

Curriculum Vitae

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Associate Professor
Director - Early Mathematics Initiative (Suncor Energy Foundation)
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Date of birth: January 16, 1973
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DEGREES

PhD 2011 *Mathematics Education*
Faculty of Education, Simon Fraser University. Burnaby, BC. Canada
Dissertation: *Conversations Held and Roles Played During Mathematics Teachers' Collaborative Design: Two Dimensions of Interaction.*
Supervisor: Dr. Peter Liljedahl

PhD Candidacy 2006 *Mathematics*
Science Faculty, Universidad Nacional Autónoma de México. Mexico City, Mexico.
Supervisor: Dr. Rodolfo San Agustín Chi

MSc. 2000 *Mathematics*
Science Faculty, Universidad Nacional Autónoma de México. Mexico City, Mexico.
Thesis: *Elliptic Curves of Higher Rank*
Supervisor: Dr. Rodolfo San Agustín Chi

B.S. 1997 *Mathematics (Honours)*
Science Faculty, Universidad Nacional Autónoma de México. Mexico City, Mexico.
Thesis: *Visualizing Curves Through Cayley's Theorem*
Supervisor: Dr. Emilio LLuis Riera

CURRENT POSITION

2017 – Current Associate Professor Werklund School of Education, University of Calgary

February, 2019

2014 – Current Director Math Minds Initiative (involving local school districts, a resource developer, and the Werklund School of Education). Duties include administration of funds, hiring graduate students, co-ordinate data collection and analysis, prepare research reports and publications, be a member of the working committee meeting, and co-design professional development for participant teachers and administrators.

PREVIOUS POSITIONS

2014 – 2017	Assistant Professor	Werklund School of Education, University of Calgary
2011 – 2014	Postdoctoral Fellow	Galileo-Gallagher: Galileo Educational Network Association (GENA) and Werklund School of Education. Duties included: Co-design and implement professional learning sessions for teachers, and conduct research for GENA.
2011 – 2014	Sessional Instructor	Werklund School of Education, University of Calgary
2008 – 2011	Sessional Instructor	Faculty of Education, Simon Fraser University
2010 – 2011	Sessional Instructor	Department of Mathematics and Statistics, University of the Fraser Valley
2008 – 2009	Sessional Instructor	Department of Mathematics, Simon Fraser University
2008	Sessional Instructor	Department of Education, University of British Columbia
2006 – 2010	Teacher/Research Assist.	Department of Mathematics, Simon Fraser University
2006 – 2006	Mathematics Consultant	Instituto de Educación Media Superior del D.F. Mexico City, Mexico.
2003 – 2006	High School Teacher	Instituto de Educación Media Superior del D.F. Mexico City, Mexico.
2000 – 2001	Course Instructor	Science Faculty, Universidad Nacional Autónoma de México. Mexico City, Mexico.
2000 – 2001	Secondary Teacher	Instituto Para las Ciencias, las Artes y la Imaginación. Cuernavaca, Mor. Mexico.
1999 – 2007	Course Instructor	Science Faculty, Universidad Autónoma del Estado de Morelos. Cuernavaca, Mor. Mexico.
1999 – 2000	High School Teacher	Instituto de Tecnológico de Estudios Superiores de Monterey. Cuernavaca, Mor. Mexico.
1995 – 2000	Teacher Assistant	Science Faculty, Universidad Nacional Autónoma de México. Mexico City, Mexico.

SCHOLARLY EXPERTISE

My scholarly work has focused strongly on mathematics teacher professional learning (K-12). Such work includes both research and teacher professional development in educational settings such as

schools and series of professional development. Additionally, I am involved in similar work for education in Science, Technology, Engineering and Mathematics (STEM).

PUBLICATIONS

Articles in double-blind refereed journals

- Carrasco, E., Carrión, V., Hernández, E., Preciado, P., Arrieta, J., Díaz, L. (2017, August). Complejidad en el acto de conocer: Segunda sesión. *Acta Latinoamericana de Matemática Educativa*, 30, 139-147.
- Preciado-Babb, A. P., Takeuchi, M. A., Alonso-Yáñez, G., Francis, K., Gereluk, D., & Friesen, S. (2016). Pioneering STEM Education for Pre-Service Teachers. *International Journal of Engineering Pedagogy*, 6 (4), 4-11.
<http://online-journals.org/index.php/i-jep/article/view/5965>
- Preciado-Babb, A. P., Metz, M., & Marcotte, C. (2015). Awareness as an enactivist framework for the mathematical learning of teachers, mentors and institutions. *ZDM*, 47(2), 257-268.
- Preciado-Babb, A. P., Saar, C., Brandon, J., & Friesen, S. (2015). Engaging High School Students in an Engineering Thermodynamics Project. *International Journal of Engineering Pedagogy*, 5(1), 12-19.
<http://online-journals.org/index.php/i-jep/article/view/4046>
- Preciado Babb, A. P., Saar, C. Marcotte, C., Brandon, J. & Friesen, S. (2013). Using Mobile Technology for Fostering Intellectual Engagement: A High School Project. *International Journal of Interactive Mobile Technologies* 7(3), p. 46 - 53.
<http://online-journals.org/index.php/i-jim/article/view/2888>
- Preciado Babb, A. P. (2012). Incorporating the iPad2 in the mathematics classroom: Extending the mind into the Collective. *International Journal of Engineering Pedagogy* 2(2), p. 23 - 29.
<http://online-journals.org/index.php/i-jep/article/view/2084>
- Preciado, A. P. & Liljedahl, P. (2012) Three cases of teachers' collaborative design: Perspectives from those involved. *Canadian Journal of Science, Mathematics and Technology Education*, 12(2). p. 22 - 35. DOI: 10.1080/14926156.2012.649052

Books

- Navarro-Robles, M. E. & Preciado-Babb, A. P. (2011). *Matemáticas 3: Enfoque por competencias*. Mexico DF, Mexico: Fernández Editores. ISBN: 978-607-498-157-5.
- Navarro-Robles, M. E. & Preciado-Babb, A. P. (2011). *Matemáticas 4: Enfoque por competencias*. Mexico DF, Mexico: Fernández Editores. ISBN: 978-607-498-158-2.
- Navarro-Robles, M. E. & Preciado-Babb, A. P. (2010). *Matemáticas 1: Enfoque por competencias*. Mexico DF, Mexico: Fernández Editores. ISBN: 978-607-498-073-8.
- Navarro-Robles, M. E. & Preciado-Babb, A. P. (2010). *Matemáticas 2: Enfoque por competencias*. Mexico DF, Mexico: Fernández Editores. ISBN: 978-607-498-121-6.

Book Chapters (* indicates double-blind refereed)

- *Preciado-Babb, A. P., Metz, M., Davis, B., & Sabbaghan, S. (In Press). Transcending contemporary obsessions: The development of a model for teacher professional development. In S. Llinares & O. Chapman (Eds.), *Tools and Processes in Mathematics Teacher Education*,

Volume 2 of *The International Handbook of Mathematics Teacher Education* (2nd Ed). SENSE|Brill Publishers.

