

# Dina Verdín

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## POSITION

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Arizona State University

Polytechnic School, Mesa AZ

*Assistant Professor, Engineering Education Systems & Design*

## EDUCATION

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Doctor of Philosophy, Engineering Education

Purdue University, West Lafayette, IN

Master of Science, Industrial Engineering

Purdue University, West Lafayette, IN

Bachelor of Science, Industrial & Systems Engineering

San José State University, San José, CA

## PENDING DECISION: SPONSORED FUNDING

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National Science Foundation IUSE: HSI

Submission Date: February 10, 2021

*Collaborative Research: Commitment to Learning Instilled by Mastery-Based Undergraduate Program (CLIMB-UP)*

## ADVISING

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### PhD Committee

Yue Liu, Chair

### Master Committee

Jana Vandenberg, Committee Member, School of Mathematics & Statistical Sciences

Arielle Rainey, Committee Member, Humanitarian Engineering, Colorado School of Mines

## TEACHING

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### Undergraduate Courses

*EGR 101: Foundations of Engineering Design I* (Spring 2021)

Arizona State University

Students are taught the engineering design process, modeling, working in dynamic teams and communicating their design products to end-users.

*ENGR 131: Transforming Ideas to Innovation I: Instructor of Record* (Fall 2019)

Purdue University

Students learn data analytics, mathematical modeling, design process to develop innovative solutions to engineering challenges, team-work, communication skills, and project management.

*ENGR 132: Transforming Ideas to Innovation II: Instructor of Record* (Spring 2020)

Purdue University

Students will learn basic programming concepts using MATLAB including relational operators, logical operators, user-defined functions, selected structures, while loops, for loops, and complex loops, linear and non-linear regression.

## Graduate Courses

*EGR 673: Quantitative methods for engineering education research (scheduled for Fall 2021)*

## **JOURNAL PUBLICATIONS**

**10 first authored (both published and pending); 1 Honorable Mention for Best Paper Award**

- J.14 **Verdín, D.**, Smith, J., & Lucena, J. C. First-Generation College Students' Funds of Knowledge Promotes Identity Development and Persistence Beliefs *Journal of Engineering Education* (submitted January 29, 2021)
- J.13 **Verdín, D.**, The Power of Interest: Minoritized Women's Interest in Engineering Fosters Persistence Beliefs Beyond Belongingness and Engineering Identity. *International Journal of STEM Education* (minor revisions submitted)
- J.12 **Verdín, D.**, Smith, J., & Lucena, J. First-Year Engineering Students' Funds of Knowledge Supports their Confidence in the Classroom and Certainty of Majoring in Engineering. *Journal of Pre-College Engineering Education Research—Special Issue on Asset-Based Pre-College Engineering Education to Promote Equity* (Accepted- Anticipated publication April, 2021)
- J.11 Lee, W., Hall, J., Godwin A., Knight, D., & **Verdín, D.** A Novel Approach to Monitoring Student Support: Instrument Development for Undergraduate STEM Education *Journal of Engineering Education* (revisions due January 2021)
- J.10 **Verdín, D.**, Smith, J., & Lucena, J. Recognizing the funds of knowledge of first-generation college students in engineering: An instrument development. *Journal of Engineering Education* (Accepted- Anticipated publication July, 2021)
- J.9 \***Verdín, D.**, Godwin, A., & Benedict, B. (2020). Exploring First-Year Engineering Students Innovation Self-Efficacy Beliefs. *Journal of Civil Engineering Education*, 146(4), 1-14. doi: 10.1061/(ASCE)EI.2643-9115.0000020 \*Honorable Mention for 2020 Best Paper Award
- J.8 **Verdín, D.**, Godwin, A., Kirn, A., Benson, L., & Potvin, G. (2019). Engineering role identity fosters grit differently for women first-generation and continuing-generation college students. *International Journal of Engineering Education*, 35(4), 1037-1051.
- J.7 Rohde, J. A., Musselman, L. J., Benedict, B., **Verdín, D.**, Godwin, A., Kirn, A., Benson, L., & Potvin, G. (2019). Design experiences, identity and belonging in early-career electrical and computer engineering students. *IEEE Transactions on Education*. vol. 62, no. 3, pp. 165-172. doi: 10.1109/TE.2019.2913356
- J.6 **Verdín, D.**, Godwin, A., & Klotz, L. (2018). Exploring the sustainability-related career outcome expectations of community college students interested in science and engineering careers. *Community College Journal of Research and Practice*. 1-16. doi: 10.1080/10668926.2018.1558133
- J.5 **Verdín, D.**, Godwin, A., & Ross, M. (2018). STEM roles: How students' ontological perspectives facilitate STEM identities. *Journal of Pre-College Engineering Education Research (J-PEER)*, 8(2), Article 4, 1-39. doi: 10.7771/2157-9288.1167
- J.4 **Verdín, D.** & Godwin, A. (2018). Exploring first-generation Latinas' identities, self-efficacy and institutional integration to inform achievement in engineering. *Journal of Women and*

