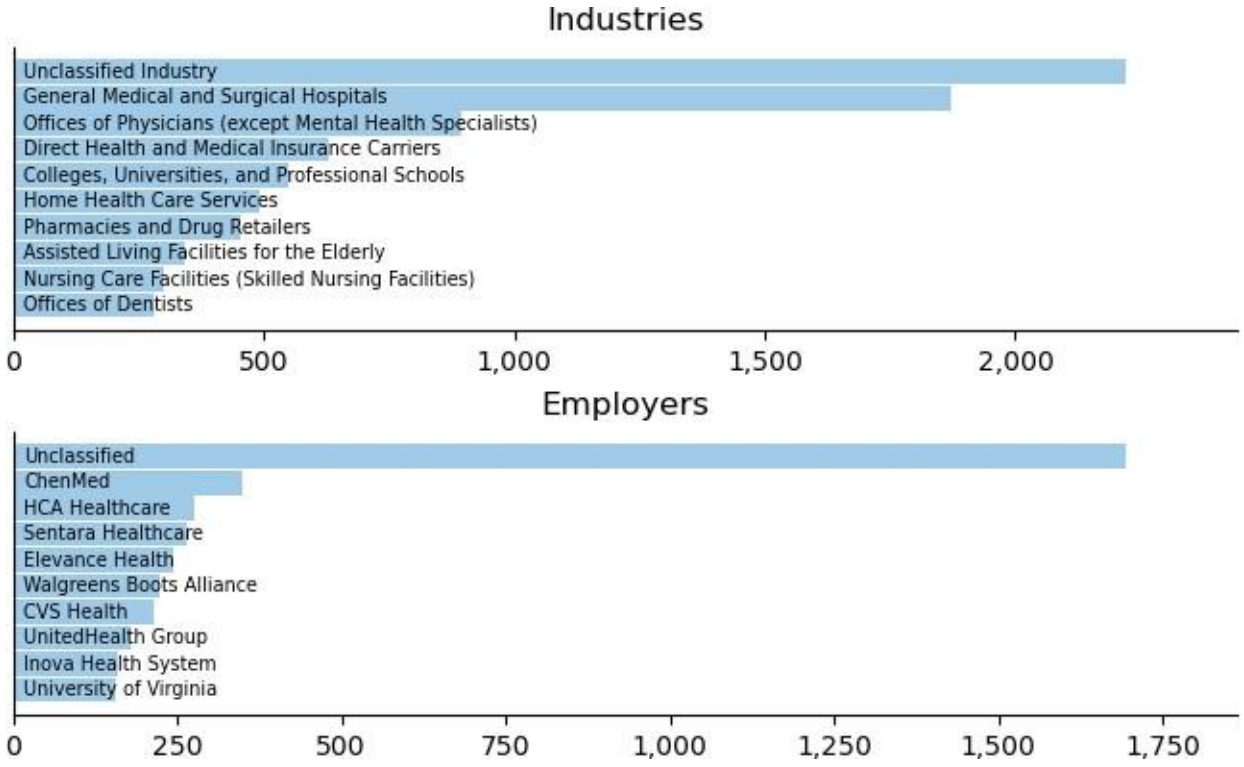
Metrics	2024	2025	2026	2027	2028	2029
Employee Count	2,166	2,243	2,310	2,369	2,421	2,460
Growth	77	67	59	53	39	46
Replacements	160	166	170	175	178	181
Total Openings	**237**	**232**	**229**	**227**	**217**	**227**

Source: Lightcast 2025 Q4 Dataset

Section 1B: Job Postings Analytics

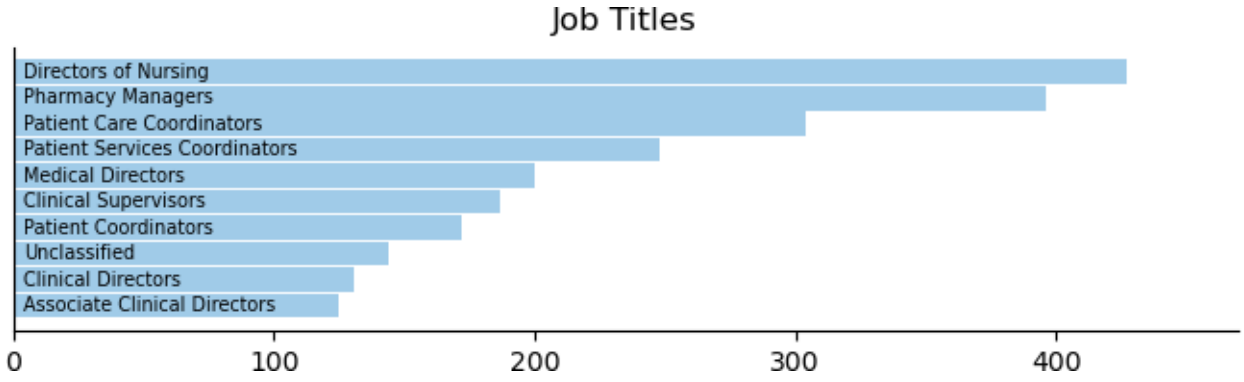
An analysis of Virginia online job postings from November 2024 through October 2025 provides valuable insights into job openings for occupations aligned to the proposed degree program. Charts 1 and 2 identify the industries and employers with the most job postings for the selected occupations. Chart 3 includes the most common job titles in postings for the occupations. Charts 4 through 6 highlight the skills most frequently indicated in job advertisements.

Charts 1-2: Industries and Employers with the Most Postings



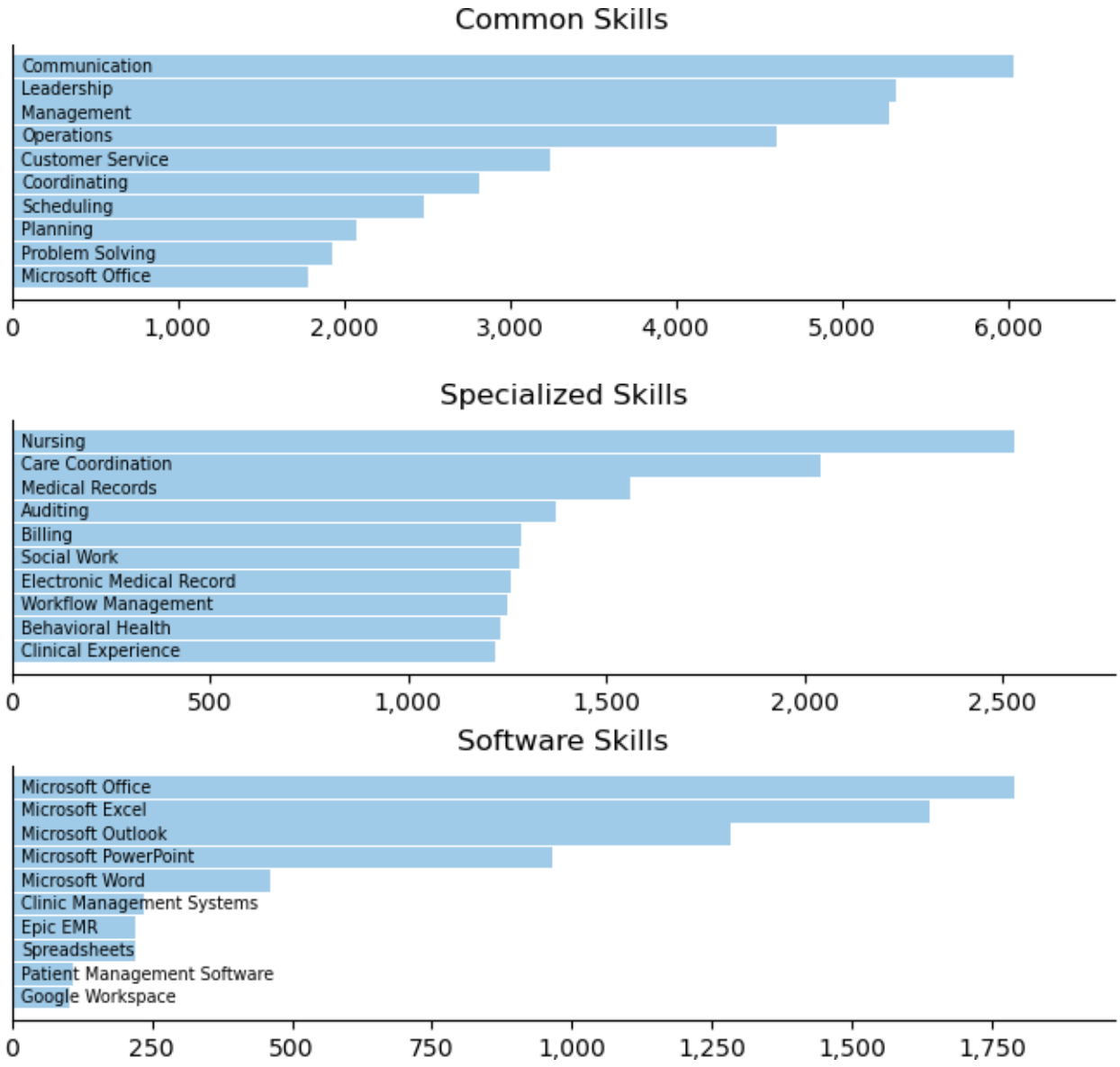
Source: Lightcast Job Posting Analytics

Chart 3: Most Common Job Titles



Source: Lightcast Job Posting Analytics

Charts 4-6: Skills Most Frequently Indicated in Job Postings



Source: Lightcast Job Posting Analytics

Note - Job postings data are based on web scraping technology. In some rare instances, data may be categorized incorrectly.

Section 2: Degree Programs Already Approved in Virginia

The proposed BS in Public Health (CIP code: 51.2201 Public Health, General) is already offered at other public and private institutions in Virginia. Table 3 includes data for student enrollment at the existing degree programs. Table 4 includes data for degrees awarded. Chart 7 shows the total student enrollment compared to degrees awarded for all institutions.

Tables 3a-3b: Student Enrollments by Institution Type

3a) Public Institutions

Institution	2021-22	2022-23	2023-24
Old Dominion University	22	38	36
Virginia Tech	227	300	304
Total	**249**	**338**	**340**

3b) Private Institutions

Institution	2021-22	2022-23	2023-24
Roanoke College	46	34	24
Total	**46**	**34**	**24**

Source: State Council of Higher Education for Virginia

Tables 4a-4b: Degrees Awarded by Institution Type

4a) Public Institutions

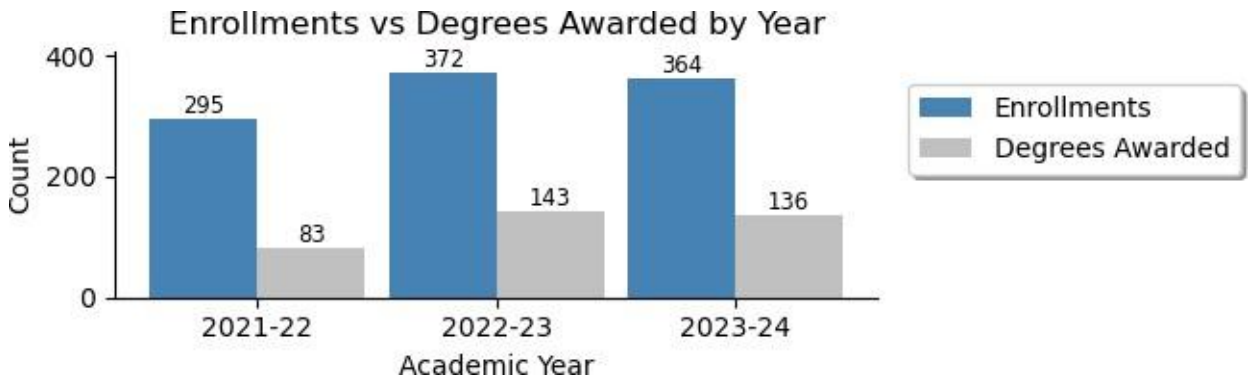
Institution	2021-22	2022-23	2023-24
Old Dominion University	8	14	18
Virginia Tech	58	107	105
Total	**66**	**121**	**123**

4b) Private Institutions

Institution	2021-22	2022-23	2023-24
Roanoke College	17	22	13
Total	**17**	**22**	**13**

Source: State Council of Higher Education for Virginia

Chart 7: Total Enrollments & Degrees Awarded



Source: State Council of Higher Education for Virginia

Section 3: Graduate Supply and Occupational Demand Assessment

This section provides an assessment of how the number of graduates being produced by existing degree programs compares to the demand for workers in occupations aligned to the proposed new BS in Public Health (CIP code: 51.2201 Public Health, General).

While workers in the aligned occupations often have degrees in the proposed program of study, they also have degrees from other disciplinary areas. Multiple degree programs may align to the same occupation, and graduates also take jobs in occupations that are not aligned to their program of study. To illustrate this, Table 5 uses data on a sample of graduates from Virginia's higher education institutions to identify programs of study for workers in the noted aligned occupations.

The dataset in Table 5 includes 792 graduates whose first job was in one of the aligned occupations in Section 1. Table 5 lists the most frequent degree programs (represented by CIP code) and the number of graduates from "Other CIP Codes."

Table 5: CIP Codes for Degree Programs Supplying Graduates to Aligned Occupations

CIP Code	Graduate Count	Percent of Total
26.0101 Biology/Biological Sciences, General.	62	7.8%
30.9999 Multi-/Interdisciplinary Studies, Other.	38	4.8%
42.0101 Psychology, General.	59	7.4%
51.3801 Registered Nursing/Registered Nurse.	92	11.6%
52.0201 Business Administration and Management, General.	41	5.2%
Other CIP Codes	500	63.1%

Source: VOEE College and Career Outcomes Dataset

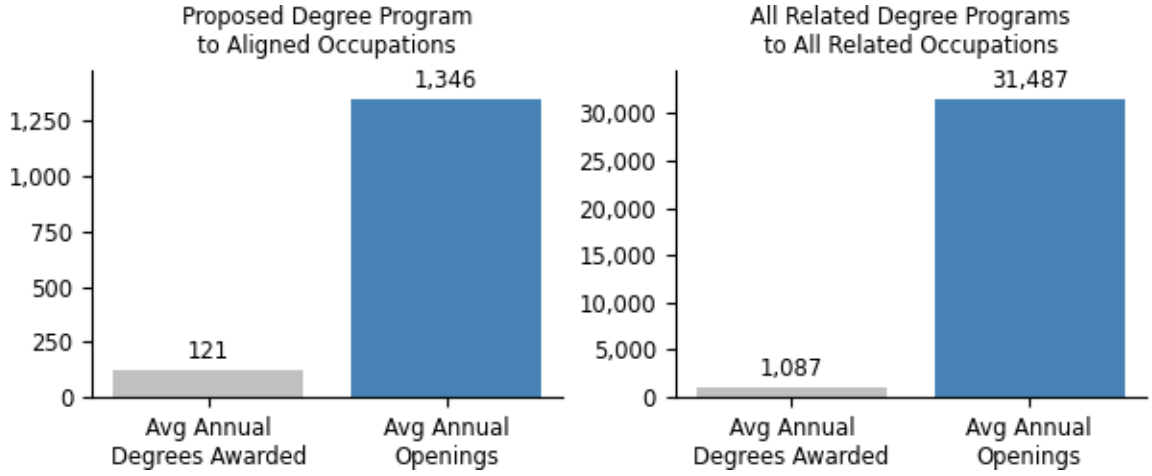
To provide a supply-to-demand comparison for the proposed degree program, Chart 8 compares the total number of graduates for CIP code: 51.2201 produced in the last academic year to:

- The annual demand for the aligned occupations.
- The total number of graduates for *all bachelor's degree programs* aligned to one or more of the selected occupations produced in the last academic year.
- The annual demand for *all occupations* aligned to one or more of those degree programs.

This analysis accounts for the mapping of multiple degree programs to multiple occupations and vice versa, but it does not incorporate graduates working in unaligned occupations. See

Appendix E for lists of the degree programs aligned to one or more of the selected occupations and the occupations aligned to one or more of those degree programs.

Chart 8: Average Annual Degrees Awarded vs Openings



Source: Lightcast 2025 Q4 Dataset

Appendix A: Data Sources

Lightcast 2025 Q4 Dataset

Labor market indicators provided by analytics firm Lightcast are based on the US Bureau of Labor Statistics (BLS) Quarterly Census of Earnings and Wages (QCEW), supplemented by Lightcast's proprietary analysis. For projected future employment, Lightcast extrapolates past trends and adjusts based on the BLS National Industry-Occupation Employment Matrix, industry staffing pattern data, and state-level industry projections. Earnings data are based on BLS Occupational Employment and Wage Statistics, and wage distribution metrics are imputed by Lightcast using proprietary statistical methods.

Lightcast Job Posting Analytics

Lightcast scans 65,000 job posting sites and deduplicates postings to analyze job postings by occupation, employer, industry, and requisite skills and credentials using text parsing algorithms and machine learning.

College and Career Outcomes Dataset

Developed in partnership with Lightcast and the State Council of Higher Education of Virginia (SCHEV), this dataset contains information about the skills and career pathways of over 640,000 graduates from Virginia postsecondary institutions. By matching data from SCHEV with students' professional social profiles and Unemployment Insurance (UI) wage information, the dataset tracks graduates as they progress from their programs of study into their first jobs and beyond (up to 15 years). The data includes degrees and credentials, occupations and employers as reported on professional profiles, employer industries, location (as of 2022), wages reported to the Virginia Employment Commission for UI purposes, and self-reported skills.

Appendix B: Glossary

Bureau of Labor Statistics (BLS) Standard Occupational Classification (SOC) system is a taxonomy to classify workers into occupational categories. All workers are classified into one of 867 detailed occupations.

Lightcast Open Skills Taxonomy is a system for categorizing skills stated in online job postings sourced through Lightcast's Job Posting Analytics (see https://lightcast.io/open-skills). The Lightcast Open Skills Taxonomy is broken down as follows:

- **Specialized Skills:** Skills that are primarily required within a subset of occupations or equip one to perform a specific task (e.g. "NumPy" or "Hotel Management"). Also known as technical skills or hard skills.
- **Common Skills:** Skills that are prevalent across many different occupations and industries, including both personal attributes and learned skills. (e.g. "Communication" or "Microsoft Excel"). Also known as soft skills, human skills, and competencies.
- **Software Skills:** Any software tool or programming component used to help with a job (e.g. Python, Workday, AutoCAD, Microsoft Excel, React.Js, Accounting Software, and 3D Modeling Software would all be considered "Software Skills").

National Center for Education Statistics (NCES) Classification of Instructional Programs (CIP) system is a taxonomy to organize and classify academic programs by field of study. The CIP system is widely used by educational institutions, government agencies, and researchers to track, compare, and assess academic programs in colleges and universities and trends across various institutions and over time.

Massachusetts Institute of Technology (MIT) Living Wage Calculator was developed to assist individuals, communities, employers, and others estimate the local wage rate that a full-time worker requires to cover the costs of their family's basic needs where they live. The calculator allows individuals to explore the living wage in a county, metro area, or state for 12 different family types. The data was last updated on February 14, 2024. For more information, please visit: https://livingwage.mit.edu.

Replacements represent an estimate of job openings caused by workers exiting the labor force due to retirement or other reasons and by workers transferring to different occupations. Replacements do not count workers who change jobs but remain in the same occupation.

Growth and Opportunity (GO) Virginia Regions are the nine distinct regions certified by the Virginia Growth and Opportunity Board. Each region includes counties and cities that share similar economic development and workforce needs.

Figure 1: GO VA Region Map

Appendix C: Identification of Aligned Occupations

Aligned Occupations

Aligned Occupations refers to jobs that closely match the skills, knowledge, and training provided by specific academic programs. The aligned occupations are those for which graduates of a given CIP code are most likely qualified and prepared. The alignment determination is based on the curriculum's required coursework, competencies developed, and the typical educational requirements needed for specific occupations. This report uses VOEE's CIP to SOC Crosswalk and a typical entry-level education restriction to define alignment. See below for more information.

CIP SOC Crosswalk

The CIP SOC Crosswalk was developed by the Bureau of Labor Statistics and the National Center for Education Statistics (NCES) to match CIP codes (academic programs) to SOC codes (occupations). Its purpose is to relate academic programs to occupations based on skills and knowledge.

VOEE's CIP to SOC Crosswalk

VOEE uses a modified version of the NCES CIP to SOC crosswalk to map CIP codes to occupations. VOEE’s modifications replace the 2018 SOC codes used in the NCES crosswalk with the equivalent SOC codes from Lightcast's SOC system to enable the use of Lightcast's enhanced labor market indicators. Additionally, the NCES program to occupation mapping framework was limited in its treatment of production occupations, so VOEE supplemented the CIP to SOC crosswalk with additional program-to-occupation mappings identified by Lightcast.

Typical Entry-Level Education Restriction

CIP to SOC crosswalks do not directly consider education level. However, in this report, occupations are restricted by typical entry-level education. For associate degree and bachelor's degree programs, only occupations with the same typical entry-level education are included. For master's degree and doctoral degree programs, occupations are included if (1) they typically require a degree at the same level as the proposed degree program OR (2) they typically require a degree one level below the proposed degree program. For example, for master's degree programs, occupations which typically only require a bachelor's degree are also included.

Appendix D: Earnings Data

Table 6 provides the results of an analysis of earnings data for the occupations aligned to the proposed new BS in Public Health (CIP code: 51.2201 Public Health, General). Earnings information includes all workers in the selected occupations, regardless of professional work experience. It includes median earnings, as well as earnings at the 25th and 75th percentiles. Median earnings are compared to the Massachusetts Institute of Technology (MIT) Living Wage Calculator. A checkmark below each scenario indicates whether the median wages meet or exceed the living wages estimate for Virginia (State Level). For additional information on MIT's Living Wage Calculator, please refer to Appendix B.

Table 7 provides the same data as Table 6 filtered down to the GO Virginia Region of the school proposing the new degree program.

Table 6: Earnings Estimates for the Occupations, State-wide

Occupation	25th %ile	Median	75th %ile	Scenario 1	Scenario 2
Health Education Specialists	$53,508	$70,427	$92,233	✓	
Medical and Health Services Managers	$95,983	$119,837	$156,174	✓	✓

Source: Lightcast 2025 Q4 Dataset

Scenario 1 is one adult working with no children. The living wage for this scenario is $49,982 (State Level).

Scenario 2 is two adults, one working with one child. The living wage for this scenario is $78,312 (State Level).

