Joanna G. Jauchen

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Education

Ph.D. Math Education Leadership, December 2024, GEORGE MASON UNIVERSITY
Dissertation: White Male DEI Faculty Service in STEM: Neoliberalism and Collective Ignorance
Ph.D. Student, Mathematics, 8/2003 – 8/2004, 15 credits completed before exiting program, UNIVERSITY OF MARYLAND
M.S. Mathematics, 9/1999 - 5/2001, TEXAS A&M UNIVERSITY
B.S. Applied Mathematics, 9/1995 – 1999, TEXAS A&M UNIVERSITY

Professional Experience

Senior Instructor, 2023 - present, Department of Mathematical Sciences, George Mason University
Instructor, 2012 - present, Department of Mathematical Sciences, George Mason University
Associate Chair for Teaching and Equity, 2020 - 2022, Department of Mathematical Sciences, George Mason University
Adjunct Faculty, 2006-2014, Mathematics, Central Texas College
Adjunct Faculty, 2011- 2012, Mathematics, College of Southern Maryland
Adjunct Faculty, 2010-2012, Mathematics, Strayer University Online
Adjunct Faculty, 2004-2005, Mathematics, Howard Community College
Research/Teaching Assistant, 2003-2004, Mathematics, University of Maryland
Analyst, 2001-2003, Johns Hopkins Applied Physics Lab
Teaching Assistant, 1996-2001, Mathematics, Texas A&M University

Awards

Presidential Award for Excellence in Teaching, 2022. This university-wide award is George "Mason's highest recognition for faculty members who demonstrate exceptional skill in and commitment to their teaching and learning practices."

David W. Rossell Quill Award, 2022. This university-wide award recognizes individuals whose efforts "exemplify leadership and dedication."

Publications

(Name changed from Boyette to Jauchen in 2015)

Peer Reviewed Articles

Bryan, T., Bulancea, G., Crossin, K., **Jauchen, J. G**., Nelson, M., Sachs, R., & Sausville, C. (2024). Healthy Vulnerable Community and Institutional Change. *PRIMUS*, 1–16. DOI: 10.1080/10511970.2024.2354808

Jauchen, J.G., Klawa, H., Nguyen, L., R.G., R., Sander, E., Seshaiyer, P., Thomas, C. (2023). GLAMS: Graduate Learning Assistants in Mathematical Sciences. *PRIMUS*, 33:8, 819-840, DOI: 10.1080/10511970.2023.2172751.

Jauchen, J.G. (2023) Institutional activism in diversity, equity, and inclusion faculty service in STEM. *Journal of Women and Minorities in Science and Engineering,* 29:1, 51-73. DOI: 10.1615/JWomenMinorScienEng.2022036614

Jauchen, J.G. (2022). Everyday activism: Gender-based service in STEM. *PRIMUS*, DOI: 10.1080/10511970.2022.2059729

Bulancea, G., Granfield, P., **Jauchen, J.,** Love, J., Nelson, M., Sachs, R., & Sausville, C. (2021). A community of grassroots leaders: Leveraging faculty networks to create change. *PRIMUS, 31*(3-5), 627-642. https://doi.org/10.1080/10511970.2021.1882016

Publications continued

Jauchen, J.G. & Jackson, T. J. (2019). Cross-disciplinary and cross-cultural impacts of math identity. *Journal of Virginia Science Education, 12*(2), 18 – 26.

Boyette, J., Leyk, M., Talley, J., Plunkett, T., & Sipe, K. (2000). Explicit representation theory of the quantum Weyl algebra at roots of 1, *Communications in Algebra, 28*(11), 5269 – 5274. https://doi.org/10.1080/00927870008827154

Peer-Reviewed Conference Proceedings

Jauchen, J.G. (2024). White male allies in STEM diversity, equity, and inclusion faculty service. *Proceedings of the Research in Undergraduate Mathematics Education Conference.* Omaha, NE.