- J.3 **Verdín, D.**, Godwin, A., Kirn, A., Benson, L., & Potvin, G. (2018). Engineering women's attitudes and goals in choosing disciplines with above and below average female representation. *Social Science- Special Issue: Women in Male-Dominated Domains*. 7(3), 44, 1-25. doi: 10.3390/socsci7030044
- J.2 Potvin, G., McGough, C., Benson, L., Boone, H. J., Doyle, J., Godwin, A., Kirn, A., Ma, B., Rohde, J., Ross, M., & **Verdín, D.** (2018). Gendered interests in electrical, computer and biomedical engineering: Intersections with career outcome expectations. *IEEE Transactions on Education*, 61(4), 298-304. doi: 10.1109/TE.2018.2859825
- J.1 Godwin, A., **Verdín, D.**, Kirn, A., & Satterfield, D. (2017). The intersection of gender and race: Exploring chemical engineering students' attitudes. *Chemical Engineering Education—Special Issue on Diversity in Chemical Engineering*, 52(2), 89-97.

## BOOK CHAPTER

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1. **Verdín, D.** (2020). "I learned how to divide at 25": A counter-narrative of how one Latina reclaims her agency and begins to see herself as someone that can do engineering. In E. González, F. Fernandez, M. Wilson. (Ed.) *Latinas Studying and Researching in STEM: An Asset-Based Approach to Increasing Resilience and Retention*

## CONFERENCE PROCEEDING (refereed)

GS = Graduate Student;

\*Best Diversity Paper Award; +Nominated for ERM Best Paper Award, ++Nominated for Best Diversity Papers

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- CP.35 **Verdín, D.** (2021). Negotiating Belongingness: A Longitudinal Narrative Inquiry of a Latina, First-Generation College Student's Experience in the Engineering Culture *American Society for Engineering Education Annual Conference & Exposition* (accepted abstract)
- CP.34 <sup>GS</sup>Liu, Y., **Verdín, D.**, Sonnert, G., & Sadler, P. M. (2021) Understanding How Social Agents and Their Communicative Messages Influence High School Girls' Engineering Career Interest *American Society for Engineering Education Annual Conference & Exposition* (accepted abstract)
- CP.33 **Verdín, D.**, Sonnert, G., & Sadler, P. M. (2021) Out-of-School Experiences that Support Latinx Students' Interest in Pursuing an Engineering Career. *American Educational Research Association Annual Meeting* (accepted to be presented in April 2021)
- CP.32 **Verdín, D.**, Smith, J., & Lucena, J. (2020) The Influence of Interest and Performance/Competence Beliefs on Graduation and Career Success for Latinx Students in Engineering. *2020 Association for the Study of Higher Education*
- <sup>+</sup>CP.31 **Verdín, D.**, Smith, J., & Lucena, J. (2020, June) The Influence of Connecting Funds of Knowledge to Beliefs about Performance, Classroom Belonging, and Graduation Certainty for First-Generation College Students. Paper presented at 2020 ASEE Virtual Annual Conference Content Access, Virtual Online 10.18260/1-2—35343
- CP. 30 Benedict, B. S., & Maxey, K. R., & Verdín, D., & Godwin, A. (2020, June), *A Review of Agentic Frameworks in Engineering Education*. Paper presented at 2020 ASEE Virtual Annual Conference Content Access, Virtual Online. 10.18260/1-2--34044
- CP.29 **Verdín, D.**, Smith, J., & Lucena, J. (2020). Exploring how First-Generation College Students' Funds of Knowledge Supports the Formation of an Engineering Identity. *American Educational Research Association Annual Meeting*. Virtual Meeting