- *Preciado-Babb, A. P., Metz, M., & Davis, B. (2019). How variance and invariance can inform teachers' enactment of mathematics lessons? In R. Huang, A. Takahashi & J. P. da Ponte (Eds.), *Theory and practice of lesson study in mathematics: An international perspective* (pp. 343-367). Springer, Cham. Online: https://link.springer.com/chapter/10.1007/978-3-030-04031-4_17
- *Preciado-Babb, A. P., Metz, M., Sabbaghan, S. & Davis, B. (2018). The role of continuous assessment and effective teacher response in engaging all students. In R. Hunter, M. Civil, Herbel-Eisenmann, N. Planas & D. Wagner (Eds.) *Mathematical discourse that breaks barriers and creates space for marginalized learners* (pp. 101-120). Rotterdam: Sense Publishers. Online: https://doi.org/10.1163/9789463512541_006
- Thom, J., D'Amour, L., Preciado Babb, A. P. (2015). Spatial knowing, doing, and being. In B. Davis and the Spatial Reasoning Study Group (Eds.) *Spatial Reasoning in the Early Years: Principles, Assertions, and Speculations* (pp. 63-82). New York: Routledge.
- Davis, B. & Preciado Babb A. P. (2015a). Chapter 12 Elementary mathematics instruction and student diversity. In J. J. W. Andrews and J. L. Lupart (Eds.), *Diversity Education: Understanding and Addressing Diversity* (pp. 393-422). Nelson Education Limited.
- Davis, B. & Preciado Babb A. P. (2015b). Chapter 17. Secondary mathematics instruction and student diversity, in J. J. W. Andrews and J. L. Lupart (Eds.), *Diversity Education: Understanding and Addressing Diversity* (pp. 520-547). Nelson Education Limited.
- *Metz, M., Preciado Babb, A. P., & Marcotte, C. (2014). Designing for Deep Mathematical Understanding: Reflections on the design and implementation of a framework for teachers. In A. Solares Rojas, A. P. Preciado Babb & K. Francis (Eds.), *What, How and Why: An international conversation on mathematics teacher learning* (pp. 43-68). Mexico, Mexico: Universidad Pedagógica Nacional. <http://dspace.ucalgary.ca/handle/1880/50422>
- Delfín-Madariaga M. N., & Preciado-Babb, A. P. (2006). Diseño y construcción de objetos a partir de una visión Matemática-Plástica con motivo de Día de Muertos. *En el Cuaderno de apoyo a la docencia, 2* (pp. 39-46). Mexico City, Mexico: Sistema de Bachillerato del Gobierno del DF.

Reports

- Preciado-Babb, A. P., Solares-Rojas, E., Davis, B., & Padilla-Carrillo, E. (2015). Final Report: Concept study - profound understanding of teachers' mathematics (15w5151). Banff International Research Station for Mathematical Innovation and Discovery. <http://www.birs.ca/events/2015/5-day-workshops/15w5151>
- Alonso-Yáñez, G., & Preciado-Babb, A. P. (2014). Kindling conversations: Weaving indigenous perspectives into the Werklund School of Education. Preliminary Report – Session held on February 28, 2014. Calgary, AB: Werklund School of Education.

Conference Proceedings (* indicates double-blind refereed)

- * Solares-Rojas, A., Preciado-Babb, A. P., Peña, F., Ortiz, A., Sandoval-Rosas, M., Soriano-Velasco, R., Carrión Vázquez, V., & Farrugia-Fuentes, M. (2018). Latinamerican trends in mathematical modeling. In T. E. Hodges, G. J. Roy & A. M. Tyminski (Eds.), *Proceedings of the 40th annual meeting of the North American Chapter of the International Group for the*

Psychology of Mathematics Education (pp. 94 - 100). Greenville, SC: University of South Carolina & Clemson University.

- * Preciado-Babb, A.P., Solares-Rojas, A., Peña, F., Ortiz, A., Sandoval-Rosas, M., Soriano-Velasco, R., Carrión-Vázquez, V. & Farrugia-Fuentes, M. (2018). Exploring perspectives on mathematical modelling: A literature survey. In E. Bergqvist, M. Österholm, C. Granberg, & L. Sumpter (Eds.). *Proceedings of the 42nd Conference of the International Group for the Psychology of Mathematics Education* Vol. 4, 3-10. Umeå, Sweden: PME.
- * Francis, K., Alonzo Yáñez, G., Chapman, O., Cherkowski, G., Dodsworth, D., Friesen, S., Gereluk, D., Knowlton Cockett, P., Preciado Babb, A. P., Shanahan, M. C., Takeuchi, M., Thomas, C., Turner, F. (2018). Forming and transforming STEM teacher education: A follow up to Pioneering STEM education. In IEEE (Ed.) *2018 IEEE Global Engineering Education Conference (EDUCON): Proceedings of a meeting held 18 to 20 April 2018, Santa Cruz de Tenerife, Canary Islands, Spain* (pp. 692-699). Institute of Electrical and Electronics Engineers.
- *Alonso-Yáñez, G., Preciado-Babb, A. P., Brown, B., & Friesen, S. (April, 2018). Studying pedagogical leadership in school system change: Lessons from complex system thinking. In *AERA Online Paper Repository*, <http://www.aera.net/Publications/Online-Paper-Repository/AERA-Online-Paper-Repository>
- * Preciado Babb, A. P., Alonso-Yáñez, G., & Solares Rojas, A. (November, 2017). Teachers' collective knowledge: An approach based on concept study and network analysis (poster). In E. Galindo & J. Newton (Eds.) *Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, pp. 633-634. Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.
- *Martínez Ortega, M., Preciado Babb, A. P., & Mejía Velasco, H. (May, 2017). Making meaning of periodic functions through body movements. In P. Preciado Babb, L. Yeworiew, & S. Sabbaghan (Eds.). *Selected Proceedings of the IDEAS Conference: Leading Educational Change*, pp. 159-168. Calgary, Canada: Werklund School of Education, University of Calgary. <http://hdl.handle.net/1880/52123>
- *Metz, M., Preciado-Babb, A. P., Sabbaghan, S., Davis, B., & Ashebir, A. (May, 2017). Using variation to critique and adapt mathematical tasks. In P. Preciado Babb, L. Yeworiew, & S. Sabbaghan (Eds.). *Selected Proceedings of the IDEAS Conference: Leading Educational Change*, pp. 169-178. Calgary, Canada: Werklund School of Education, University of Calgary. <http://hdl.handle.net/1880/52124>
- *Metz, M., Preciado-Babb, A. P., Sabbaghan, S., Davis, B., & Ashebir, A. (May, 2017). Attending and responding to what matters: A protocol to enhance mathematics pedagogy. In P. Preciado Babb, L. Yeworiew, & S. Sabbaghan (Eds.). *Selected Proceedings of the IDEAS Conference: Leading Educational Change*, pp. 179-190. Calgary, Canada: Werklund School of Education, University of Calgary. <http://hdl.handle.net/1880/52125>
- Preciado-Babb, A. P., Sabbaghan, S., & Yeworiew, L. (May, 2017). Foreword: Leading Educational Change. In P. Preciado Babb, L. Yeworiew, & S. Sabbaghan (Eds.). *Selected Proceedings of the IDEAS Conference: Leading Educational Change*, pp. 1-6. Calgary, Canada: Werklund School of Education, University of Calgary. <http://hdl.handle.net/1880/52096>
- *Aljarrah, A., Preciado Babb, A. P., Metz, M., Sabbaghan, S., Pinchbeck, G. G., & Davis, B. (2016). Transforming mathematics classroom settings into spaces of expanding possibilities. In M.