Jauchen, J.G. (2019). Horizon content knowledge in preservice teacher textbooks: An application of network analysis. In Otten, S., Candela, A. G., de Araujo, Z., Haines, C., & Munter, C. (Eds). *Proceedings of the forty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PMENA)*. St Louis, MO: University of Missouri. https://www.pmena.org.

Non-Peer Reviewed Conference Proceedings

Jackson, T.J. & **Jauchen, J.G.** (2019). Diving into the vortex: Examining math identity, science self-efficacy, sex, and race. In *Proceedings of the IAFOR International Conference on Education*, Nagoya, Japan: The International Academic Forum.

Presentations

Jauchen, J.G. (2024). White male allies in STEM diversity, equity, and inclusion faculty service. *Research in Undergraduate Mathematics Education Conference.* Omaha, NE.

Jauchen, J.G. (2023). *LGBTQ+ Institutional Activism in STEM***.** Joint Mathematics Meetings, Boston, MA.

Bulancea, G., Crossin, K., **Jauchen, J.G.,** Sachs, R., Sausville, C. & Nelson, M. (2023). *Unforeseen Benefits of a Healthy Community of Change*. Joint Mathematics Meetings, Boston, MA.

Lukyanenko, A., **Jauchen, J. G.,** Goldin, R., Holzer, M., R.G., R. (Sep 2021). *Variations on Standards-Based Grading.* Panel, Innovations in Teaching and Learning Conference, Fairfax, VA.

R.G., R., Klawa, H., Thomas, C. Nguyen, L., **Jauchen, J.G.,** Seshaiyer, P. (Sep 2021). *Graduate Assistants Supporting Active Learning in Graduate Classrooms.* Innovations in Teaching and Learning Conference, Fairfax, VA.

Jauchen, J.G. (2021). *Activist Faculty Service: Framing the Work of Women Faculty in Gender-Based Initiatives*. Joint Mathematics Meetings, Virtual.

Jauchen, J.G., Sachs, R., Sausville, C. & Nelson, M. (2020). *Ready for Change – Institutional and Departmental Factors Supporting Active Learning Recitations*. Joint Mathematics Meetings, Denver, CO.

Jauchen, J.G. (Nov, 2019). *Awakening from the Meritocracy: Equity, Merit and Feminist Positionality*. Presentation, National Women's Studies Association. San Francisco, CA.

Jauchen, J.G. (Apr, 2017). *Gender identities in female STEM and elementary education majors*. Presentation, George Mason University Women and Gender Studies 4th Annual Conference, Fairfax, VA.

Jauchen, J.G. (Mar, 2017). *Gender Assumptions in STEM Initiatives*. Presentation, Mason Graduate Interdisciplinary Conference, Arlington, VA.

Presentations continued

Jauchen, J.G. (Jan, 2017). *Reflective Journaling in a Quantitative Reasoning Course.* Presentation, Joint Mathematics Meetings, Atlanta, GA.

Jauchen, J.G. (Jan, 2017). *Intentionally unstructuring assignments for future elementary educators.* Presentation, Joint Mathematics Meetings, Atlanta, GA.

Boyette, J. (Oct, 2014). *Flipping a large lecture course.* Presentation, Innovations in Teaching and Learning Conference, Fairfax, VA.

Boyette, J., Leyk, M., Talley, J., Plunkett, T., & Sipe, K. (Jan, 2000) *Explicit Representation Theory of the Quantum Weyl Algebra at Roots of 1.* Presentation, Joint Mathematics Meetings, Washington, DC.

Invited Talks

Jauchen, J.G. (2024, Sep 20). Equitable Teaching. George Mason University Mathematics Graduate Teaching Assistant PATMath Seminar.

Jauchen, J.G. & Sachs, R. (2023). *Vulnerable Leadership in Institutional Change Efforts.* George Mason University NSF-IUSE Active Learning Discussion Seminar.

Jauchen, J.G. (2022, Aug 5). *Identity.* George Mason University Mathematics Graduate Student Launchpad.

Jauchen, J.G. (2022, Feb 18). *Thinking about Teaching.* George Mason University Mathematics Graduate Seminar.