- CP.28 **Verdín, D.** & Godwin, A, “Engineering Disciplinary Interests by Gender and Parental Level of Education,” *2019 IEEE Frontiers in Education Conference (FIE)*, Covington, KY, USA, 2019, pp. 1-5, doi: 10.1109/FIE43999.2019.9028611.
- CP.27 Benedict, B., **Verdín, D.**, Rohde, J. A., Brown, H., Baker, R., & Godwin, A. “An Early adaptation of identity trajectory theory to understand the identities of undergraduate engineering students,” *2019 IEEE Frontiers in Education Conference (FIE)*, Covington, KY, USA, 2019, pp. 1-5, doi: 10.1109/FIE43999.2019.9028365.
- CP.26 Hall, J., Lee, W. C., Knight, D., Godwin, A., and **Verdín, D.**, “Disciplinary differences of undergraduate students’ perceived support in STEM: Exploring the potential of college profiles,” *2019 IEEE Frontiers in Education Conference (FIE)*, Covington, KY, USA, 2019, pp. 1-5, doi: 10.1109/FIE43999.2019.9028454.
- CP.25 **Verdín, D.**, & Godwin, A. (2019, June), *Board 51: An Initial Step Toward Measuring First-Generation College Students’ Personal Agency: A Scale Validation* Paper presented at 2019 ASEE Annual Conference & Exposition, Tampa, Florida. 10.18260/1-2--32367
- CP.24 **Verdín, D.**, Smith, J.M., & Lucena, J. (2019, June), *Recognizing Engineering Students’ Funds of Knowledge: Creating and Validating Survey Measures* Paper presented at 2019 ASEE Annual Conference & Exposition, Tampa, Florida. 10.18260/1-2--33226
- CP.23 Godwin, A., Thielmeyer, A. H., Rohde, J. A., **Verdín, D.**, Benedict, B., & Baker, R. (2019, June), *Using Topological Data Analysis in Social Science Research: Unpacking Decisions and Opportunities for a New Method* Paper presented at 2019 ASEE Annual Conference & Exposition, Tampa, Florida. 10.18260/1-2--33522
- CP.22 Smith, J.M., **Verdín, D.**, & Lucena, J.C. (2019, June), *Board 143: EAGER: Broadening Participation of First-generation College Students in Engineering – Backgrounds, Experiences and Strategies for Success* Paper presented at 2019 ASEE Annual Conference & Exposition, Tampa, Florida. 10.18260/1-2--32258
- CP.21 **Verdín, D.**, & Godwin, A. (2019). The relationship between engineering identity and belongingness on certainty of engineering major for first-generation college students. Paper presented at the 2019 annual meeting of the American Educational Research Association. Retrieved from the AERA Online Paper Repository. doi10.302/1431660
- CP.20 Hall, J., **Verdín, D.**, Lee, W.C., Knight, D., & Godwin, A. (2019, April), *Toward a Measurement of Co-Curricular Support: Insights from an Exploratory Factor Analysis* Paper presented at 2019 CoNECD- The Collaborative Network for Engineering and Computing Diversity, Crystal City, Virginia. <https://strategy.asee.org/31801>
- \*CP.19 **Verdín, D.**, Godwin, A., Sonnert, G., & Sadler, P. M, “Understanding how First-Generation College Students’ Out-of-School Experiences, Physics and STEM Identities Relate to Engineering Possible Selves and Certainty of Career Path,” *2018 IEEE Frontiers in Education Conference (FIE)*, San Jose, CA, USA, 2018, pp. 1-8, doi: 10.1109/FIE.2018.8658878.
- CP.18 Benedict, B., **Verdín, D.**, Baker, R., & Godwin, A. “I Don’t FIT the Stereotype, but I see Myself as an Engineer: First-Year Engineering Students’ Attitudes and Beliefs about their Engineering Identities,” *2018 IEEE Frontiers in Education Conference (FIE)*, San Jose, CA, USA, 2018, pp. 1-7, doi: 10.1109/FIE.2018.8659229.
- CP.17 Rohde, J. A., **Verdín, D.**, Doyle, J. M., Godwin, A., Kirn, A., Benson, L., & Potvin, G., “Investigating the intersection of career aspirations and engineering beliefs among first year engineering students.” *2018 IEEE Frontiers in Education Conference (FIE)*, San Jose, CA, USA, 2018, pp. 1-8, doi: 10.1109/FIE.2018.8659311.
- CP.16 Godwin, A., **Verdín, D.**, Benedict, B., & Baker, R. (2018). CAREER: Actualizing latent diversity: building innovation through engineering students’ identity development—an

executive summary. Proceedings of the *125<sup>th</sup> American Society for Engineering Education Annual Conference & Exposition*, Salt Lake City, UT.

