Wesley Marek Maciejewski

Curriculum Vitae

22 January, 2020

Contact Information

E-mail: wesley.maciejewski@sjsu.edu
Residence: San José, California
Citizenship: Canadian

Education

Queen's University, Kingston, Ontario, Canada

Ph.D., 2012 (Advisor: Peter D. Taylor)

University of Calgary, Calgary, Alberta, Canada

M.Sc., Pure Mathematics, 2007

University of Alberta, Edmonton, Alberta, Canada

B.Sc. (Honours), Mathematics, 2005

Employment Experience

San José State University, San José, California, USA — **Current**

Assistant Professor, tenure track
Department of Mathematics

The University of Auckland, Auckland, New Zealand — **2015**

Lecturer (Assistant Professor in North American parlance), fixed term
Maths Education Unit, Department of Mathematics

The University of British Columbia, Vancouver, British Columbia, Canada

Science Teaching and Learning Fellow — **2013 - 2014**
Carl Wieman Science Education Initiative / Department of Mathematics

Postdoctoral Research Fellow — **2012 - 2013**
Department of Mathematics (Advisor: Christoph Hauert)

Queen's University, Kingston, Ontario — **2008 - 2012**

Teaching Fellow

Southern Alberta Institute of Technology, Calgary, Alberta — **2007 - 2008**

Mathematics Faculty

Education Publications (Peer-reviewed journal articles and book chapters)

Maciejewski, W. (2019). Let Your Students Cheat on Exams. *PRIMUS*, DOI: 10.1080/10511970.2019.1705450

Maciejewski, W., and Star, J. (2019). Justifications for Choices Made in Procedures. *Educational Studies in Mathematics*, DOI: 10.1007/s10649-019-09886-7

Maciejewski, W. (2019). Future-oriented Thinking and Activity in Mathematical Problem Solving. In (Liljedahl, P. & Santos-Trigo, M., Eds.) Mathematical Problem Solving: Current Themes, Trends, and Research. Springer.

Maciejewski, W. and Barton, B. (2016). Mathematical Foresight: Thinking in the Future to Work in the Present. *For the Learning of Mathematics, 36(3).*

Maciejewski, W. and Star, J. (2016). Developing Flexible Derivative Procedures in First-year Calculus. *Research in Mathematics Education*, DOI: 10.1080/14794802.2016.1148626.

Code, W., Merchant, S., Maciejewski, W., Thomas, M., and Lo, J. (2016). The Mathematics Attitudes and Perceptions Survey: a New Instrument to Assess Expert-like Behaviour Among Undergraduate Mathematics Students. *International Journal of Mathematics Education in Science and Technology*, DOI: 10.1080/0020739X.2015.1133854.

Maciejewski, W. (2016). Instructors' Perceptions of their Students' Conceptions: The Case in Undergraduate Mathematics. *International Journal of Teaching and Learning in Higher Education, 28(1)*, pp. 1-8.

Maciejewski, W. (2016). Flipping the Calculus Classroom: an Evaluative Study. *Teaching Mathematics and its Applications, 35*, DOI: 10.1093/teamat/hrv019

Maciejewski, W. and Merchant, S. (2015). Mathematical Tasks, Study Approaches, and Course Grades: A Year-by-year Analysis. *International Journal of Mathematics Education in Science and Technology*, DOI: 10.1080/0020739X.2015.1072881.

Gula, T., Hoessler, C., and Maciejewski, W. (2015). Seeking mathematics success for college students: a randomized field trial of an adapted approach. *International Journal of Mathematics Education in Science and Technology*, DOI: 10.1080/0020739X.2015.1029026.

Maciejewski, W. (2012). A College-level Foundational Mathematics Course: Evaluation, Challenges, and Future Directions. *Adults Learning Mathematics, 7,* pp.20-31.

Maciejewski, W. and Matthews, A. (2010). Who Are Community College Math Instructors? *College Quarterly, 13(4).*

Kajander, A., Mason, R., Taylor, P., Doolittle, E., Boland, T., Jarvis, D., and Maciejewski, W. (2010). Multiple visions of teachers understandings of mathematics. *For the Learning of Mathematics, 30*, pp. 50-56.

Refereed Conference Publications (Education)

Maciejewski, W. (2020). Conceptualizing service and general education mathematics. ICME 14.