Table 7: Earnings Estimates for the Occupations, GO Virginia Region 4

Occupation	25th %ile	Median	75th %ile
Health Education Specialists	$43,815	$59,332	$75,732
Medical and Health Services Managers	$96,167	$124,053	$162,011

Source: Lightcast 2025 Q4 Dataset

Appendix E: Lists of Related Programs and Occupations

Table 8: All Related Degree Programs to Aligned Occupations, Top 20 by 3-Year Average Degrees Awarded

Academic Program	3-Year Average Degrees Awarded	Percent of Total
Community Health Services/Liaison/Counseling.	440	40.5%
Health/Health Care Administration/Management.	240	22.1%
Community Health and Preventive Medicine.	181	16.7%
Public Health, General.	121	11.1%
Public Health Education and Promotion.	69	6.3%
Public Health, Other.	19	1.7%
Health and Wellness, General.	17	1.6%

Source: Lightcast 2025 Q4 Dataset

Table 9: All Related Occupations to All Related Academic Programs, Top 20 by 5-Year Average Annual Openings

Occupation	5-Year Average Annual Openings	Percent of Total
General and Operations Managers	9,479	30.1%
Registered Nurses	5,122	16.3%
Project Management Specialists	3,693	11.7%
Managers, All Other	3,074	9.8%
Compliance Officers	1,434	4.6%
Medical and Health Services Managers	1,217	3.9%
Public Relations Specialists	939	3.0%
Sales Managers	939	3.0%
Marketing Managers	790	2.5%
Chief Executives	557	1.8%
Financial Specialists, All Other	489	1.6%
Social Scientists and Related Workers, All Other	455	1.4%
Occupational Health and Safety Specialists	454	1.4%
Social and Community Service Managers	387	1.2%
Fundraisers	364	1.2%
Administrative Services Managers	347	1.1%
Architectural and Engineering Managers	326	1.0%
Industrial Production Managers	310	1.0%
Facilities Managers	275	0.9%
Biological Scientists, All Other	195	0.6%
All Other Occupations	643	2.0%

Source: Lightcast 2025 Q4 Dataset

Appendix F: Missing Data

Missing Workforce, Wage, and Job Postings Data (Tables 1-2, Charts 1-6, Chart 8, Tables 6-7)

If workforce, wage, and job postings data are unavailable, there are no occupations aligned to the proposed degree program. See Appendix C for more information about aligned occupations.

Missing Enrollment and Completions Data (Tables 3-4, Charts 7-8)

If enrollment and completions data are unavailable, no existing degree programs are offered under the CIP code for the proposed degree program. If NCES has identified CIP codes that are closely related to the CIP code of the proposed degree program, additional reports will be generated for those related CIP codes.

Missing Virginia Graduates Data (Table 5)

If data about Virginia graduates are unavailable, there were no graduates whose first job was in one of the aligned occupations in the College and Career Outcomes Dataset. This dataset is a sample of graduates and is not representative of all graduates or workers in Virginia.

Program Overview

Public Health, General

Lightcast Q4 2025 Data Set

November 2025

Virginia

Parameters

Completions Year: 2024

Jobs Timeframe: 2024 - 2030

Job Postings Timeframe: Jan 2024 - Sep 2025

Programs:

Code	Description
51.2201	Public Health, General

Regions:

Code	Description
51	Virginia

Education Level:

Description
Bachelor's degree

Tuition Type: Tuition & Fees

Graduate Status: Undergraduate

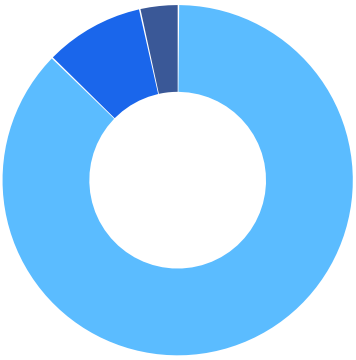
Residency: In-State

5	141	Completions Distribution
Institutions	**Completions**	Average: 28.2
67% Growth (2020-2024)	422% Growth (2020-2024)	2 — Median: 13 — 105

Program Overview

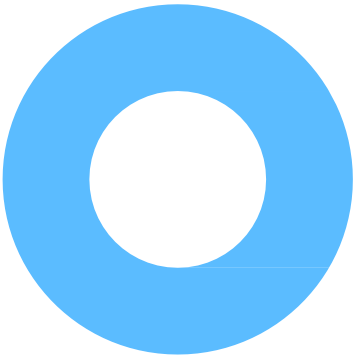
	Completions (2024)	% Completions	Institutions (2024)	% Institutions
All Programs	141	100%	5	100%
Distance Offered Programs	23	16%	3	60%
Non-Distance Offered Programs	118	84%	2	40%

Market Share by Institution Type



Institution Type	Completions (2024)	Market Share
Public, 4-year or above	123	87.2%
Private not-for-profit, 4-year or above	13	9.2%
Private for-profit, 4-year or above	5	3.5%

Market Share by Program

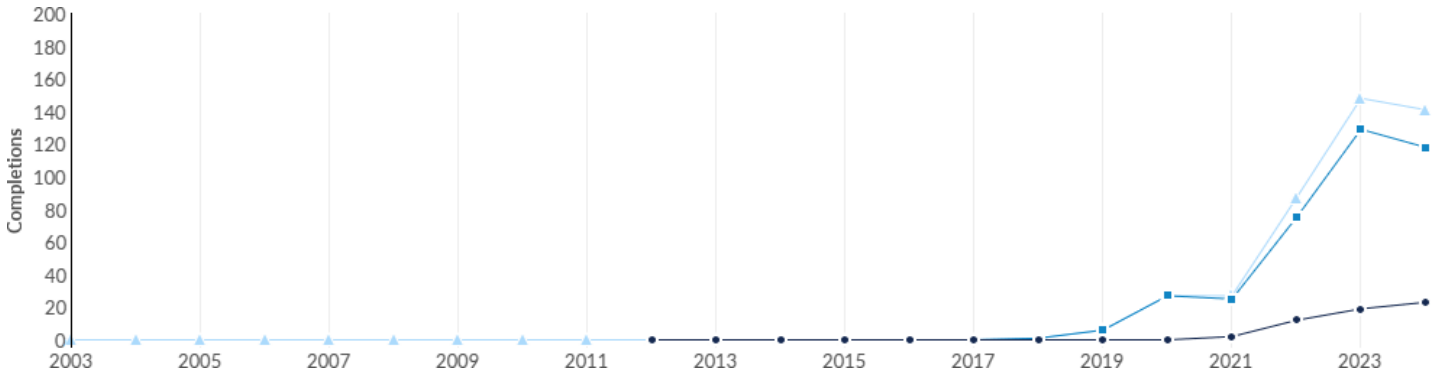


Program	Completions (2024)	Market Share
Public Health, General (51.2201)	141	100.0%

Completions by Institution

Institution	Bachelor's Degree Completions (2024)	Growth % YOY (2024)	Market Share (2024)	IPEDS Tuition & Fees (2023)	Completions Trend (2020-2024)
Virginia Polytechnic Institute and State University	105	-1.9%	74.5%	$15,478	
Old Dominion University	18	28.6%	12.8%	$12,262	
Roanoke College	13	-40.9%	9.2%	$36,774	
South University-Virginia Beach	3	0.0%	2.1%	$16,452	
South University-Richmond	2	0.0%	1.4%	$16,452	

Regional Trends



		2012 Completions	2024 Completions	% Change
A	Distance Offered Programs	0	23	Insf. Data
■	Non-Distance Offered Programs	0	118	Insf. Data
C	All Programs	0	141	Insf. Data

Regional Completions by Award Level

	Award Level	Completions (2024)	Percent	
A	Bachelor's Degree	141	100.0%	

Similar Programs

155	38,961
Programs (2024)	**Completions (2024)**

CIP Code	Program	Bachelor's Degree Completions (2024)
42.0101	Psychology, General	4,586
52.0201	Business Administration and Management, General	4,268
51.3801	Registered Nursing/Registered Nurse	2,867
26.0101	Biology/Biological Sciences, General	2,574
30.9999	Multi-/Interdisciplinary Studies, Other	2,195
52.0101	Business/Commerce, General	1,788
45.1001	Political Science and Government, General	1,409
24.0101	Liberal Arts and Sciences/Liberal Studies	1,340
54.0101	History, General	1,191
09.0101	Speech Communication and Rhetoric	1,101

Target Occupations

*Filtered by the proportion of the national workforce in these occupations with a Bachelor's degree

25,494	+7.7%	$57.23/hr $119.0K/yr	2,390
*Jobs (2024)**	*% Change (2024-2030)**	**Median Earnings**	*Annual Openings**
*10% below National average**	*Nation: +9.6%**	Nation: $46.21/hr; $96.1K/yr	

Occupation	*2024 Jobs**	*Annual Openings**	Median Earnings	*Growth (2024 - 2030)**	*Employment Concentration (2024)**
Managers, All Other	*12,735*	*1,109*	$71.43/hr	*+4.60%*	*1.08*
Public Relations Specialists	*5,847*	*532*	$37.38/hr	*+4.89%*	*1.18*
Medical and Health Services Managers	*3,712*	*416*	$59.34/hr	*+20.29%*	*0.64*
Administrative Services Managers	*1,146*	*121*	$60.33/hr	*+11.69%*	*0.44*
Healthcare Social Workers	*748*	*80*	$30.86/hr	*+10.70%*	*0.52*
Community Health Workers	*433*	*53*	$24.95/hr	*+11.09%*	*0.67*
Statisticians	*387*	*28*	$48.89/hr	*+6.72%*	*1.01*
Health Education Specialists	*384*	*46*	$32.68/hr	*+8.85%*	*0.54*
Epidemiologists	*103*	*7*	$40.63/hr	*+9.71%*	*1.00*

Job Postings Summary

22,579	2 : 1	3,808	24 days
Unique Postings	**Posting Intensity**	**Employers Competing**	**Median Posting Duration**
52,586 Total Postings	Regional Average: 3 : 1	58,892 Total Employers	Regional Average: 24 days

There were **52,586** total job postings for your selection from January 2024 to September 2025, of which **22,579** were unique. These numbers give us a Posting Intensity of **2-to-1**, meaning that for every 2 postings there is 1 unique job posting.

This is close to the Posting Intensity for all other occupations and companies in the region (3-to-1), indicating that they are putting average effort toward hiring for this position.

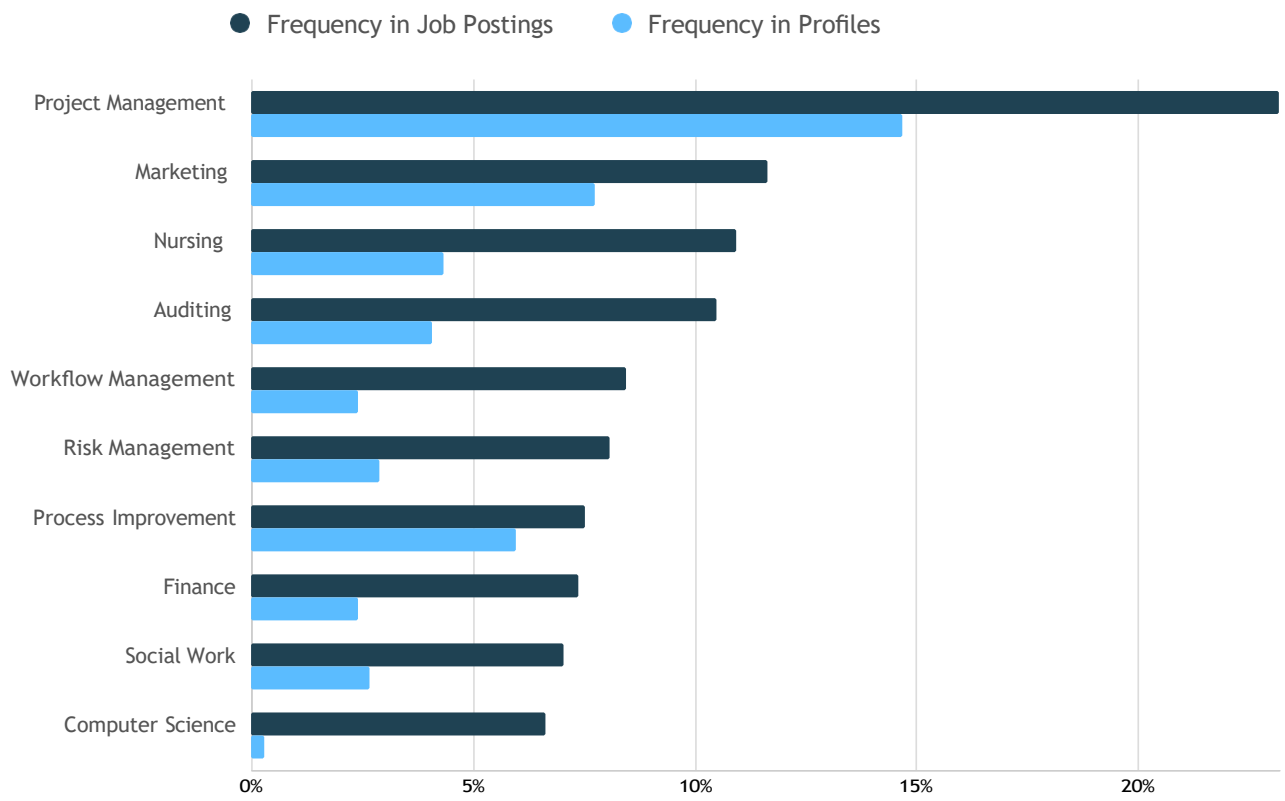
Top Companies Posting

Company	Total/Unique (Jan 2024 - Sep 2025)	Posting Intensity	Median Posting Duration
Capital One	2,101 / 528	4 : 1	28 days
Amazon	1,358 / 428	3 : 1	31 days
Elevance Health	936 / 414	2 : 1	23 days
Sentara Healthcare	745 / 293	3 : 1	29 days
University of Virginia	717 / 276	3 : 1	31 days
HCA Healthcare	1,173 / 265	4 : 1	33 days
Leidos	1,018 / 263	4 : 1	22 days
SAIC	1,064 / 238	4 : 1	25 days
CVS Health	718 / 237	3 : 1	30 days
Booz Allen Hamilton	709 / 225	3 : 1	32 days

Top Posted Job Titles

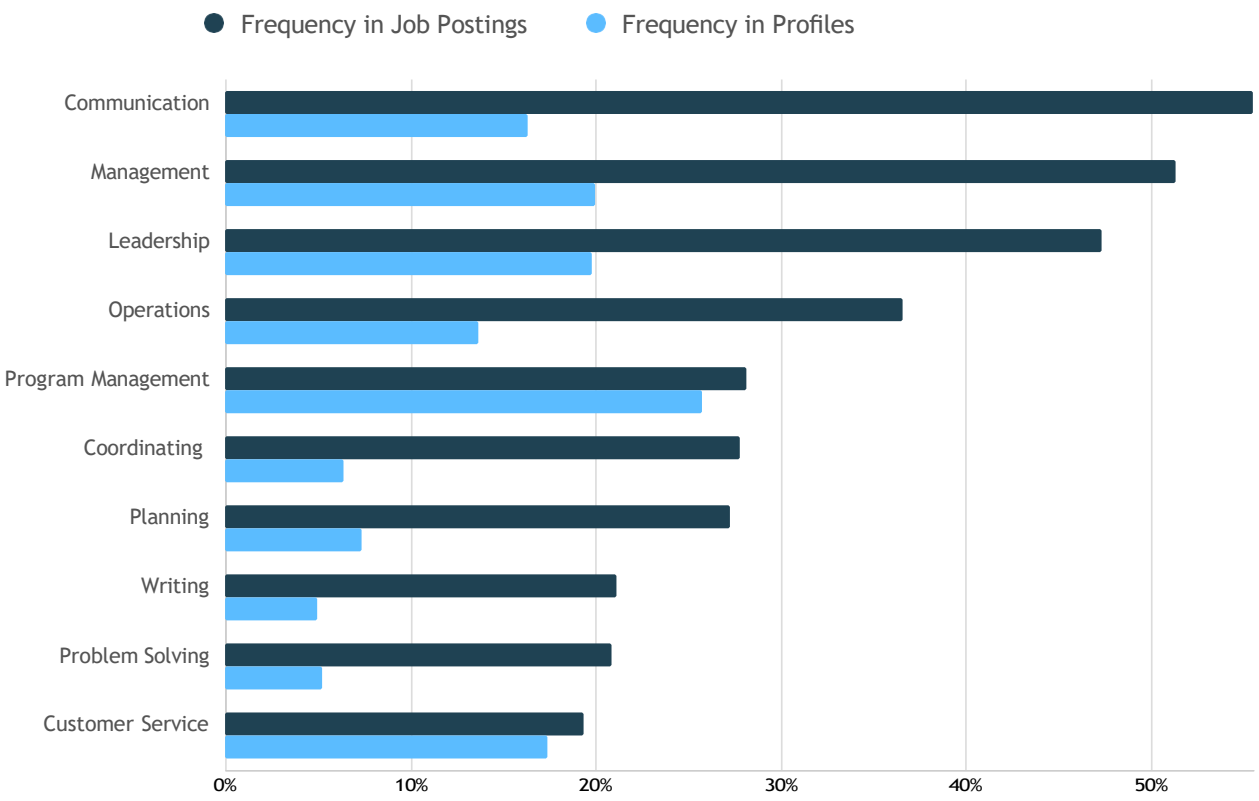
Job Title	Total/Unique (Jan 2024 - Sep 2025)	Posting Intensity	Median Posting Duration
Program Managers	3,818 / 1,707	2 : 1 	23 days
Pharmacy Managers	1,313 / 494	3 : 1 	27 days
Communications Specialists	889 / 396	2 : 1 	26 days
Technical Program Managers	1,137 / 354	3 : 1 	24 days
Program Coordinators	741 / 349	2 : 1 	23 days
Deputy Program Managers	732 / 286	3 : 1 	23 days
Program Directors	563 / 284	2 : 1 	26 days
Directors of Nursing	512 / 239	2 : 1 	31 days
Action Officers	437 / 149	3 : 1 	23 days
Compliance Managers	321 / 131	2 : 1 	32 days

Top Specialized Skills



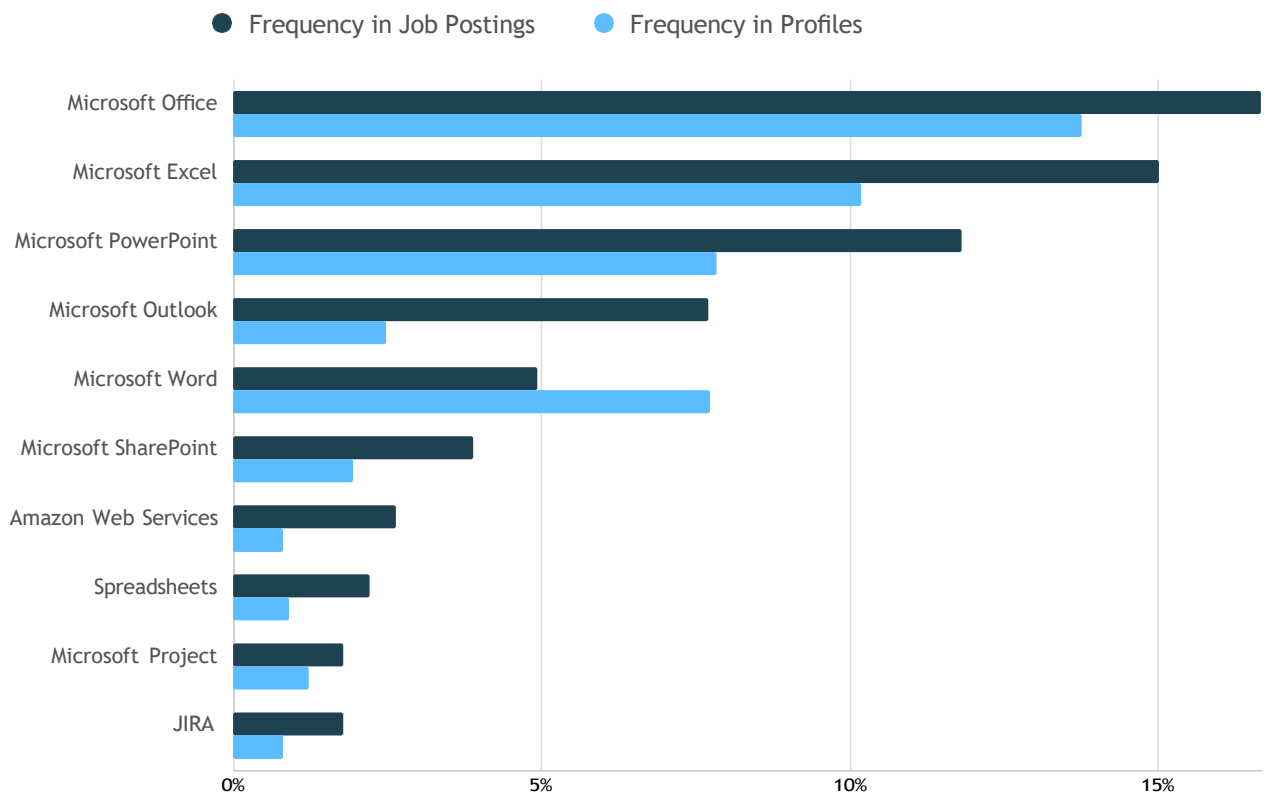
Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Project Management	5,236	23%	14,421	15%	+19.8%	Rapidly Growing
Marketing	2,627	12%	7,620	8%	+23.0%	Rapidly Growing
Nursing	2,475	11%	4,266	4%	+20.1%	Rapidly Growing
Auditing	2,368	10%	4,004	4%	+21.8%	Rapidly Growing
Workflow Management	1,910	8%	2,378	2%	+18.0%	Growing
Risk Management	1,830	8%	2,850	3%	+26.2%	Rapidly Growing
Process Improvement	1,701	8%	5,854	6%	+27.0%	Rapidly Growing
Finance	1,665	7%	2,386	2%	+27.3%	Rapidly Growing
Social Work	1,594	7%	2,605	3%	+9.7%	Growing
Computer Science	1,501	7%	275	0%	+26.8%	Rapidly Growing

Top Common Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Communication	12,530	55%	15,999	16%	+3.6%	Lagging
Management	11,584	51%	19,608	20%	+5.3%	Stable
Leadership	10,682	47%	19,464	20%	+8.5%	Stable
Operations	8,269	37%	13,415	14%	+8.1%	Stable
Program Management	6,363	28%	25,310	26%	+30.5%	Rapidly Growing
Coordinating	6,277	28%	6,283	6%	+14.7%	Growing
Planning	6,156	27%	7,271	7%	+10.9%	Growing
Writing	4,764	21%	4,884	5%	+11.8%	Growing
Problem Solving	4,709	21%	5,150	5%	+11.3%	Growing
Customer Service	4,374	19%	17,060	17%	+5.2%	Stable

Top Software Skills



Skills	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Microsoft Office	3,767	17%	13,532	14%	+18.5%	Growing
Microsoft Excel	3,393	15%	9,999	10%	+17.7%	Growing
Microsoft PowerPoint	2,668	12%	7,704	8%	+26.1%	Rapidly Growing
Microsoft Outlook	1,742	8%	2,439	2%	+25.0%	Rapidly Growing
Microsoft Word	1,116	5%	7,599	8%	+7.2%	Stable
Microsoft SharePoint	881	4%	1,906	2%	+2.4%	Lagging
Amazon Web Services	598	3%	781	1%	+24.0%	Rapidly Growing
Spreadsheets	499	2%	881	1%	+22.2%	Rapidly Growing
Microsoft Project	404	2%	1,209	1%	+3.4%	Lagging
JIRA	401	2%	793	1%	+24.1%	Rapidly Growing

Top Qualifications

Qualification	Postings with Qualification
Top Secret-Sensitive Compartmented Information (TS/SCI Clearance)	3,007
Project Management Professional Certification	2,243
Registered Nurse (RN)	1,796
Security Clearance	1,736
Valid Driver's License	1,621
Secret Clearance	1,426
Basic Life Support (BLS) Certification	989
Master Of Business Administration (MBA)	842
Cardiopulmonary Resuscitation (CPR) Certification	830
Top Secret Clearance	774

Appendix A

Program Selection Details

CIP Code	Program Name
51.2201	Public Health, General

Appendix B - Data Sources and Calculations

Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Emsi earnings by industry.

Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

State Data Sources

This report uses state data from the following agencies: Virginia Employment Commission

Contents

I. Basic Program Information

Institution (official name)	Virginia Commonwealth University
Degree Program Designation	Master of Science (MS)
Degree Program Name	Pharmaceutical Engineering
CIP code	51.2003
Anticipated Initiation Date	Fall 2027
Governing Board Approval Date (actual or anticipated)	April 23, 2026 (anticipated)

II. Curriculum Requirements. Address the following using appropriate bolded category headings:

- Core Coursework and total credit hours (include course descriptor/designator, name, and credit hour value). Indicate new courses with an asterisk.
- Sub Areas (e.g., concentrations, emphasis area, tracks) and total credit hours. Include brief description of focus/purpose of sub area and required courses.
- Additional requirements (e.g., internship, practicum, research, electives, thesis, dissertation) and total credit hours
- Total credit hours for the curriculum/degree program.

Thesis Option

Core Courses (15 credits)
BIOS 543: Graduate Research Methods I (3 credits)
PESC 505: Pharmaceutical Engineering Fundamentals I (3 credits)
PESC 507: Pharmaceutical Engineering Fundamentals II (3 credits)
PESC 605: Advanced Topics in Pharmaceutical Engineering I (3 credits)
PESC 607: Advanced Topics in Pharmaceutical Engineering I (3 credits)

Pharmaceutical Engineering elective: 3 credits
Open electives: 6 credits

Directed Research (6 credits)
PESC 697: Directed Research in Pharmaceutical Engineering (6 credits)

Total credit hours: 30 credit hours

Non-Thesis Option

Core Courses (15 credits)
BIOS 543: Graduate Research Methods I (3 credits)
PESC 505: Pharmaceutical Engineering Fundamentals I (3 credits)
PESC 507: Pharmaceutical Engineering Fundamentals II (3 credits)
PESC 605: Advanced Topics in Pharmaceutical Engineering I (3 credits)
PESC 607: Advanced Topics in Pharmaceutical Engineering I (3 credits)

Pharmaceutical Engineering electives: 6 credits

Open electives: 9 credits

Total credit hours: 30 credit hours

III. Description of Educational Outcomes.

Students of the proposed program will be able to:

- Apply advanced principles of pharmaceutical sciences and engineering to the design, manufacturing, and/or quality control of complex drug delivery systems within regulatory frameworks.
- Design entrepreneurial strategies and innovative technological solutions to address unmet needs in the healthcare and pharmaceutical industry.
- Contribute effectively to multidisciplinary teams, demonstrating the ability to integrate diverse perspectives to solve complex challenges in a professional environment.
- Critically articulate complex scientific data and research findings through written and oral formats to both specialist and non-specialist audiences.
- Design, execute, and defend an independent research project that contributes original insights to the field, utilizing advanced experimental or computational methodologies.

IV. Description of Workplace Competencies/Skills.

Graduates of the proposed program will be able to:

- Act as content experts in their focus area of research e.g., engineering associated with active ingredient, particle control, formulation, drug delivery and their relationships to biopharmaceutics
- Solve problems that manifest themselves in cross-discipline challenges, where Pharmaceutical Engineers can form a technical bridge across multiple functions
- Build and lead research teams to identify new areas of innovation in the field
- Interact with scientists from across disciplines when solutions of an interdisciplinary nature are required for patient health
- Coach and mentor more junior staff members or students
- Effectively communicate and disseminate their research findings
- Propose novel areas of research and obtain internal or external funding as needed

V. External Duplication. Provide information for each existing degree program at a Virginia public institution at the same degree level. Use SCHEV's degree/certificate inventory and institutions' websites.

Institution	**Program degree designation, name, and CIP code**	**Degrees granted (most recent 5-yr average)**
Virginia Tech	MS/MENG, Chemical Engineering, 14.0701	4
University of Virginia	MS/ME, Chemical Engineering, 14.0701	12

VI. Relationship to Existing Programs: Briefly explain how the proposed program is similar and distinctive from one(s) that already exists within VCU.

There are two similar M.S. programs at VCU: 1) M.S. in Pharmaceutical Sciences; 2) M.S in Engineering with a concentration in Chemical and Life Science. These existing degree programs and the proposed degree program share some related interests in terms of research focus. However, there are distinct differences in the purposes and objectives of each program.

The M.S. program in Pharmaceutical Sciences is housed within the School of Pharmacy (CIP 51.2010). The program is concerned with the discovery and evaluation of new drugs, their delivery, their pharmacology, clinical sciences, drug analysis, and Pharmacoeconomics. The M.S. degree in Engineering with a concentration in CLSE is concerned with aspects of oil and natural gas refining, power generation and materials engineering. The students in the proposed program will be concerned with distinctly different areas than these existing programs and will not share core courses with the M.S. in Pharmaceutical Sciences or the M.S. in Engineering degrees.

Students in the proposed program will focus on the convergence knowledge and research needed to develop, deliver, and manufacture pharmaceutical products. This effort from two VCU organizations will result in students uniquely trained to address the most advanced problems of the pharmaceutical industry and support the rapidly growing pharmaceutical reshoring efforts in Virginia. The students will learn the modern concepts of active pharmaceutical ingredient manufacture including continuous operations. In addition, they will learn the most advanced concepts of targeted drug delivery and how particle engineering impacts the effectiveness of medicines.

VII. Labor Market Information. Fill in the tables below with relevant information from the Bureau of Labor Statistics (BLS) and Virginia Employment Commission (VEC). Insert correct years (20XX and 20YY) to reflect the most recent 10-year projections. Add rows as necessary.

Labor Market Information: Bureau of Labor Statistics, 2024 -2034(10-Yr)

Occupation	Base Year Employment	Projected Employment	Total % Change and #s	Typical Entry Level Education
Engineers, All Other	158,800	162,100	2.1%, 3,300	Bachelor's
Pharmacists	335,100	350,500	4.6%, 15,400	Doctoral or professional
Chemists	86,800	91,000	4.9%, 4,300	Bachelor's
Chemical Engineers	21,600	22,100	2.6%, 600	Bachelor's
Material Engineers	23,00	24,300	5.7%, 1,300	Bachelor's

Labor Market Information: Virginia Employment Commission, 2022 -2032 (10-Yr)

Occupation	Base Year Employment	Projected Employment	Total % Change and #s	Annual Change #	Education
Engineers, All Other	6,275	6,534	4.13%, 259	26	Bachelor's
Pharmacists	7,374	7,671	4.03%, 297	30	Doctoral or professional
Chemists	1,411	1,474	4.46%, 63	6	Bachelor's
Chemical Engineers	413	439	6.3%, 26	3	Bachelor's
Material Engineers	458	501	9.39%, 43	4	Bachelor's

X A complete VOEE "Degree Program Labor Market Profile" report is included.
X A Lightcast Labor Market Analysis is included.

VIII. Projected Resource Needs

Cost and Funding Sources to Initiate and Operate the Program			
Informational Category		**Program Initiation Year 2027 - 2028**	**Program Full Enrollment Year[1] 2029 - 2030**
1	Projected Enrollment (Headcount)	20	40
2	Projected Enrollment (FTE)	15	30
3	Estimated Tuition and E&G Fees	$15,073 (in-state); $17,120 (out-state)	$15,073 (in-state); $17,120 (out-state)
4	Projected Revenue from Tuition and E&G Fees	$ 321,920	$ 640,840
5	Other Funding Sources Dedicated to the Proposed Program (e.g., grant, business entity, private sources)	0	0

[1] For the "Full Enrollment Year" use: for baccalaureate degrees, initiation plus 3; for masters degrees, initiation plus 2; for doctoral degrees, initiation plus 3.

IX. Virginia Needs. Briefly indicate state needs for the degree program.

State Needs. Pharmaceutical Engineering constitutes a critical discipline in the broader life sciences industry, encompassing a unique set of knowledge along with the technical and functional skills required for the design, development, manufacturing, and assessment of drug products and therapies. The life sciences industry, including the pharmaceutical sector, continues to experience significant growth in the United States and particularly in Virginia, where we have seen a commitment of nearly $13 Billion dollars from the pharmaceutical industry to the Commonwealth in 2025 alone. This growth is largely fueled by an aging population, the need to treat chronic diseases, and changes in clinical practice. In the Commonwealth, this burgeoning expansion of the pharmaceutical sector has been fueled by the state and federal initiatives in the life sciences, as well as the urgency to strengthen the pharmaceutical supply chain and reshoring essential drug product manufacturing, which is crucial to America's economy and national security.

Employer Needs. In the Commonwealth, the surge in the pharmaceutical sector's growth is driven by state and federal government initiatives in the life sciences, aiming to fortify the pharmaceutical supply chain and recent large investments from large pharma companies. The US pharmaceutical sector is expected to grow at a compound annual growth rate (CAGR) of 5.72% from 2025-2030. The overall economic impact in the Commonwealth was USD 10 billion in 2017, growing to USD 16 billion in 2022, representing a 60% growth, much greater than the CAGR expected for the US. In the Richmond region, a strong emphasis on the biopharmaceutical industry by both state and federal governments, including the recent designation as a “Tech Hub” by the Federal Economic Development Administration, is expected to generate 5,500 new direct biopharmaceutical jobs over the next 10 years. This job growth represents a 50% increase in the job market, and does not account for the needs in the labor market that will come from the almost $13 billion recently announced by the pharma industry mentioned earlier. Amid the sector's anticipated growth, the demand for skilled scientists at the MS level is high. While no compiled job posting statistics was found based on degree requirements in the area of life science in Virginia, data from California indicates that 19% of job postings in life sciences seek talent with an MS degree, compared to 12% of job postings requiring a PhD degree, indicating the relevance of the proposed degree.

Student Needs. The demand for graduates with MS degrees in pharmaceutical engineering arises from a crucial mismatch in the skill set of the workforce entering the job market, contributing to a labor shortage in the pharmaceutical sector. The Pharmaceutical Research and Manufacturers of America (PhRMA) attributes the high number of job vacancies in the industry to the growing U.S. gap in STEM-related skills in the workforce. Yet, there are no MS in Pharmaceutical Engineering programs in the Commonwealth, and only a handful in the country. Consequently, the pharmaceutical sector faces the challenge of having to retrain professionals with misaligned backgrounds, such as biological scientists, to do jobs in the pharmaceutical manufacturing industry, as the current pool of talent with MS in Pharmaceutical Engineering remains limited. VCU’s proposed MS in Pharmaceutical Engineering degree program responds to the current and growing needs of the pharmaceutical industry in the Commonwealth and beyond. The development of a workforce with the technical, functional and soft skills as described in this degree program will help address the

need for STEM with skills aligned to the labor market that will help produce the new drug products and therapies of tomorrow.

X. Return on Investment. Information for existing similar degree programs in Virginia. Fill in the table below with relevant information from The Foundation for Research on Economic Opportunity https://freopp.org/roi-in-higher-education/. If the Foundation does not have information on the discipline of the proposed degree program, contact Academic Affairs.

Institution	Field of Study	Earnings (1 year)	Earnings (10 years)	ROI (on time completion)	ROI (non-completion)
University of Southern California	Pharmaceutical Sciences	107,944	164,105	1,525,943	1,210,753
University of Florida	Pharmaceutical Sciences	75,743	103,189	733,373	591,788
University of Georgia	Pharmaceutical Sciences	124,915	155,077	1,804,298	1,471,350
University of Maryland, Baltimore	Pharmaceutical Sciences	100,801	140,404	1,085,081	878,244
MCPHS University	Pharmaceutical Sciences	68,535	107,689	425,399	327,739
Northeastern University	Pharmaceutical Sciences	94,225	146,509	1,030,372	813,980
Western New England University	Pharmaceutical Sciences	126,826	160,407	1,661,867	1,325,192
Rutgers University - New Brunswick	Pharmaceutical Sciences	88,532	100,176	224,309	170,256
Long Island University	Pharmaceutical Sciences	73,585	106,138	210,513	153,419
Campbell University	Pharmaceutical Sciences	108,219	164,105	1,980,577	1,585,000
Ohio State University	Pharmaceutical Sciences	148,018	180,565	2,227,207	1,816,083
Temple University	Pharmaceutical Sciences	103,296	150,471	1,363,471	1,106,555
University of Washington - Seattle	Pharmaceutical Sciences	87,081	117,632	476,421	376,379

VOEE Degree Program Labor Market Profile

Virginia Commonwealth University has proposed a new MS in Pharmaceutical Engineering (CIP code: 51.2003 Pharmaceutics and Drug Design). No data exists for CIP code 51.2003. Alternate CIP code data provided.

Degree Program Labor Market Profile

Introduction

The Virginia Office of Education Economics (VOEE) prepared this analysis to support the degree program approval process outlined by the State Council of Higher Education for Virginia (SCHEV). The report provides insights into how the proposed degree program aligns with state and local labor markets, focusing on the jobs graduates are likely to secure upon entering the workforce. The report examines the growth prospects for these jobs in the state and the production of similar existing degree programs statewide. Additionally, the report reviews online job postings data to identify common job titles, employers, and skills for occupations aligned with the proposed degree program of study. All supporting data are referenced throughout the report and detailed in Appendix A.

Degree Program Proposal

Virginia Commonwealth University has proposed a new **MS in Pharmaceutical Engineering - RELATED CIP** (**CIP code: 26.1001 Pharmacology**).

Proposer Contact Information

Name: Rob Direnzo

Title: Associate Director of Academic Planning & Programs and SCHEV Liaison

Institution: Virginia Commonwealth University

Department and College: Office of the Provost

Phone Number: (804) 828-0100

Section 1: Proposed Degree Program and the Workforce in Virginia

Section 1 provides an analysis of the occupations most aligned to the proposed degree program, including the five-year projected job demand and the most common job titles and skills advertised by employers for the selected occupations. Occupations are included if (1) they typically require a degree at the same level as the proposed degree program OR (2) they typically require a degree one level below the proposed degree program (e.g., a master's degree report includes occupations that typically require a bachelor's degree). See Appendix C for more information about the identification of aligned occupations.

Table 1: Occupation Degree Alignment

Table 1 includes the typical entry-level education for the aligned occupations for the proposed MS in Pharmaceutical Engineering - RELATED CIP (CIP code: 26.1001 Pharmacology).

Occupation	Typical Education
11-9121 Natural Sciences Managers	Bachelor's degree
19-1029 Biological Scientists, All Other	Bachelor's degree

Source: Lightcast 2025 Q4 Dataset

Section 1A: Workforce Projections

Tables 2a and 2b and Tables 3a and 3b include workforce projections for the Standard Occupational Classification (SOC) occupations most closely aligned to a MS in Pharmaceutical Engineering - RELATED CIP. Tables 2a and 3a include state-level data. Tables 2b and 3b include data for the Growth and Opportunity (GO) Virginia region of the institution. Appendix B includes a map of the GO Virginia regions.

Tables 2a and 2b: Five-year Workforce Projections by Occupation

2a) Statewide

Occupation	Workforce 2024	Workforce 5 Year Projection	Workforce Change 5 Year Projection	Workforce % Change 5 Year Projection
Natural Sciences Managers	1,763	1,877	115	6.5%
Biological Scientists, All Other	2,276	2,356	80	3.5%
State Total	**4,038**	**4,233**	**195**	**4.8%**

Source: Lightcast 2025 Q4 Dataset

2b) Growth and Opportunity (GO) Virginia Region 4

Occupation	Workforce 2024	Workforce 5 Year Projection	Workforce Change 5 Year Projection	Workforce % Change 5 Year Projection
Natural Sciences Managers	263	268	5	1.9%
Biological Scientists, All Other	139	146	7	5.1%
Region Total	**402**	**415**	**12**	**3.0%**

Source: Lightcast 2025 Q4 Dataset

Tables 3a and 3b: Annual Workforce, Growth, and Replacement Projections for Aligned Occupations

3a) Statewide

Metrics	2024	2025	2026	2027	2028	2029
Employee Count	4,038	4,109	4,164	4,201	4,231	4,233
Growth	88	71	53	45	17	37
Replacements	297	302	306	309	311	311
Total Openings	**385**	**373**	**359**	**354**	**328**	**349**

Source: Lightcast 2025 Q4 Dataset

3b) Growth and Opportunity (GO) Virginia Region 4

Metrics	2024	2025	2026	2027	2028	2029
Employee Count	402	406	409	412	413	415
Growth	4	3	3	2	2	2
Replacements	30	30	30	30	30	30
Total Openings	**34**	**33**	**33**	**32**	**32**	**32**

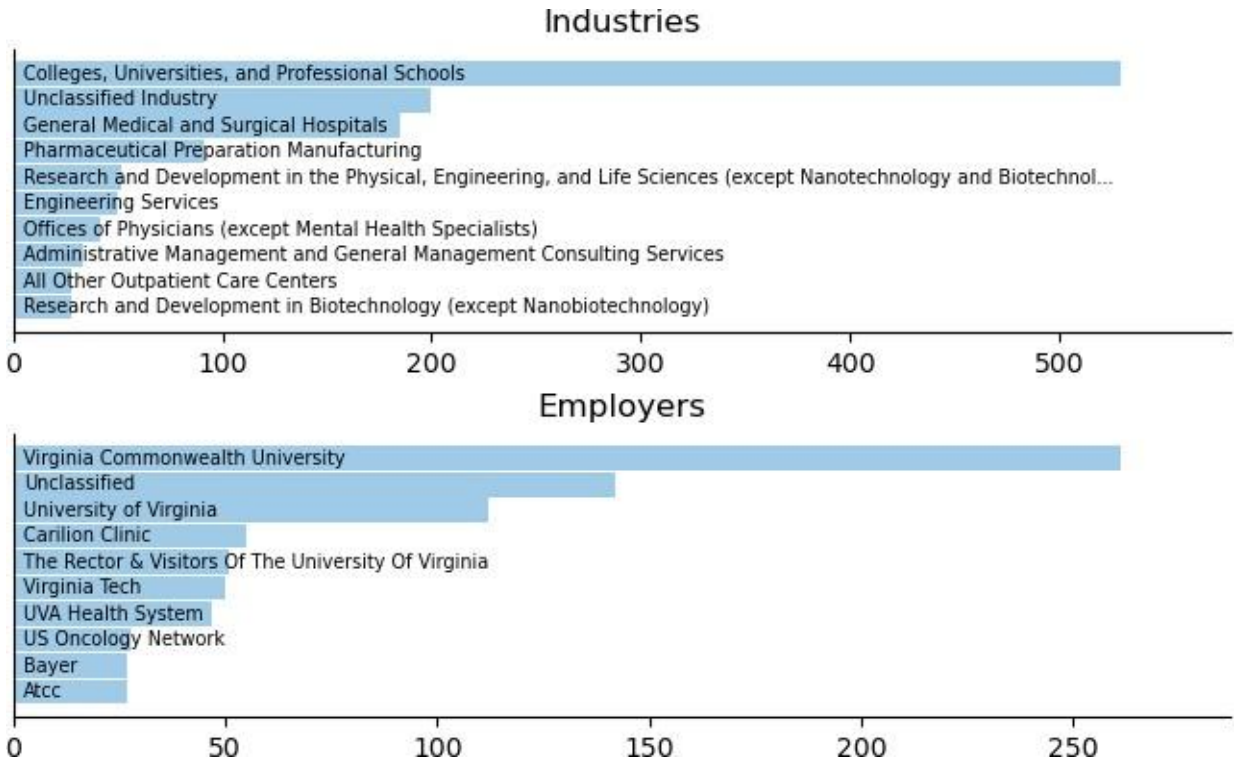
Source: Lightcast 2025 Q4 Dataset

Section 1B: Job Postings Analytics

An analysis of Virginia online job postings from November 2024 through October 2025 provides valuable insights into job openings for occupations aligned to the proposed degree program. All occupations in Table 1, including those that have a typical entry-level education below that of the proposed degree program are included. Charts 1 and 2 identify the industries and employers with

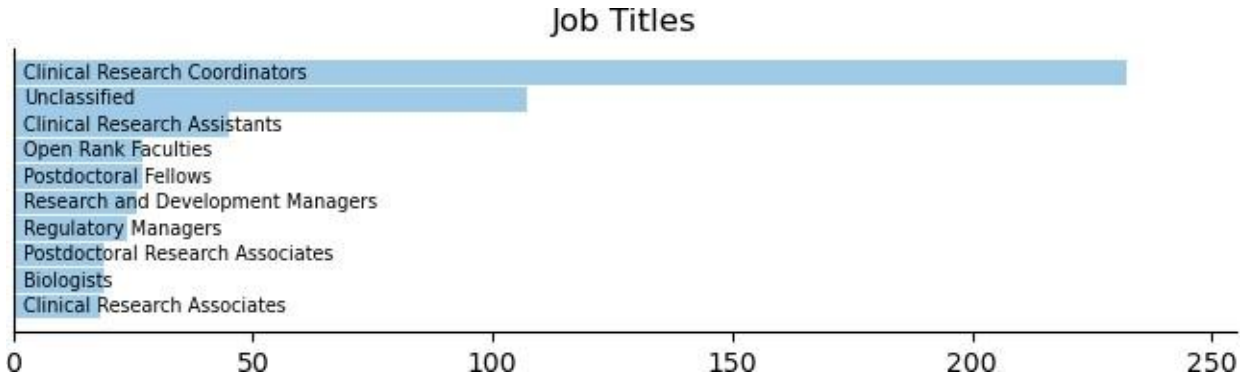
the most job postings for the selected occupations. Chart 3 includes the most common job titles in postings for the occupations. Charts 4 through 6 highlight the skills most frequently indicated in job advertisements.

