Dan Wolczuk

Contact Information

Dan Wolczuk
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Academic Positions:

Associate Professor, Teaching Stream — May 2004 - present
Faculty of Mathematics, University of Waterloo

Brief Teaching Philosophy

As an instructor, my goal is not only to help students develop a strong understanding of course content, but also to nurture a growth mindset and to develop their mathematical reasoning and metacognitive abilities. I do this by both using, and explicitly teaching students about, effective educational strategies informed by cognitive load theory, educational psychology, mathematics education, and educational neuroscience. Ultimately, I strive to teach students not just what to learn, but how to learn, giving them tools to succeed in academics and beyond.

Research Interests

- Science of learning (cognitive load theory, test-enhanced learning, guided instruction)
- Educational psychology (motivation, learning skills, assessment, mental health)
- Educational neuroscience (neuroscience of learning, neuroscience-informed pedagogy)

Awards and Distinctions

2022 Excellence in Teaching Award, Canadian Mathematical Society
2021 Distinguished Teacher Award, University of Waterloo
2013 Distinction in Teaching Award, Faculty of Mathematics, University of Waterloo
2013 Instructor of the Year, Mathematics Student Society, University of Waterloo
2001 NSERC Canada Graduate Scholarship

Publications

Books and Course Notes

- Wolczuk, D. (2024) *Calculus for the Sciences*. openlibrary-repo.ecampusontario.ca
- Norman, D., Wolczuk, D. (2019) *Introduction to Linear Algebra for Science and Engineering (3rd edition)*. Pearson Publishing. ISBN # 978-0-13-468263-1
- Wolczuk, D. (2016) *Linear Algebra 1 and 2 Course Notes*. Pearson Publishing. ISBN # 978-1-323-56954-2
- Wainwright, J., West, J., Wolczuk, D. (2016) *Multivariable Calculus Course Notes*. Pearson Publishing. ISBN # 978-1-323-48163-9
- Norman, D., Wolczuk, D. (2012) *Student Solution Manual for Introduction to Linear Algebra for Science and Engineering (2nd edition)*. Pearson Publishing. ISBN # 978-0-321-80762-5
- Norman, D., Wolczuk, D. (2012) *Introduction to Linear Algebra for Science and Engineering (2nd edition)*. Pearson Publishing. ISBN # 978-0-321-74896-6

Refereed Journal Articles

- Korst, B., Wolczuk, D., Smilek, D. (2022). *Is performance on tests affected by the difficulty of the first question and an informational message about the benefits of the testing effect?*. In 2022 ASEE Annual Conference & Exposition.
- Pinner, C., Wolczuk, D. (2001) *On the inhomogeneous Hall's ray of period one quadratics*. Experimental Math. 10, 487 - 495.

Presentations

Invited Talks

Dec 2024	*The Future of Mathematics Education*, Fields Institute Conference (keynote speaker)
May 2024	*Introducing the Science of Learning*, ResearchEd (panel)
Dec 2022	*Fact, Fiction, or Fad*, Canadian Mathematical Society
June 2022	*Moving Forward with OER*, Canadian Mathematical Society
June 2022	*Enhancing Student Engagement*, Canadian Mathematical Society
Dec 2020	*Virtual Escape Rooms*, Canadian Mathematical Society
July 2020	*Promoting Student Engagement in Online Courses*, Canadian Mathematical Society
Jun 2019	*Presentation Skills*, Banff International Research Station

Colloquia, Seminars, Talks

July 2025	*Mathematical Thinking*, Think Academy Canada
June 2025	*Applying Cognitive Load Theory in Math Education*, ResearchEd
May 2025	*Is the Aim of Math Education Research Off?*, FYMSiC
Dec 2024	*Cognitive Load Theory for Mathematics Education*, Cornell University
June 2024	*Cognitive Load Theory in Mathematics*, ResearchEd
May 2024	*Cognitive Load Theory for Mathematics*, University of Manchester
May 2024	*Optimizing Calculus Education*, FYMSiC
May 2024	*Effective Mathematics Instructions*, ResearchEd
Jan 2023	*Promoting Student Learning with Test Retakes*, Lilly Conference
June 2022	*Increasing Student Learning with Weekly Proctored Quizzes*, Scholarship of Teaching and Learning in Higher Education
Feb 2020	*Comics as Pedagogical Tools (poster)*, Lilly Conference