- Takeuchi, A.P. Preciado Babb, & J. Lock. (Eds.) *IDEAS 2016: Designing for Innovation Selected Proceedings* (pp. 162-170). Calgary, Canada: Werklund School of Education. <http://hdl.handle.net/1880/51201>
- *Metz, M., Preciado Babb, A. P., Sabbaghan, S., Aljarrah, A., Pinchbeck, G., & Davis, B. (2016). Transcending traditional/Reform dichotomies in mathematics education. In M. B. Wood, E. E. Turner, M. Civil & J. A. Eli (Eds.) *Proceedings of the 38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1253-1258). Tucson, AZ: The University of Arizona. <http://www.pmena.org/pmenaproceedings/PMENA 38 2016 Proceedings.pdf>
- *Metz, M., Preciado Babb, A. P., Sabbaghan, S., Pinchbeck, G., Aljarrah, A., & Davis, B. (2016). Teachers' awareness of variation. In M. Takeuchi, A.P. Preciado Babb, & J. Lock. (Eds.) *IDEAS 2016: Designing for Innovation Selected Proceedings* (pp. 182-191). Calgary, Canada: Werklund School of Education. <http://hdl.handle.net/1880/51222>
- *Pavón Pérez, N., Solares Rojas, A., & Preciado Babb, A. P. (2016). El estudio de las funciones lineales como una introducción del álgebra en educación secundaria (poster). In M. B. Wood, E. E. Turner, M. Civil & J. A. Eli (Eds.) *Proceedings of the 38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 210-211). Tucson, AZ: The University of Arizona. <http://www.pmena.org/pmenaproceedings/PMENA 38 2016 Proceedings.pdf>
- *Preciado Babb, A. P., Aljarrah, A., Sabbaghan, S., Metz, M., Pinchbeck, G. G., Davis, B. (2016). Teachers' perceived difficulties for creating mathematical extension at the boundary of students' discernments (short oral presentation). In M. B. Wood, E. E. Turner, M. Civil & J. A. Eli (Eds.) *Proceedings of the 38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 514-517). Tucson, AZ: The University of Arizona. <http://www.pmena.org/pmenaproceedings/PMENA 38 2016 Proceedings.pdf>
- *Preciado Babb, A. P., Metz, M., Sabbaghan, S., Pinchbeck, G. G., Aljarrah, A., & Davis, B. (2016). Addressing the challenge of differentiation in elementary mathematics classrooms. In M. Takeuchi, A.P. Preciado Babb, & J. Lock. (Eds.) *IDEAS 2016: Designing for Innovation Selected Proceedings* (pp 203-212). Calgary, Canada: Werklund School of Education. <http://hdl.handle.net/1880/51226>
- *Sabbaghan, S., Preciado Babb, A. P., Metz, M., Aljarrah, A., Pinchbeck, G. G., & Davis, B. (2016). Juxtaposing mathematical extensions with cognitively loaded questions in the mathematics classroom. In M. Takeuchi, A.P. Preciado Babb, & J. Lock. (Eds.) *IDEAS 2016: Designing for Innovation Selected Proceedings* (pp. 213-223). Calgary, Canada: Werklund School of Education. <http://hdl.handle.net/1880/51227>
- *Preciado Babb, A. P., Metz, M., Sabbaghan, S., Davis, B. (2016). Fine-Grained, Continuous Assessment for the Diverse Classroom: A Key Factor to Increase Performance in Mathematics. In *Proceedings of the American Education Research Association Annual Meeting 2016* (pp. 1-20). <http://www.aera.net/Publications/Online-Paper-Repository/AERA-Online-Paper-Repository/Owner/973698>
- * Preciado Babb, A. P., Miwa, T.; Dianne, G.; Alonso Yáñez, G.; Krista, F.; Friesen, S. (2016). Pioneering STEM in undergraduate education: A course for pre-Service teachers. In IEEE (Ed.) *2016 IEEE Global Engineering Education Conference (EDUCON 2016): Proceedings of a*

meeting held 10 to 13 April 2016, Abu Dhabi, UEA 2016 (pp. 324-331). Institute of Electrical and Electronics Engineers.

- Preciado-Babb, A. P. (2016). Introducción. In García-Campos, M., Sandoval-Cáceres, I. T. (Eds), *MEMORIAS CMO-BIRS 2015: Concept Study - Profound Understanding of Teachers' Mathematics 15w5151*, pp. 1 – 6. Universidad Pedagógica Nacional: Mexico City. <http://hdl.handle.net/1880/51529>
- *Metz, M., Sabbaghan, S., Preciado Babb, A. P., & Davis, B. (2015). One step back, three forward success through mediated challenge. In A. P. Preciado Babb, Takeuchi, M., & Lock, J (Eds.) *Proceedings of the IDEAS 2015: Design Responsive Conference* (pp. 178-186). Calgary, Canada: Werklund School of Education. <http://dspace.ucalgary.ca/handle/1880/50872>
- *Preciado Babb, A. P., Metz, M., Sabbaghan, S., & Davis, B. (2015). Insights on the relationships between mathematics knowledge for teachers and curricular material. In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Bradfield & H. Dominguez (Eds.), *Proceedings of the 37th annual meeting of the North American chapter of the international group for the Psychology of Mathematics Education* (pp. 796-803). Lansing, MI: Michigan State University. <https://www.msu.edu/~brakoni1/PMENA-2015-PROCEEDINGS-2015-11-04.pdf>
- *Preciado Babb, A. P., McInnis, V., Metz, M., Sabbaghan, S., & Davis, B. (2015). Epiphanies in mathematics teaching: The personal learning experience of an elementary teacher in the Math Minds Initiative. In A. P. Preciado Babb, Takeuchi, M., & Lock, J (Eds.) *Proceedings of the IDEAS 2015: Design Responsive Conference* (pp. 187-197). Calgary, Canada: Werklund School of Education. <http://dspace.ucalgary.ca/handle/1880/50873>
- *Sabbaghan, S., Preciado Babb, A. P., Metz, M., & Davis, B. (2015). Dynamic responsive pedagogy: Implications of micro-level scaffolding. In A. P. Preciado Babb, Takeuchi, M., & Lock, J (Eds.) *Proceedings of the IDEAS 2015: Design Responsive Conference* (pp. 198-207). Calgary, Canada: Werklund School of Education. <http://dspace.ucalgary.ca/handle/1880/50874>
- *Preciado Babb, A. P. (2014). Learning about research by research design: Students' perceptions of a master's online course in education. In P. Preciado Babb (Ed.). *Proceedings of the IDEAS 2014: Rising to Challenge Conference* (pp. 189-197). Calgary, Canada: Werklund School Education, University of Calgary. <http://dspace.ucalgary.ca/handle/1880/50604>
- *Brandon, J., Saar, C., Friesen, S., Preciado Babb, P., Alonso, G. (2014). Supporting Pedagogical Leadership in Area III. In P. Preciado Babb (Ed.). *Proceedings of the IDEAS: Rising to Challenge Conference* (pp. 15-24). Calgary, Canada: Werklund School of Education, University of Calgary. <http://dspace.ucalgary.ca/handle/1880/50590>
- *Preciado Babb, A. P. (2014). Assessing teachers' profound understanding of emergent mathematics in masters course. In C. Nicol, S. Oesterle, P. Liljedahl & D. Allan (Eds.) *Proceedings of the Joint Meeting of PME 38 and PME-NA 36, Vol. 5* (pp. 9-16). Vancouver, Canada: PME. <http://www.pmena.org/pmenaproceedings/PMENA 36 PME 38 2014 Proceedings Vol 5.pdf>
- *Preciado Babb, A. P., Saar, C. Marcotte, C., Brandon, J. & Friesen, S. (2014). Engaging high school students in an engineering thermodynamics project. In IEEE (Ed.) *2014 IEEE Global Engineering Education Conference (EDUCON 2014): Proceedings of a meeting held 3 to 5 April 2014, Istanbul, Turkey 2014* (pp. 222-228). Institute of Electrical and Electronics Engineers.