Maciejewski, W. (2018). Observing change in students' attitudes towards mathematics: contrasting quantitative and qualitative approaches. *PMENA 40.*

Maciejewski, W. (2018). Changes in attitudes revealed through students' writing about mathematics. *PME 42.*

Arden, A., Hardy, N., and Maciejewski, W. (2018). Teaching first year mathematics courses in transition from secondary to tertiary. *CMESG 2017.*

Maciejewski, W. (2017). Mathematical Knowledge as Memories of Mathematics. *PME 41.*

Maciejewski, W., Roberts, R., and Addis, D.R. (2016). Episodic Future Thinking in Mathematical Situations. *PME 40.*

Oates, G., and Maciejewski, W. (2016). Research Mathematicians & Mathematics Educators: Collaborations for Change. *PME 40.*

Maciejewski, W. and Barton, B. (2016). A Framework for Students' Mathematical Foresight. *ICME 13*

Davies, B., Yoon, C., Griffith Moala, J., and Maciejewski, W. (2016). Princples for Designing Invention Tasks for Undergraduate Mathematics. *ICME 13*.

Maciejewski, W., Mgombelo, J., and Savard, A. (2011). Meaningful Procedural Knowledge in Mathematics Learning. *CMESG 2011*

Mathematics Publications

Maciejewski, W. (2019). Orb-web Spiders as Bayesian Learners. *The Science of Nature (Naturwissenschaften)*. DOI: 10.1007/s00114-019-1615-z

Maciejewski, W. and Puleo, G. (2014). Environmental Evolutionary Graph Theory. *Journal of Theoretical Biology, 360*, pp. 117-128.

Taylor, P. and Maciejewski, W. (2014). Hamilton's Inclusive Fitness in Finite-structured Populations. *Philosophical Transactions of the Royal Society Series B, 369*, 20130360.

Maciejewski, W., Hauert, C., and Fu., F. (2014). Evolutionary Game Dynamics in Populations with Heterogeneous Structures. *PLoS Computational Biology*. DOI:10.1371/journal.pcbi.1003567.

Maciejewski, W. (2014). Reproductive Value on Evolutionary Graphs. *Journal of Theoretical Biology, 340*, pp. 283-293.

Taylor, P. and Maciejewski, W. (2012). An Inclusive Fitness Analysis of Synergistic Interactions in Structured Populations. *Proceedings of the Royal Society B, 279*, pp. 4596-4603.

Maciejewski, W. (2012). Resistance and Relatedness on an Evolutionary Graph. *Journal of the Royal Society Interface, 69*, pp. 511-517.

Maciejewski, W. (2010). An Analysis of the Orientation of an Orb-Web Spider. *Journal of Theoretical Biology, 265,* pp. 604-608.

Unrefereed Publications

Maciejewski, W. (2020). Teach as you practice. *To appear in the First Year Math and Stats in Canada newsletter*.

Maciejewski, W. (2019). Review of "Traditions in German-speaking Mathematics Education". Mathematical Association of America Reviews.

Maciejewski, W. (2018). On the teaching of procedures. *CMS Notes, 50(1)*, pp. 10-12.

Code, W. and Maciejewski, W. (2017). Mathematics Attitudes & Perceptions Survey: New Data & Alignment with Other Recent Findings. *Poster presented at the 2017 Reserch in Undergraduate Mathematics conference, San Diego.*

Maciejewski, W. and Tortora, C. (2017). An Alternate Characterisation of Developmental Mathematics Students. *Poster presented at the 2017 Reserch in Undergraduate Mathematics conference, San Diego.*

Maciejewski, W. (2014). An Online Discussion Forum in Undergraduate Mathematics: One Department's Experience. *Poster presented at the University of British Columbia's Teaching and Learning day.* Poster available online here: http://mathwes.ca/PiazzaPoster.pdf

Maciejewski, W. and Mamolo, A. (2010). Beyond the Superficial: Procedural Knowledge in University. In Liljedahl, P. (Ed.) *Proceedings of the 2010 Canadian Mathematics Education Study Group*, Vancouver, British Columbia.

Maciejewski, W. and Matthews, A. (2010). Who Are Community College Math Instructors...and Who Cares? In Liljedahl, P. (Ed.) *Proceedings of the 2010 Canadian Mathematics Education Study Group*, Vancouver, British Columbia.

Maciejewski, W. (2010). The Reconceptualization of Procedural Knowledge: Implications for the Community College. In Brigham, S. and Plumb, D. (Eds.) *Proceedings of the Canadian Association for the Study of Adult Education Annual Conference*, Montréal, Québec.

