

# Ryan Shifler, Ph.D.

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Associate Professor of Mathematics and academic leader at Salisbury University, currently serving as Associate Dean in the Henson School of Science and Technology. Extensive experience in program oversight, curriculum development, data-informed decision making, and cross-institutional partnerships. Active researcher in algebraic geometry, combinatorics, and quantum cohomology with a strong record of peer-reviewed publications and undergraduate mentorship, and a recognized contributor to statewide mathematics education and policy initiatives.

## Academic Appointments

2023 – . . . > **Associate Professor**, Department of Mathematical Sciences, Salisbury University.

2017 – 2023 > **Assistant Professor**, Department of Mathematical Sciences, Salisbury University.

2011 – 2017 > **Graduate Teaching Assistant**, Department of Mathematics, Virginia Tech.

2011 & 2014 > **Adjunct Faculty**, Developmental Mathematics, Hagerstown Community College.

## Academic Administrative Experience

### Associate Dean of the Richard A. Henson School of Science and Technology, Salisbury University

2022 – . . .

> Director of the Integrated Science Program.

- Collaborate with students and faculty to support student progress toward completion of a Bachelor of Science degree.
- Facilitate key administrative processes for academic programs, including coordination of the Academic Program Review.
- Develop and propose curriculum revisions to align program offerings with student educational objectives and career pathways.

> Co-Coordinator of the Forensic Science Concentration within the Integrated Science Program.

- Co-facilitate an academic concentration in partnership with faculty subject-matter experts.
- Maintain a collaborative partnership with Wor-Wic Community College to implement and manage a Memorandum of Understanding enabling Salisbury University students to enroll in WWCC courses.
- Coordinate financial and logistical components of the agreement to ensure seamless cross-institutional course participation.

> Oversee the Urban and Regional Planning Program.

- Support key personnel in the administration of academic programs.
- Recommend program updates in response to evolving university policies.
- Guide proposed program changes through the institutional curriculum approval process.
- Communicate critical administrative updates and recommendations to the Program Director.

> Articulation agreements for student recruitment.

- Led initiatives to develop partnerships with community colleges to establish articulation agreements supporting seamless STEM student transfer pathways.
- Convened faculty across institutions to align curricula and reduce administrative barriers in the transfer process.

> Data analytics for informed decision making.

## **Academic Administrative Experience (continued)**

- Inform programmatic and administrative decision-making through data analytics and longitudinal analysis.
- Conducted multi-year analyses of DFW rates, degree completion, program selection and changes, and summer and winter session enrollment for first-time students.
- Led assessment of math and chemistry placement exams and evaluated their impact on student success.
- Contributed to policy and practice changes based on findings, including implementation of high school transcript-based placement for Calculus I.

## ➤ Outreach initiatives.

- Assembled and led faculty teams in developing NSF grant proposals to advance the university's educational mission and expand student support resources.
- Serve as an ex officio member of the STEM Outreach Committee, advocating for resources to support faculty-led initiatives.
- Coordinate and facilitate outreach activities, including Henson Newsletters and Henson Seminars.

Mathematics and Computer Science Tutor Coordinator, Salisbury University

Fall 2021 – Spring 2022 for the Department of Mathematical Sciences and the Department of Computer Science.  
Spring 2018 – Spring 2019 for the Department of Mathematics and Computer Science.

- Facilitate student application and hiring processes in collaboration with Department Chairs.
- Manage student employment contracts, ensure compliance with Human Resources requirements, and meet all administrative deadlines.
- Expand recruitment efforts across all science programs, with intentional outreach to students from diverse backgrounds.
- Implement an electronic sign-in system to track student attendance and improve administrative efficiency.

Calculus Readiness Director, Salisbury University

Spring 2018 – Spring 2019

- Developed and implemented Calculus Readiness, a co-requisite, just-in-time learning program to support Calculus I students with prerequisite material.
- Led a team of three colleagues to design session materials aligned with Calculus I content, ensuring logical progression and timely introduction of topics.
- Organized and managed Calculus Readiness Leaders to facilitate sessions for students across six Calculus I sections (150 students).
- Created infrastructure to schedule and coordinate students into appropriate readiness sessions.
- Addressed departmental concern over declining mastery of prerequisite material, improving students' preparedness and success in Calculus I.