- *Preciado Babb, A. P., Saar, C. Marcotte, C., Brandon, J. & Friesen, S. (2013). Using Mobile Technology for Fostering Intellectual Engagement: A High School Project. In IEEE (Ed.) *2013 IEEE Global Engineering Education Conference (EDUCON 2013): Proceedings of a meeting held 13-15 March 2013, Berlin, Germany 2013 Vol. 2* (pp. 367-374). Institute of Electrical and Electronics Engineers.
- Preciado Babb, Metz, M., & Marcotte, C. (2013). A phenomenological study of teachers' professional learning and their understanding of mathematics-for-teaching. In A. P. Preciado Babb, A. Solares Rojas, I. T. Sandoval Cáceres, & C. Butto Zarzar (Eds.) *Proceedings of the First Meeting between the National Pedagogic University and the Faculty of Education of the University of Calgary* (pp. 79-84). Calgary, Canada: Faculty of Education of the University of Calgary. <http://dspace.ucalgary.ca/handle/1880/49736>
- Preciado Babb, A. P. (2013). Conversations held and roles played during mathematics teachers' collaborative design: Two dimensions of interaction. In S. Oesterle, D. Allan, & P. Lijedahl (Eds.) *Proceedings of the 2012 annual meeting of the Canadian mathematics Education Study Group* (pp. 217-224). Burnaby, BC: CMESG. ISBN: 978-0-86491-343-2
- *Preciado Babb, A. P. (2012). Incorporating the iPad in the mathematics classroom: Extending the mind into the Collective. In IEEE (Ed.) *2012 IEEE Global Engineering Education Conference (EDUCON 2012): Proceedings of a meeting held 17-20 April 2012, Marrakech, Morocco 2012 Vol. 2* (pp. 1226-1230). Institute of Electrical and Electronics Engineers. ISBN:978-1-46731-457-2.
- Preciado Babb, A. P. (2010). Teachers' professional development by collaborative design: Why does it work? *Proceedings of the 2010 annual meeting of the Canadian mathematics Education Study Group* (235-236). Burnaby, BC: CMESG. <http://files.eric.ed.gov/fulltext/ED529564.pdf>
- Preciado Babb A. P. & Liljedahl, P. (2010). The designing braid: Teachers' interactions while designing learning artefacts, (Short oral presentation). In M. F. Pinto & T. F. Kawasaki (Eds.), *Proceedings of the 34th Conference of the International Group for the Psychology of Mathematics Education* (pp. 89). Belo Horizonte, Brazil: PME.
- Preciado Babb, A. P. & Liljedahl, P. (2008). Implementing Lesson Study at Public Schools in Mexico: A Teachers' Perception of their Own Professional Growth. *Proceedings of the World Association of Lesson Studies International Conference 2008*. <http://www.ied.edu.hk/wals/conference08/post1.htm#parallel3>

Edition of books and proceedings

- Preciado Babb, A. P., Yeworiew, L., & Sabbaghan, S. (Eds.) (2017, May). *Selected Proceedings of the IDEAS Conference 2017: Leading Educational Change*. Calgary, Canada: Werklund School of Education, University of Calgary. <http://hdl.handle.net/1880/52096>
- Takeuchi, M. A., Preciado Babb, A. P., & Lock, J. (Eds.) (2016, May). *IDEAS 2016: Designing for Innovation Selected Proceedings*. Calgary, Canada: Werklund School of Education, University of Calgary. <http://hdl.handle.net/1880/51231>
- Preciado Babb, A. P., Takeuchi, M., & Lock, J (Eds.) (2015). *Proceedings of the IDEAS 2015: Design Responsive Pedagogy Conference*. Calgary, Canada: Werklund School of Education. ISBN: 978-0-88953-384-4. <http://dspace.ucalgary.ca/handle/1880/50608>

- Solares Rojas, A., Preciado Babb, A. P., & Francis, K. (Eds.) (2014). *What, How and Why: An international conversation on mathematics teacher learning*. Mexico, Mexico: Universidad Pedagógica Nacional. <http://dspace.ucalgary.ca/handle/1880/50422>
- Preciado Babb, A. P. (Ed.) (2014). *Proceedings of the Ideas 2014: Rising to the Challenge Conference*. University of Calgary. ISBN: 978-0-88953-376-9. <http://hdl.handle.net/1880/50141>
- Preciado Babb, A. P., Solares Rojas, A., Sandoval Cáceres, I. T., & Butto Zarzar, C. (Eds.) (2013). *Proceedings of the First Meeting between the National Pedagogic University and the Faculty of Education of the University of Calgary*. Calgary, Canada: Faculty of Education of the University of Calgary. ISBN: 978-0-88953-366-0. <http://dspace.ucalgary.ca/handle/1880/49746>

Posters

- Preciado Babb, A. P., Alonso-Yáñez, G., & Solares Rojas, A. (November, 2017). Teachers' collective knowledge: An approach based on concept study and network analysis. In E. Galindo & J. Newton (Eds.) *Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.
- Alonso-Yáñez, G., Preciado-Babb, A. P., Brown, B., & Sengupta, P. (October, 2016). *Exploring STEM professional learning: A social network analysis*. *Science, Technology, Engineering and Mathematics in Education Conference*. Beijing, China.
- Pavón Pérez, N., Solares Rojas, A., & Preciado Babb, A. P. (November, 2016). El estudio de las funciones lineales como una introducción del álgebra en educación secundaria. *38th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Tucson, AZ.

