

LAURA MELISSA CRUZ CASTRO

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EDUCATION

Ph.D. in Engineering Education

Expected Aug 2022

Purdue University, West Lafayette, IN, USA

Dissertation: Computational Thinking at Scale

Advisor: Dr. Kerrie Douglas

M.S. in Electrical and Computer Engineering

Expected Dec 2021

Purdue University, West Lafayette, IN, USA

Advisor: Dr. Mirelle Boutin

M.S. in Business Intelligence

Jan 2018

Online Business School

Universitat de Barcelona, Barcelona, Catalonia, Spain

B.S. in Statistics

Sep 2015

Universidad Nacional de Colombia, Bogota, Colombia

Thesis: Bayesian Approximation for a Split-Plot Design with a Binary Outcome

Co-advisors: Dr. Edilberto Cepeda Cuervo and Dr. Bruce Craig

PUBLICATIONS

Refereed Journal Articles

1. **Cruz Castro, L. M.**, Magana, A. J., Douglas, K. A., & Boutin, M. (2021). Analyzing Students' Computational Thinking Practices in a First-Year Engineering Course. *IEEE Access*, 9, 33041-33050. <https://doi.org/10.1109/ACCESS.2021.3061277>
2. **Cruz Castro, L. M.**, Ortiz, F., & Lemus, D. F. (2016). Construction of a Family Socioeconomic Index for the Students who Present the SABER 11 Test. *Comunicaciones en Estadística* 9(1), 73–84. <https://doi.org/10.15332/s2027-3355.2016.0001.04>
3. Diefes-Dux, H. A., & **Cruz Castro, L. M.** (in press). Reflection Strategies and Students' Access to Feedback in a First-Year Engineering Course using Standards-Based Grading. *Journal of Engineering Education*, V(N), X-Y.

Refereed Journal Articles in Submission

1. **Cruz Castro, L. M.**, Douglas, K. A., Diefes-Dux, H. A., Magana, A. J., & Boutin, M. (under review Oct. 2021). The Role of Self-Regulated Learning Sub-Processes in the Success of Students' Acquisition of Programming Skills in an Introductory Computational Thinking Course. *Journal of Computing in Higher Education*, V(N), X-Y.

Refereed Journal Articles in Preparation

1. **Cruz Castro, L. M.**, & Diefes-Dux, H. A. (2022). Student Engagement with a Standards-Based Grading System with and without Reflection. *Journal of Engineering Education*, V(N), X-Y.
2. **Cruz Castro, L. M.**, Li, T., Douglas, K. A., & Brinton, C. (2022). A Learning Analytics Tool to Address Students' Use of LMS Content. *IEEE Transaction on Learning Technologies*, V(N), X-Y.

Refereed Conference Proceedings

1. Chen, Y. W., Tenorio, B., **Cruz Castro, L. M.**, Douglas, K. A., Lan, A., & Brinton, C. (Accepted for publication Oct. 2021) Click-Based Student Performance Prediction: A Clustering Guided Meta Learning Approach. *Proceedings of the IEEE International Conference on Big Data (IEEE Big Data 2021)*.
2. **Cruz Castro, L. M.**, Ray, S., Merzdorf, H., Douglas, K. A., & Hammond, T. (2021). A Meta Learning Approach to Personalized Automatic Assessment of Rectilinear sketches. *Proceedings of the 51th ASEE/IEEE Frontiers in Education Conference, Lincoln, NE*.
3. Li, T., **Cruz Castro, L. M.**, & Douglas, K. A. (2021). Relationship between Learning Engagement Metrics and Learning Outcomes in an Online Engineering Course. *Proceedings of the 51th ASEE/IEEE Frontiers in Education Conference, Lincoln, NE*.
4. **Cruz Castro, L. M.**, & Shoaib, H. (2021). A Systematized Literature Review on Computational Thinking Assessment in STEM Higher Education. *Proceedings of the 128th ASEE Conference and Exposition, Long Beach, CA*.
5. Diefes-Dux, H. A., & **Cruz Castro, L. M.** (2019). Patterns of Monthly Student Access to Feedback by Section in a Large Course using Standards-Based Grading and Reflection. *Proceedings of the 8th Research in Engineering Education Symposium, Cape Town, South Africa*.
6. Diefes-Dux, H. A., & **Cruz Castro, L. M.** (2019). Validation of an Instrument to Measure Student Engagement with a Standards-Based Grading System. *Proceedings of the 126th ASEE Conference and Exposition, Tampa, FL*.
7. Diefes-Dux, H. A., & **Cruz Castro, L. M.** (2018). Student Reflection to Improve Access to Standards-Based Grading Feedback. *Proceedings of the 48th ASEE/IEEE Frontiers in Education Conference, San Jose, CA*.
<https://doi.org/10.1109/FIE.2018.8659325>

Refereed Conference Papers in Submission

1. Chen, Y. W., Tenorio, B., **Cruz Castro, L. M.**, Douglas, K. A., Lan, A., & Brinton, C. (submitted Sept. 2021) Predicting Student Performance via Attention-Based Per-

- sonalized Federated Learning and Self-Supervised Behavioral Pretraining. *Proceedings of the 36th AAAI Conference on Artificial Intelligence, Vancouver, BC, Canada*.
2. **Cruz Castro, L. M.**, Li, T., Ciner, L., Douglas, K. A., & Brinton, C. (submitted Aug. 2021) A Human-Centered Learning Analytics Approach for Predicting Learning Outcome in a First-Year Engineering Course. *Proceedings of the 2022 AERA Annual Meeting, San Diego, CA*.