- <sup>++</sup>CP.15 Benedict, B., **Verdín, D.**, & Godwin, A., (2018, June), *Uncovering Latent Diversity: Steps Towards Understanding 'What Counts' and 'Who Belongs' in Engineering Culture* Paper presented at 2018 ASEE Annual Conference & Exposition, Salt Lake City, Utah. 10.18260/1-2--31164
- CP.14 **Verdín, D.**, & Godwin, A. (2018, April). First-generation college students identifying as future engineers. Paper presented at the 2018 *American Educational Research Association Annual Meeting*. Retrieved from the AERA Online Paper Repository. doi 10.302/1300654
- CP.13 **Verdín, D.**, Godwin, A., Kirn, A., Benson, L., & Potvin, G. (2018, April), *Understanding How Engineering Identity and Belongingness Predict Grit for First-Generation College Students* Paper presented at 2018 CoNECD- The Collaborative Network for Engineering and Computing Diversity Conference, Crystal City, Virginia. <https://peer.asee.org/29589>
- CP.12 **Verdín, D.**, & Godwin, A. “Testing for measurement invariance in engineering identity constructs for first-generation college students,” *2017 IEEE Frontiers in Education Conference (FIE)*, Indianapolis, IN, 2017, pp. 1-5, doi: 10.1109/FIE.2017.8190616.
- CP.11 Benedict, B., **Verdín, D.**, Godwin, A., & Milton, T. (2017). Social and latent identities that contribute to diverse students’ belongingness in engineering. Proceedings of *IEEE Frontiers in Education Conference*, Indianapolis, IN.
- CP.10 **Verdín, D.** (2017). Quantifying and assessing trends on National Science Foundation's broader impact criterion. Proceedings of the *124<sup>th</sup> American Society for Engineering Education Annual Conference & Exposition*, Columbus, OH.
- CP.9 **Verdín, D.**, & Godwin, A. (2017). Physics identity promotes alternative careers for first-generation college students in engineering. Proceedings of the *124<sup>th</sup> American Society for Engineering Education Annual Conference & Exposition*, Columbus, OH.
- CP.8 Benson, L., Potvin, J., Kirn, A., Godwin, A., Doyle, J., Rohde, J. A., **Verdín, D.**, & Boone, H. (2017) characterizing student identities in engineering: Attitudinal profiles of engineering majors. Proceedings of the *124<sup>th</sup> American Society for Engineering Education Annual Conference & Exposition*, Columbus, OH.
- CP.7 Kirn, A., Godwin, A., Pearson, N., Rodriguez-Simmonds, H. E., Rohde, J. A., **Verdín, D.**, & Ross, M. (2017) Building supports for diversity through engineering teams. Proceedings of the *124<sup>th</sup> American Society for Engineering Education Annual Conference & Exposition*, Columbus, OH.
- CP.6 **Verdín, D.**, Godwin, A., & Capobianco, B. (2016). Synthesis review of the funds of knowledge framework in STEM education. Proceedings of the *123<sup>rd</sup> American Society for Engineering Education Annual Conference & Exposition*, New Orleans, LA.
- CP.5 Kirn, A., Godwin, A., Benson, L., Potvin, G., Doyle, J. M., **Verdín, D.**, Boone, H. (2016). Intersectionality of non-normative identities in the cultures of engineering (InIce). Proceedings of the *123<sup>rd</sup> American Society for Engineering Education Annual Conference & Exposition*, New Orleans, LA.
- CP.4 Fernandez, T., Godwin, A., **Verdín, D.**, Kirn, A., Potvin, G., Doyle, J., & Boone, H. (2016). More comprehensive and inclusive approaches to demographic data collection. Proceedings of the *123<sup>rd</sup> American Society for Engineering Education Annual Conference & Exposition*, New Orleans, LA.
- CP.3 **Verdín, D.**, & Godwin, A. (2015). First in the family: A comparison of first-generation and non-first-generation engineering college students. Proceedings of *IEEE Frontiers in Education Conference*, El Paso, TX.