Charts 1-2: Industries and Employers with the Most Postings



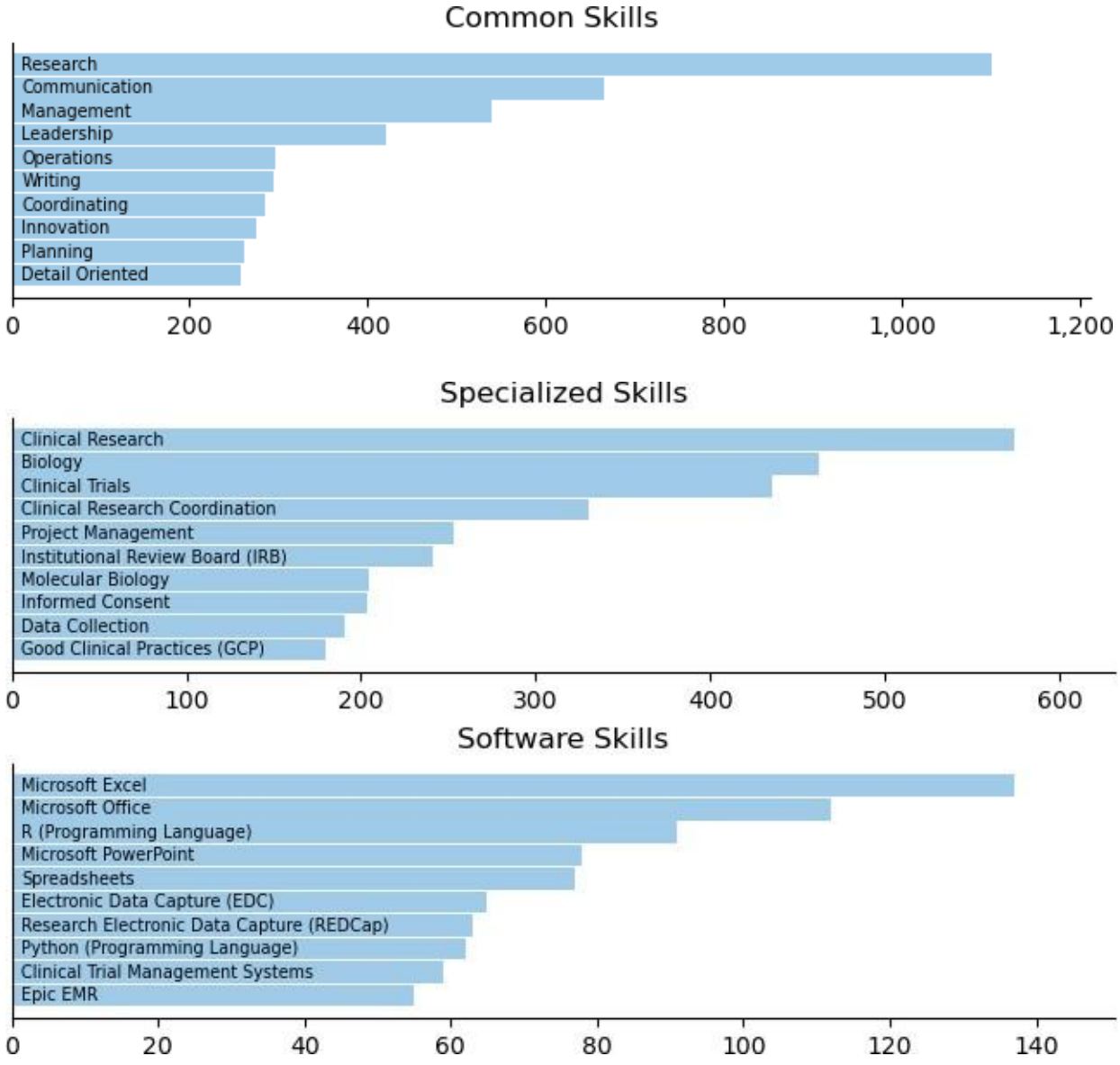
Source: Lightcast Job Posting Analytics

Chart 3: Most Common Job Titles



Source: Lightcast Job Posting Analytics

Charts 4-6: Skills Most Frequently Indicated in Job Postings



Source: Lightcast Job Posting Analytics

Note - Job postings data are based on web scraping technology. In some rare instances, data may be categorized incorrectly.

Section 2: Degree Programs Already Approved in Virginia

The proposed MS in Pharmaceutical Engineering - RELATED CIP (CIP code: 26.1001 Pharmacology) is already offered at other public and private institutions in Virginia. Programs are also offered at lower degree levels. Table 4 includes data for student enrollment at the existing degree programs. Table 5 includes data for degrees awarded. Tables 4 and 5 include information for both the level of the proposed degree program and for degree programs one level below the proposed program (e.g., for proposed master's degree programs, information for both master's degree and bachelor's degree programs is included). Charts 7 and 8 show the total student enrollment compared to degrees awarded for all institutions.

Tables 4a-4b: Student Enrollments by Institution Type

4a) Public Institutions

Master's Degree Programs

Institution	2021-22	2022-23	2023-24
Virginia Commonwealth University	4	4	2
Total	**4**	**4**	**2**

Bachelor's Degree Programs

No data are available.
See Appendix F for more information.

Master's and Bachelor's Degree Programs

	2021-22	2022-23	2023-24
Grand Total	**4**	**4**	**2**

4b) Private Institutions

Master's Degree Programs

No data are available.
See Appendix F for more information.

Bachelor's Degree Programs

No data are available.
See Appendix F for more information.

Master's and Bachelor's Degree Programs

No data are available.
See Appendix F for more information.

Source: State Council of Higher Education for Virginia

Tables 5a-5b: Degrees Awarded by Institution Type

5a) Public Institutions

Master's Degree Programs

Institution	2021-22	2022-23	2023-24
Virginia Commonwealth University	6	4	4
Total	**6**	**4**	**4**

Bachelor's Degree Programs

No data are available.
See Appendix F for more information.

Master's and Bachelor's Degree Programs

	2021-22	2022-23	2023-24
Grand Total	**6**	**4**	**4**

5b) Private Institutions

Master's Degree Programs

No data are available.
See Appendix F for more information.

Bachelor's Degree Programs

No data are available.
See Appendix F for more information.

Master's and Bachelor's Degree Programs

No data are available.
See Appendix F for more information.

Source: State Council of Higher Education for Virginia

Chart 7: Total Enrollments & Degrees Awarded - Master's Degrees

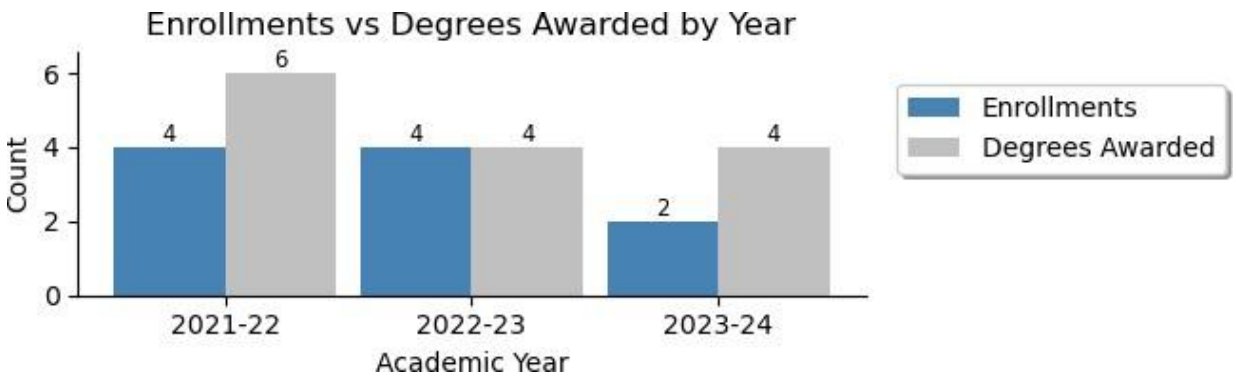


Chart 8: Total Enrollments & Degrees Awarded - Bachelor's Degrees

No data are available.
See Appendix F for more information.

Source: State Council of Higher Education for Virginia

Section 3: Graduate Supply and Occupational Demand Assessment

This section provides an assessment of how the number of graduates being produced by existing degree programs compares to the demand for workers in occupations aligned to the proposed new MS in Pharmaceutical Engineering - RELATED CIP (CIP code: 26.1001 Pharmacology).

While workers in the aligned occupations often have degrees in the proposed program of study, they also have degrees from other disciplinary areas. Multiple degree programs may align to the same occupation, and graduates also take jobs in occupations that are not aligned to their program of study. To illustrate this, Table 6 uses data on a sample of graduates from Virginia's higher education institutions to identify programs of study for workers in the noted aligned occupations.

The dataset in Table 6 includes 1,307 graduates whose first job was in one of the aligned occupations in Section 1, including both those occupations that (1) typically require a degree at the same level as the proposed degree program and those occupations that (2) typically require a degree one level below the proposed degree program. Table 6 lists the most frequent degree programs (represented by CIP code and regardless of level) and the number of graduates from "Other CIP Codes."

Table 6: CIP Codes for Degree Programs Supplying Graduates to Aligned Occupations

CIP Code	Graduate Count	Percent of Total
24.0101 Liberal Arts and Sciences/Liberal Studies.	39	3.0%
26.0101 Biology/Biological Sciences, General.	199	15.2%
26.1501 Neuroscience.	42	3.2%
42.0101 Psychology, General.	177	13.5%
51.2201 Public Health, General.	49	3.7%
Other CIP Codes	801	61.3%

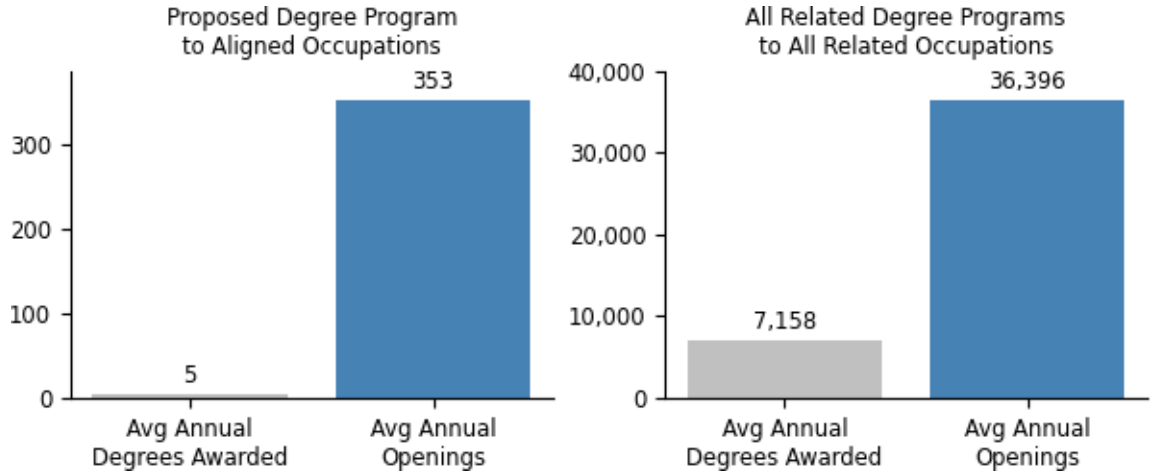
Source: VOEE College and Career Outcomes Dataset

To provide a supply-to-demand comparison for the proposed degree program, Chart 9 compares the total number of graduates for CIP code: 26.1001 produced in the last academic year to:

- The annual demand for the aligned occupations.
- The total number of graduates for *all master's and bachelor's degree programs* aligned to one or more of the selected occupations produced in the last academic year.
- The annual demand for *all occupations* aligned to one or more of those degree programs.

This analysis accounts for the mapping of multiple degree programs to multiple occupations and vice versa, but it does not incorporate graduates working in unaligned occupations. See Appendix E for lists of the degree programs aligned to one or more of the selected occupations and the occupations aligned to one or more of those degree programs.

Chart 9: Average Annual Degrees Awarded vs Openings



Source: Lightcast 2025 Q4 Dataset

Appendix A: Data Sources

Lightcast 2025 Q4 Dataset

Labor market indicators provided by analytics firm Lightcast are based on the US Bureau of Labor Statistics (BLS) Quarterly Census of Earnings and Wages (QCEW), supplemented by Lightcast's proprietary analysis. For projected future employment, Lightcast extrapolates past trends and adjusts based on the BLS National Industry-Occupation Employment Matrix, industry staffing pattern data, and state-level industry projections. Earnings data are based on BLS Occupational Employment and Wage Statistics, and wage distribution metrics are imputed by Lightcast using proprietary statistical methods.

Lightcast Job Posting Analytics

Lightcast scans 65,000 job posting sites and deduplicates postings to analyze job postings by occupation, employer, industry, and requisite skills and credentials using text parsing algorithms and machine learning.

College and Career Outcomes Dataset

Developed in partnership with Lightcast and the State Council of Higher Education of Virginia (SCHEV), this dataset contains information about the skills and career pathways of over 640,000 graduates from Virginia postsecondary institutions. By matching data from SCHEV with students' professional social profiles and Unemployment Insurance (UI) wage information, the dataset tracks graduates as they progress from their programs of study into their first jobs and beyond (up to 15 years). The data includes degrees and credentials, occupations and employers as reported on professional profiles, employer industries, location (as of 2022), wages reported to the Virginia Employment Commission for UI purposes, and self-reported skills.

Appendix B: Glossary

Bureau of Labor Statistics (BLS) Standard Occupational Classification (SOC) system is a taxonomy to classify workers into occupational categories. All workers are classified into one of 867 detailed occupations.

Lightcast Open Skills Taxonomy is a system for categorizing skills stated in online job postings sourced through Lightcast's Job Posting Analytics (see https://lightcast.io/open-skills). The Lightcast Open Skills Taxonomy is broken down as follows:

- **Specialized Skills:** Skills that are primarily required within a subset of occupations or equip one to perform a specific task (e.g. "NumPy" or "Hotel Management"). Also known as technical skills or hard skills.
- **Common Skills:** Skills that are prevalent across many different occupations and industries, including both personal attributes and learned skills. (e.g. "Communication" or "Microsoft Excel"). Also known as soft skills, human skills, and competencies.
- **Software Skills:** Any software tool or programming component used to help with a job (e.g. Python, Workday, AutoCAD, Microsoft Excel, React.Js, Accounting Software, and 3D Modeling Software would all be considered "Software Skills").

National Center for Education Statistics (NCES) Classification of Instructional Programs (CIP) system is a taxonomy to organize and classify academic programs by field of study. The CIP system is widely used by educational institutions, government agencies, and researchers to track, compare, and assess academic programs in colleges and universities and trends across various institutions and over time.

Massachusetts Institute of Technology (MIT) Living Wage Calculator was developed to assist individuals, communities, employers, and others estimate the local wage rate that a full-time worker requires to cover the costs of their family's basic needs where they live. The calculator allows individuals to explore the living wage in a county, metro area, or state for 12 different family types. The data was last updated on February 14, 2024. For more information, please visit: https://livingwage.mit.edu.

Replacements represent an estimate of job openings caused by workers exiting the labor force due to retirement or other reasons and by workers transferring to different occupations. Replacements do not count workers who change jobs but remain in the same occupation.

Growth and Opportunity (GO) Virginia Regions are the nine distinct regions certified by the Virginia Growth and Opportunity Board. Each region includes counties and cities that share similar economic development and workforce needs.

Figure 1: GO VA Region Map

Appendix C: Identification of Aligned Occupations

Aligned Occupations

Aligned Occupations refers to jobs that closely match the skills, knowledge, and training provided by specific academic programs. The aligned occupations are those for which graduates of a given CIP code are most likely qualified and prepared. The alignment determination is based on the curriculum's required coursework, competencies developed, and the typical educational requirements needed for specific occupations. This report uses VOEE's CIP to SOC Crosswalk and a typical entry-level education restriction to define alignment. See below for more information.

CIP SOC Crosswalk

The CIP SOC Crosswalk was developed by the Bureau of Labor Statistics and the National Center for Education Statistics (NCES) to match CIP codes (academic programs) to SOC codes (occupations). Its purpose is to relate academic programs to occupations based on skills and knowledge.

VOEE's CIP to SOC Crosswalk

VOEE uses a modified version of the NCES CIP to SOC crosswalk to map CIP codes to occupations. VOEE’s modifications replace the 2018 SOC codes used in the NCES crosswalk with the equivalent SOC codes from Lightcast's SOC system to enable the use of Lightcast's enhanced labor market indicators. Additionally, the NCES program to occupation mapping framework was limited in its treatment of production occupations, so VOEE supplemented the CIP to SOC crosswalk with additional program-to-occupation mappings identified by Lightcast.

Typical Entry-Level Education Restriction

CIP to SOC crosswalks do not directly consider education level. However, in this report, occupations are restricted by typical entry-level education. For associate degree and bachelor's degree programs, only occupations with the same typical entry-level education are included. For master's degree and doctoral degree programs, occupations are included if (1) they typically require a degree at the same level as the proposed degree program OR (2) they typically require a degree one level below the proposed degree program. For example, for master's degree programs, occupations which typically only require a bachelor's degree are also included.

Appendix D: Earnings Data

Table 7 provides the results of an analysis of earnings data for the occupations aligned to the proposed new MS in Pharmaceutical Engineering - RELATED CIP (CIP code: 26.1001 Pharmacology). Earnings information includes all workers in the selected occupations, regardless of professional work experience. It includes median earnings, as well as earnings at the 25th and 75th percentiles. Median earnings are compared to the Massachusetts Institute of Technology (MIT) Living Wage Calculator. A checkmark below each scenario indicates whether the median wages meet or exceed the living wages estimate for Virginia (State Level). For additional information on MIT's Living Wage Calculator, please refer to Appendix B.

Table 8 provides the same data as Table 7 filtered down to the GO Virginia Region of the school proposing the new degree program.

Table 7: Earnings Estimates for the Occupations, State-wide

Occupation	25th %ile	Median	75th %ile	Scenario 1	Scenario 2
Biological Scientists, All Other	$70,856	$87,402	$108,938	✓	✓
Natural Sciences Managers	$114,673	$138,593	$176,384	✓	✓

Source: Lightcast 2025 Q4 Dataset

Scenario 1 is one adult working with no children. The living wage for this scenario is $49,982 (State Level).

Scenario 2 is two adults, one working with one child. The living wage for this scenario is $78,312 (State Level).

Table 8: Earnings Estimates for the Occupations, GO Virginia Region 4

Occupation	25th %ile	Median	75th %ile
Biological Scientists, All Other	$64,821	$78,051	$101,146
Natural Sciences Managers	$103,005	$121,498	$170,498

Source: Lightcast 2025 Q4 Dataset

Appendix E: Lists of Related Programs and Occupations

Table 9: All Related Degree Programs to Aligned Occupations, Top 20 by 3-Year Average Degrees Awarded

Academic Program	3-Year Average Degrees Awarded	Percent of Total
Biology/Biological Sciences, General.	2,727	38.1%
Mathematics, General.	610	8.5%
Chemistry, General.	589	8.2%
Neuroscience.	414	5.8%
Data Science, General.	362	5.1%
Physics, General.	316	4.4%
Exercise Physiology and Kinesiology.	272	3.8%
Biomedical Sciences, General.	227	3.2%
Biochemistry.	195	2.7%
Statistics, General.	170	2.4%
Biological and Biomedical Sciences, Other.	161	2.2%
Biological and Physical Sciences.	145	2.0%
Financial Mathematics.	104	1.5%
Geology/Earth Science, General.	103	1.4%
Science, Technology and Society.	78	1.1%
Mathematics and Computer Science.	72	1.0%
Applied Mathematics, General.	53	0.7%
Nutrition Sciences.	53	0.7%
Sustainability Studies.	43	0.6%
Physical Sciences, Other.	40	0.6%
All Other Academic Programs	425	5.9%

Source: Lightcast 2025 Q4 Dataset

Table 10: All Related Occupations to All Related Academic Programs, Top 20 by 5-Year Average Annual Openings

Occupation	5-Year Average Annual Openings	Percent of Total
Management Analysts	6,591	18.1%
Software Developers	5,669	15.6%
Project Management Specialists	3,693	10.1%
Managers, All Other	3,074	8.4%
Secondary School Teachers, Except Special and Career/Technical Education	1,889	5.2%
Computer and Information Systems Managers	1,716	4.7%
Compliance Officers	1,434	3.9%
Computer Occupations, All Other	1,355	3.7%
Medical and Health Services Managers	1,217	3.3%
Financial and Investment Analysts	727	2.0%
Clinical Laboratory Technologists and Technicians	712	2.0%
Data Scientists	658	1.8%
Operations Research Analysts	559	1.5%
Education Administrators, Postsecondary	543	1.5%
Financial Specialists, All Other	489	1.3%
Engineers, All Other	459	1.3%
Social Scientists and Related Workers, All Other	455	1.2%
Occupational Health and Safety Specialists	454	1.2%
Database Architects	429	1.2%
Fundraisers	364	1.0%
All Other Occupations	3,910	10.7%

Source: Lightcast 2025 Q4 Dataset

Appendix F: Missing Data

Missing Workforce, Wage, and Job Postings Data (Tables 1-3, Charts 1-6, Chart 9, Tables 7-8)

If workforce, wage, and job postings data are unavailable, there are no occupations aligned to the proposed degree program. See Appendix C for more information about aligned occupations.

Missing Enrollment and Completions Data (Tables 4-5, Charts 7-9)

If enrollment and completions data are unavailable, no existing degree programs are offered under the CIP code for the proposed degree program. If NCES has identified CIP codes that are closely related to the CIP code of the proposed degree program, additional reports will be generated for those related CIP codes.