Acknowledgments

1. Olaya-Arenas, P., & Kaplan, I. (2019). Quantifying Pesticide Exposure Risk for Monarch Caterpillars on Milkweeds Bordering Agricultural Land. *Frontiers in Ecology and Evolution*, 7, 223. <https://doi.org/10.3389/fevo.2019.00223>
2. Rodriguez-Fuentes, R. A. (2019). Linguistic and Cultural Factors in Graduate School Admissions: An Examination of Latin American Students at Purdue University. Purdue University Graduate School. Thesis. <https://doi.org/10.25394/PGS.7434353.v>

Other Publications

1. **Cruz Castro, L. M.**, & Ehsan, H. (2020). Surviving the Pandemic as Grad Student Parents. *Inside Higher Ed.*. Retrieved from <https://www.insidehighered.com>

INVITED TALKS

1. **Cruz Castro, L. M.**, & Mendoza, J. (2021). Introduction to Programming and Data Analysis. *Women in Mathematics and Statistics Club, University of Florida*.
2. **Cruz Castro, L. M.**, & Ehsan, H. (2020). The Role of Academic Parents. *ASEE Center for Diversity, Equity, and Inclusion*.
3. **Cruz Castro, L. M.** (2020). The Role of Meta-Cognition in the Acquisition of Programming Skills. *ASEE Student Chapter, Purdue University*.
4. **Cruz Castro, L. M.** (2018). Reflection and standards based grading system. *School of Engineering Education Seminar, Purdue University*.

RESEARCH EXPERIENCE

Graduate Research Assistant Aug 2018 – Present
SEED Laboratory, School of Engineering Education, Purdue University
West Lafayette, IN, USA

Student Consultant May 2018 – Aug 2018
Statistical Consulting Service, Department of Statistics, Purdue University
West Lafayette, IN, USA

Research Scientist Statistics Jan 2016 – Jan 2017
Institute for assessment of education (ICFES), Colombia Department of Education
Bogota, Colombia

Research Assistant - Junior Statistician

Apr 2015 – Jan 2016

Data Science, Buy Behavioral Methods Global Group, Nielsen company

*Bogota, Colombia***TEACHING EXPERIENCE**

Graduate Teaching Assistant

Aug 2021 – Present

ECE20875: Python for Data Science

Elmore Family School of Electrical and Computer Engineering, Purdue University

- Coordinated grading assignments and office hours among undergraduate and graduate teaching assistants.
- Facilitated equal opportunities for students that require accommodation during exams and homework.
- Collaborated with other instructional team members to develop questions for exams and homework assignments and their corresponding evaluation rubrics.

Teaching Apprentice

Jan 2021 – May 2021

ENE68500: Educational Methods in Engineering

School of Engineering Education, Purdue University

- Administered the course's learning management system.
- Moderated in-class group discussions.
- Lead instructor in one lecture on student centered teaching.

Course Developer

Jan 2019 – May 2019

School of Engineering Education, Purdue University

- Designed a graduate-level course using the principles of backward design titled: *Statistical Literacy for Engineering Education Researchers*.

MENTORING EXPERIENCE

Grad-Track Mentor

Aug 2021 – Present

Purdue University - College of Engineering

Mentor of a First-Year Graduate Student

Aug 2021 – Present

Purdue University - Electrical and Computer Engineering

Mentor of an Undergraduate Student

May 2021 – Present

Purdue University - Data Science

Academic Mentor

Aug 2020 - Present

Cientifico Latino - Graduate School Mentorship Initiative

Academic Mentor

Aug 2018 – Present

Colombian Student Association at Purdue - Big Sibling Program

SERVICE TO PROFESSION

IEEE Access Reviewer	Feb 2021 – Present
Computer Applications in Engineering Education (CAE) Reviewer	Mar 2019 – Present

SERVICE TO THE UNIVERSITY

Colombian Student Association at Purdue (CSAP) President	Apr 2021 – Present
Engineering Education Graduate Student Association Social Justice and Inclusion Chair	Aug 2018 - May 2019
Women in Engineering Program Activity assistant - Introduce a Girl to Engineering day	Jan 2020

RELATED PROFESSIONAL SKILLS

- | | | |
|--------------------|----------------------|-----------|
| • Grant writing | • Data visualization | • R |
| • GitHub | • Python | • Tableau |
| • GitHub classroom | • C++ | • MySQL |

PROFESSIONAL AFFILIATIONS

American Society of Engineering Education – ASEE Student member	Apr 2021 – Present
IEEE Eta Kappa Nu – HKN Electrical and Computer Engineering Honor Society	Dec 2020 – Present
Institute of Electrical and Electronics Engineers – IEEE Member	Dec 2020 – Present
Society of Industrial and Applied Mathematics – SIAM Member	Oct 2020 – Present