Maciejewski, W. (2009). The Role of Rote: What is Meaningful Practice? In Liljedahl, P. (Ed.) *Proceedings of the 2009 Canadian Mathematics Education Study Group*, Toronto, Ontario.

Teaching Experience

San José State University

Math 1: Mathematical Reasoning (Fall, 2018; Spring, 2019, 2020)
This is a new, general education course intended for under-prepared students intending to major in STEM fields.

Math 105: Concepts in Mathematics, Probability, Statistics (Spring, 2020)
Upper-division math for prospective elementary teachers.

Math 170: Mathematical Modeling in the Life Sciences (Fall, 2019)
Discrete and continuous models stemming from biological situations.

Math 281: Graduate Seminar on Mathematics Education (Fall, 2018)
A graduate seminar on theory and methods in mathematics education research.

Math 133A: Ordinary Differential Equations (Spring, 2018)
A large ($\sim$ 85), introductory ODE class. Topics include: methods for solving first-order separable, linear, second-order linear; Laplace transforms; power-series methods; modelling of spring-mass systems; linear algebra and linearization of higher-oder systems.

Math 1005A: Elementary Mathematics 1 (Fall, 2017)
Our former, large ($\sim$ 950 students) developmental math course I coordinate and teach.

Math 297: Professional Development in College Teaching (Fall and Spring, 2016-2019)
TA training and development seminar.

Math 138: Complex Variables (Spring, 2017)
An introduction to complex variables. Topcis include: complex numbers and complex-valued functions; contour integration; singular points and residues; power series.

Math 1006A: Elementary Mathematics I (Fall, 2016)
A first-year mathematics course on elementary mathematics for developmental students.
Class size: ~180.

The University of Auckland

Maths 108: General Mathematics (Summer, Fall, Winter, 2015)
A first-year mathematics course on elementary mathematics, linear algebra, and calculus.
Class size: ~190.

The University of British Columbia

MATH 102: Differential Calculus with Application to Life Sciences (Fall, 2013 and 2014)
A first-year course on differential calculus with an emphasis on life sciences applications. The second offering of this course was 'flipped': students were required to watch short videos and complete quizzes before class, while class time was devoted to interactice engagement activities. I was on a team of three instructors that developed the resources for the course. One of the videos I produced for the course is found here: https://www.youtube.com/watch?v=E-owZqDrTkE.

MATH 340: Linear Programming (Winter, 2014)
A course for third-year students in a variety of degree programs. The focus was on linear optimization problems and the simplex method. *Class size: ~50.*

MATH 103: Integral Calculus with Application to Life Sciences (Winter, 2013)
A first-year course on integral calculus with an emphasis on life sciences applications.
Class size: ~100.

Queen's University

MATH 339: Evolutionary Game Theory (Winter, 2012)
A third-year course focusing on game theory and the evolution of behaviours. *Class size: ~140.*

APSC 174: Linear Algebra. (Spring, 2011)
A first-year linear algebra course for engineering students. *Class size: ~75.*

MATH 224: Applied Mathematics for Civil Engineers. (Fall, 2009 and 2010)
This large, second-year course consists of five weeks of statistics and six of ordinary differential equations. In addition to the three lectures per week, students also receive instruction in MatLab.
Class size: ~120.

MATH 126: An Introductory Calculus Course for Economics Majors. (Fall, 2008)
This is a first-year course focusing on elementary calculus. *Class size: ~100.*

Southern Alberta Institute of Technology
Instructor
I was the primary instructor for the following academic courses:

BMAT 205, Business Mathematics: Focused on basic interest and annuity calculations.
MATH 285, Calculus 2: A course on methods of integration.
STAT 220, Statistics 1: Introductory statistics; probability, distributions, sampling, basic statistical methods.

and the following non-academic courses, all of which centred on foundational mathematics in some form:

MATH 104, Math for Apprentice Trades
MATH 141, Math for Pre-Apprentices
MATH 206, Math for Printers 1
MATH 215, Non-Destructive Pipeline Testing Mathematics
MATH 255, Estimating

Coordinator/Instructor **May, 2008**
I coordinated and instructed alongside a team of instructors in delivering a course sequence to visiting students from Angola. The group of sixty students were employees of Angola LNG, an Angola-based natural gas company, who were sent to Calgary to receive training at SAIT. I was the leader of a team of instructors who designed and taught a sequence of courses intended to provide the students with a solid understanding of foundational mathematics, chemistry, and physics.