Missing Virginia Graduates Data (Table 6)

If data about Virginia graduates are unavailable, there were no graduates whose first job was in one of the aligned occupations in the College and Career Outcomes Dataset. This dataset is a sample of graduates and is not representative of all graduates or workers in Virginia.

Job Posting Analytics

Lightcast Q4 2025 Data Set

October 2025

Virginia

Parameters

Select Timeframe: Jan 2024 - Sep 2025

Regions:
14 items selected. See Appendix A for details.

Job Title:

Results should include

Description	Description
Chemical Engineers	Medicinal Chemists
Biochemical Engineers	Manufacturing Engineers
Pharmaceutical Scientists	Process Safety Engineers
Analytical Scientists	Materials Scientists
Pharmaceutical Chemists	Nanotechnology Engineers

Minimum Experience Required: Any

Advertised Salary: Include all postings regardless

Education Level:

Description
Master's degree

Job Type: Include Internships

Keyword Search:

Posting Type: Newly Posted

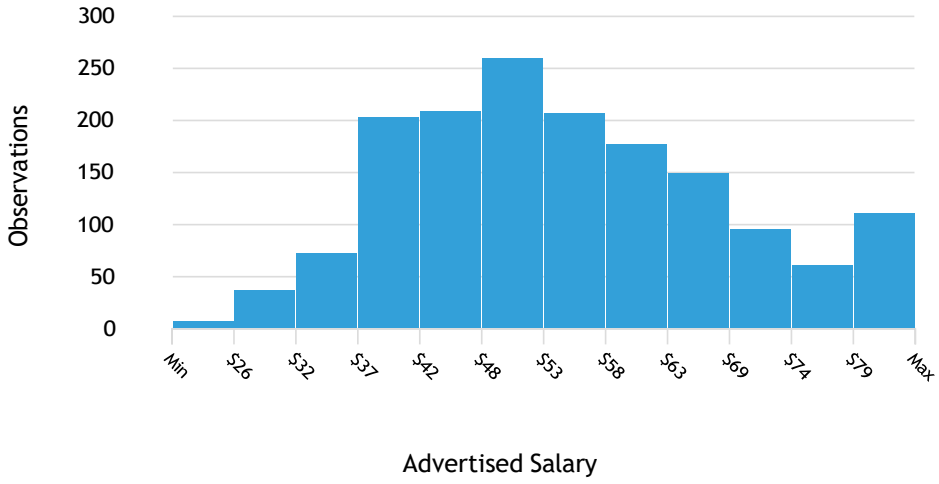
Job Postings Overview

3,411 **Unique Postings** 8,848 Total Postings	**901** **Employers Competing** 627,272 Total Employers
26 Days **Median Posting Duration** Regional Average: 25 Days	**3 : 1** **Posting Intensity** Regional Average: 2 : 1

Advertised Salary

*There are **1,578** advertised salary observations (46% of the 3,411 matching postings).*

$52.80/hr
Median Advertised Salary



Advertised Salary Trend

▼12.5% Jan 2024 - Sep 2025

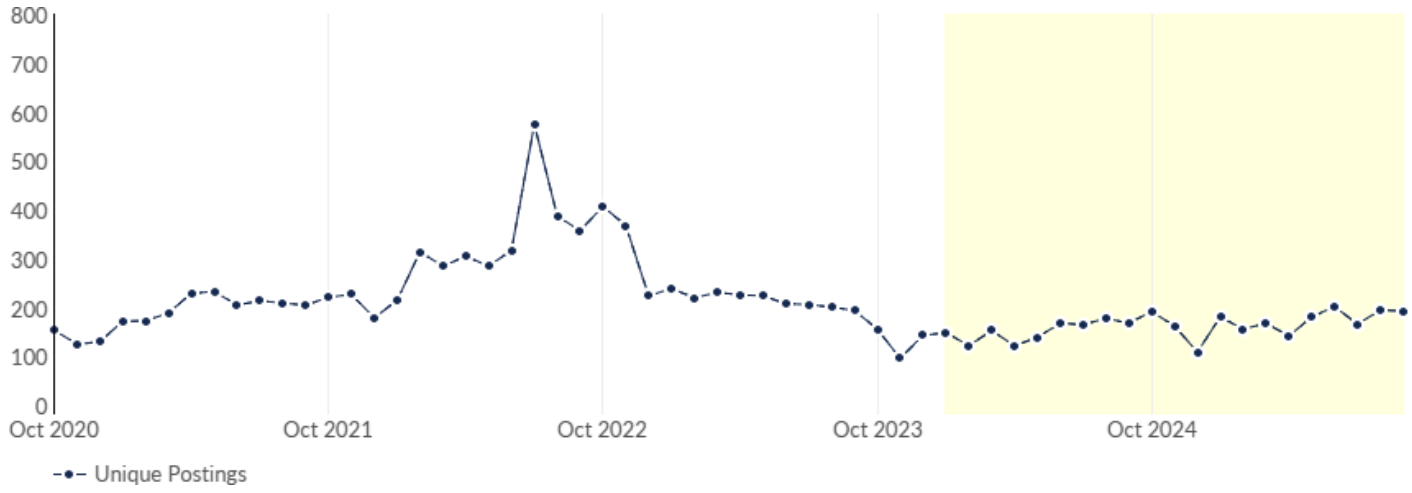
$52.80 Median

1,578 Job Postings

Job Postings Regional Breakdown

State	Unique Postings (Jan 2024 - Sep 2025)
California	1,199
Massachusetts	447
Florida	318
Pennsylvania	308
New Jersey	217

Unique Postings Trend



Month	Unique Postings	Posting Intensity
Sep 2025	193	2 : 1
Aug 2025	195	2 : 1
Jul 2025	166	2 : 1
Jun 2025	202	2 : 1
May 2025	181	3 : 1
Apr 2025	142	3 : 1
Mar 2025	168	3 : 1
Feb 2025	156	3 : 1
Jan 2025	181	3 : 1
Dec 2024	109	3 : 1
Nov 2024	162	3 : 1
Oct 2024	192	3 : 1
Sep 2024	168	3 : 1
Aug 2024	178	3 : 1
Jul 2024	165	3 : 1
Jun 2024	168	2 : 1
May 2024	139	2 : 1
Apr 2024	122	2 : 1
Mar 2024	153	2 : 1
Feb 2024	122	2 : 1

Jan 2024	149	2 : 1
Dec 2023	143	2 : 1
Nov 2023	96	2 : 1
Oct 2023	156	2 : 1
Sep 2023	194	2 : 1
Aug 2023	201	3 : 1
Jul 2023	206	2 : 1
Jun 2023	208	3 : 1
May 2023	224	3 : 1
Apr 2023	226	3 : 1
Mar 2023	231	3 : 1
Feb 2023	220	3 : 1
Jan 2023	239	2 : 1
Dec 2022	224	2 : 1
Nov 2022	368	2 : 1
Oct 2022	407	3 : 1
Sep 2022	357	2 : 1
Aug 2022	388	2 : 1
Jul 2022	575	2 : 1
Jun 2022	317	2 : 1
May 2022	285	2 : 1
Apr 2022	305	3 : 1
Mar 2022	285	2 : 1
Feb 2022	314	2 : 1
Jan 2022	215	3 : 1
Dec 2021	179	3 : 1
Nov 2021	227	2 : 1
Oct 2021	221	3 : 1
Sep 2021	205	4 : 1
Aug 2021	209	2 : 1
Jul 2021	214	3 : 1

Jun 2021	205	3 : 1
May 2021	233	2 : 1
Apr 2021	229	3 : 1
Mar 2021	189	2 : 1
Feb 2021	173	4 : 1
Jan 2021	172	3 : 1
Dec 2020	130	4 : 1
Nov 2020	125	3 : 1
Oct 2020	154	3 : 1

Education Breakdown

Education Level	Unique Postings	% of Total
No Education Listed	0	0%
High school or GED	66	2%
Associate's degree	77	2%
Bachelor's degree	2,983	87%
Master's degree	3,411	100%
Ph.D. or professional degree	837	25%

Minimum Education Breakdown

Minimum Education Level	Unique Postings (minimum)	Unique Postings (max advertised)	% of Total (minimum)
High school or GED	66	0	2%
Associate's degree	44	0	1%
Bachelor's degree	2,889	0	85%
Master's degree	412	2,383	12%
Ph.D. or professional degree	0	837	0%

Experience Breakdown

Minimum Experience	Unique Postings	% of Total
No Experience Listed	691	20%
0 - 1 Years	267	8%
2 - 3 Years	714	21%
4 - 6 Years	1,069	31%
7 - 9 Years	411	12%
10+ Years	259	8%

Top Companies Posting

	Total/Unique (Jan 2024 - Sep 2025)	Posting Intensity	Median Posting Duration
Northrop Grumman	672 / 172	4 : 1	22 days
Raytheon Technologies	427 / 102	4 : 1	33 days
Actalent	228 / 84	3 : 1	18 days
Lockheed Martin	281 / 73	4 : 1	28 days
L3Harris Technologies	158 / 70	2 : 1	24 days
Eurofins	309 / 68	5 : 1	33 days
Arinc International Of Canada Ulc	147 / 45	3 : 1	37 days
Merck & Co.	186 / 43	4 : 1	23 days
Medtronic	125 / 41	3 : 1	33 days
Intuitive	122 / 38	3 : 1	29 days

Top Cities Posting

City	Total/Unique (Jan 2024 - Sep 2025)	Posting Intensity	Median Posting Duration
Irvine, CA	202 / 98	2 : 1	19 days
Sunnyvale, CA	343 / 90	4 : 1	32 days
San Diego, CA	186 / 76	2 : 1	29 days
Boston, MA	278 / 73	4 : 1	32 days
Cambridge, MA	161 / 59	3 : 1	25 days
Los Angeles, CA	164 / 59	3 : 1	29 days
Orlando, FL	168 / 43	4 : 1	21 days
Goleta, CA	125 / 38	3 : 1	33 days
San Jose, CA	98 / 37	3 : 1	29 days
Fremont, CA	59 / 36	2 : 1	20 days

Top Posted Occupations

	Total/Unique (Jan 2024 - Sep 2025)	Posting Intensity	Median Posting Duration
Industrial Engineers	4,541 / 1,800	3 : 1	27 days
Chemists	1,285 / 514	3 : 1	27 days
Chemical Engineers	457 / 173	3 : 1	29 days
Materials Engineers	454 / 147	3 : 1	26 days
Medical Scientists, Except Epidemiologists	219 / 73	3 : 1	26 days
Mechanical Engineers	140 / 53	3 : 1	31 days
Production Workers, All Other	113 / 50	2 : 1	24 days
Materials Scientists	168 / 49	3 : 1	25 days
Biochemists and Biophysicists	188 / 42	4 : 1	32 days
Architectural and Engineering Managers	94 / 29	3 : 1	22 days
Biological Scientists, All Other	94 / 26	4 : 1	22 days
Natural Sciences Managers	35 / 25	1 : 1	44 days
Aerospace Engineers	36 / 21	2 : 1	20 days
Industrial Production Managers	31 / 17	2 : 1	24 days
Civil Engineers	41 / 17	2 : 1	3 days
Petroleum Engineers	93 / 17	5 : 1	13 days
Engineers, All Other	28 / 16	2 : 1	19 days
Pharmacy Aides	25 / 14	2 : 1	53 days
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	16 / 13	1 : 1	5 days
Data Scientists	36 / 12	3 : 1	21 days
Semiconductor Processing Technicians	23 / 12	2 : 1	32 days
Microbiologists	17 / 11	2 : 1	22 days
Lawyers	16 / 10	2 : 1	34 days
Computer, Automated Teller, and Office Machine Repairers	37 / 10	4 : 1	19 days
Pharmacy Technicians	23 / 9	3 : 1	n/a
Electronics Engineers, Except Computer	15 / 8	2 : 1	15 days
Postsecondary Teachers	17 / 8	2 : 1	24 days
Software Developers	11 / 7	2 : 1	40 days

Commercial and Industrial Designers	14 / 7	2 : 1	17 days
Inspectors, Testers, Sorters, Samplers, and Weighers	35 / 7	5 : 1	11 days
Production, Planning, and Expediting Clerks	16 / 6	3 : 1	31 days
Financial Managers	11 / 5	2 : 1	11 days
Database Administrators	8 / 5	2 : 1	8 days
Computer Occupations, All Other	18 / 5	4 : 1	13 days
Bioengineers and Biomedical Engineers	7 / 5	1 : 1	10 days
Clinical Laboratory Technologists and Technicians	8 / 5	2 : 1	40 days
Computer Network Architects	7 / 4	2 : 1	53 days
Industrial Engineering Technologists and Technicians	10 / 4	3 : 1	42 days
Laborers and Freight, Stock, and Material Movers, Hand	9 / 4	2 : 1	18 days
Purchasing Managers	9 / 3	3 : 1	47 days
Computer Hardware Engineers	26 / 3	9 : 1	50 days
Health and Safety Engineers, Except Mining Safety Engineers and Inspectors	4 / 3	1 : 1	8 days
Life, Physical, and Social Science Technicians, All Other	11 / 3	4 : 1	31 days
First-Line Supervisors of Firefighting and Prevention Workers	4 / 3	1 : 1	13 days
Education Administrators, Postsecondary	5 / 2	3 : 1	n/a
Financial Risk Specialists	4 / 2	2 : 1	21 days
Computer and Information Research Scientists	2 / 2	1 : 1	12 days
Network and Computer Systems Administrators	6 / 2	3 : 1	n/a
Nuclear Engineers	2 / 2	1 : 1	23 days
Physical Scientists, All Other	6 / 2	3 : 1	10 days

Top Posted Occupations

Occupation (O*NET)	Total/Unique (Jan 2024 - Sep 2025)	Posting Intensity	Median Posting Duration
Manufacturing Engineers	4,513 / 1,789	3 : 1	27 days
Chemists	1,285 / 514	3 : 1	27 days
Chemical Engineers	457 / 173	3 : 1	29 days
Materials Engineers	454 / 147	3 : 1	26 days
Medical Scientists, Except Epidemiologists	219 / 73	3 : 1	26 days
Mechanical Engineers	139 / 52	3 : 1	31 days
Production Workers, All Other	113 / 50	2 : 1	24 days
Materials Scientists	168 / 49	3 : 1	25 days
Biochemists and Biophysicists	188 / 42	4 : 1	32 days
Architectural and Engineering Managers	94 / 29	3 : 1	22 days

Top Posted Occupations

Occupation	Total/Unique (Jan 2024 - Sep 2025)	Posting Intensity	Median Posting Duration
Manufacturing Engineer	4,513 / 1,789	3 : 1	27 days
Chemist	1,490 / 573	3 : 1	26 days
Chemical / Process Engineer	457 / 173	3 : 1	29 days
Materials Engineer	454 / 147	3 : 1	26 days
Researcher / Research Associate	177 / 76	2 : 1	24 days
Medical Scientist	219 / 73	3 : 1	26 days
Production Worker	136 / 62	2 : 1	26 days
Mechanical Engineer	140 / 53	3 : 1	31 days
Biochemist / Biophysicist	188 / 42	4 : 1	32 days
Engineering Manager	94 / 29	3 : 1	22 days
Biologist	81 / 24	3 : 1	22 days
Research and Development Manager	34 / 24	1 : 1	44 days
Aerospace Engineer	36 / 21	2 : 1	20 days
Reservoir / Petroleum Engineer	93 / 17	5 : 1	13 days
Civil Engineer	41 / 17	2 : 1	3 days
Pharmacy Aide	25 / 14	2 : 1	53 days
Technical Sales Representative	16 / 13	1 : 1	5 days
Data Scientist	32 / 11	3 : 1	21 days
Production Plant Manager	23 / 11	2 : 1	24 days
Microbiologist	17 / 11	2 : 1	22 days
Lawyer	16 / 10	2 : 1	34 days
Pharmacy Technician	23 / 9	3 : 1	n/a
Industrial Engineer	12 / 7	2 : 1	10 days
Product Development Engineer	14 / 7	2 : 1	17 days
Software Developer / Engineer	11 / 7	2 : 1	40 days
Quality Inspector / Technician	35 / 7	5 : 1	11 days

Scheduler / Operations Coordinator	16 / 6	3 : 1	31 days
Quality Control Systems Manager	8 / 6	1 : 1	15 days
Biomedical Engineer	7 / 5	1 : 1	10 days
Energy Engineer	6 / 5	1 : 1	21 days
Electronics Engineer	12 / 5	2 : 1	15 days
Optical / Laser Engineer	8 / 5	2 : 1	2 days
Robotics Engineer	11 / 5	2 : 1	7 days
Risk Analyst	11 / 5	2 : 1	11 days
Laboratory Technician	8 / 5	2 : 1	40 days
Data Engineer	8 / 5	2 : 1	8 days
Computer Systems Engineer / Architect	18 / 5	4 : 1	13 days
Warehouse Worker	9 / 4	2 : 1	18 days
Chemistry Professor	8 / 4	2 : 1	24 days
College Professor (Other)	9 / 4	2 : 1	24 days
Manufacturing / Production Technician	10 / 4	3 : 1	42 days
Validation Engineer	16 / 4	4 : 1	22 days
Artificial Intelligence Engineer	6 / 4	2 : 1	21 days
Network Engineer / Architect	7 / 4	2 : 1	53 days
Procurement / Sourcing Manager	9 / 3	3 : 1	47 days
Health and Safety Engineer	4 / 3	1 : 1	8 days
Hardware Engineer	26 / 3	9 : 1	50 days
Radio Frequency (RF) Engineer	3 / 3	1 : 1	n/a
Fire Chief / Marshal	4 / 3	1 : 1	13 days
Medical Biller	3 / 2	2 : 1	7 days

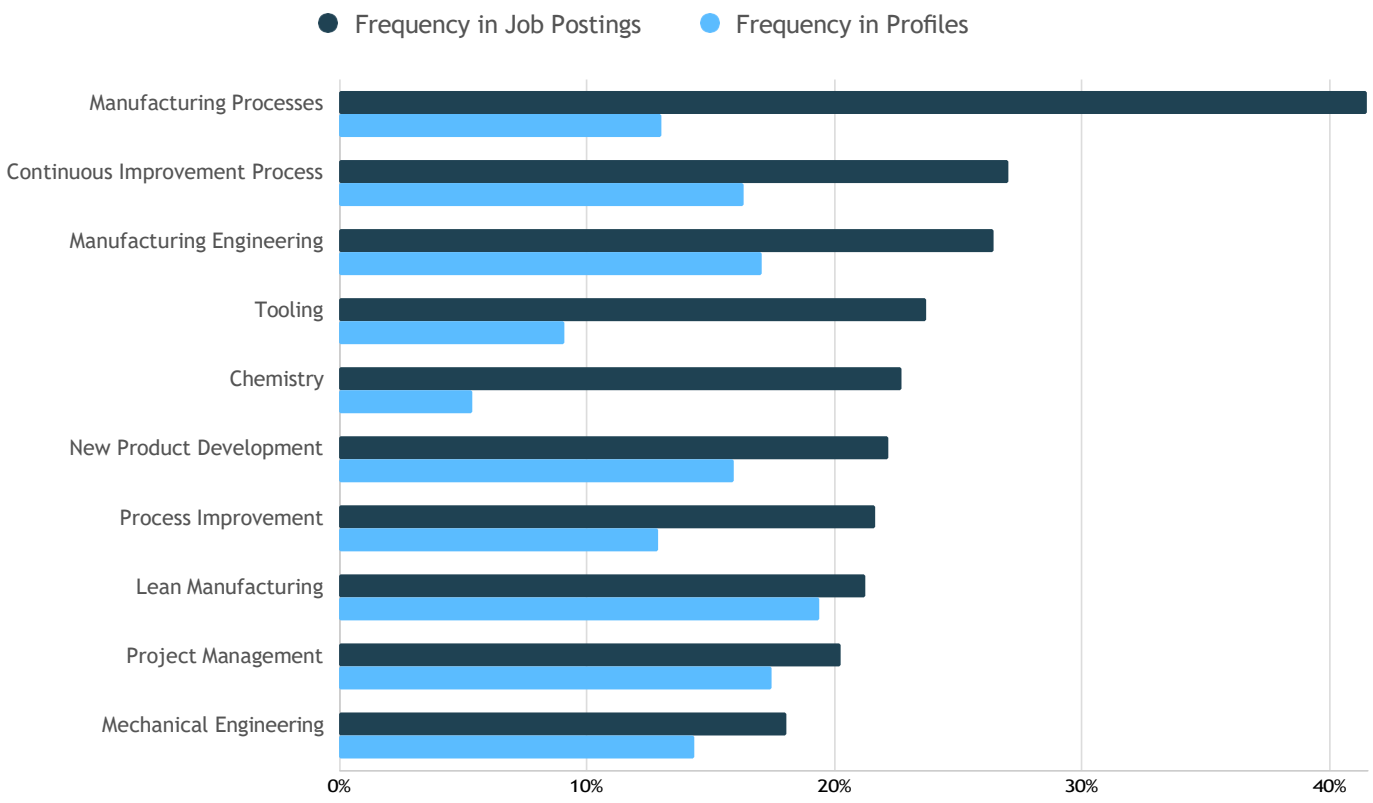
Top Posted Job Titles

	Total/Unique (Jan 2024 - Sep 2025)	Posting Intensity	Median Posting Duration
Manufacturing Engineers	5,075 / 2,017	3 : 1	26 days
Analytical Scientists	1,623 / 591	3 : 1	28 days
Chemical Engineers	584 / 254	2 : 1	23 days
Materials Scientists	620 / 211	3 : 1	21 days
Pharmaceutical Scientists	376 / 145	3 : 1	32 days
Medicinal Chemists	285 / 87	3 : 1	26 days
Process Safety Engineers	177 / 45	4 : 1	20 days
Pharmaceutical Chemists	71 / 44	2 : 1	12 days
Biochemical Engineers	28 / 15	2 : 1	32 days
Nanotechnology Engineers	9 / 2	5 : 1	36 days