MEDIA PRODUCTION AND WEB-DESIGN

- Preciado Babb (2013). Designing as engineers: An inquiry project in thermodynamics. Galileo Educational Network Association. galileo.org/cbe-and-galileo/thermodynamics/
- Preciado Babb (2012). First meeting between the Pedagogical national University and the Faculty of Education of the University of Calgary. https://people.ucalgary.ca/~apprecia/UPN_UC/en
- Preciado Babb (2010). Funciones Tangente y Secante. Interactive website to explore trigonometric functions. www.tareasya.com.mx/micrositios/bachillerato_matematicas/tangente_secante.html
- Preciado Babb (2010). Funciones Cotangente y Cosecante. Interactive website to explore trigonometric functions. www.tareasya.com.mx/micrositios/bachillerato_matematicas/cotangente_y_cosecante.html

PRESENTATIONS

Invited Speaker

- ¿Qué es la modelación matemática? ¿Por qué es importante en la educación? Presented at the Seminar of analysis and development of teaching 2017 – 2018, Colegio de Matemáticas, Autonomous National University of Mexico, May 17, 2018.

¿Qué deberían saber los profesores de matemáticas y cómo podrían aprenderlo? Una aproximación a través del estudio de conceptos? Presented at both Universidad Pedagógica Nacional, Mexico City, and Universidad de Colima, Colima, Mexico. August 2016.

Redefiniendo el rol de estudiantes y maestros en el aula de matemáticas con acceso a tecnología móvil. Universidad Pedagógica Nacional. Mexico City, Mexico. September 2013.

Conference Presentations (Papers)

The role of mathematical modeling in postsecondary education. *Conference on Postsecondary Learning and Teaching*. Taylor Institute of Teaching and Learning – University of Calgary, Calgary, Canada. May, 2018.

Teachers' perceived difficulties for creating mathematical extension at the boundary of students' discernments (short oral presentation). *38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Tucson, AZ: November, 2016

Pioneering STEM in undergraduate education: A course for pre-Service teachers. *IEEE Global Engineering Education Conference*. Abu Dhabi, UEA. April, 2016.

Addressing the challenge of differentiation in elementary mathematics classrooms. *IDEAS 2016: Designing for Innovation Conference*. Calgary, Canada. May 2016

Insights on the relationships between mathematics knowledge for teachers and curricular material. *37th annual meeting of the North American chapter of the international group for the Psychology of Mathematics Education*, Lansing, US. November 2015.

Epiphanies in mathematics teaching: The personal learning experience of an elementary teacher in the Math Minds Initiative. *IDEAS 2015: Design Responsive Conference*. Calgary, Canada. May 2015.

Learning about research by research design: Students' perceptions of a master's online course in education. *IDEAS 2014: Rising to Challenge Conference*. Calgary, Canada. May 2014.

Assessing teachers' profound understanding of emergent mathematics in masters course. *34th Conference of the International Group for the Psychology of Mathematics Education*. Vancouver, Canada. July 2014.

Engaging high school students in an engineering thermodynamics project. *IEEE Global Engineering Education Conference*. Istanbul, Turkey. April, 2014.

Students' Visual Exploration of the Properties of Radicals. Co-presented with Isabel Lau at the *Innovators Designers and Researchers: Leading a New Knowledge Network Conference*. Calgary, Canada. May 2013.

Using Mobile Technology for Fostering Intellectual Engagement: A High School Project. *Institute of Electrical and Electronics Engineers, Global Engineering Education Conference*. Berlin, Germany. March, 2013.

A phenomenological study of teachers' professional learning and their understanding of mathematics-for-teaching. *First Meeting between the National Pedagogic University and the Faculty of Education of the University of Calgary*. Mexico City, Mexico. February, 2013.

Conversations held and roles played in teachers' collaborative design: Two dimensions of interaction. *Canadian Mathematics Education Study Group*. Laval Universite. Quebec, QC. May, 2012.

- **Incorporating the iPad in the mathematics classroom: Extending the mind into the Collective
Institute of Electrical and Electronics Engineers, Global Engineering Education Conference.
Marrakesh, Morocco. April, 2012.
- Conceptualizing role and position in interactions among teachers engaged in collaborative design
of mathematics learning artifacts. *Mathematics Education Doctoral Seminar.* Faculty of
Education, Simon Fraser University. Burnaby, Canada. November, 2011.
- Different Roles in Teachers' Collaborative Design of Mathematics Teaching Artifacts. *28th Annual
Qualitative Analysis Conference,* Bradford, Canada. May, 2011.
- In search of a metaphor: Characterizing conversations in teachers' collaborative design.
Mathematics Education Graduate Students Association 3rd Conference. Faculty of Education,
University of British Columbia, Vancouver, Canada. February, 2011.
- Different roles in teachers' collaborative design of mathematics teaching artifacts. *Mathematics
Education Doctoral Seminar.* Faculty of Education, Simon Fraser University. Vancouver,
Canada. September, 2010.
- The designing braid: Teachers' interactions while designing learning artefacts. *34th Conference of
the International Group for the Psychology of Mathematics Education.* Belo Horizonte,
Brazil. July, 2010.
- Methodological issues on the study of interactions in teams of collaborative design of
teaching/learning artefacts. *Mathematics Education Graduate-Students Association 2nd
Conference.* Faculty of Education, University of Calgary. Calgary, Canada. December, 2010.
- The designing braid: Teachers interactions while designing learning artefacts. *Mathematics
Education Doctoral Seminar.* Faculty of Education, Simon Fraser University. Burnaby,
Canada. November, 2009.
- Joint Design for Strategies of Environmental Education. Co-presenter. 5th World Environmental
Education Congress. Montreal, Canada. May 2009.
- Implementing Lesson Study at public schools in Mexico: A teachers perception of their own
professional development. *International Conference of the World Association of Lesson
Studies.* Hong Kong. December, 2008.
- Connecting patterns and that mumbo jumbo stuff we have to teach: A collaborative lesson design.
Mathematics Education Doctoral Seminar. Faculty of Education, Simon Fraser University.
Burnaby, Canada. November, 2008.
- The Lesson Study Experience. *Changing the Culture 2008: Mathematics: Beauty and Utility.* Pacific
Institute for the Mathematical Sciences, Vancouver, Canada. April, 2008.
- The Rational Point Group of Planar Degree-Three Curves. *Faculty of Education X Anniversary,
Universidad Autónoma del Estado de Morelos,* Cuernavaca, Mexico. September, 2002.
- Configuration of Straight Lines and Elliptic Curves, *Fellowship Seminar of the Mathematics
Institute, Universidad Nacional Autónoma de México.* Mexico City, Mexico. April, 2002.
- Generating Elliptic Surfaces from Elliptic Curves of Fixed Rank. *Algebraic Geometry Inter-
institutional Seminar, Universidad Juárez Autónoma de Tabasco,* Cunducan, Mexico. March,
2002.

** Best student paper award

A Secret Among Prime Numbers. *Fellowship Seminar, Fellowship Seminar of the Mathematics Institute, Universidad Nacional Autónoma de México*. Mexico City, Mexico. February, 1998.

Visualization of Cayley's Theorem Configurations. *Fellowship Seminar, Fellowship Seminar of the Mathematics Institute, Universidad Nacional Autónoma de México*, Mexico City, Mexico. February, 1996.