- CP.2 De Urquidi, K., **Verdín, D.**, Hoffmann, S., & Ohland, M. (2015). Outcomes of accepting or declining advanced placement calculus credit. Proceedings of *IEEE Frontiers in Education Conference*, El Paso, TX.
- CP.1 **Verdín, D.**, Godwin, A., & Morazes, J. (2015). Qualitative study of first-generation Latinas: understanding motivation for choosing and persisting in engineering. Proceedings of the *122<sup>nd</sup> American Society for Engineering Education Annual Conference & Exposition*, Seattle, WA.

### **RESEARCH PRESENTATIONS (peer reviewed)**

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4. **Verdín, D.**, Smith, J., & Lucena, J. (2019). Preliminary Steps Towards Recognizing the Funds of Knowledge of First-Generation College Students Majoring in Engineering. Poster presented at *ASHE: Association for the Study of Higher Education*. Portland, OR. November 13-16.
3. **Verdín, D.**, Smith, J., & Lucena, J. (2019). How First-Generation College Students' Funds of Knowledge Support the Formation of an Engineering Identity. *NSF Engineering Education and Centers Grantee Conference* Arlington, VA. October 21-23, 2019.
2. **Verdín, D.** & Godwin, A. (March, 2018). Exploring the sustainability-related career outcome expectations of community college students interested in science. Poster presented at *NARST 2018: National Association of Research in Science Teaching Annual International Conference*. Atlanta, GA. March 10-13, 2018.
1. **Verdín, D.**, Ross, M., & Godwin, A. (April 2016). STEM Roles: How students' ontological perspectives facilitate STEM identities. Poster presented at *NARST 2016: National Association of Research in Science Teaching Annual International Conference*, Baltimore, MD.

### **INVITED PRESENTATIONS**

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\*Recognized as Top 3 Research Presentations

4. **Verdín, D.** (November, 2020). The Untapped Potential of Household Knowledge: Examining How First-Generation College Students Funds of Knowledge Supports their Persistence in Engineering. First-Generation College Student Week 2020: Research Seminar
3. Godwin, A. & **Verdín, D.** (2020). Engineering Disciplinary Differences in Women's Attitudes and Goals. *Society for Personality and Social Psychology (SPSP)* New Orleans, LA. Confirmed for February 2020
2. \***Verdín, D.** (2018). Poster: Invisible innovators: understanding how first-generation college students negotiate their multiple identities and agency in the culture of engineering. Presented in at the Division D: In-Progress Research Gala *American Educational Research Association Annual Meeting*, New York, NY. April 13-17, 2018.
1. **Verdín, D.** (2017). A comparison of first-generation and non-first-generation engineering college students. Presented at the *42<sup>nd</sup> Annual American Studies Symposium*. West Lafayette, IN.

### **HONOR & AWARDS**

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2020 ASU CCI Catalyst Award for Poly Sol an Employee Organization

#### **Graduate**

National Science Foundation (NSF) Graduate Research Fellowship 2016-2019

IEEE Frontiers in Education Best Diversity Paper Award 2019

College of Engineering Outstanding Graduate Student Research Award 2019

Alliance for Graduate Education and the Professoriate (AGEP) Distinguished Scholar 2019

AERA Division D In-Progress Research Gala Top 3 Research Proposals 2018  
Ford Foundation Honorable Mention 2016  
National Association of Research in Science Teaching, Jhumki Basu Scholar Award 2016  
Purdue University Engineering Education Explorers Fellowship 2014

## **ADDITIONAL SERVICE**

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### **NSF Reviewer 2021**

#### **Journal of Engineering Education (JEE)**

- ❖ Manuscript Reviewer, 2017, 2018, 2019

#### **Journal of Women and Minorities in Science and Engineering (JWMSE)**

- ❖ Manuscript Reviewer, 2018

#### **American Society for Engineering Education (ASEE)**

- ❖ Conference Proceedings Reviewer, 2014-present

#### **IEEE Frontiers in Education (FIE)**

- ❖ Conference Proceedings Reviewer, 2015-2018

#### **National Association for Research in Science Teaching (NARST)**

- ❖ Conference Proposal Reviewer, 2017-2018

#### **Louis Stokes Alliances for Minority Participation (LSAMP)**

- ❖ AGEP Mentor for Undergraduate LSAMP Student, 2018-present