Top Industries

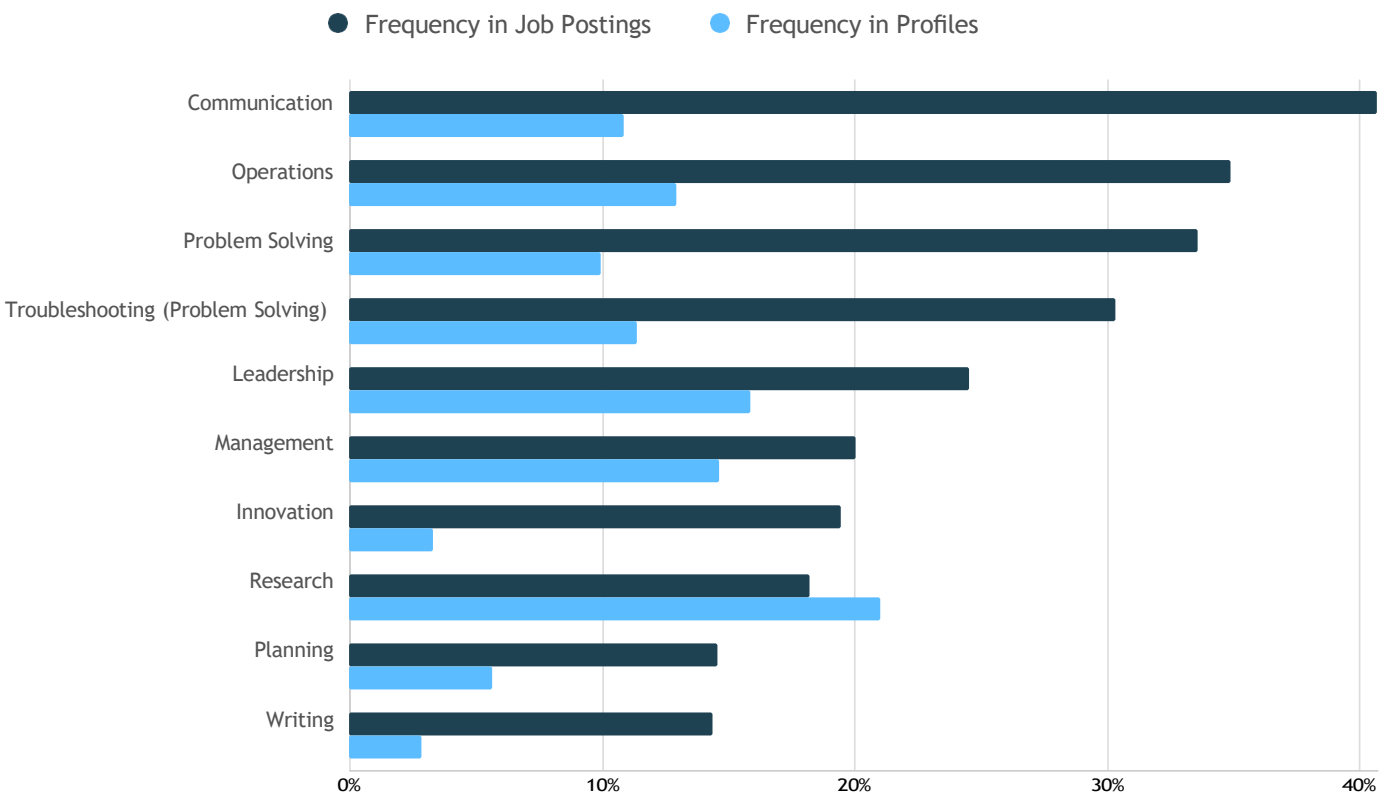
	Total/Unique (Jan 2024 - Sep 2025)	Posting Intensity	Median Posting Duration
Aircraft Manufacturing	1,623 / 456	4 : 1	28 days
Pharmaceutical Preparation Manufacturing	1,088 / 308	4 : 1	27 days
Employment Placement Agencies	493 / 209	2 : 1	21 days
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)	584 / 171	3 : 1	30 days
Engineering Services	226 / 114	2 : 1	31 days
Electromedical and Electrotherapeutic Apparatus Manufacturing	291 / 96	3 : 1	25 days
Temporary Help Services	141 / 81	2 : 1	26 days
Computer Systems Design Services	188 / 73	3 : 1	29 days
Guided Missile and Space Vehicle Manufacturing	129 / 71	2 : 1	22 days
Colleges, Universities, and Professional Schools	154 / 60	3 : 1	36 days

Top Specialized Skills



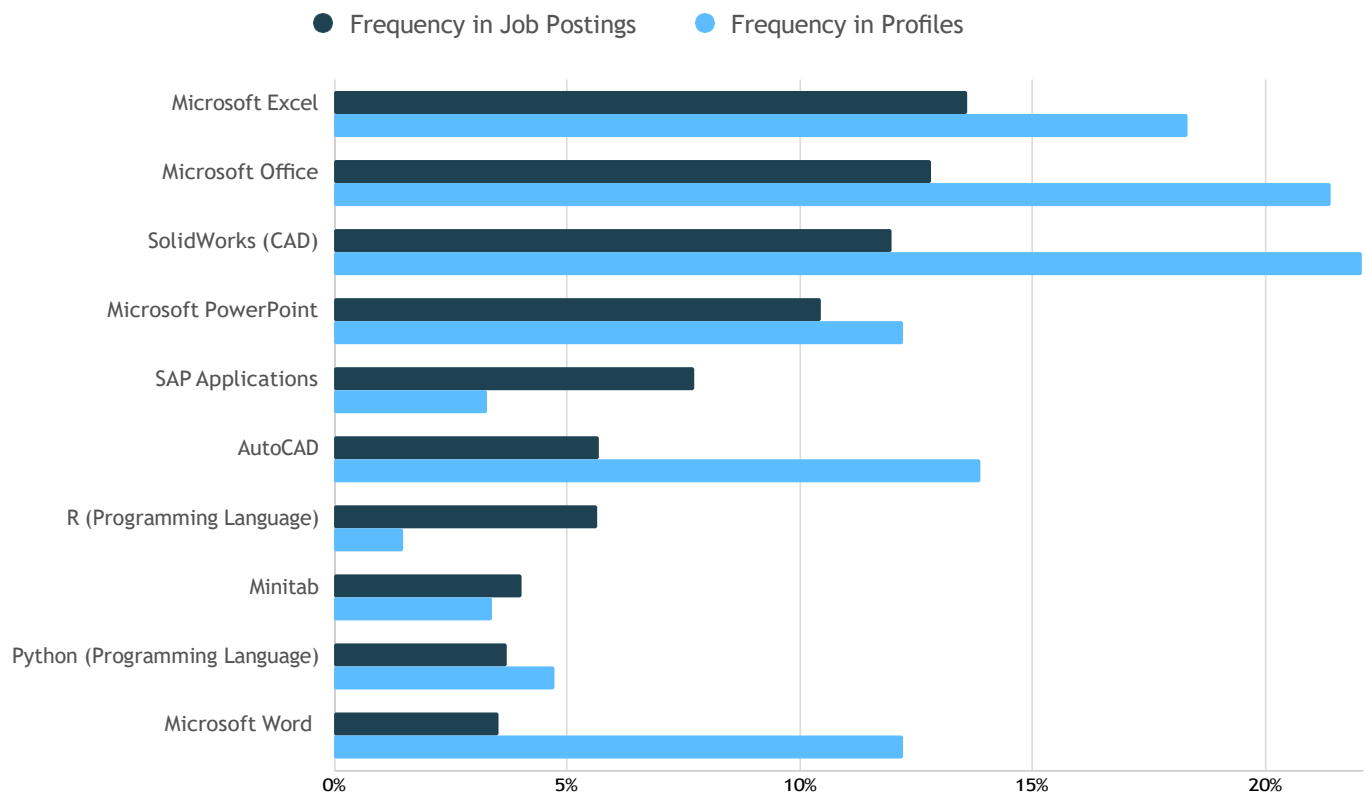
	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Manufacturing Processes	1,417	42%	3,750	13%	+18.8%	Growing
Continuous Improvement Process	923	27%	4,689	16%	+23.4%	Rapidly Growing
Manufacturing Engineering	903	26%	4,916	17%	+22.7%	Rapidly Growing
Tooling	809	24%	2,617	9%	+25.5%	Rapidly Growing
Chemistry	776	23%	1,541	5%	+18.2%	Growing
New Product Development	758	22%	4,582	16%	+24.1%	Rapidly Growing
Process Improvement	738	22%	3,708	13%	+27.0%	Rapidly Growing
Lean Manufacturing	725	21%	5,582	19%	+28.1%	Rapidly Growing
Project Management	691	20%	5,025	17%	+19.8%	Rapidly Growing
Mechanical Engineering	616	18%	4,132	14%	+21.2%	Rapidly Growing

Top Common Skills



	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Communication	1,388	41%	3,117	11%	+3.6%	Lagging
Operations	1,190	35%	3,727	13%	+8.1%	Stable
Problem Solving	1,145	34%	2,856	10%	+11.3%	Growing
Troubleshooting (Problem Solving)	1,036	30%	3,267	11%	+19.0%	Growing
Leadership	838	25%	4,556	16%	+8.5%	Stable
Management	685	20%	4,206	15%	+5.3%	Stable
Innovation	665	19%	945	3%	+25.8%	Rapidly Growing
Research	621	18%	6,034	21%	+17.2%	Growing
Planning	498	15%	1,633	6%	+10.9%	Growing
Writing	491	14%	828	3%	+11.8%	Growing

Top Software Skills



	Postings	% of Total Postings	Profiles	% of Total Profiles	Projected Skill Growth	Skill Growth Relative to Market
Microsoft Excel	464	14%	5,272	18%	+17.7%	Growing
Microsoft Office	438	13%	6,160	21%	+18.5%	Growing
SolidWorks (CAD)	409	12%	6,349	22%	+24.1%	Rapidly Growing
Microsoft PowerPoint	357	10%	3,514	12%	+26.1%	Rapidly Growing
SAP Applications	264	8%	941	3%	+21.6%	Rapidly Growing
AutoCAD	194	6%	3,992	14%	+16.9%	Growing
R (Programming Language)	193	6%	423	1%	+20.3%	Rapidly Growing
Minitab	138	4%	979	3%	+7.6%	Stable
Python (Programming Language)	127	4%	1,358	5%	+24.5%	Rapidly Growing
Microsoft Word	121	4%	3,514	12%	+7.2%	Stable

Top Qualifications

	Postings with Qualification
Security Clearance	320
Secret Clearance	225
Six Sigma Green Belt	98
Six Sigma Black Belt	67
Top Secret Clearance	56
Master Of Business Administration (MBA)	45
Project Management Professional Certification	44
Top Secret-Sensitive Compartmented Information (TS/SCI Clearance)	33
Valid Driver's License	26
Six Sigma Certification	24

Appendix A - Regions

Code	Description
6	California
10	Delaware
11	District of Columbia
12	Florida
13	Georgia
24	Maryland
25	Massachusetts

Code	Description
34	New Jersey
36	New York
37	North Carolina
42	Pennsylvania
45	South Carolina
51	Virginia
54	West Virginia

Proposed Program Discontinuance Brief
Program Discontinuance: Discontinue the Bachelor of Science in Education (B.S.Ed.) in Health and Physical Education degree program at Virginia Commonwealth University (VCU).

Overview
Virginia Commonwealth University (VCU) seeks approval to discontinue the Bachelor of Science in Education (B.S.Ed.) in Health and Physical Education (CIP code: 13.1314) degree program. The degree program is located in the School of Education, Department of Teaching and Learning.

Delivery Format
The B.S.Ed. in Health and Physical Education is offered in the face-to-face delivery format.

Target Implementation Date
The program is scheduled for discontinuation in fall 2027.

Rationale
Enrollment trends and demand for the B.S.Ed. in Health and Physical Education have been insufficient to sustain the program. Student enrollment in the degree program has averaged 13 students per year since inception-far below expectations. The School of Education no longer has the full-time faculty required to teach core and required courses. Additionally, student enrollment and graduation data indicate that the degree program would not meet the productivity and viability standards of the State Council of Higher Education for Virginia (SCHEV) when reviewed during the next cycle.

Impact on Students
A teach-out plan is in place for the seven (7) students currently enrolled in the B.S.Ed. in Health and Physical Education degree program. All students are expected to graduate in spring 2030. The last term that students will be able to complete the B.S.Ed. in Health and Physical Education degree program is spring 2031.

Institutional records show that two (2) students have "stopped out" since spring 2025, and those students have been considered. There is a three (3) semester period in which students may return and complete the degree program. All core and required courses will continue to be offered as such courses. The two (2) students will be notified in writing about the discontinuation of the degree program. Faculty advisors will also work with the students to transfer to another degree program, if a degree program is appropriate.

Impact on Faculty and Staff
There is no full-time faculty teaching in the program. The program coordinator for the program is also coordinating the early childhood and elementary programs and will continue to do so after this program's discontinuance.

Funding
No funding is needed or requested for the discontinuance of the degree program.

Next Steps

March 19, 2026 - University Undergraduate Curriculum Committee (UUCC) **APPROVED**
April 2, 2026 – University Committee on Academic Affairs (UC-AA) **APPROVED**
April 9, 2026 – University Council **APPROVED**
April 13, 2026 – President's Cabinet **APPROVED**
April 23-24, 2026 – AHAC/Board of Visitors *Pending Institutional Approval*

SUBSTANTIVE CHANGE
TEACH-OUT PLAN

Program Closure

Program Name: **Bachelor of Science (B.S.Ed.) in Health and Physical Education**
Program CIP Code: **13.1314**
Number of students currently enrolled in the program: **7**

Admission Closure Date
Virginia Commonwealth University's Department of Teaching and Learning in the School of Education is seeking approval to close the Bachelor of Science in Education (B.S.Ed.) in Health and Physical Education (CIP Code: 13.1314) degree program. Students will no longer be admitted into the degree program beginning Fall 2027 **(August 24, 2027).**

Communication Plan
All affected parties including currently enrolled students, students with lapsed enrollment, prospective students, faculty, staff, and, as applicable, community and industry partners will be notified.

Currently enrolled students
There are currently seven (7) students enrolled in the Bachelor of Science in Education in Health and Physical Education. Remaining students are expected to graduate in spring 2030. Currently enrolled students will be notified of the decision to close the program through an advising session, email from the department chair and an update to the School of Education website. A communication timeline is provided in Appendix A.

Students with lapsed enrollment
There are two (2) students with lapsed enrollment in the Bachelor of Science in Education in Health and Physical Education. Students with lapsed enrollment will be notified of the decision to close the program through email notification from the department chair and an update to the School of Education website. VCU requires students who do not attend for three or more successive fall and spring semesters, excluding summer sessions, to submit an application for readmission. A continuous enrollment chart that details the last enrolled semester and the must return semester is provided in Appendix B.

Prospective students
Prospective students will be notified of the decision to close the program through email notifications and updates to the School of Education website.

Faculty and staff, including admissions and recruiting/marketing staff

On December 16, 2025 and January 20, 2026, the Department of Teaching and Learning, composed of the chairperson and all department faculty, considered the recommendation to discontinue the B. S. Ed in Health and Physical Education program. On February 24, 2026 the Curriculum and Academic Resource Committee (CARC), which includes the associate dean of academic affairs and representatives from each department, convened for its monthly meeting. During this meeting, the recommendation to discontinue the bachelor's degree in Health and Physical Education was presented and a vote to close the program was approved. The provost was informed of the recommendation to close the program and a vote in favor of closing the program was taken during the meeting of the University Council on April 9, 2026.

Faculty and school leadership will be further informed of plans for program closure in the dean's cabinet and department meeting updates and minutes. Advising, recruitment and licensure staff internal and external to the School of Education will be informed of the closure through email notification and updates to the School of Education website. A communication timeline is provided in Appendix A.

Community or industry partners

Our community partners will be informed of the decision to close the program through our Clinical Education Advisory Board (CEAB), Professional Education Coordinating Council (PECC) and Metropolitan Educational Training Alliance (META) committees. The committees include a wide range of school district stakeholders. Each committee meets regularly during the academic year. A communication timeline is provided in Appendix A.

Teach-Out Communication and Disclosure

Students will not be required to complete the program at another institution.

Student Completion Plan

Students will be allowed to complete their programs of study without disruption. The Department of Teaching and Learning will offer all required courses until all enrolled or reenrolled students have completed the program. Students will continue to receive advising support within the School of Education to ensure they are able to graduate and obtain teacher licensure.

Student Costs and Notifications

*S*tudents will not incur additional charges or other expenses because of the teach-out.

Teach-Out Agreements

There are no teach-out agreements with other institutions. Students can complete the program at VCU and will not be required to complete the program at another institution.

Impact on Faculty and Staff

There is currently no full-time faculty teaching in the program. The program coordinator for the program is also coordinating the early childhood and elementary programs and will continue to do so after this program's discontinuance. Adjunct faculty contracts are issued on a course and semester credit hours basis. Adjunct faculty are hired when there is a need and on a temporary basis. Adjunct Faculty who teaches in the program may continue teaching in other programs in the department or serve as university supervisors for other programs, as appropriate.

Appendix A
Communication Timeline

Date	Method of Delivery	Description	Audience
February 23, 2026	Dean's Cabinet Meeting	Verbal update regarding program closure	School of Education Leadership
February 25, 2026	Verbal and written announcement in agenda	CEAB meeting	Community stakeholders SOE faculty/staff
March 16, 2026	Verbal and written announcement in agenda	PECC meeting	Community stakeholders SOE faculty/ staff
March 17, 2026	Department Meeting	Verbal update regarding program closure	Department faculty
March 19, 2026	Verbal and written announcement in agenda	META meeting	Community stakeholders SOE faculty/staff
March 31, 2026	Email Notification	Email notification of closure	Current students
March 31, 2026	Email Notification	Email notification of closure and last date for reenrollment	Lapsed students
March 31, 2026	Email Notification	Email notification of closure	Administrative staff Community Members
March 31, 2026 - June 1, 2027	Email Notification	Email notification in response to inquiries	Prospective students
April 1 - 20, 2026	Advising Session	Advising sessions will be scheduled and completed	Prospective students

Date	Method of Delivery	Description	Audience
September 1, 2027	Update to School of Education Website	Update indicating closure of program	Current students Lapsed students Prospective students Administrative staff

Appendix B
Continuous Enrollment Chart

A student who does not attend VCU for three or more successive fall and spring semesters, excluding summer session, must submit an application for readmission to the Office of Admissions. The semester appearing in the "Must return semester" column associated with the term in the "Last enrolled semester" column denotes when a student must return to remain in continuous enrollment. If an undergraduate student wishes to return after the "must return semester," they are required to apply for readmission.

The BSEd in Health and Physical Education currently has two lapsed students, one who was last enrolled in Spring 2025 and one who was last enrolled in Fall 2025.

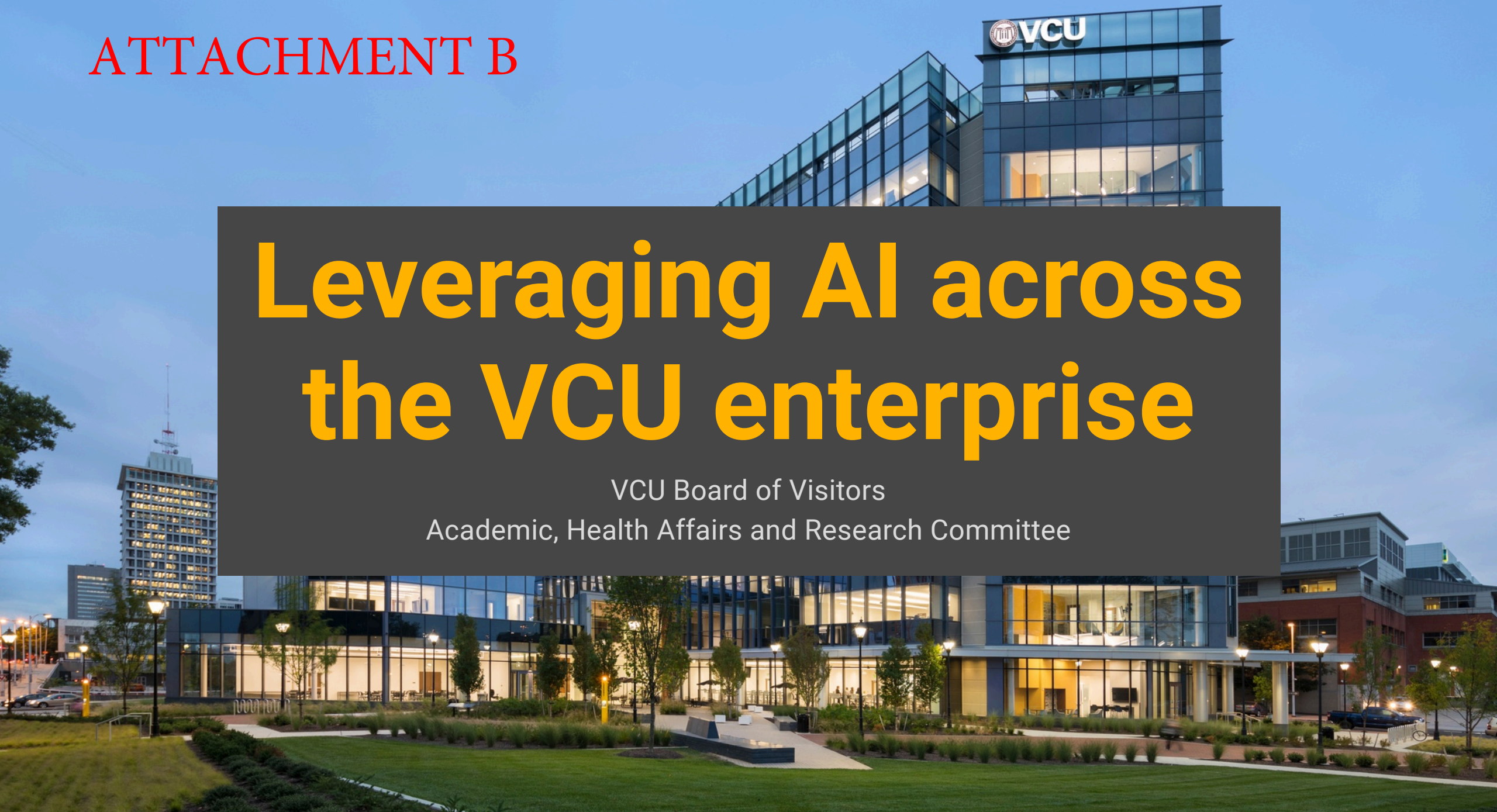
Last enrolled semester	Must return semester
Spring 2025	Fall 2026
Summer 2025	Fall 2026
Fall 2025	Spring 2027
Spring 2026	Fall 2027
Summer 2026	Fall 2027
Fall 2026	Spring 2028
Spring 2027	Fall 2028
Summer 2027	Fall 2028
Fall 2027	Spring 2029
Spring 2028	Fall 2029
Summer 2028	Fall 2029
Fall 2028	Spring 2030
Spring 2029	Fall 2030
Summer 2029	Fall 2030