Conference Presentations (Posters)

El estudio de las funciones lineales como una introducción del álgebra en educación secundaria. *North American Chapter of the International Group for the Psychology of Mathematics Education*, Tucson, US. November, 2016.

Exploring STEM professional learning: A social network analysis. *Science, Technology, Engineering and Mathematics in Education Conference*. Beijing, China. October, 2016.

Public Presentations, Workshops, and Professional Development

Kainai Math Project, *KBE District PD Day*, Kainai Board of Education (two one-hour sessions), November 9, 2018. Kainai Nation, AB.

Math Minds: The RaPID model – Secondary. *Golden Hills School Division No. 75. Professional Development Session*. September 21, 2018.

Aisspommootsiio'pa - Learning mathematics at Kainai Board of Education. *Blackfoot Confederacy Conference*, October 5, 2018. Calgary, AB.

Adapting: Simultaneous Support for Struggling / Advanced Learners. *Transforming Mathematics Education: Transcending Dichotomies to Meet the Needs of Diverse Learners*. Public session at the University of Calgary, April 30, 2018. Calgary, AB.

MATH MINDS: Building Mathematical Understanding and Fluency. *ATA/CCSD High School Professional Development Day* March 23, 2018. Calgary, AB.

Enhancing Teaching Practice Through Systematic Variation. *Mathematics Council of the Alberta Teacher's Association*. October 21, 2017. Calgary, AB.

Math Minds Research – Elementary. *Golden Hills School Division No. 75. Professional Development Session*. September 22, 2017.

Math Minds Research – Secondary. *Golden Hills School Division No. 75. Professional Development Session*. September 22, 2017.

Meeting Students' Needs in Learning Mathematics Through a Teacher, Resource and Research Partnership. *Partner Research in School Conference*. August 25, 2017. Calgary, AB.

Making sense of periodic graphs through the body. *Math Symposium – Emerging insights into mathematics education: Bodies of learning*. University of Calgary, May 10, 2017.

Math Minds Professional Learning Session. *Professional development day at Wheatland Elementary School*. January 31, 2017. Strathmore, AB.

AWARDS, F. ELLOWSHIPS, AND ACCOLADES

April, 2012 Best Student Presentation *Institute of Electrical and Electronics Engineers, Global Engineering Education Conference 2012*. Marrakesh, Morocco.

2014	Recruitment Award	Graduate Scholarship for Recruitment Award, \$250 for multilingual expertise in recruitment of students.
2010	Graduate Fellowship	Awarded to graduate students at the Faculty of Education at Simon Fraser University, \$6250 .
2008	President's Stipend	Awarded to graduate students in the Faculty of education at Simon Fraser University, \$6250 .
2002 – 2006	Doctoral Scholarship	Awarded to Mexican doctoral students, Mexican National Council for Science and Technology, \$48645 .
1991	Best Student	Best Student of the University, 1990. Universidad Autónoma del Estado de Morelos. Mexico.
1990	First Place	Mexican Mathematics Olympiad, Guanajuato, Gto. Mexico.

APPLICATIONS FOR FUNDING (* INDICATES AWARDED)

2019	Principal Investigator	Insight Development Grant: Exploring mathematical modelling knowledge for teaching through simulation and coding. SSHRC
*2017	Principal Investigator	Enhancing prospective mathematics teachers' learning through modeling. Werklund School of Education Teaching and Learning Grants, \$8936 .
*2017	Principal Investigator	Alberta Education Title: Learning Mathematics at Kanai Board of Education, \$49665 .
2017	Principal Investigator	Indigenous and Northern Affairs Canada - Research, Measurement, Evaluation and Knowledge Transfer activities. Title: Learning Mathematics at Kanai Board of Education
2017	Principal Investigator	Insight Grants: <i>Mathematics Knowledge for STEM Teaching</i> . SSRCH.
2017	Principal Investigator	University of Calgary SoTL Grant. Title: Mathematics knowledge for modeling for future teachers
2017	Principal Investigator	Alberta Education – Research Partnership Program. Title: Improving student learning in mathematics through research-informed instructional methods
2017	Organizer	5-Day workshop: <i>Spatial Reasoning, Indigenous Knowledge and Mathematics for Teaching</i> . Banff International Research Station. (Originally applied in 2015 and invited to re-submit.)
2016	Principal Investigator	Spencer Foundation – Small Research Grants. Title: Developing mathematics-for-teaching at the elementary level
*2016	Principal Investigator	Research Fellowship Outbound, Werklund School of Education, University of Calgary, \$4000 .

*2015	Applicant	McLean Foundation Support for aboriginal community members to attend the workshop <i>Concept Study: Profound Understanding of Teachers' Mathematics</i> , Oaxaca, Mexico, August 2015, \$3000 .
2015	Principal Investigator	Small Research Grants: <i>Using Curricular Resource to Develop Mathematics-for Teaching</i> . The Spencer Foundation.
2015	Principal Investigator	Eyes High: Postdoctoral Scholars. University of Calgary.
2015	Principal Investigator	Research Fellowship Inbound, Werklund School of Education, University of Calgary.
2015	Principal Investigator	Connection Grant: <i>Concept Study: Profound Understanding of Teachers' Mathematics</i> . SSRCH
*2014	Principal Investigator	VPR Seed Grant, Werklund School of Education, University of Calgary, \$10700 .
2014	Principal Investigator	Insight Grants: <i>Relationships between mathematics knowledge for teaching, curricular material resources and student performance: A design-based research involving elementary schools, teacher educators and resource developers</i> . SSRCH.
*2013	Organizer	5-Day workshop: <i>Concept Study: Profound Understanding of Teachers' Mathematics</i> . Banff International Research Station. Granted support included accommodation and meals for 42 participants.

REVIEW AND EDITION OF SCHOLARLY WORK

Journals

2019	Reviewer	International Journal of Mathematics Teacher Education
2014 – Present	Reviewer	European Journal of Engineering Education
2015 – Present	Reviewer	International Journal of Interactive Mobile Technologies
2014 – Present	Reviewer	International Journal of Science and Mathematics Education
2012 – Present	Editor and Reviewer	Revista Educación Matemática

Conferences

2012 - Present	Program Committee	Institute of Electrical and Electronics Engineers, EDUCON, Global Engineering Education Conference.
2013 – 2014	Reviewer	XIV Conferencia Interamericana de Educación Matemática
2013 – Present	Scientific Committee	International Conference of the Portuguese Society for Engineering Education

2012 – Present	Program Committee	International Conference of the Portuguese Society for Engineering Education. Portugal, from 31st October to 1st November 2013.
2015 – Present	Reviewer	North American Chapter of the International Group for the Psychology of Mathematics Education.
2012	Reviewer, Conference	Institute of Electrical and Electronics Engineers, International Conference on Teaching, Assessment and Learning for Engineering 2012. Hong Kong.