## External Leadership Experience

Maryland State Department of Education (MSDE)

➤ Co-Chair, Launch Years Task Force, Fall 2024 – . . . .

## External Leadership Experience (continued)

- Invited Co-Chair of the Launch Years Task Force, focused on informing policy changes in secondary education mathematics.
- Provide expertise on higher education curriculum alignment to support policy recommendations.
- Serve as liaison between postsecondary institutions and MSDE, communicating proposed changes and potential challenges.
- Facilitate alignment of mathematics curricula between high schools and colleges to ensure smooth student transitions.

### University System of Maryland (USM)

- Member, USM Admissions Standards Task Force, Fall 2025 – · · ·.
  - Member of task force charged with recommending math requirements for USM admissions.
  - Provide guidance in response to recent changes in Maryland secondary mathematics standards.
- Member, USM High School Math Course Evaluation Group, Fall 2023 – · · ·.
  - Collaborate with a team of USM math faculty to evaluate high school mathematics courses across Maryland counties and Baltimore City.
  - Review syllabi, exams, and assessments to determine alignment with USM four-year math admission requirements.
  - Ensure high school mathematics curricula meet standards for postsecondary readiness.
- Co-Chair, USM-Maryland Association of Community Colleges Math Affinity Group, Fall 2022 – · · ·.
  - Co-Chair and member of multiple USM and Maryland mathematics task forces focused on aligning secondary and postsecondary curricula.
  - Advise on policy issues including USM admissions standards, the Transfer with Success Act, and Maryland Blueprint legislation.
  - Facilitate consensus on student learning outcomes for mathematics courses to enhance transfer success from community colleges to four-year institutions.
  - Chaired a statewide subcommittee to develop learning outcomes for Differential Equations, ensuring consistency across Maryland.

### MD-DC-VA Section of the Mathematical Association of America (MAA)

- Program Chair, Fall 2020 – Fall 2022.
  - Elected Program Chair responsible for organizing Section Meetings held twice annually (Fall and Spring).
  - Selected 2–3 invited speakers and coordinated a workshop leader for each meeting.
  - Designed and managed the schedule for contributed talks at Section Meetings.
  - Played a key role in transitioning Fall 2020 Section Meeting to a fully virtual format due to COVID-19, developing a successful online meeting plan in collaboration with the Section Chair.
  - Implemented the virtual meeting model again for Spring 2021, ensuring a seamless and engaging experience for attendees.
- Salisbury University Representative/Site Coordinator for the MD-DC-VA Section Meeting, Spring 2020 and Fall 2021.

## External Leadership Experience (continued)

- Served as Site Coordinator for the planned Spring 2020 Section Meeting at Salisbury University ( $\approx 120$  anticipated attendees); coordinated hotel accommodations, classroom reservations, signage, catering, and website information.
- Adapted to COVID-19 cancellation of Spring 2020 meeting, demonstrating flexibility and planning under uncertainty.
- Served as Program Chair and Site Coordinator for Fall 2021 Section Meeting (72 registered attendees), managing logistics and programming amidst fluid COVID-19 protocols.
- Successfully executed one of the few in-person MAA events in 2021, ensuring a safe and engaging experience for participants.

## Education and Training

2025	➢ <b>Emerging Leader Program, Leadership Maryland.</b> Competitively selected from public, private, government, education, and nonprofit sectors in the State of Maryland.
2013 – 2017	➢ <b>Ph.D., Virginia Tech</b> in Mathematics.
2011 – 2013	➢ <b>M.S., Virginia Tech</b> in Mathematics.
2009 – 2011	➢ <b>B.S., Salisbury University</b> in Mathematics.
2007 – 2009	➢ <b>A.A. &amp; A.S., Hagerstown Community College</b> in Mathematics and Arts and Sciences.

## Publications

### Research

In pure mathematics, authors are listed in alphabetical order. It is generally accepted that each author contributed equally to the work.