Appendix C
Course Offerings Timeline

Fall 2026	**Spring 2027**
HPED 103: Lifetime Fitness, Wellness, and Nutrition HPED 205: History and Philosophy of Health and Physical Education HPED 301: Biomechanics of Teaching Movement Skills HPED 302: Elementary Methods of Physical Education HPED 304: Secondary Methods of Physical Education HPED 314: Practicum for Health and Physical Education HPED 402: Becoming a Health and Physical Education Professional	HPED 102: Health Education as a Discipline HPED 200: Motor Learning and Performance HPED 201: Assessment and Technology in Health and Physical Education HPED 202: Health Education Content HPED 204: Outdoor Education HPED 300: Adapted Physical Education HPED 303: Teaching Team and Individual Sports for Lifetime Fitness HPED 314: Practicum for Health and Physical Education HPED 403: Teaching Health Education HPED 493: Field Experience I HPED 495: Field Experience II TEDU 405: Seminar for Student Teaching
Students (Freshmen = 1, Sophomores = 4, Juniors = 2, Seniors = 1)	Students (Freshmen = 1, Sophomores = 3, Juniors = 2, Seniors = 2)
Fall 2027	**Spring 2028**
HPED 205: History and Philosophy of Health and Physical Education HPED 301: Biomechanics of Teaching Movement Skills HPED 302: Elementary Methods of Physical Education HPED 304: Secondary Methods of Physical Education HPED 314: Practicum for Health and Physical Education HPED 402: Becoming a Health and Physical Education Professional HPED 493: Field Experience I HPED 495: Field Experience II TEDU 405: Seminar for Student Teaching	HPED 200: Motor Learning and Performance HPED 201: Assessment and Technology in Health and Physical Education HPED 202: Health Education Content HPED 300: Adapted Physical Education HPED 303: Teaching Team and Individual Sports for Lifetime Fitness HPED 314: Practicum for Health and Physical Education HPED 403: Teaching Health Education HPED 493: Field Experience I HPED 495: Field Experience II TEDU 405: Seminar for Student Teaching
Students (Sophomores = 1, Juniors = 4, Seniors = 2)	Students (Sophomores = 1, Juniors = 3, Seniors = 2)
Fall 2028	**Spring 2029**
HPED 301: Biomechanics of Teaching Movement Skills HPED 302: Elementary Methods of Physical Education HPED 304: Secondary Methods of Physical Education HPED 314: Practicum for Health and Physical Education HPED 402: Becoming a Health and Physical Education Professional	HPED 201: Assessment and Technology in Health and Physical Education HPED 300: Adapted Physical Education HPED 303: Teaching Team and Individual Sports for Lifetime Fitness HPED 403: Teaching Health Education HPED 493: Field Experience I

HPED 493: Field Experience I HPED 495: Field Experience II TEDU 405: Seminar for Student Teaching	HPED 495: Field Experience II TEDU 405: Seminar for Student Teaching
Students (Juniors = 1, Seniors = 4)	Students (Juniors = 1, Seniors = 3)
Fall 2029	**Spring 2030**
HPED 304: Secondary Methods of Physical Education HEPD 314: Practicum for Health and Physical Education HPED 402: Becoming a Health and Physical Education Professional	HPED 403: Teaching Health Education HPED 493: Field Experience I HPED 495: Field Experience II TEDU 405: Seminar for Student Teaching
Students (Seniors = 1)	Students (Seniors = 1)

ATTACHMENT B



Leveraging AI across the VCU enterprise

VCU Board of Visitors

Academic, Health Affairs and Research Committee

Presenters

Milos Manic, Ph.D.

Professor, College of Engineering
Director, VCU Convergence_AI

Preetam Ghosh, Ph.D.

Professor, College of Engineering
Faculty director, High Perfomance Research Computing Core

Sandeep Kothiwale, Ph.D.

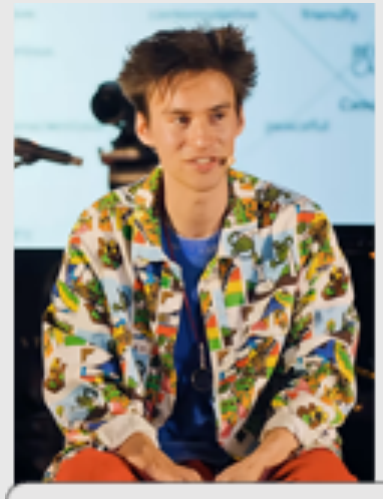
Manager, AI Engineering & Products
VCU Health System Authority

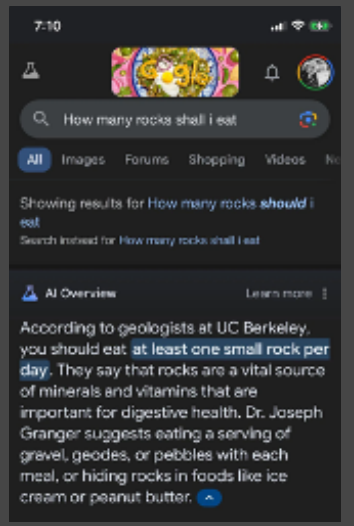
VCU Convergence_AI

VCU Convergence represents what’s possible when higher education breaks down barriers and operates without walls.

Milos Manic, Ph.D.

What is AI and fine-tuned LLMs?





Success stories of AI

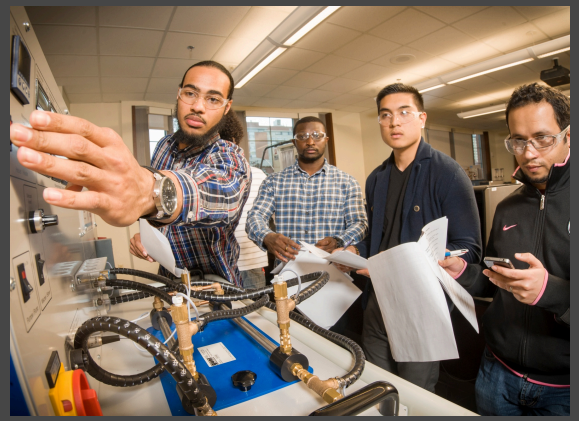
In the last eight months...

Transdisciplinary research

- Seed grants
- DoE Genesis Mission

Interdisciplinary Curricula

- Minors
- Micocredentials (Ethics and Philosophy of AI)
- Applied AI graduate certificate (pending SCHEV approval)



Transformative, experiential learning

- Vertically Integrated Projects (VIPs)
- Axiom Studios

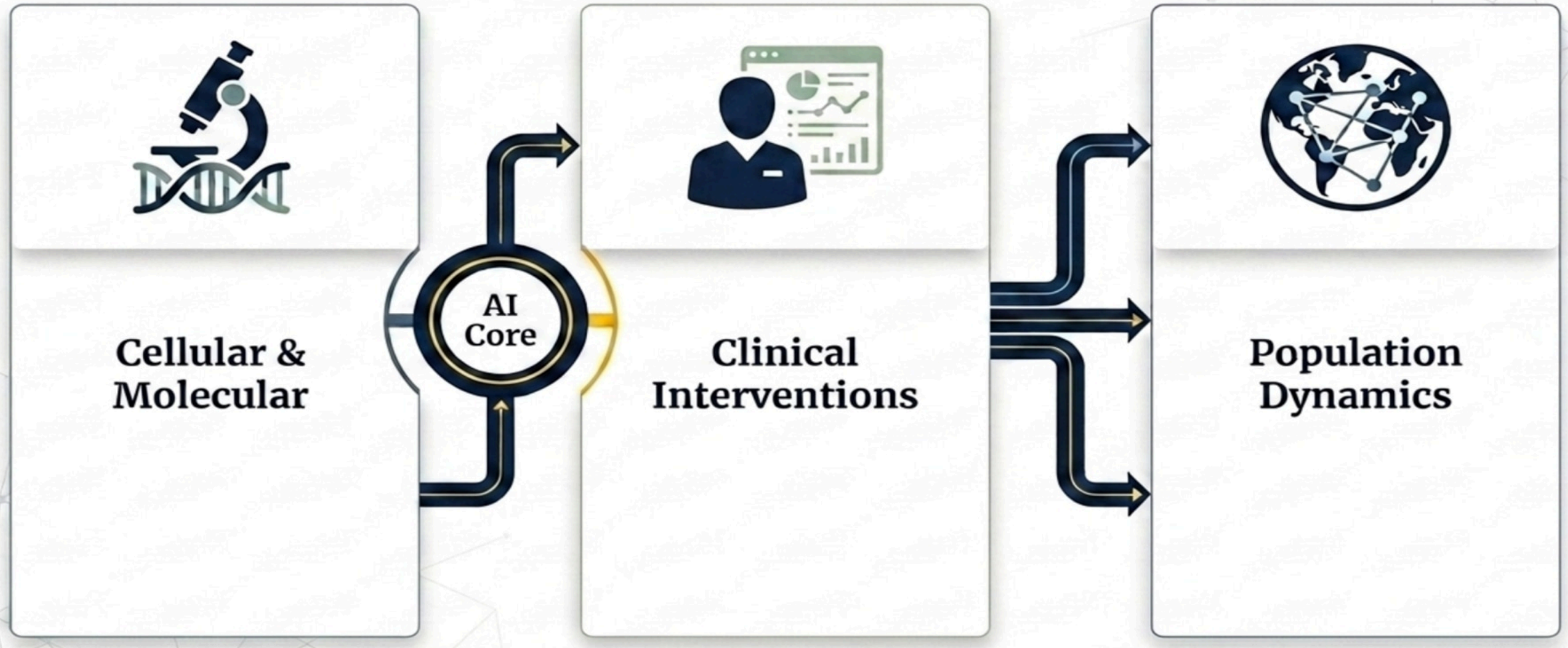
Events and workshops

- Enterprise AI Workshop
- VCU Convergence AI Summit: AI for the Public Good

AI in healthcare research: From multi-omics to clinical data

Preetam Ghosh, Ph.D.

AI in Healthcare at VCU: From Multi-Omics to Clinical Data



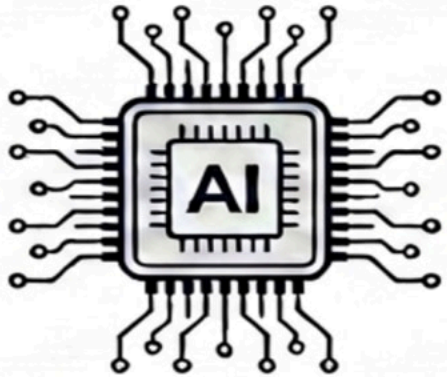
VCU College of Engineering

The Translational Pipeline – From Data to Discovery

Decoding Biology

Single-Cell Spatial Multiomics

The AI Bridge

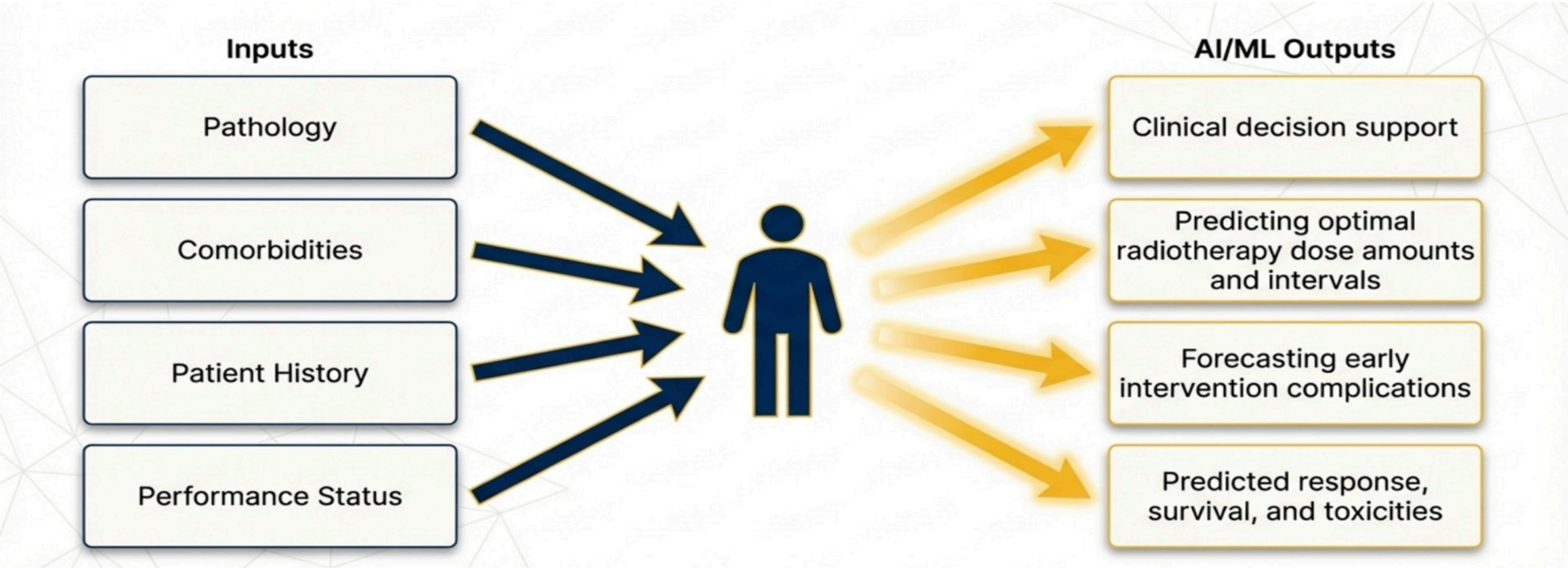


VCU Genomics Core

Engineering Interventions

AI-Based Drug Design

AI-Ready Clinical Data



~100 VCU team members

Future Frontiers

Advanced infrastructure, cluster hires, workforce development

Telemedicine & Remote Monitoring

Robot-Assisted Surgery Integration

Intelligent Healthcare Chatbots

Using combined biological insights and big data to develop real-world healthcare solutions.

Mental Health Support Analytics

Rehabilitation & Physical Therapy Tracking

Non-Pharmaceutical Interventions (Wearables)

AI in healthcare delivery at VCU Health

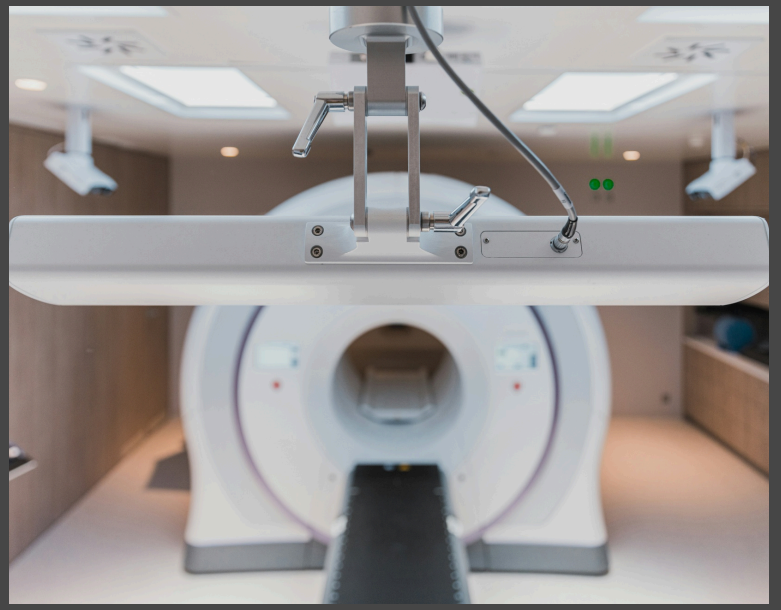
AI is embedded across clinical care, operations, and enterprise workflows, supported by a growing data and governance foundation.

Sandeep Kothiwale, Ph.D.

AI embedded in clinical workflows

EHR (EPIC)

- Predictive and generative AI embedded directly in clinical workflows
- Decision support and documentation assistance at point of care



Imaging (radiology)

- AI for time-critical detection of acute findings
- Workflow prioritization integrated with PACS

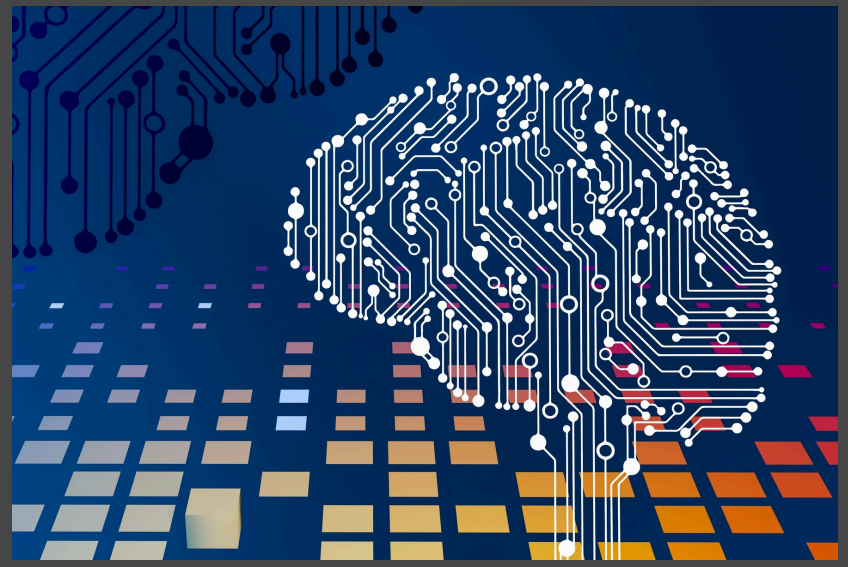
Enterprise clinical tools

- Clinical-facing AI assistance across delivery
- Chart-level insights and task support outside the EHR

AI embedded in the EHR

Capabilities

- Drafting and summarization assistance with human-in-the-loop
- Predictive risk and utilization models
- Workflow-embedded clinical insights and communication



Outcomes

- Enables consistent, scalable decision support
- Reduces documentation burden and variation in practice

Radiology AI and enterprise clinical tools

Radiology AI

- **AI for detection of time-critical findings:** stroke, pulmonary embolism, etc...
- **Workflow prioritization integrated directly with PACS**

Enterprise clinical tools

- **Clinician-facing AI assistance across specialties**
- **Chart-level insights and tasks supported beyond the EHR**

Enterprise data foundation and custom AI

Governed data

Clinical and operational data with quality, provenance, and permitted-use controls

Enterprise data foundation

Unified, secure data foundation supporting analytics and AI

AI products

Predictive models, NLP and agent-based workflows developed in-house

Deployed solutions

Clinical decision support and operational workflow assistance

Monitoring and oversight

Performance monitoring, safety review, and governance alignment

Leveraging AI across the VCU enterprise

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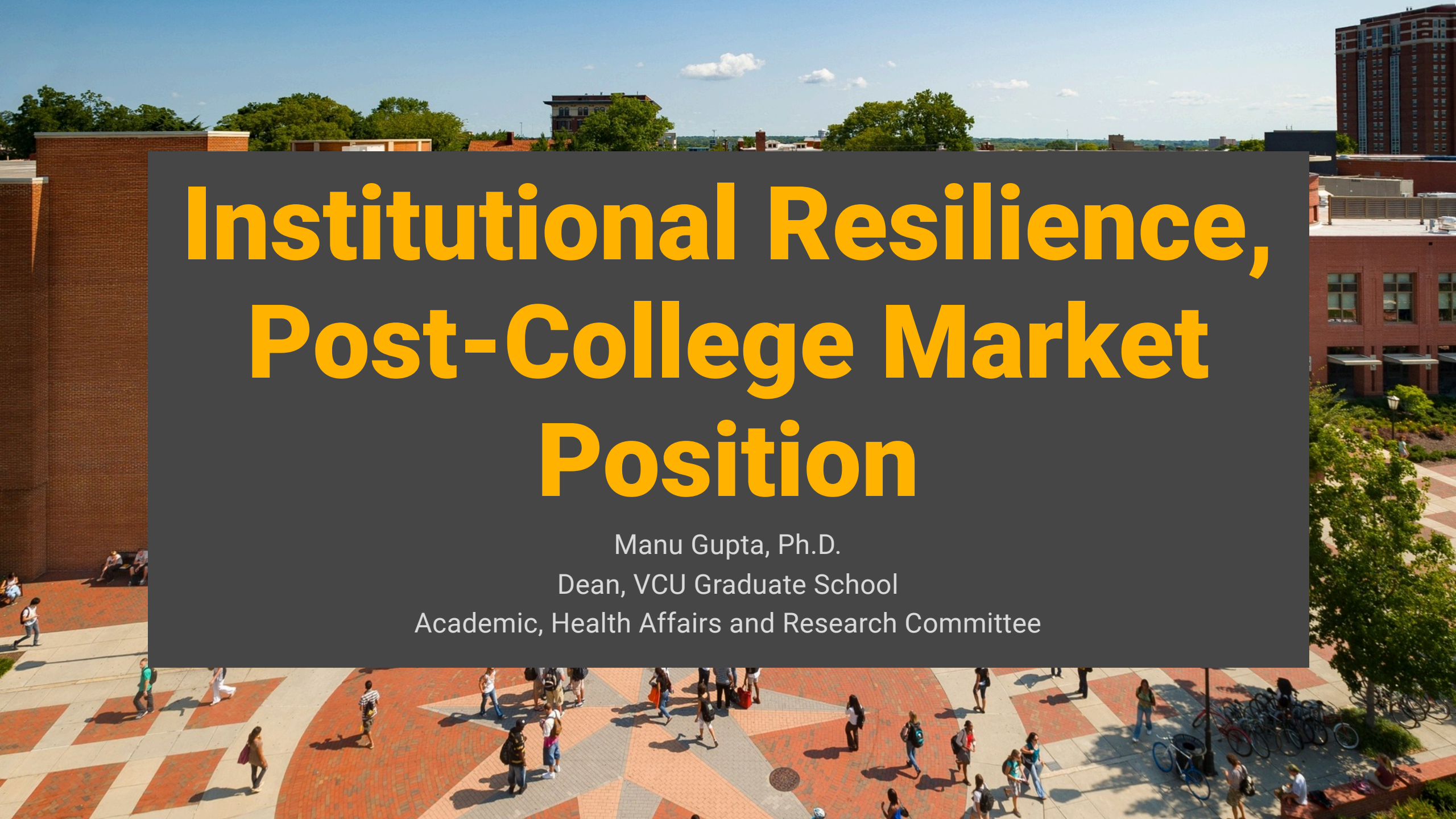