Bradley, J., Romero-Farmer, R. & **Jauchen, J. G.** (2021, Apr 19). *Qualitative Approaches to Mathematics Education Research.* Math Education Matters. https://www.matheducationmatters.com/docstudents

Baily, S., Shaklee, B. & **Jauchen, J.G.** (2021, Apr 15). *Service, Citizenship, and Engagement in Higher Ed.* George Mason University, PhD in Education Student Organization (PESO) Mentoring Talks.

Bray, H. and **Jauchen, J.G.** (2021, Apr 2). *Equity in Active Learning: Some ideas for Reflection.* George Mason University NSF-IUSE Active Learning Discussion Seminar.

Highlights of Curriculum Development

- **Collaboratively designed an active learning curriculum for Active-Learning Calculus with Embedded Precalculus (MATH 123/124) to retain students in STEM (2017 – 2024)**. The two-semester sequence includes all material from a traditional Calculus I course, with integrated Precalculus review. In my sections, I utilize mini-lectures and active learning at white boards where students work in groups of 2-3 students during class time. I consider the classroom one of the first places that students begin to understand what productive mathematical communities are like. Because of that, I emphasize often-hidden aspects of mathematical culture to usher STEM students into fuller forms of participation in the classroom, including use of precise mathematical discourse, understanding what counts as evidence in mathematics spaces, and normalizing mistakes, missteps of intuition, and error correction in the problem-solving process. I engage in ongoing collaborative planning with other Math 123/124 faculty to refine materials and coordinate the departmental approach to the course.

- **Developed an Online Course for Business Calculus**, including instructor created video lectures, online discussion boards, written work, and supplemental links. (2013 – 2024. The course ran for the first time in Spring 2014. In spring of 2015, I oversaw the selection of a new textbook for the course and redesigned the course with this new book in mind. The following fall, the discussion boards in the course were discontinued based on student feedback that they were too time-consuming. Instructor created resources were folded into the course to scaffold learning based on this change. In 2017, I

Highlights of Curriculum Development, continued

curated a list of written work problems that help students understand the meaning of mathematics in business contexts. Solutions to these practice problems are posted in pdf and video formats. In 2018, I undertook a project to embed videos and custom homework problems in the main homework problem sets (in MyMathLab). Students have largely indicated this is very helpful. In Fall 2019, I piloted an approach to use Kaltura to give individual feedback to students on their quizzes. I am currently planning a course redesign with Ermias Kassaye for Spring of 2024. This project began my interest in creating open access calculus videos aimed at non-STEM majors. I currently maintain a YouTube archive of videos that are open access.

- **Piloted a course redesign in George Mason's Active Learning Technology Classroom for Math for Elementary Educators, a 200-level undergraduate course for pre-service teachers (2013-2021).** In 2013, I was part of the first cohort of teachers in the Active Learning Technology Classroom (Exploratory Hall, L102). During that time, Karen Crossin and I redesigned two courses, Math 271 and 272, an undergraduate course sequence for pre-service teachers. Course creation involved designing active group work, creating lectures in alternative delivery mediums and mentoring undergraduate learning assistants. We piloted that course sequence in Fall of 2013. In Spring of 2015, we split that course into two smaller sections. My curricular and pedagogical work has continued, and over the last six years, I have (1) developed and curated a significant number of new activities in the course; (2) changed the assessment approach in the course to increase access to high-level thinking, cultivate mathematical identity and position students as creators of mathematical knowledge; (3) partnered with a local Fairfax county math coach to improve my teaching and more closely align the course with approaches that my students will see in their future work in the public school system; and (4) incorporated current research on equity from my PhD coursework in Mathematics Education. I undertook a curriculum analysis project to analyze the types of connected knowledge my students have access through engagement with the textbook, and will incorporate findings from that project into future iterations of the course.