Course Development **January, 2008 - June, 2008**
I was a member of a team responsible for developing a series of high-school math equivalency courses. This involved interpreting the provincial curriculum, choosing a corresponding text, and developing on-line support materials.

University of Calgary, Calgary, Alberta
Teaching Assistant **2005 - 2007**

Supervisory Experience

I have co-supervised, with Christoph Hauert, two NSERC Undergraduate Student Research Award holders at UBC during the Summer of 2013. I have also co-supervised, with Caroline Yoon, a B.Sc. (Honours) student in mathematics education at the University of Auckland and, with Christina Krause, two MS students at the Universität of Duisburg-Essen, Germany. I am currently supervising three MS/MA students at San José State University and a post-doctoral researcher.

Former Students

Jessica Mean, M.A., San José State University, 2018

Major Internal Funding

Student Success, Excellence and Technology Fee (SSETF) Grant
Co-principal Investigator (with Stacy Gleixner) **2017 - 2019**
Awarded by San José State University ($640,000) for improvement of freshman transitional courses.

Major External Funding

Basic Skills CSU/CCCS Partnership
SJSU Principal Investigator **2016 - 2018**
Basic Skills Partnership, California Community College System, $2,000,000. Bruce Simon and Beth Yeager, Principal Investigators. Various CSU and CCCS site investigators; Wes Maciejewski, SJSU Principal Investigator.

George Brown College/HRSDC, Toronto, Ontario
Investigator **2010 - 2012**
Understanding Individual Numeracy: How Are We Doing? Does it Matter?, Human Resources and Social Development Canada, $300,000. Crystal Kotow-Sullivan, Principal Invesitgator. Paul Balog, Dianne Bascombe, Wes Maciejewski, Asia Matthews, Investigators. May, 2010 - August, 2012.

JUMP Math, Toronto, Ontario
MITACS ACCELERATE Intern **2009 - 2010**
I designed a college-level foundational math course based on the JUMP Math program. The course was piloted at George Brown College in Fall 2009. The results of this study were published in the international peer-reviewed journal *Adults Learning Mathematics*; see my publication list for details.

Selected Recent and Forthcoming Presentations

Tapas Talks, San José State University, November, 2019
- Flexibility of procedural knowledge: an indicator of expertise.

Department Colloquium (with J. Bragelman and T. Bergthold), San José State University, October, 2019
- Engaging under-prepared university students in rigorous mathematics: the story of Math 1.

Psychology of Mathematics Education, Pretoria, South Africa, July, 2019
- Towards a theory of post secondary general education mathematics.

Drake University, Des Moines, IA, February, 2019
- Mathematical foresight: thinking in the future to work in the present.

Bay Area Active Learning Workshop, Newark, CA, January, 2019

- Instructional responses to EO 1110 and implications for AB 705.

Psychology of Mathematics Education, North America, Greenville, SC, November, 2018

- Observing change in students' attitudes towards mathematics: contrasting quantitative and qualitative approaches.

Psychology of Mathematics Education, Umeå, Sweden, July, 2018

- Changes in attitudes revealed through students' writing about mathematics.

Universität of Duisburg-Essen, Essen, Germany, June, 2018

- Assessing Chagne in Attitudes Towards Mathematics
- Mathematics for Everyone: re-thinking General Education in Mathematics

California State University System, Math/QR Professional Development Webcast, CSU Chancellor's Office, CA, May, 2018

- Addressing affects in math instruction: What they are and what can be done about them.

Santa Clara University, Phi Mu Epsilon Colloquium, Santa Clara, CA, April, 2018

- Getting caught in a web of interesting mathematics.

San José State Universtiy, Mathematics Colloquium, San José, CA, March, 2018

- Getting caught in a web of interesting mathematics.

Michigan State University, East Lansing, MI, February, 2018

- Mathematical foresight: thinking in the future to work in the present.

Bay Area Active Learning Workshop, Freemont, CA, January, 2018

- Developing flexible procedural knowledge in the college math classroom.

Psychology of Mathematics Education, Singapore, July, 2017.

- Mathematical Knowledge as Memory of Mathematics.

Canadian Mathematics Education Study Group, Montréal, June, 2017.