**Bold font indicates undergraduate coauthors.**

- *Minimum quantum degrees with Maya diagrams in a family of odd orthogonal partial flag varieties*, submitted. (with **S. Barr**.)
- *On the quantum parameter in the quantum cohomology of a family of odd symplectic partial flag varieties*, *Journal of Algebra and Its Applications*, to appear. (with **C. Bean** and **C. Shank**.)
- *Curve neighborhoods and combinatorial property  $\mathcal{O}$  for a family of odd symplectic partial flag manifolds*, *Rocky Mountain Journal of Mathematics*, to appear. (with **C. Bean** and **B. Cruikshank**.)
- *Minimum quantum degrees with Maya diagrams*, *Annals of Combinatorics* 29 (2), 395-413, 2025.
- *Positivity determines the quantum cohomology of the odd symplectic Grassmannian of lines*, *Communications in Algebra* 52 (11), 4955-4960, 2024.
- *Curve neighborhoods of Schubert varieties in the odd symplectic Grassmannian*, *Transformation Groups* 29 (1), 361-408, 2024. (with C. Pech.)
- *On the spectral properties of the quantum cohomology of the odd quadrics*, *Involve, a Journal of Mathematics* 16 (1), 27-34, 2023. (with **S. Warman**.)
- *Minimum quantum degrees for isotropic Grassmannians of types B and C*, *Annals of Combinatorics* 26 (2), 453-480, 2022. (with C. Withrow.)
- *On Frobenius-Perron dimension*, *Proceedings of the American Mathematical Society* 150 (12), 5035-5045, 2022. (with C. Li, M. Yang, and **C. Zhang**.)
- *Galkin's lower bound conjecture holds for the Grassmannian*, *Communications in Algebra* 48 (2), 857-865, 2020. (with **L. Evans**, L. Schneider, **L. Short**, and **S. Warman**.)

## Publications (continued)

- *Conjecture  $\mathcal{O}$  holds for some horospherical varieties of Picard rank 1*, *Involve, a Journal of Mathematics* 13 (4), 551-558, 2020. (with **L. Bones**, **G. Fowler**, and L. Schneider.)
- *Conjecture  $\mathcal{O}$  holds for the odd symplectic Grassmannian*, *Bulletin of the London Mathematical Society* 51 (4), 705-714, 2019. (with C. Li, and L. Mihalcea.)
- *Equivariant quantum cohomology of the odd symplectic Grassmannian*, *Mathematische Zeitschrift* 291 (3-4), 1569-1603, 2019. (with L. Mihalcea.)
- *Equivariant quantum cohomology of the odd symplectic Grassmannian*, Ph.D. Dissertation, Virginia Polytechnic Institute and State University Library, 2017.

## Expository

- *Faculty writing groups for mathematicians*, *MAA Focus* (October/November 2018). (with J. Anderson, J. Austin, Y. Jing, L. Schneider, and S. Wesolowski.)

## Journal Refereeing

- *Journal of Algebraic Combinatorics*, *Communications in Algebra*, *Mathematics Magazine*.

## Student Mentee Awards and Recognition

Departmental Honors	➢ <b>Garrett Fowler</b> (2019), <b>Stephanie Warman</b> (2021), <b>Laurie Short</b> (2021), and <b>Caleb Shank</b> (2025).
University Honors	➢ <b>Stephanie Warman</b> (2021) and <b>Connor Bean</b> (2024).