- **Designed and implemented an Active Learning Quantitative Reasoning course with reflective journaling** to encourage reflective student engagement. I designed the course around mini-lectures, small-to-medium-sized problems, and reflective journaling. Students in the course were given time to explore mathematical concepts in contexts of their own choosing (a practice grounded in culturally relevant pedagogy). I emphasized concrete application of quantitative reasoning principles to subject matter that was individually meaningful to each student. I piloted the course in Summer 2015 and have taught it each summer from 2015 – 2019. In 2019, the course was recognized as an outstanding Mason Core Quantitative Reasoning course for scoring above 4.75 on "overall rating of teaching" on Student Ratings of Instruction.

Professional Experience

GEORGE MASON UNIVERSITY, Fairfax, VA
2012 – Present: Instructor/Senior Instructor, Department of Mathematical Sciences, George Mason University
Courses taught: Calculus, Precalculus, Applied Calculus, Quantitative Reasoning, and Math for Elementary Educators. I taught courses in a variety of non-traditional formats, including flipped, active learning, problem based, and online. I also developed a YouTube video library of pre-calculus and calculus videos for use in my own courses and throughout the department. I served as the departmental coordinator for Applied Calculus, which included both departmental service and representing the department for university-wide assessment efforts of quantitative reasoning. I also coordinated (with Karen Crossin) the two-semester sequence for pre-service elementary educators from 2012 - 2022.

CENTRAL TEXAS COLLEGE, PACIFIC FAR EAST CAMPUS, Seoul, Korea
2006 -- 2014, Adjunct Faculty, Mathematics, Central Texas College
Courses taught: College Algebra and Contemporary Mathematics. This position was fully online. I taught courses to military personnel stationed in the Pacific Far East through effective online instruction.

THE COLLEGE OF SOUTHERN MARYLAND, LaPlata, MD
2011 – 2012, Adjunct Faculty
Courses: College Algebra, Intermediate Algebra, Pre-Algebra. I utilized BlackBoard, MyMathLab, Hawkes Learning System, and graphing calculators in traditional and hybrid classes.

Professional Experience, continued

STRAYER UNIVERSITY ONLINE, Chantilly, VA
2010 – 2012, Adjunct Faculty
Teach Fundamentals of Mathematics, a developmental mathematics course. Personalized a template course with assignments, supplemental materials, and links to create an engaging learning experience for students.

HOWARD COMMUNITY COLLEGE, Columbia, MD
Adjunct Faculty (8/2004 - 5/2005)
Taught College Algebra and Review of Algebra with Geometry Applications courses, which involved graphing calculator components.

UNIVERSITY OF MARYLAND, College Park, MD
Teaching/Research Assistant (8/2003 - 8/2004)
Taught recitation section of Calculus III using Matlab in fall 2003. Performed research and Matlab computations for Dr. John Osborn in Spring/Summer 2004.

APPLIED PHYSICS LAB, JOHNS HOPKINS UNIVERSITY, Laurel, MD
Analyst (9/2001 - 8/2003)
Performed computational and computer programming support for warfare analysis group. Programmed applications in multiple languages. Modeled, prepared, debugged, and ran warfare simulations.

TEXAS A&M UNIVERSITY, College Station, TX
Undergraduate and Graduate Teaching Assistant/Grader/Tutor (9/1996 - 5/2001)
Taught computer lab/recitation of Honors Calculus courses under Dr. Jeff Morgan. Utilized Maple.

Open Educational Resources

Since fall of 2013, I have created and published over **290 Open Educational Resource Videos** for Engineering Calculus, Applied Calculus, and other courses. These are all listed under my YouTube Channel: https://bit.ly/2QeUqMl. I use these videos in my own classes, but they are also searchable through YouTube's search function.

I have included a table below with brief statistics on users and watch time for all videos. Views are counted if a user clicks on the video and watches for at least 30 seconds. Total watch time is the amount of time the video plays. My average click-through rate is 5.79% (considered good for a small channel).

Timeframe (as of Dec 2024)	Views	Total Watch time (hours)
Within the 28 days	1996	101.6
Within the last year	39,600	2067
Lifetime of the videos	414,900	26,500

Over 110 videos have more than 1,000 views (over their lifetime). Examples below.

