Olivia Ryan

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Education

Ph.D. – Engineering Education Expected May 2026
Virginia Polytechnic Institute and State University (VT) Advisor: Dr. Susan Sajadi
Focus: Exploring the role of math courses in the engineering curriculum
Certificate: Preparing the Future Professoriate

M.S. – Engineering Mechanics May 2025
Virginia Polytechnic Institute and State University (VT) Advisor: Dr. David Dillard
Focus: Improving a homework feedback system for mechanics education

B.S. – Engineering May 2020
Roger Williams University (RWU)
Specialization: Electrical Engineering
Minor: Mathematics
Honors: *summa cum laude;* Honors Program Graduate

Peer-Reviewed Journal Publications

1. **Ryan, O.**, Fisher, M., Schibelius, L., Huerta, M., Sajadi, S., & Drinkwater, K. (In Press). A Scenario-Based Approach: Helping Engineering Students Manage Conflict. *Advances in Engineering Education*
2. Drinkwater, K., **Ryan, O.,** Sajadi, S., Katz, A., & Huerta, M. (2025). Expanding Possibilities for Qualitative Analysis: Using Generative AI to Apply a Feedback Quality Rubric. *Journal of Engineering Education, 114(3)*
3. **Ryan, O.,** Sajadi, S., Barrera, S., & Tavakoli Jaghargh, R. (2025). Understanding the Effects of a Math Placement Exam on Calculus 1 Enrollment and Engineering Persistence. *Education Sciences, 15(2)*
4. Sajadi, S., Huerta, M., **Ryan, O.,** & Drinkwater, K. (2024). Harnessing Generative AI to Enhance Feedback Quality in Peer Evaluations within Project-Based Learning Contexts. *International Journal of Engineering Education, 40(5), 998-1012*
5. Huerta, M., Sajadi, S., Schibelius, L., **Ryan, O.,** & Fisher, M. (2024). An Exploration of Psychological Safety and Conflict in First-Year Engineering Student Teams. *Journal of Engineering Education, 113(3), 635-666*
6. Guerboukha, H., Shrestha, R., Neronha, J., **Ryan, O.,** Hornbuckle, M., Fang, Z., & Mittleman, M. (2020). Efficient Leaky-Wave Antennas at Terahertz Frequencies Generating Highly Directional Beams*. Applied Physics Letters 117 (26)*
7. Zhao, L., Laredo, E., **Ryan, O**., Yazdkhasti, A., Kim, H-T., Ganye, R., Horiuchi, T., & Yu, M. (2020). Ultrasound Beam Steering with Flattened Acoustic Metamaterial Luneburg Lens*. Applied Physics Letters, 116 (7)*

Journal Publications Under Review

1. **Ryan, O.,** & Sajadi, S. (Major Revisions). An Exploration of Curriculum Complexity and Math Cruciality for Three Engineering Disciplines Across Multiple Institutions. *Journal of Engineering Education*
    - **Invited to submit to the special issue: "Surrounding Systems' Influences on Engineering Education: Focus on Organizations, Policies, and Contexts"**