- Teaching First Year Mathematics Courses in Transition from Secondary to Tertiary (with Ann Arden and Nadia Hardy).

Research in Undergraduate Mathematics Education Annual Meeting XX, San Diego, California, USA, February, 2017.

- An Alternate Characterisation of Developmental Mathematics Students (with Cristina Tortora). *Poster presentation.*
- Mathematics Attitudes & Perceptions Survey: New Data & Alignment with Other Recent Findings (with Warren Code). *Poster presentation.*

Universität of Duisburg-Essen, Essen, Germany, January, 2017.

- Flipping the Calculus Classroom: What is it and does it *work*?
- Developmental Mathematics: An Opportunity?
- Mathematical Foresight: Thinking in the Future to Work in the Present.

Joint Mathematics Meetings, Atlanta, Georgia, USA, January, 2017.

- Choices Made by Students when Enacting Procedures (with Jon R. Star).
- Developmental Math Students' Dispositions Towards Mathematics.

Psychology of Mathematics Education, Szeged, Hungary, August, 2016.

- Episodic Future Thinking in Mathematical Situations (with Reece Roberts and Donna Rose Addis).
- Research Mathematicians and Mathematics Educators: Collaborations for Change in Undergraduate Mathematics (with Greg Oates).

International Conference on Mathematics Education, Hamburg, Germany, July, 2016.

- A Framework for Undergraduate Students' Mathematical Foresight (with Bill Barton).

Joint Mathematics Meetings, Seattle, USA, January, 2016.

- An Analysis of Undergraduate Students Mathematical Foresight, a Preliminary Report (with B. Barton).
- Mathematics Attitudes and Perceptions Survey: Assessing Students Expert-like Conceptions of Mathematics (presented by W. Code, with S. Merchant, J.Lo, and M. Thomas)

Community of Undergraduate Learning in the Mathematical Sciences, Auckland, September, 2016.

- A recent general-interest presentation of mine can be found here: https://www.youtube.com/watch?v=t2bLXN8W2IM

Psychology of Mathematics Education Annual Meeting, Hobart, Australia, July, 2015.

- Mathematical Foresight: An Integral Part of Authentic Mathematical Acivity (with B. Barton).

Joint Mathematics Meetings, San Antonio, USA, January, 2015. Four presentations:

- An Evaluation of a Flipped Calculus Classroom.
- Do We Know How Students View and Study Math?
- Developing Flexible Procedures in Undergraduate Calculus (with J. Star).
- Seeking Mathematics Success for College Students: A Randomized Field Trial of an Adapted Approach (with T. Gula and C. Hoessler).

Professional Development

Program for University Teaching and Learning, Cetificates I-IV, April, 2010

The Program for University Teaching and Learning is a series of four certificates, with a focus on Foundations, Practical Experience, Scholarship, and Leadership, designed to expose the participant to a pedagogy of higher education and to help create reflective instructors. I have completed the requirements and have received all four certificates.

Teaching Assistant Professional Development Presenter, Queen's University 2009 - 2012.

I have hosted a variety of seminars and presentations for teaching assistants at Queen's University through their Centre for Teaching and Learning.

Community and Department Service

Editorial Board. International Journal of Mathematics Education in Science and Technology.

Reviewer. International Journal of Research in Undergraduate Mathematics Education Research; Mathematical Association of America Reviews, International Journal for Mathematics Education in Science and Technology; Computers and Education; Canadian Journal of Science, Mathematics, and Technology Education; Psychology of Mathematics Education Annual Meeting Proceedings; Journal of Mathematical Behavior; Evolution; Journal of Theoretical Biology; Entropy; the Proceedings of

the Royal Society B; BioSystems; IEEE Transactions; Nature Scientific Reports; and Journal of the Royal Society Interface. I have also reviewed textbooks for Nelson Canada.

Committee Membership. Graduate Studies and Research (SJSU); Board of General Studies (SJSU; temporary, one semester); General Education Task Force (SJSU); Institutional Review Board (SJSU); Transit, Traffic, and Parking Committee (SJSU); Executive Order 1110 Response Committee (SJSU); Department Scholarship Committee (SJSU); Developmental Mathematics Curriculum Committee (SJSU); Mathematics Community Committee (UAuckland); Health and Safety (UBC); Tenure and Promotion Committee (Queen's); Appointments Committe (Queen's).

LANGUAGES English (Native), German (Goethe Institut level B1)