Most Viewed Videos	Link	Views
Continuity at a Point	https://youtu.be/Gq6btsI5XYQ	31,834
Implicit Differentiation with Exponential Functions	https://youtu.be/C2-UxaWwf80	19,685
Point of Diminishing Returns	https://youtu.be/5hBRVO0vdgc	16,474
Real Numbers and Interval Notation	https://youtu.be/XRxMH37lp0A	16,005
Complex Chain Rule Problems	https://youtu.be/aKD3b2dpR78	8,888
Minimizing Inventory Costs	https://youtu.be/EbNQZqsQyz0	8,110
More on Implicit Differentiation	https://youtu.be/aTVFFdSUQOE	7,760
Two sided Limits	https://youtu.be/g1YOboZWOLM	7, 349
Continuity on an Interval	https://youtu.be/cb_hIqWYqOA	3,662

Service

National Service:

- SEMINAL NICcast Planning Volunteer (2021-2022)
- Program Committee, International Conference on Technology in Collegiate Mathematics (2018 – 2021)
- Co-Chair, International Conference on Technology in Collegiate Mathematics, Washington, DC. 2018

University Service

- Member, GMU Distance Education Council (2014 – 2016).
- Abstract reviewer, Innovations in Teaching and Learning Conference, GMU (2013)

College Service:

- Committee Member: College of Science Strategic Plan Working Group (Spring 2023)
- Committee Member: College of Science Inclusive Excellence Planning for Graduate Students. (Spring 2021-Spring 2022)

Departmental Service:

- Associate Chair: I served as the Associate Chair of Teaching and Equity in the mathematics department. In this role, I oversaw all departmental scheduling, enrollment management, adjunct oversight, and responding to student complaints. I also facilitated a weekly teaching and learning conversation (TLC) for the department. In addition, I assisted the Chair with long-term planning and departmental decisions. Projects I have worked on include: a five-year strategic plan, organizing a cohort of faculty to develop robust online courses, and assisting with the term faculty promotion processes. More details on my responsibilities are given on the last pages of this CV. (2020 – 2022)
- Ad hoc Term Faculty Workload Committee: I worked with Karen Crossin and Catherine Sausville to facilitate the creation of an ad hoc term faculty workload committee to respond to COS requests for term workload guidelines. We coordinated with Tyrus Berry who had been officially designated to guide the departmental efforts. The committee was composed of a majority of the math department term faculty who graciously and thoughtfully contributed to college-requested guidelines. Together, we gathered data, suggested a term faculty workload draft, and wrote a white paper substantiating our proposal. Proposal will be presented to the full department in January of 2025 (Fall 2024 - Spring 2025).
- Community Member: Calculus Reform Project. This project, under an NSF-IUSE grant, sought to implement active learning activities in Calculus I and Calculus II recitations. A small group of faculty, led by Bob Sachs met to organize, plan, and implement this project. (2019 – present)
- Scheduling Coordinator: I served as the scheduler for the mathematics department for a year before enlarging the role to associate chair. In this role I scheduled all classes, managed enrollments, and liaised with adjuncts (2019-2020)
- Hiring Committee: I have served on five separate hiring committees, both for Term Faculty and for the outreach director of MEGL (Spring 2020, Spring 2021, Spring 2022)
- Undergraduate Mentoring: Each spring and fall semester, I mentor 1-4 undergraduate learning assistants who assist me in my courses as part of the STEM Accelerator's efforts to attract and retain STEM majors. (2013-present)
- Committee member: Precalculus reform project. George Mason University. (2015-2016).
- Course Coordinator: Business Calculus. Spearheaded departmental initiative to choose a new Applied Calculus Text. Created departmental materials (homework sets, common syllabus, and instructional notes) for use by other faculty and adjuncts. (2014 – present).
- Course Coordinator: Math for Elementary Educators co-coordinator (2013 –2022)

Outreach and Service Learning:

- Created and oversaw an undergraduate service-learning experience for preservice teachers. My former students volunteered in Title I schools. We met as a group each week to reflect on their experiences and connect their observations to content from the Math for Elementary Educators course. (2015 - 2016).
- Organized a group of K-12 students from So Others Might Eat (SOME) to visit GMU to participate in an afternoon of science. (2015)

Courses Taught or Able to Teach

Education: I am well prepared to teach a variety of topics at the undergraduate/graduate level or in professional development settings. In education/higher education, this includes qualitative methods (introduction, epistemology, phenomenology, case study, critical discourse analysis, social network analysis), courses in mathematics education, and courses in critical/feminist theory in education. Special topics I could teach include courses on institutional change/activism, grassroots leadership, equitable pedagogies in STEM, and gender/queerness in STEM.

Mathematics I have taught a variety of math courses at community colleges (real number system, basic algebra, intermediate algebra, college algebra, quantitative reasoning). I have taught 100-200 level mathematics courses at George Mason (calculus I, precalculus, quantitative reasoning, math for elementary educators, business calculus, probability). I can teach any 100-200 level mathematics courses, including math for elementary educators, linear algebra, differential equations, and discrete math.

Technical Expertise

Learning Management Systems:	Canvas, Blackboard, Moodle, MyMathLab, Webassign
Programming:	Matlab, LaTex
Software Applications:	Mathematica, Camtasia, NVivo

Duties as Associate Chair of Teaching and Equity

Scheduling

- I scheduled about 100 sections of different classes each fall and spring semester for approximately 40 full-time faculty and 10-20 adjunct faculty. I also did summer scheduling, which was fewer classes and faculty.
- Enrollment predictions: Download data from Microstrategy and predict enrollments for the coming semester
- Survey faculty to solicit scheduling requests. Download and organize the survey.
- Design the schedule for full-time faculty. Enter data into CLSS
- Adjust schedule for room assignments
- Survey adjuncts and GTAs (summer) for scheduling requests.
- Schedule adjuncts and GTAs for teaching
- Monitor enrollments and adjust schedule for buyouts, reductions, adjunct cancellations and new courses

Adjunct faculty hiring

- Place ad for adjuncts and adjust ad based on current needs
- Review adjunct resumes and send out invitations to interview
- Interview adjuncts
- Send out offers to teach and answer adjunct questions
- Update guidelines for adjuncts every fall and spring in response to departmental needs. Send to others in leadership for feedback and guidance.

Oversee faculty/GTA Peer Reviews and Promotion

- Assign faculty peer reviews and email that information to the department
- Remind faculty to conduct formative GTA reviews during the first few weeks of the course
- Follow-up on peer reviews and send reminder emails
- Conduct peer reviews that cannot be conducted by other faculty
- Organized and facilitated the instructional faculty promotion and contract renewal process

Support effective teaching in the department

- Run a weekly teaching and learning seminar on Friday mornings at for faculty, GTAs and adjuncts.
- Facilitate GTA and adjunct trainings that are held before the semester begins. I am not the primary organizer, but I assist in organizing these sessions and contribute to the content
- Receive, investigate and respond to student complaints
- Participate in course-level discussions about 100 and 200 level courses, in particular, large service courses like precalculus, quantitative reasoning, and calculus
- Answer random emailed questions about teaching, LMS, departmental practices, etc.

"Show up" for strategic departmental conversations and planning

A big part of my job was to show up for different conversations in the department and participate in ongoing initiatives.

- Met bi-weekly and sometimes weekly with departmental leadership
- Contributed to our workload planning document and helped implement the new point system.
- Contributed to the five-year plan
- Served on the COS DEI planning committee
- Met with the group who is implementing the current NSF IUSE grant in the math department (2 hour meeting biweekly)
- Participated in meetings on the current Provost-level initiative to continue online courses in all Mason Core courses
- Met with testing center director, tutoring center director, undergraduate coordinator, graduate director, etc. to facilitate departmental conversations and decision-making
- Contributed to the yearly departmental budget request

Misc work

- Recorded Associate Chair Best Practices to preserve institutional memory