Peer-Reviewed Conference Papers and Proceedings

1. Chaback, B. E., Grohs, J., Lord, J., **Ryan, O.**, Wallwey, C., & Dillard, D. (2025, November). WIP: Development of a Dual Feedback System for Engineering Mechanics. *2025 IEEE Frontiers in Education Conference (FIE)*, *Nashville, TN*
2. **Ryan, O.**, Drinkwater, K., & Sajadi, S. (2025, June). Utilizing Podcast Interviews as a Data Source in Engineering Education Research to Analyze Experiences of Women Engineers After a Career Break. *American Society of Engineering Education (ASEE) Conference, Montreal, Canada*
3. **Ryan, O.**, Drinkwater, K., Sajadi, S., & Huerta, M. (2025, June). Understanding First-Year Engineering Students' Perceptions of AI-Generated Performance Feedback Reviews. *American Society of Engineering Education (ASEE) Conference, Montreal, Canada*
4. **Ryan, O.**, Grohs, J., Dillard, D., Lord, J., Wallwey, C., Chaback, B., & Walz, A. (2025, June). Evaluating the Effectiveness of an Open-Source Textbook in a Large, Middle-Year Engineering Mechanics Course. *American Society of Engineering Education (ASEE) Conference, Montreal, Canada*
5. Drinkwater, K., **Ryan, O.**, Sajadi, S., & Huerta, M. (2025, June). Brief: Development of Feedback Literacy Through Reflections in Project-Based Learning Teams. *American Society of Engineering Education (ASEE) Conference, Montreal, Canada*
6. Josiam, M., **Ryan, O.**, & Sridhar, V. (2025, June). Using Embeddings to Uncover the Similarity Between Engineering Education Doctoral Programs and Academic Workforce Opportunities. *American Society of Engineering Education (ASEE) Conference, Montreal, Canada*
7. Sajadi, S., **Ryan, O**., & Drinkwater, K. (2025, February). Barriers in the Workplace: An Analysis of Engineering Workplace Culture and Climate*. 2025 Collaborative Network for Engineering & Computing Diversity (CoNECD), San Antonio, TX*
8. Gray, D., **Ryan, O.**, Newcomer, J., & Taimoory, H. (2024, July). Impact of Math Placement on Persistence and Time to Graduation in Engineering. *First-Year Engineering Experience (FYEE) Conference, Boston, MA*
9. **Ryan, O.**, & Sajadi, S. (2024, June). Understanding Students in Times of Transition: The Impact of the COVID-19 Pandemic on Engineering Students Math Readiness and Transition into Engineering*. American Society of Engineering Education (ASEE) Conference, Portland, OR*
10. **Ryan, O.**, & Benitz, M. (2024, June). Evaluating Fourth-Grader's Perception of Engineering Through a Community-Engaged Project. *American Society of Engineering Education (ASEE) Conference, Portland, OR*
11. Drinkwater, K., **Ryan, O.**, Fisher, M., Sajadi, S., & Huerta, M. (2024, June). Improving Peer Feedback in Project-Based Learning Contexts: An Investigation into a First-Year Engineering Intervention. *American Society of Engineering Education (ASEE) Conference, Portland, OR*

12. **Ryan, O.**, & Sajadi, S. (2024, February). Beyond Math Readiness: Understanding Why Some Women Pursue Engineering. *2024 Collaborative Network for Engineering & Computing Diversity (CoNECD), Arlington, VA*
13. Sajadi, S., **Ryan, O.**, Schibelius, L., & Huerta, M. (2023, October). WIP: Using Generative AI to Assist in Individual Performance Feedback for Engineering Student Teams. *2023 IEEE Frontiers in Education Conference (FIE), College Station, TX*
14. Schibelius, L., **Ryan, O.**, & Sajadi, S. (2023, October). Student perceptions of teamwork, conflict, and industry preparedness in engineering interdisciplinary capstone design. *2023 IEEE Frontiers in Education Conference (FIE), College Station, TX*
15. **Ryan, O.**, Fisher, M., Schibelius, L., Huerta, M., & Sajadi, S. (2023, June). Using a scenario-based learning approach with instructional technology to teach conflict management to engineering students*. American Society of Engineering Education (ASEE) Conference, Baltimore, MD*

Grants

1. **Ryan, O.** *Understanding Student Agency to Navigate Math Barriers in Engineering.* $1000 award from the VT Graduate Research Development Program (2025, February)

Teaching Experience

VT ENGE 1216: Foundations of Engineering* Spring 2026

Graduate Teaching Assistant

*ENGE 1216: Foundation of Engineering is a first-year engineering course focused on engineering design, criteria and constraints, data collection and analysis, testing and iteration of design solutions, CAD tools, and professional development

- Collaborate with the instructor on overall course planning and weekly lesson plans
- Assess and grade individual and team assignments, providing constructive feedback.
- Provide in-class support during lectures by answering student questions and troubleshooting CAD errors
- Host weekly office hours to provide individual student support