Grants

2015	Reviewer	Insight Grant - Social Sciences and Humanities Research Council
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SERVICE (INCLUDING COMMITTEES, VOLUNTARY WORK, AND SYMPOSIA ORGANIZATION)

2014 – present	Director	Math Minds.
2016 – 2018	Curriculum Review	Alberta Education's Curriculum Working Groups.
2018 – present	Academic Co-Coordinator	4-course graduate topic: Contemporary, Emergent Mathematics for Teaching, Werklund School of Education, University of Calgary.
2017 – present	Academic Co-Coordinator	4-course graduate topic: Teaching and Learning Mathematics, Werklund School of Education, University of Calgary.
2016 – present	Academic Co-Coordinator	MEd Learning Technologies program, Werklund School of Education, University of Calgary.
2016	Design Team	Program design for the Learning Sciences Masters, Werklund School of Education, University of Calgary.
2018	Selecting Committee	Head of the Department of Mathematics and Statistics, University of Calgary.
2016	Hiring Committee	Department of Astrophysics, Faculty of Science, University of Calgary.
2015 – 2016	Co-organizer	Junior Math Contest. Department of Mathematics and Statistics, University of Calgary.
2015	Co-organizer	Math Camp. Department of Mathematics and Statistics, University of Calgary.
2015	Hiring Committee	Werklund School of Education, University of Calgary.
2014 – 2018	Student Selection Committee	Werklund School of Education, University of Calgary

2016, Nov	Committee Member-Candidacy	Lemieux, C. PhD, Werklund School of Education, University of Calgary
2018, Jun	Neutral Chair- Candidacy	Linto, K. EDD, Werklund School of Education, University of Calgary
2017, Nov	Neutral Chair – Candidacy	Amery, E. L. EDD, Werklund School of Education, University of Calgary
2017, May	Neutral Chair – Candidacy	Rheaume, J. EDD, Werklund School of Education, University of Calgary
2015, Dec	Neutral Chair – Candidacy	Urasaki, J. EDD, Werklund School of Education, University of Calgary
2015, Oct	Neutral Chair – Candidacy	Aljarrah, A. PhD, Werklund School of Education, University of Calgary.
2018, Aug	Neutral Chair-Oral Examination	Kilani, H. EDD, Werklund School of Education, University of Calgary
2018, Mar	Neutral Chair-Oral Examination	Kraushaar, R. D. EDD, Werklund School of Education, University of Calgary
2017, Apr	Neutral Chair-Oral Examination	Prytuluk, N. EDD, Werklund School of Education, University of Calgary
2018, Apr	Neutral Chair-Oral Examination	Prytuluk, N. EDD, Werklund School of Education, University of Calgary
2015, Jul	Neutral Chair-Oral Examination	Bass, G. A. EDD, Werklund School of Education, University of Calgary
2015, Jun	Neutral Chair-Oral Examination	Carlgren, D. A. EDD, Werklund School of Education, University of Calgary
2015	Organizer	<i>Concept Study - Profound Understanding of Teachers' Mathematics</i> (workshop). Oaxaca, Mexico.
2014	Hiring Committee	Werklund School of Education, University of Calgary.
2010 – 2014	Secretary General	International Society of Engineering Education. National Monitoring Committee, Canada.

2012 – 2013	Co-Chair	First meeting between the Pedagogical National University (Mexico) and the Faculty of Education of the University of Calgary (Canada). February 2013.
2011	Co-Chair	Mathematics Education Graduate-Students Association 3rd Conference. SFU/UBC. February 2011.
2010	Volunteer	Canadian Mathematics Education Study Group 2010, Burnaby, BC.
2008 – 2011	Organization	Mathematics Education Doctorate Students annual conference, SFU. Burnaby, BC.
2007	Coordinator	21st Mexican Mathematics Olympiad. Saltillo, Coah. Mexico.
2001	Representative (Morelos)	15th Mexican Mathematics Olympiad. Oaxtepec, Mor. Mexico.
2000	Accompanist Teacher	14th Mexican Mathematics Olympiad. Morelia, Mich. Mexico.
1999	Referee	Third Humberto Lopez-Pineda Mathematics Conquest. ITESM, Cuernavaca Mor. Mexico.

CURRENT STUDENT SUPERVISION AND MENTORING

PhD Supervisor	Alemu Gashie Ashebir Werklund School of Education, University of Calgary.
PhD Supervisory Committee	Stefan Rothsuh Werklund School of Education, University of Calgary.
PhD Supervisory Committee	Collette Lemieux Werklund School of Education, University of Calgary.
EdD Supervisor	Arushi Prabhakar Werklund School of Education, University of Calgary.
EdD Supervisor	Bradley van Middelooop Werklund School of Education, University of Calgary.
EdD Supervisor	William Dekker Werklund School of Education, University of Calgary.
Masters Co-Supervisor	Remedios Soriano Velasco, Universidad Pedagógica Nacional, Mexico.
PhD Co-Supervisor	Fredy Peña, Centro de Investigaciones Avanzadas del Instituto Politécnico Nacional, Mexico.

STUDENT EXAMINATION (COMMITTEE)

- 2019 Masters Sandoval Rosas, M.
De la aritmética al álgebra: El caso de fracciones algebraicas.
Universidad Pedagógica Nacional, Mexico. January 5, 2019
- 2018 EDD Candidacy Flood, K.
Affordances of Smartphones in Supporting Student Learning: A Case Study.
Werklund School of Education, University of Calgary
- 2017 PhD Predoctoral Hernández Zavaleta, J. E.
Prácticas emergentes ante el enfrentamiento con dinámicas erráticas. Un estudio del pensamiento y lenguaje variacional: Memoria Predoctoral
CINVESTAV-IPN, Mexico
- 2016 PhD Candidacy Lemieux, C.
The use of stories in statistics education: The impact on students' understanding of statistics and belief in the usefulness of statistics.
Werklund School of Education, University of Calgary.
- 2016 Bachelor Dissertation Sántiz Pérez, E. G.
Factores que influyen en el aprendizaje de las matemáticas en primer ciclo de educación primaria bilingüe indígena: Una perspectiva desde la comunidad educativa.
Indigenous Education, Universidad Pedagógica Nacional, Mexico.
- 2015 EdD Candidacy Carlgren, D. A.
A Scientific Community of Students: The Effects of Peer Reviewed Journaling in Science Class.
Werklund School of Education, University of Calgary.
- 2015 PhD Dissertation Sobhanzadeh, M.
Implementing Reflective Writing in Combination with Laboratories.
Department of Physics and Astronomy, University of Calgary
- 2015 PhD Int. Mention Goizueta, M.
Aspectos etimológicos de la argumentación en el aula de matemáticas.
Faculty of Education, Universitat Autònoma de Barcelona
- 2002 Bachelor thesis Sánchez Gómez J. F.
Las gavillas de Jean-Pierre Serre.
Science Faculty, Universidad Nacional Autónoma de México
- 2002 Bachelor thesis Vigueras Herrera, O.
Cohomología de gavillas sobre variedades complejas
Science Faculty, Universidad Nacional Autónoma de México
- 2001 Bachelor thesis Vera Licona M. P.
Un análisis geométrico combinatorio del hexagrama místico de Pascal
Science Faculty, Universidad Nacional Autónoma de México

2000 Bachelor thesis Pérez Buendía, J. R.
Las conjeturas de Weil para hipersuperficies de Fermat
 Science Faculty, Universidad Nacional Autónoma de México.