## Funding

\$368	➢ Received the Henson Travel Award to attend the Spring Meeting of the MD-DC-VA section of the MAA held at George Mason University held on April 11-12, 2025.
\$3,300	➢ Received through the Henson Summer Research Program at Salisbury University for Summer 2025 to work with student <b>Stephen Barr</b> .
\$1,000	➢ Received the Henson Travel Award to attend The Joint Mathematics Meeting held in San Francisco, CA held on January 3-6, 2024.
\$12,000	➢ Received, with Josh Sokoloski, Susanne Daly, and Giulia Franchi, through the Faculty Research Enhancement Grants Program at Salisbury University in a collaborative project across departments to support transfer students in the school of science for 2024.
\$4,000	➢ Received through the Henson Summer Research Program at Salisbury University for Summer 2023 to work with students <b>Connor Bean</b> and <b>Caleb Shank</b> .
\$4,000	➢ Received through the Henson Summer Research Program at Salisbury University for Summer 2022 to work with students <b>Connor Bean</b> and <b>Bradley Cruikshank</b> .
\$10,645	➢ Received through the Faculty Research Enhancement Grants Program at Salisbury University for 2020.
\$1,000	➢ Received the Henson Travel Award to attend The Joint Mathematics Meeting held in Denver, CO held on January 15-18, 2020.
\$1,000	➢ Received the Henson Travel Award to attend The Joint Mathematics Meeting held in Baltimore, MD held on January 16-19, 2019.
\$1,000	➢ Received the Henson Travel Award to attend The Joint Mathematics Meeting held in San Diego, CA held on January 10-13, 2018.
\$1,000	➢ Awarded grant (Declined) from the SU foundation to attend Math Fest in Denver, CO held in 2018.

## Funding (continued)

\$450 ➤ Awarded to attend The Ohio State Workshop on Schubert Calculus held on May 9-12, 2018.  
\$39,763 ➤ **Total amount awarded.**

## Presentations

### Invited Talks

- *Geometry, Symmetry, and Counting Curves: A Combinatorial Perspective*, Virginia Tech, Department Colloquium, January 23, 2026.
- *Curve neighborhoods of Schubert Varieties of the odd symplectic Grassmannian*, Eastern Fall Sectional Meeting of the American Mathematical Society, UMass Amherst, October 1-2, 2022.
- *Curve neighborhoods of Schubert Varieties of the odd symplectic Grassmannian*, Virginia Tech, Algebra Seminar, January 28, 2022.
- *Curve neighborhoods of Schubert Varieties of the odd symplectic Grassmannian*, University of Poitiers, Groups, Algebra, and Geometry Seminar, November 18, 2021.
- *Minimum quantum degrees for isotropic Grassmannians of types B and C*, (Cancelled) Virginia Tech, Algebra Seminar, April 3, 2020.
- *Equivariant quantum cohomology of the odd symplectic Grassmannian*, Rutgers University, Algebra Seminar, February 22, 2017.

### Invited Talks at Salisbury University

- *An introduction to (quantum) Schubert calculus*, Salisbury University Math and Computer Science Club Meeting, October 20, 2020.
- *An invitation to algebraic geometry*, Salisbury University Math and Computer Science Department Colloquium, September 26, 2019.

### Contributed Presentations

- *Quantum cohomology determined with negative structure constants present* at The Joint Mathematics Meetings. San Francisco, CA January 3-6, 2024.
- *A proposed generalization of a full rim hook removal on partitions* at The Mathematical Association of America Maryland-District of Columbia-Virginia Section Meeting. Montgomery College; Germantown, MD. April 22-23, 2022.
- *Calculus readiness* at The Mathematical Association of America Maryland-District of Columbia-Virginia Section Meeting. Hood College and Frederick Community College; Frederick, MD, April 12-13, 2019.
- *Calculus readiness* at the Joint Mathematics Meetings. Baltimore, MD January 16-19, 2019.
- *Calculus readiness* at The Mathematical Association of America Maryland-District of Columbia-Virginia Section Meeting. Mary Washington University; Fredericksburg, VA. November 2-3, 2018.
- *Universal Groebner bases of circulant polynomial systems* at The Joint Mathematics Meetings. San Diego, CA January 10-13, 2018.
- *Curve neighborhoods of the odd symplectic Grassmannian* at The Mathematical Association of America Maryland-District of Columbia-Virginia Section Meeting. Christopher Newport University; Newport News, VA. November 17-18, 2017.
- *Schubert calculus* at The Mathematical Association of America Maryland-District of Columbia-Virginia Section Meeting. Johns Hopkins University; Baltimore, Maryland. November 5, 2016.
- Seminar talk of *Quantum cohomology of the odd symplectic Grassmannian* at the Algebra Seminar. Virginia Tech; Blacksburg, Virginia. April 29, 2016.
- Show and tell presentation of *Quantum cohomology of the odd symplectic Grassmannian* at the Algebra Seminar. Virginia Tech; Blacksburg, Virginia. April 17, 2015.