VT ENGE 1215: Foundations of Engineering* Fall 2025

Graduate Teaching Assistant

*ENGE 1215: Foundations of Engineering is a first-year engineering course that introduces students to the profession. Students learn to collect and analyze data, practice problem-solving, and are introduced to mathematical modeling with MATLAB

- Created lecture slides and led lessons on systems thinking, peer feedback, and MATLAB programming
- Collaborate with the instructor on overall course planning and weekly lesson plans
- Assess and grade individual and team assignments, providing constructive feedback.
- Provide in-class support during lectures by answering student questions and troubleshooting MATLAB errors
- Host weekly office hours to provide individual student support

VT ENGE 5224: Disciplinary Literacy: Theorizing and Writing in Engineering Education* Fall 2025
Teaching Apprentice

*ENGE 5224: Disciplinary Literacy: Theorizing and Writing in Engineering Education is a graduate-level course that introduces engineering education graduate students to the role of theories and conceptual frameworks used in engineering education research

- Develop and facilitate class activities to teach first-year graduate students how to apply theoretical frameworks in engineering education research
- Lead small-group meetings to provide feedback on course assignments and support student progress
- Collaborate with the course instructor on overall class planning, in-class activity design, and weekly discussion topics
- Planned and led one lesson where students mapped all of the theoretical frameworks they learned during the semester together

VT Rising Sophomore Abroad Program Spring 2023 - Spring 2024
Co-Instructor for Australia & New Zealand (2024) and UK & Ireland (2023) Tracks

- Developed and delivered lecture materials for recitation sessions, engaging undergraduate students in a course on global engineering
- Coordinated and led a two-week-long study abroad program, overseeing student travel and learning activities in foreign countries

Schuler Scholar Program Nov. 2021 - July 2022
STEM Program Associate

- Provided supplemental math and science education to more than 50 students per week across 4 Chicago Public Schools
- Assessed students' algebra skills, identified learning gaps, and created a targeted curriculum to address those gaps
- Created STEM resources to support student learning

RWU Tutoring Center Aug. 2016 - May 2020
Math Peer Tutor

- Served as a tutor for several courses, including all courses in the Calculus sequence
- Hosted tutoring sessions for 7 hours per week to review homework, clarify concepts, and offer support across various math courses
- Continued supporting students virtually during spring 2020 to ensure uninterrupted learning

Research Experience

VT Department of Engineering Education Aug. 2022 - Aug. 2025
PI: Dr. Susan Sajadi
Graduate Research Assistant

- Collaborated with colleagues on multiple research projects, collecting data, performing data analysis, and sharing findings through conference presentations and peer-reviewed journal publications
- Served as interim lab group lead during the PI's leave, coordinating meetings, guiding ongoing projects, and supporting group communication
- Analyzed data from over 300 student reflections to identify trends and insights
- Wrote code that automates the data cleaning process for an AI-focused research project

- Designed a protocol and conducted interviews with 15 first-year engineering students about their experiences learning math during the COVID-19 pandemic
- Facilitated 10 focus groups with first-year engineering students about conflict and psychological safety
- Developed and delivered a conflict management workshop for multiple engineering classes and instructors

Collaborative Research: A Student Asset-based Approach to the Formation of Equitable Teams
NSF Award # 2411935 | Co-PI: Dr. Susan Sajadi Jan. 2025 - April 2025
Graduate Research Assistant

- Collaborated with a multi-institutional research team to develop a survey instrument for dissemination across multiple engineering courses and universities
- Piloted focus group and interview protocols with students on the project advisory board
- Coordinated communication with the student advisory board

VT Department of Engineering Education and Engineering Mechanics Aug. 2023 - May 2024
Co-PIs: Dr. Jacob Grohs, Dr. David Dillard
Graduate Research Assistant

- Collaborated on a multidisciplinary team developing an open-access Mechanics of Materials textbook and homework system
- Developed the second iteration of the code for the homework system that provides personalized feedback for students in Mechanics of Materials
- Improved the functionality and efficiency of the homework submission system for the pilot semester of the open-access textbook
- Created a survey and led focus groups to collect student feedback on the use and effectiveness of an open-access textbook

