

Joanna G. Jauchen

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Education

Ph.D. Math Education Leadership, ABD, GEORGE MASON UNIVERSITY

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

Instructional Faculty, 2012 - , 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

Publications

(Name changed from Boyette to Jauchen in 2015)

Peer Reviewed Articles

Jauchen, J.G., Klawa, H., Nguyen, L., R.G., R., Sander, E., Seshaiyer, P., Thomas, C. (under review). GLAMS: Graduate Learning Assistants in Mathematical Sciences.

Jauchen, J.G. (in press). Everyday activism: Gender-based service in STEM. *PRIMUS*.

Jauchen, J.G. (in press). Institutional activism in diversity, equity, and inclusion faculty service in STEM. *Journal of Women and Minorities in Science and Engineering*.

Balancea, 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>

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. doi: 10.1080/00927870008827154

Peer-Reviewed Conference Proceedings

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*. St Louis, MO: University of Missouri. Retrieved from <https://www.pmena.org>.

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Publications continued

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

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., Klawe, 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.

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

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.

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Highlights of teaching

- ▶ Taught a two-semester **Active-Learning Calculus sequence with Embedded Precalculus** designed to retain students in STEM. I utilized mini-lectures and active learning at white boards where students worked in groups. I emphasized aspects of mathematical culture to usher STEM students into fuller forms of participation in mathematical spaces, including use of precise mathematical discourse, understanding what counts as evidence in mathematics spaces, and normalizing mistakes in the problem-solving process. (2017 – 2019)
- ▶ Developed an **Online Course for Business Calculus**, including instructor created video lectures, online discussion boards, written work and supplemental links. **Flipped a traditional Business Calculus** course in a large lecture environment. (2013 – 2020)
- ▶ Developed an **Online Course for Business Calculus**, including instructor created video lectures, online discussion boards, written work and supplemental links. **Flipped a traditional Business Calculus** course in a large lecture environment. (2013 – 2020)
- ▶ 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. Course creation involved designing active group work, creating lectures in alternative delivery mediums and mentoring undergraduate learning assistants. 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 from a K-12 practitioner; and (4) incorporated current research on equity. (2013-2014)
- ▶ Designed and implemented an **Active Learning Quantitative Reasoning course with reflective journaling** to encourage reflective practice. The course was designed 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. Emphasis was placed on concrete application of quantitative reasoning principles to subject matter that was individually meaningful to each student. The course was piloted in summer 2015 and has run each summer from 2015 – 2019.

Teaching Experience

GEORGE MASON UNIVERSITY, Fairfax, VA

2012 – Present: Instructional Faculty, Department of Mathematical Sciences, George Mason University (8/2012 - Present)

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, semi-flipped, active learning, problem based, and online. I also developed a 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.

CENTRAL TEXAS COLLEGE, PACIFIC FAR EAST CAMPUS, Seoul, Korea

2006- 2014, Adjunct Faculty, Mathematics, Central Texas College (6/2006 – 3/2014)

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

Adjunct Faculty (9/2011 – 8/2012)

Courses: College Algebra, Intermediate Algebra, Pre-Algebra. I utilized BlackBoard, MyMathLab, Hawkes Learning System, and graphing calculators in traditional and hybrid classes.

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Teaching Experience continued

STRAYER UNIVERSITY ONLINE, Chantilly, VA

Adjunct Faculty (1/2010 – 7/2012)

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.

TEXAS A&M UNIVERSITY, College Station, TX

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/2QeUqMI>. 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 some 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.

Timeframe (as of Feb 2022)	Views	Total Watch time (hours)
Within the 28 days	5400	294
Within the last year	40,100	2,300
Lifetime of the videos	299,900	20,300

Ninety 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	23,060
Implicit Differentiation with Exponential Functions	https://youtu.be/C2-UxaWwf80	12,812
Real Numbers and Interval Notation	https://youtu.be/XRxMH37lp0A	11,334
Point of Diminishing Returns	https://youtu.be/5hBRVO0vdgc	11,110
Minimizing Inventory Costs	https://youtu.be/EbNQZqsQyz0	5,991
More on Implicit Differentiation	https://youtu.be/aTVFFdSUQOE	6,525
Two sided Limits	https://youtu.be/g1YOboZWOLM	5,938
Complex Chain Rule Problems	https://youtu.be/aKD3b2dpR78	5,636
Continuity on an Interval	https://youtu.be/cb_hlqWYqOA	3,621

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Service

National Service:

- SEMINAL NICcast Planning Team (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)

Departmental Service:

- Associate Chair: I serve as the Associate Chair of Teaching and Equity in the mathematics department. In this role, I do all scheduling, manage enrollments, liaise with adjuncts, respond to student complaints, and facilitate a weekly teaching conversation for the department. In addition, I assist the Chair with long-term planning, departmental decisions, and budgeting. (2020 – 2022)
- Committee Member: College of Science Inclusive Excellence Planning for Graduate Students. (Spring 2021)
- 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 weekly 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: (Spring 2020, Spring 2021, Spring 2022)
- Undergraduate Mentoring: Each spring and fall semester, I mentor 1-3 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 – present).

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

I have taught a variety of mathematics courses at the collegiate level including pre-algebra, beginning algebra, intermediate algebra, college algebra, precalculus, calculus, quantitative reasoning, probability, and math for elementary educators. My background has prepared me to teach any 100-200 level courses, including linear algebra, differential equations, and discrete math. I am also able to teach a variety of courses in education/higher education including qualitative methods (introduction, phenomenology, case study), other introductory courses in mathematics education, and courses in critical/feminist theory in education.

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Technical Expertise

Learning Management Systems:	Blackboard, Moodle, MyMathLab
Programming:	Matlab, LaTeX
Software Applications:	Mathematica, Camtasia, NVivo