Conference Workshops

Oct 2025	*Formative Assessments*, Edvance Annual Gathering
Oct 2025	*Guided Instruction*, Edvance Annual Gathering
Oct 2025	*Cognitive Load Theory*, Edvance Annual Gathering
Oct 2025	*The Science of Learning for Mathematics*, Edvance Annual Gathering
Oct 2025	*The Science of Learning*, Compass Reformed Educators Convention
Oct 2024	*Assessments for Learning*, Edvance Annual Gathering
Oct 2024	*Instructional Methods*, Edvance Annual Gathering
Oct 2024	*Cognitive Load Theory*, Edvance Annual Gathering
Oct 2024	*The Science of Learning*, Edvance Annual Gathering

University of Waterloo Teaching Seminars/Workshops

Nov 2025	Failing Forward, UW Black Student Society
Oct 2024	Teach Them How to Learn, University of Waterloo Math Teaching Seminar
Oct 2024	Active Learning, University of Waterloo Centre for Teaching Excellence
June 2024	Cognitive Load Theory for Instructional Design, University of Waterloo Centre for Teaching Excellence
July 2022	Assessing Assessments, University of Waterloo Math Teaching Seminar
July 2022	Teach Them How to Fish, Teaching Student Association Seminar
Feb 2020	Optional Test Retakes, University of Waterloo Teaching Research Commons

Earlier selected talks available upon request.

Teaching Experience

Course Development

2024 – 2025	Revised Calculus 1 and 2 for Science Students
2023 – 2024	Calculus 1 and 2 for Science Students Online
2020	Revised Calculus 1 and 2 for Science Students
2014	Linear Algebra for Mathematical Teaching Online
2013	Linear Algebra 2 for Honours Mathematics Online
2012	Linear Algebra 1 for Honours Mathematics Online
2009	Revised Linear Algebra 1 and 2 for Honours Mathematics
2008	Revised Calculus 3 for Honours Mathematics

University of Waterloo Courses Taught

Course	# of Sections
AMath/PMath 332 Applied Complex Analysis	4
Math 116 Calculus 1 for Engineering	3
Math 118 Calculus 2 for Engineering	6
Math 125 Applied Linear Algebra 1	1
Math 127 Calculus 1 for Science	13
Math 128 Calculus 2 for Science	11
Math 135 Algebra for Honours Math	1
Math 136 Linear Algebra 1 for Honours Math	26
Math 137 Calculus 1 for Honours Math	10
Math 138 Calculus 2 for Honours Math	6
Math 217 Calculus 3 for Chemical Eng	1
Math 218 Differential Equations for Engineering	1
Math 235 Linear Algebra 2 for Honours Math	30
Math 237 Calculus 3 for Honours Math	17
Math 636 Linear Algebra for MMT	4
Math 900 University Mathematics Teaching Techniques	1
PMath 340 Elementary Number Theory	2

Professional Service

University of Waterloo Service

2016 – Present	Transfer Credit Assessment (core mathematics courses)
2008 – Present	Academic Advising
2018 – 2025	Graduate Student Teacher Training Program Co-Instructor
2008 – 2025	Outreach and recruitment activities: Fall Orientation, Fall Open House, March Break Open House, You@UWaterloo Day, Ontario University Fair
2021 – 2023	Director of Mathematical Studies Program
2021 – 2023	Math Faculty Undergraduate Affairs Committee
2021 – 2022	Department Advisory Committee on Appointments
2020 – 2021	Covid-19 Teaching Team
2016 – 2020	Senate Undergraduate Council
2016 – 2020	Undergraduate Student Learning How to Learn Seminars Organizer and Instructor
2011 – 2020	Mathematics Contest Committee
2010 – 2020	Math Faculty Undergraduate Affairs Committee
2016 – 2019	Senate
2012 – 2014	Senate Undergraduate Council
2007 – 2011	Math Circles Instructor\Organizer

External Service

2021 – 2025	CMS Education Committee
2024	Chalk & Talk with Anna Stokke Podcast
2021 – 2023	Fields Institute Elementary Program
2004 – 2018	K–12 Outreach (school visits, enrichment programs)

Education

University of Waterloo, Waterloo, ON, Canada

MMath, Pure Mathematics, 2004

- Thesis Topic: Intervals with few prime numbers.
- Advisor: Dr. Cameron Stewart

University of Northern British Columbia, BC, Canada

BSC, Mathematics, 2001

- Research Topic: Inhomogeneous Diophantine approximations.
- Advisor: Dr. Chris Pinner