Brown University Mittleman Lab Aug. 2020 - May 2021
Graduate Research Assistant

- Revisited a previous experiment on a Terahertz metamaterial, aiming to reproduce and validate the original results

RWU School of Engineering Sept. 2018 - March 2020
Undergraduate Research Assistant

- Partnered with a mechanical engineering faculty member to teach 240 local elementary school students about wind energy and the engineering design process through engaging, hands-on activities
- Created educational materials to explain electrical engineering concepts to audiences without technical backgrounds

University of Maryland - Bioinspired Robotics June 2019 - Aug. 2019
National Science Foundation Research Experience for Undergraduates

- Validated the novel properties of the Luneburg lenses by comparing experimental results with simulation data
- Designed and built a sturdy system to support the Luneburg lens during experiments

Academic Achievements and Awards

1. Edward A. Bouchet Graduate Honor Society — Spring 2026
2. VT Academy for Outstanding Graduate Pedagogy Member — Fall 2025 - Spring 2026
3. SWE Academic Leadership for Women in Engineering Participant — Fall 2025 - Spring 2026
4. VT Pratt Fellowship — Fall 2024 - Spring 2025
5. VT Pratt Fellowship — Fall 2022 - Spring 2023
6. SWE Women in Engineering: A Review of the 2022 Literature — Fall 2022
    - **Silver Award for American Society of Business Publication Editors Upper Midwest Region**
7. Brown University Graduate School Fellowship — Fall 2020 - Spring 2021
8. RWU Top Engineering Graduate — May 2020
9. RWU Presidential Core Values Medallion — May 2020
10. RWU Henderson Outstanding Math Tutor Award — May 2020
11. RWU Robotics Award Co-Recipient — May 2020
12. RWU Presidential Scholar — Fall 2016 - Spring 2020
13. RWU Corporate Scholar — Fall 2018 - Spring 2020
14. RWU Dean's List — Fall 2016 - Spring 2020
15. Harold G. Way Scholarship Award Recipient — May 2019

Guest Lectures

1. **Ryan, O.** (January 2026). Department Community Building Trivia Event. *In VT Engineering Education Seminar.*
2. **Ryan, O.** (January 2025). Department Community Building Trivia Event. *In VT Engineering Education Seminar.*
3. Fisher, M. & **Ryan, O.** (March 2024). A Conflict Management Workshop for Student Teams. *In VT Rising Sophomore Abroad Program.* (Presentation for all 3 tracks)
4. Fisher, M. & **Ryan, O.** (March 2023). A Conflict Management Workshop for Student Teams. *In VT Rising Sophomore Abroad Program.* (Presentation for all 4 tracks)
5. Huerta, M., Sajadi, S., **Ryan, O.**, & Fisher, M. (October 2022). A Conflict Management Workshop for Student Teams. *In VT CREATE Ideation for Innovation Course.*
6. Huerta, M., Sajadi, S., **Ryan, O.**, & Fisher, M. (September 2022). A Conflict Management Workshop for Student Teams. *In VT Interdisciplinary Capstone Course.*
7. Huerta, M., Sajadi, S., **Ryan, O.**, & Fisher, M. (September 2022). A Conflict Management Workshop for Student Teams. *In VT Foundations of Engineering Course.*

Conference Posters, Workshop Presentations, and Panels

1. Awotunde, I., Kaufman, K., Kumar, N., Melo De Lyra, M., Mullins, D., & **Ryan, O.** (2025, April). Theory Talk. *Panel hosted by the American Society of Engineering Education (ASEE) Student Division*
2. Huerta, M., Sajadi, S., **Ryan, O.**, Fisher, M., & Schibelius, L. (2023, June). Dysfunctional Teams, Functional Teaching Approaches: Implementing Conflict Management Training in the Classroom for Engineering Teams. *Workshop at American Society of Engineering Education (ASEE) Conference, Baltimore, MD*
    - **Over 60 attendees at the workshop**