## Presentations (continued)

- Master thesis defense of *Computation algebraic geometry applied to invariant theory*. Virginia Tech; Blacksburg, Virginia. April 30, 2013.
- *Universal Groebner bases of circulant polynomial systems* at The Salisbury University Student Research Conference. Salisbury University; Salisbury, Maryland. April 29, 2011.
- *Universal Groebner bases of circulant polynomial systems* at The Mathematical Association of America Maryland-District of Columbia-Virginia Section Undergraduate Research Conference. Received second place for the student paper awards. Randolph-Macon College; Ashland, Virginia. April 15-16, 2011.
- Poster presentation *Universal Groebner bases of circulant polynomial systems* at the National Conference of Undergraduate Research (NCUR). Ithaca College; Ithaca, New York. March 31-April 2, 2011.

## Conference and Workshop Attendance

- Attended and accompanied student **Caleb Shank** to the Spring Meeting of the MD-DC-VA section of the MAA, George Mason University, April 11-12, 2025.
- Launch Years Initiative: 2025 Conference, University of Texas at Austin, February 27-28, 2025.
- Council of Colleges of Arts and Sciences (CCAS) Annual Meeting, Austin, TX, November 6-9, 2024.
- Joint Mathematics Meetings, San Francisco, CA, January 3-6, 2024.
- Council of Colleges of Arts and Sciences (CCAS) Annual Meeting, San Diego, CA, November 1-4, 2023.
- Fall Meeting of the MD-DC-VA section of the MAA, Stevenson University, October 13-14, 2023.
- Council of Colleges of Arts and Sciences (CCAS) Annual Meeting, Washington, DC, November 2-5, 2022.
- Eastern Fall Sectional Meeting of the American Mathematical Society, UMass Amherst, October 1-2, 2022.
- Spring Meeting of the MD-DC-VA section of the MAA, Montgomery College, April 22-23, 2022.
- Fall Meeting of the MD-DC-VA section of the MAA, Salisbury University, November 5-6, 2021.
- Spring Meeting of the MD-DC-VA section of the MAA, virtual, April 23-24, 2021.
- Introductory workshop: Combinatorial Algebraic Geometry, ICERM, February 1-5, 2021. Served as a recitation leader.
- The conference Quantum Groups and Cohomology Theory of Quiver and Flag Varieties, virtual through Centre International De Rencontres Mathematiques Scientific Events, December 14-18, 2020. My collaborator, Clelia Pech, presented our joint work in an invited talk titled Curve Neighbourhoods of the odd symplectic Grassmannian.
- Fall Meeting of the MD-DC-VA section of the MAA, virtual, November 7, 2020.
- Fall Meeting of the MD-DC-VA section of the MAA, Norfolk State University, November 8-9, 2019.
- Attended and accompanied student **Garrett Fowler** to the Spring Meeting of the MD-DC-VA section of the MAA meeting, Hood College and Frederick Community College, Frederick, MD, April 12-13, 2019.
- Attended and accompanied students **Lela Bones** and **Garrett Fowler** to the JMM held in Baltimore, MD, January 16-19, 2019.
- Fall Meeting of the MD-DC-VA section of the MAA, Mary Washington University, November 2-3, 2018.
- The Ohio State Workshop on Schubert Calculus held on May 9-12, 2018.
- Spring Meeting of the MD-DC-VA section of the MAA, VMI/Washington and Lee, April 13-14, 2018.
- Joint Mathematics Meetings, San Diego, CA, January 10-13, 2018.