TEACHING

Courses Taught

University of Calgary. Calgary, AB, Canada.

MATH/EDUC 305 – Inside Mathematics

EDUC401 – Issues in Learning and Teaching

EDUC409, EDUC 460 – Specialization 1, Mathematics (Elementary and Secondary)

EDUC427 – STEM Education (Elementary and secondary)

EDUC506 – Specialization 2, Mathematics (Elementary and Secondary)

EDUC509 – Curriculum 1, Mathematics (Secondary)

EDUC545 – Specialization 1 Science (Secondary)

EDTP512 – Studies in Pedagogy and Schooling Seminar (Mathematics)

EDTP599 – Mathematics for elementary teachers

EDER603 – Research Methodology in Education (Face-to-face and online)

EDER689.75 – Designing Tasks for the Math Classroom

EDER 689.05 – Geometry in Nature, Art, and Computer Graphics (Online)

EDER 689.87 – Mathematical Knowledge for Teachers

EDER699.73 – Language Teaching and Technology (Online)

Simon Fraser University. Burnaby, BC, Canada

FANX99 – Foundations of Analytical and Quantitative reasoning

EDUC475 – Designs For Learning: Elementary Mathematics

EDUC415 – Designs For Learning: Secondary Mathematics

University of British Columbia. Vancouver, BC, Canada

CUST416B/951 – Special Topics in Curriculum Studies

University of the Fraser Valley. Abbotsford, BC, Canada.

MATH094 – Introduction to College Math I

MATH111 – Calculus I

MATH112 – Calculus II

MATH140 – Algebra for Business

MATH221 – Linear Algebra

Universidad Nacional Autónoma de México. Mexico City, Mexico.

Linear Algebra I

Universidad Autónoma del Estado de Morelos. Cuernavaca, Mor. Mexico.

Analytic Geometry and Linear Algebra

Linear Algebra I

Linear Algebra II

Calculus I

Calculus III

Differential Equations

Geometry I

Algebra

Design of learning tasks for courses

MATH/EDUC305 – Inside Mathematics
 EDUC409 – Specialization 1, Mathematics
 EDUC506 – Specialization 2, Mathematics (Secondary)
 EDUC509 – Curriculum 1, Mathematics (Secondary)
 EDUC545 – Curriculum 1, Science (Secondary)
 EDTP512 – Studies in Pedagogy and Schooling Seminar (Mathematics)
 EDTP599 – Mathematics for elementary teachers
 EDER603 – Research Methodology in Education (Blended)
 EDER669.73 – Language Teaching and Technology (Online)
 EDER 689.05 – Geometry in Nature, Art, and Computer Graphics (Online)
 EDER689.75 – Designing Tasks for the Math Classroom

Course Development

University of Calgary. Calgary, AB, Canada.

EDER 689.05 – Geometry in Nature, Art, and Computer Graphics (Online)
 EDER689.75 – Designing Tasks for the Math Classroom
 EDD779 – Introduction to Computer Supported Learning (Co-developer)
 MATH/EDUC305 – Mathematics for Teaching (Co-developed with the Department of Mathematics and Statistics)

Program Development

2016	4-course topic, MEd	Teaching and Learning Mathematics, Werklund School of Education, University of Calgary
2017	4-course topic, MEd	Contemporary, Emerging Mathematics for Teachers, Werklund School of Education, University of Calgary

GIVEN WORKSHOPS, TRAINING, AND DIPLOMA COURSES (SELECTED)

2019	Teachers	<i>Aisspommootsio'pa – Learning Mathematics at KBE</i> , Kainai Board of Education (whole-day session): January 31. Kainai Nation, Alberta.
2018	Teachers	<i>Learning Mathematics at KBE</i> , Kainai Board of Education (4 whole-day sessions): February 6, March 6, March 27, April 24. Kainai Nation, Alberta.
2017-2018	Teachers	<i>CBE - Examining Student Learning in Mathematics through Design-based Research</i> . Professional Learning series (12 half-day sessions): April 13, May 12 and 26, June 9, October 16, November 3, November 17, December 8, 2017; January 19, February 9, March 9, and April 13, 2018. Calgary, AB.
2016	Faculty and Students	<i>Workshop on Concept Study</i> , National Pedagogical University, Center for Research and Advanced

		Studies of the National Polytechnic Institute, and University of Colima (two sessions), Mexico.
2015-2018	Teachers	<i>Math Concept Study -Radisson Park Elementary School.</i> (13 sessions): November 20, 2015; March 11, April 22, May 27, December 16, 2016; March 10, April 21, June 9, November 24, December 15, 2017; March 2, April 27, May 25, 2018. Calgary, AB.
2016	Teachers	<i>Supporting Mathematical Thinking through the Learning of a Second Language,</i> Calgary Board of Education (one session), Calgary, AB.
2016	Teachers	<i>Supporting Problem Solving and Mathematical reasoning,</i> Calgary Board of Education (one session), Calgary, AB.
2015	Teachers	<i>Teaching the Language of Mathematical Thinking,</i> Calgary Separate School District (one session) , Calgary, AB.
2014	Teachers	<i>Senator Patrick Burns School Professional Learning Session,</i> Calgary Board of Education (two sessions) , Calgary, AB.
2014	Faculty and Students	<i>Introduction to PechaKucha: An alternative form of presentations,</i> Taylor Institute for Teaching and Learning, University of Calgary, Calgary, AB.
2013	Faculty and students	<i>Introduction to PuchaKecha,</i> Werklund School of Education, University of Calgary, Calgary, AB.
2006	Olympiad Trainers	<i>Advanced Workshop on Mathematics</i> Olimpiada Mexicana de Matemáticas Guanajuato, Gto. Mexico.
2005	Olympiad Trainers	<i>Workshop for Olympiad Trainers</i> Olimpiada Mexicana de Matemáticas Mexico City, Mexico
2002 – 2003	Teachers	<i>Differential and Integral Calculus</i> Science Faculty Universidad Autónoma del Estado de Morelos Cuernavaca, Mor. Mexico
2001 – 2006	Olympiad Participants	<i>National Mathematical Olympiad Training</i> Olimpiada Mexicana de Matemáticas Cuernavaca, Mor. Mexico
1999 – 2006	Olympiad Participants	<i>Morelos State Mathematical Olympiad Training</i> Olimpiada Mexicana de Matemáticas Cuernavaca, Mor. Mexico
2002	Teachers	<i>Mathematics Learning</i> Colegio de Estudios Científicos y Tecnológicos del Estado de Morelos Cuernavaca, Mor. Mexico

2001 – 2002	Teachers	<i>Mathematics</i> Science Faculty Universidad Autónoma del Estado de Morelos. Cuernavaca, Mor. Mexico. September
2000	Olympiad Trainers	<i>Workshop-Course for Mathematics Olympiad Trainers</i> Olimpiada Mexicana de Matemáticas Cuernavaca, Mor. Mexico
1996	Teachers and Students	<i>Introduction to the Use of the Software Mathematica.</i> Xalapa, Ver. Mexico.