3. **Ryan, O.**, Levesque, H., Harkins, M., Hysong, N., & Gallagher, P. (2020, October). Improving Children's Bicycle Safety Through the Use of 'Smart' Technology. *Poster at American Society of Engineering Education (ASEE) Northeast Section Conference, Bridgeport, CT*
    - **First place in the student poster competition**
4. Dunn, B., & **Ryan, O.** (2019, November). Educating Fourth Graders on Wind Energy and Engineering Design. *Poster at National Collegiate Honors Council Conference, New Orleans, LA*
5. DelSanto, A., Phetteplace, E., & **Ryan, O.** (2017, September). Drinking Water Project in Anconcito, Ecuador. *Poster at Northeast Graduate Student Water Symposium, Amherst, MA*

Other Work Experience

Sargent & Lundy June 2021 – Oct. 2021
Associate I
- Collected information from external vendors to develop accurate specification sheets
- Collaborated with various engineering disciplines to deliver engineering design packages to clients
- Used AutoCAD to develop and modify substation drawings

RWU Department of Resident Life and Housing Aug. 2019 – May 2020
Resident Assistant
- Supported 40 first-year students in their transition to college and built an inclusive community within the Honors Program residence hall

ComEd – An Exelon Company June 2018 – Aug. 2018
Intern – Voltage Optimization (VO) Team
- Developed a method for selecting suitable Bellwether meters for feeders across Chicago, in anticipation of ComEd implementing voltage optimization in 2018
- Conducted data analysis for more than 3000 critical meters scheduled for VO implementation in 2018

Academic and Professional Service

VT Engineering Education Fall 2024 - Spring 2025
Graduate Representative
- Elected by peers to serve on the graduate committee alongside 5 faculty members, representing graduate students' interests to the department
- Organized and led meetings for graduate students to share departmental updates, gather feedback, and facilitate communication across various departmental committees
- Led the formalization of a faculty apprenticeship program to give graduate students teaching experience at the graduate level

ASEE Student Division July 2024 - June 2025
Co-Chair, Best Paper Award
- Collaborated with reviewers and division leadership to evaluate submissions and select papers for the Best Paper Award and Best Diversity Paper Award at the 2025 ASEE conference for the student division.
- Moderated multiple sessions at the 2025 ASEE conference

ASEE ERM Division Spring 2025
Best Paper Committee
- Reviewed and ranked several papers for the Best Paper award in the Educational Research and Methods Division at the 2025 ASEE conference

RWU Technical Design Review Spring 2025
Engineering Education Panel Member
- Served as the engineering education expert to review a senior design project that aimed to share their work through educational materials

VT Engineering Education Fall 2023 - Spring 2024
Student Ambassador
- Helped plan and took part in Open Houses and Admitted Students Day, engaging with prospective students and supporting recruitment efforts

RWU Engineers Without Borders (EWB) Spring 2017 - Spring 2019
President; Secretary
- Planned (6) and participated (1) in international service trips, oversaw project meetings, and helped manage a strict budget
- Collaborated with multiple faculty and campus community members to ensure the success of the projects

RWU Electrical Engineering Club (IEEE) Fall 2017 - Fall 2019
President
- Led group meetings, organized club fundraisers, and managed all club activities.
- Planned and executed a trip to the regional conference

RWU School of Engineering (SECCM) Fall 2017 - Spring 2020
Student Ambassador
- Represented the School of Engineering by leading tours and answering questions for prospective students at more than 20 in-person and virtual events

Certifications

Engineer in Training (EIT) – *Illinois* May 2021

Peer Reviewer

- ASEE Conference - Student Division 2024 - present
- ASEE Conference - ERM Division 2024 - present
- ASEE Conference - LEES Division 2024 - present
- ASEE Conference - Math Division 2023 - present
- ASEE - CoNECD 2023 - 2024
- IEEE - Frontiers in Education 2023 - 2024

Professional Affiliations

- American Society of Engineering Education (ASEE)
- American Society of Mechanical Engineers (ASME)
- Society of Women Engineers (SWE)