## Conference and Workshop Attendance (continued)

- Fall Meeting of the MD-DC-VA section of the MAA, Christopher Newport University, November 17-18, 2017.
- Joint Mathematics Meetings, Atlanta, GA, January 4-7, 2017.
- Fall Meeting of the MD-DC-VA section of the MAA, Johns Hopkins University, November 4-5, 2016.
- Workshop on Symplectic Varieties and Geometric Representation Theory, UNC, October 29-30, 2016.
- Algebraic Groups, Quantum Groups and Geometry, University of Virginia, May 24-27, 2016.
- Fall Eastern Sectional Meeting, Rutgers University, New Brunswick, NJ, November 14-15, 2015.
- Positivity in Combinatorial Algebraic Geometry at the University of Oregon, Eugene, OR, August 10-14, 2015.
- Graduate Student Combinatorics Conference at the University of Kentucky, Lexington, KY, March 27-29, 2015.
- Triangle Lectures in Combinatorics at North Carolina State University, Raleigh, NC, February 21, 2015.
- Fall Southeastern Sectional Meeting, University of North Carolina at Greensboro, Greensboro, NC, November 8-9, 2014.
- Spring Meeting of the MD-DC-VA section of the MAA, Salisbury University, April 12-13, 2013.
- Fall Meeting of the MD-DC-VA section of the MAA, Virginia Military Institute, October 26-27, 2012.
- Spring Meeting of the MD-DC-VA section of the MAA, Randolph-Macon College, April 15-16, 2011.

## Faculty Service

- Member (of two committees), Tenure and Promotion Committees, Fall 2023 – . . .
- Faculty Advisor, Club Cross Country and Track and Field Team, Fall 2022 – . . .
- Member (4 terms), Athletics Committee, Fall 2019 – Spring 2027.
- Member, Government Relations Committee, Fall 2024 – Spring 2026.
- Chair, Long Range Academic Planning Committee, Fall 2024 – Spring 2025.
- Member, Faculty Development Committee, Fall 2021 – Spring 2024.
- Member, Faculty Search Committee for Statistics, Fall 2022 – Spring 2023.
- Organizer, Department Colloquium, Spring 2021 – Spring 2022.

## Courses Taught

### Salisbury University

- MATH 105 Liberal Arts Mathematics: Moneymatics, where Money and Mathematics Meet.
- MATH 140 Algebra and Trigonometry.
- MATH 201 Differential Calculus.
- MATH 202 Integral Calculus with Sequences and Series.
- MATH 210 Discrete Mathematics.
- MATH 306 Linear Algebra.
- MATH 310 Multivariable Calculus.
- MATH 385 (Independent Study) Topology.
- MATH 385 (Independent Study) Sports Analytics.
- MATH 390 (Undergraduate Research) Taught numerous times on varying topics in Schubert Calculus.

## Courses Taught (continued)

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- MATH 406 Geometric Structures.
- MATH 441 Abstract Algebra 1.
- MATH 442 Abstract Algebra 2.
- MATH 451 Analysis 1.
- MATH 452 Analysis 2.
- MATH 471 Numerical Methods (with Python).
- MATH 472 Numerical Linear Algebra (with Python).
- MATH 490 (Topics Course) Undergraduate Algebraic Geometry.
- MATH 490 (Topics Course) Combinatorics.
- MATH 490 (Topics Course) Introduction to Quantum Computing.
- HONR 495 Honors Thesis.
- COSC 390 (Undergraduate Research) Project on programming in Schubert Calculus.

### Virginia Tech

- MATH 2015 Differential Calculus for Biological Sciences.
- MATH 2016 Integral/Multivariable Calculus for Biological Sciences.
- MATH 1225 Engineering Differential Calculus.
- MATH 1226 Engineering Integral Calculus with Sequences and Series.
- MATH 2204 Engineering Multivariable Calculus.

### Hagerstown Community College

- MATH 099 Developmental College Algebra.
- MATH 100 Developmental College Algebra.

## Professional Memberships

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- Member, Mathematical Association of America.
- Member, American Mathematical Society.
- Member, Council of Colleges of Arts and Sciences.
- Member, Leadership Maryland.

## Academic and Professional Honors

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- Nominated for the University System of Maryland Board of Regents' Faculty Award for Mentoring in 2023.
- Nominated for SUSRC's Outstanding Research Mentor Award in 2018 and 2019.
- Section NExT Fellow for the MD-DC-VA Section of the MAA in 2017.

## References

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Available on Request.