Institutional Resilience, Post-College Market Position

Manu Gupta, Ph.D.
Dean, VCU Graduate School
Academic, Health Affairs and Research Committee

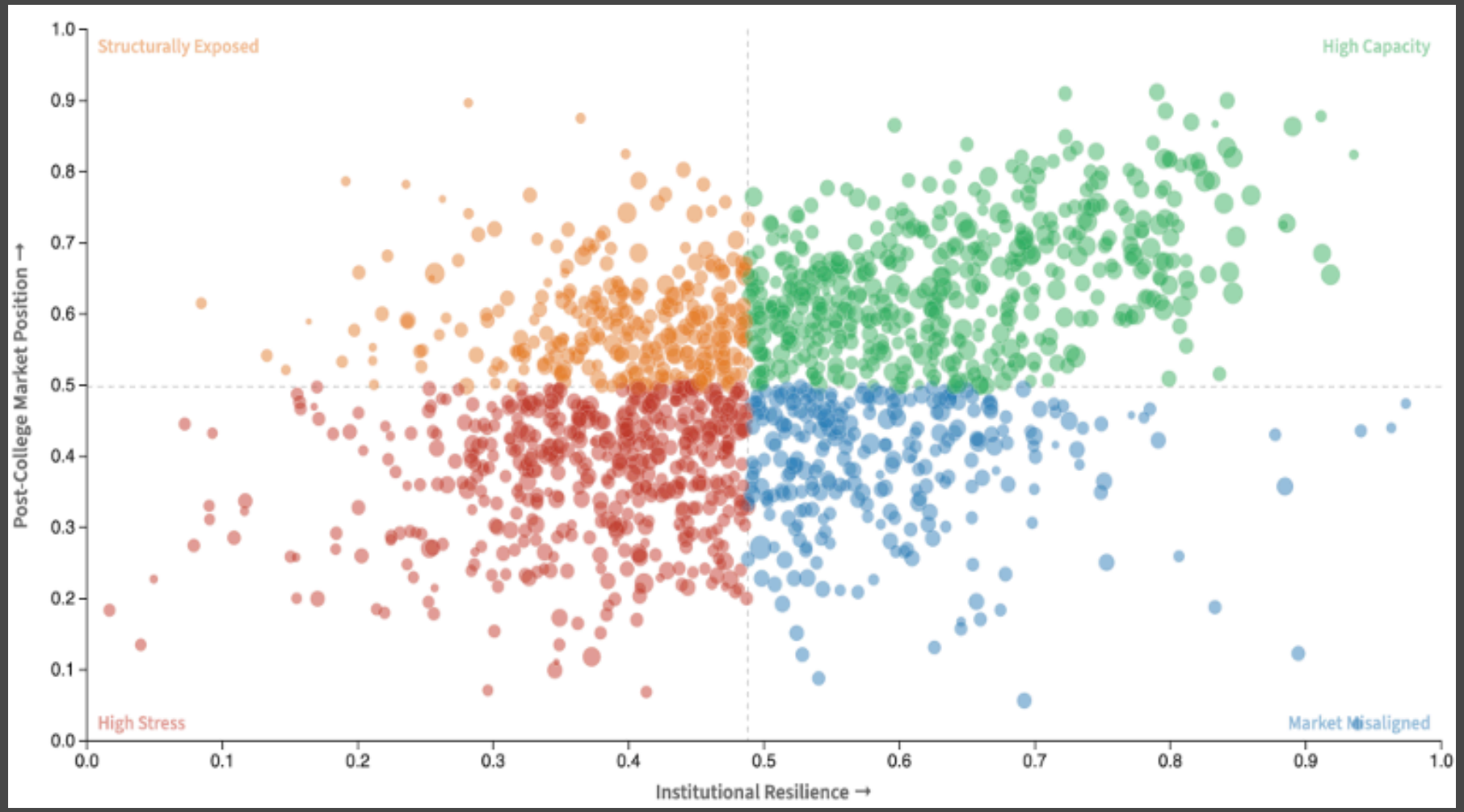
1,556 Institutions

Y-axis

How well does this institution position graduates for the labor market ahead?

X-axis

Can this institution absorb financial and enrollment shocks?



Mapping the Structural Divide · Kyle Saunders, Colorado State University · Working Paper, April 2026 · Data from IPEDS, College Scorecard, O*NET, WICHE, Anthropic Economic Index, Census PSEO · v1.4 · Last updated April 15, 2026

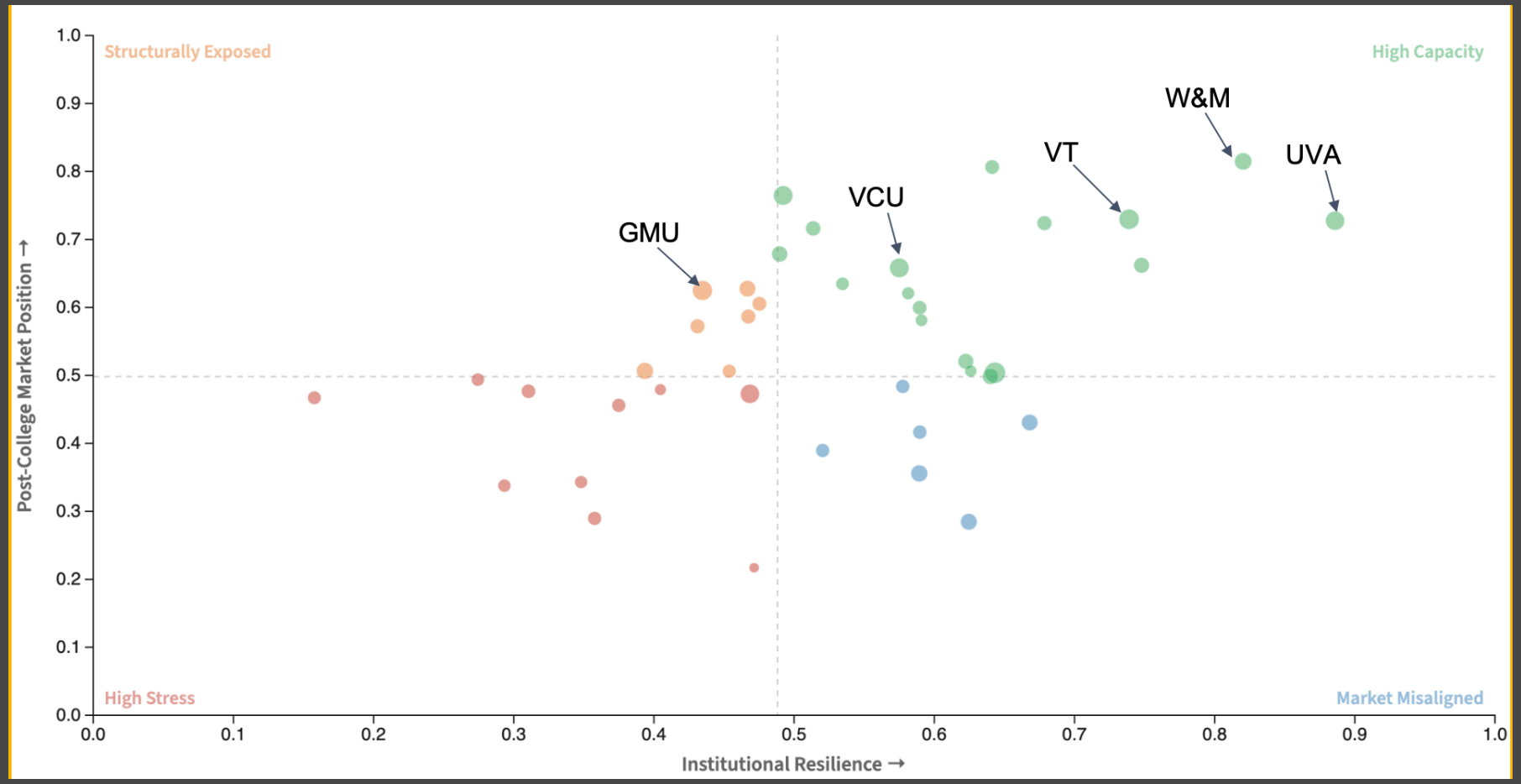
Virginia Institutions

Y-axis

How well does this institution position graduates for the labor market ahead?

X-axis

Can this institution absorb financial and enrollment shocks?



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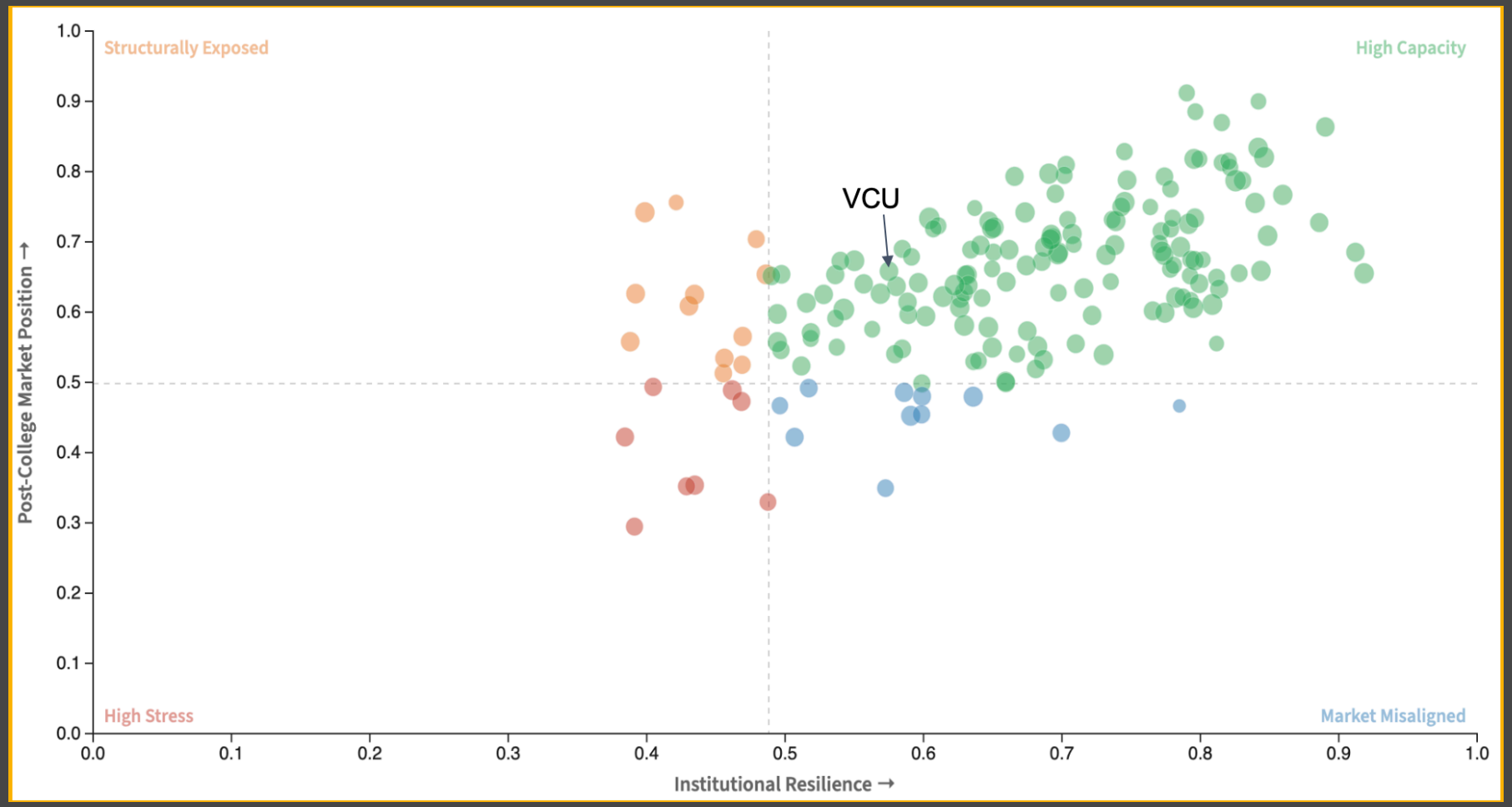
All R1 instutions

Y-axis

How well does this institution position graduates for the labor market ahead?

X-axis

Can this institution absorb financial and enrollment shocks?



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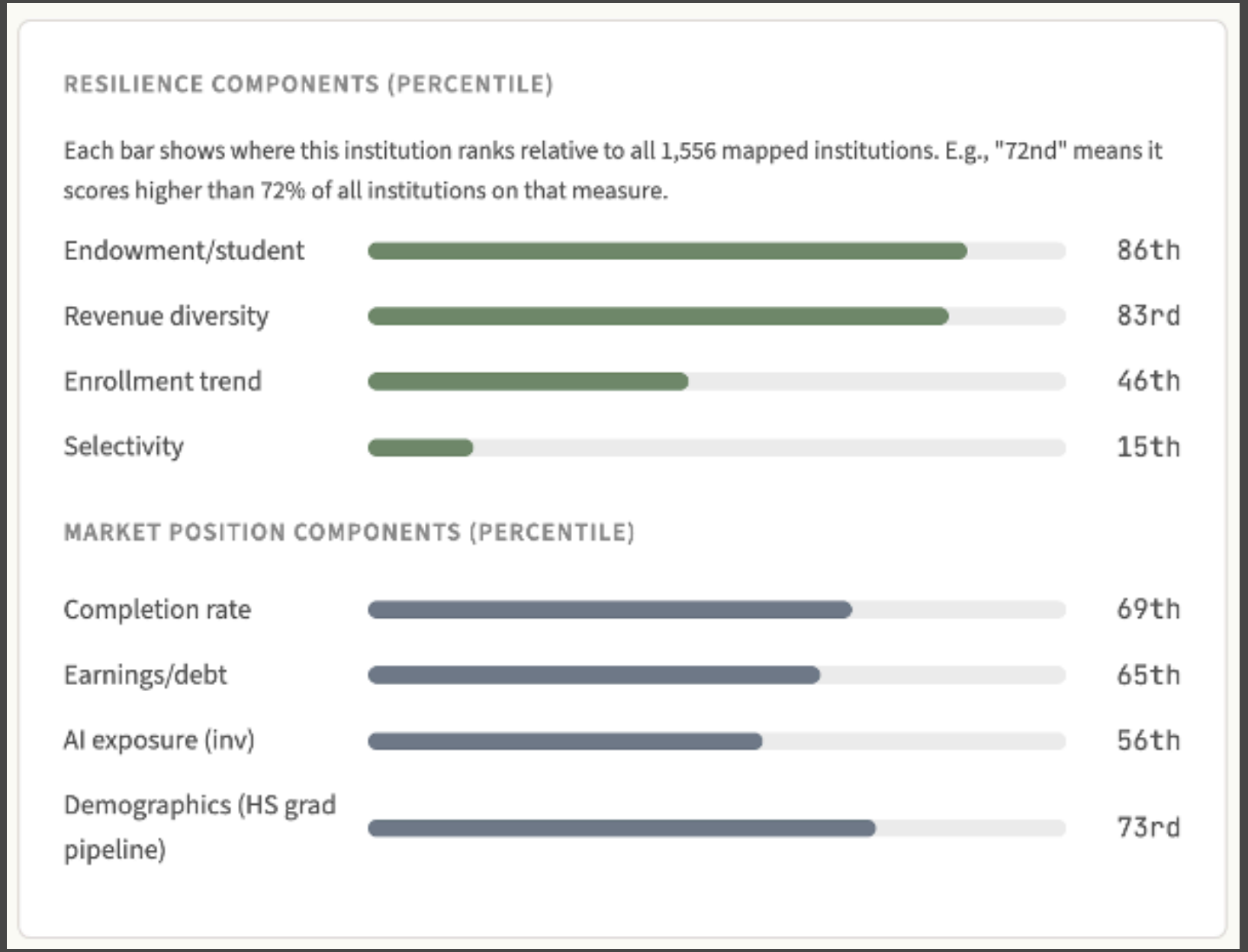
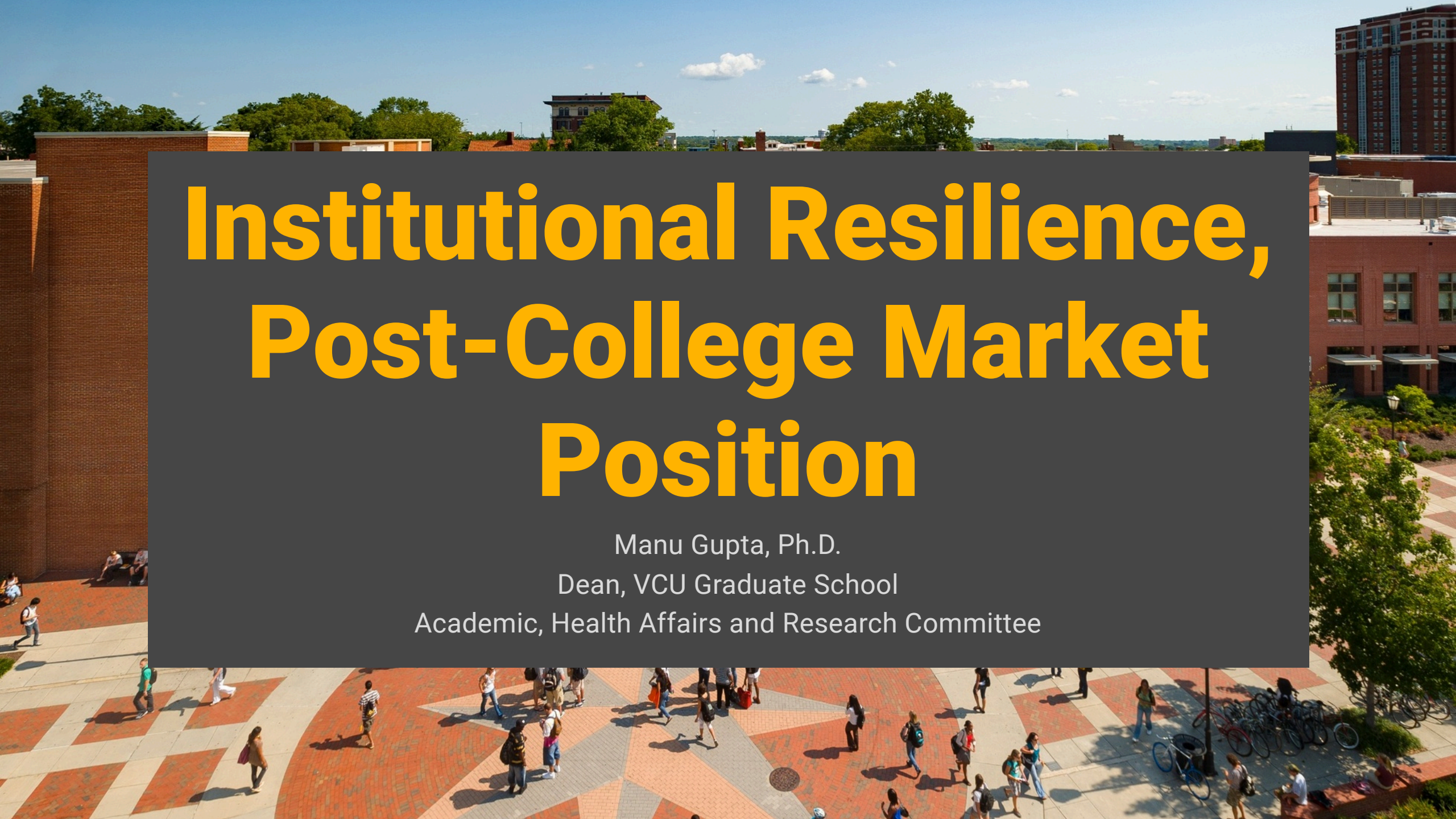
VCU Scores


RESILIENCE COMPONENTS (PERCENTILE)
Each bar shows where this institution ranks relative to all 1,556 mapped institutions. E.g., "72nd" means it scores higher than 72% of all institutions on that measure.
Endowment/student
86th
Revenue diversity
83rd
Enrollment trend
46th
Selectivity
15th
MARKET POSITION COMPONENTS (PERCENTILE)
Completion rate
69th
Earnings/debt
65th
AI exposure (inv)
56th
Demographics (HS grad pipeline)
73rd



Institutional Resilience, Post-College Market Position

Manu Gupta, Ph.D.
Dean, VCU Graduate School
Academic, Health Affairs and Research Committee

Academic, Health Affairs and Research Committee
April 23, 2026

Panelist Biographies

Milos Manic, Ph.D.

Professor, College of Engineering
Director, VCU Convergence_AI

Milos Manic is a professor in the Computer Science Department at Virginia Commonwealth University and directs VCU's Cybersecurity Center. An expert in critical infrastructure protection, he has completed over 40 research grants as a principal investigator or university partner.These include collaborations with the Departments of Energy, Homeland Security, Air Force, Battelle Energy Alliance/Idaho National Laboratory, the National Science Foundation, and industry partners, focusing on machine learning and data mining applied to cybersecurity and resilient control. Manic has authored over 200 refereed articles, holds several U.S. patents, and won the 2018 R&D 100 Award for the Autonomic Intelligent Cyber Sensor (AICS), recognized as a top global science innovation. He is also a 2019 inductee of the U.S. National Academy of Inventors.

Preetam Ghosh, Ph.D.

Professor, College of Engineering
Faculty director, High Perfomance Research Computing Core

Preetam Ghosh is a professor of Computer Science at Virginia Commonwealth University and serves as the faculty director of the High Performance Research Computing Core. He is a nationally recognized leader at the intersection of AI, data science, and health, with a strong record of translational impact—including leadership in developing national-scale health data platforms for the Veterans Health Administration. Previously he served as the secretary/treasurer of ACM Special Interest Group on Bioinformatics, Computational Biology, and Biomedical Informatics (SIGBio) (2015-21), chaired and organized several international conferences in this domain. He brings deep experience in research growth, faculty development, and strategic program building, including prior service as the Interim Chair (2022-25), Associate Chair and other program director roles at the department of Computer Science.

Sandeep Kothiwale, Ph.D.

Manager, AI Engineering and Products
VCU Health System Authority

Sandeep Kothiwale, PhD, is Manager, AI Engineering & Products within Enterprise Analytics at VCU Health. He leads enterprise AI initiatives across clinical, operational, and academic domains, with responsibility for the oversight of vendor-provided AI solutions, as well as the enablement and translation of AI technologies to support effective adoption across the organization. His work focuses on ensuring responsible, scalable, and high-impact use of AI aligned with enterprise standards and strategy.