Emily Dringenberg

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620.423.9072

**EDUCATION**

B.S., Mechanical Engineering, Kansas State University, 2008

M.S., Industrial Engineering, Purdue University, 2014

Ph.D., Engineering Education, Purdue University, 2015

**HONORS/CERTIFICATION**

* Outstanding Reviewer, Journal of Civil Engineering Education **2020**
* Helen Plants Award for best Special Session at Frontiers in Education Conference **2019**
* Frontiers in Education New Faculty Fellow **2019**
* Wickenden Award from JEE Editorial Board, Honorable Mention **2018**
* ASEE First-Year Programs Division Best Paper, Finalist **2018**
* Ohio State University Institute for Teaching and Learning Endorsement: **2017-2018**

Foundation, Impact, Transformation (FIT)

* ASEE Midwest Regional Conference Best Paper **2017**
* Kansas State University Peer Review of Teaching *Fellow*, *Mentor* **Spring 2016, 2017**
* Kansas State University Faculty of the Month *Nominee* **Fall 2015**
* Kansas State University New Faculty Institute Program Completed**Fall 2015**
* NSF Graduate Research Fellowship Program *Recipient* **Spring 2012**
* *AmeriCorps Academic Award*, Teach For America Service Completion **Spring 2011**
* “*Outstanding Senior,*” selected by KSU Mechanical Engineering Faculty **Fall 2008**
* Teach for America *Fellow*, top 10% of 35,000 applicants nationwide **Fall 2009**
* Fundamentals of Engineering (FE) Certification **Fall 2008**

**WORK EXPERIENCE**

**Assistant Professor, Ohio State University, Columbus, OH Fall 2017-Current**

* Tenure track faculty member in Department of Engineering Education
* Secured External Research Funding in Engineering Education
  + **Dringenberg, E**. (PI). (09/01/2020-08/31/2025). “CAREER: Surfacing deeply-held beliefs about gender- and race-based minoritization in engineering,” National Science Foundation Award #1943934. $597,139
  + **Dringenberg, E**. (PI) & Kajfez, R.L. (Co-PI) (09/01/2019-08/31/2022). “Am I Smart Enough to be an Engineer? Study of Engineering Students’ Beliefs and Identities Across Institutionalized Educational Pathways,” National Science Foundation Award #1920421. $574,270
  + Johnston-Halperin, E. (PI), 4 co-PIs, **Dringenberg, E.** and 13 other Senior Personnel (9/15/2020 - 8/31/2021). “NSF convergence accelerator - track C: QuSTEAM: Convergent undergraduate education in quantum science, technology, engineering, arts, and mathematics,” Funded Grant Proposal: National Science Foundation Award #2040581. $709,707 (Personal Contribution (PC): $15,000).
  + **Dringenberg, E**. (PI). (07/01/2018-06/30/2021). “Research: Engineering Students’ Beliefs about Decision Making,” National Science Foundation Award #1738209. $344,572
  + Betz, A. R. & **Dringenberg, E**. (Co-PI). (09/01/2017-08/31/2019). “Research Initiation: The Formation of Engineering Students' Beliefs about Intelligence,” National Science Foundation Award #1763357. $253,436
* Demonstrated Teaching Excellence at both Graduate and Undergraduate Levels
  + Managed teaching assistants at undergraduate and graduate levels
  + Co-developed all curriculum, assessment, and pedagogy for Research Design in Engineering Education (ENGREDU 7780)
  + Developed and executed graduate-level independent study related to Beliefs about Intelligence (Spring 2018)
* Engaged in Significant Service at the Department, College, and National Levels

**Assistant Professor of Teaching, Kansas State University, Manhattan, KS 2015-2017**

* Developed and implemented new course, Engineering Problem Solving, for undeclared first-year engineering students
* Taught DEN 160, Engineering Orientation
* Advised over 200 first-year students in engineering and helped with enrollment days
* Collaborated with Academic Success Center staff to develop support for all engineering students

**NSF Graduate Research Fellow, Purdue University, West Lafayette, IN 2012-2015**

* Independently investigated the experiences of first-year engineering students engaging with team-based engineering design tasks
* Faculty Apprentice, Difficult Concepts in Engineering, mentored by Dr. Ruth Streveler

**Graduate Professional Assistant, Purdue University, Women in Engineering Program 2011-2012**

* Director of K-5 Engineering outreach
  + Developed and modified outreach activities for introducing K-5 students to engineering concepts at afterschool programs impacting over 300 different children each semester
  + Hired, trained and supervised a team of over 30 undergraduate women in engineering
  + Communicated with 11 community after school programs in three different corporations in Indiana
  + Developed free show case events for community ages K-6 and their families to explore basic engineering concepts through hands-on activities
  + Working to expand impact of current program by facilitating additional outreach which has reached over 400 local K-6 students
* Director of FYI (7-8) and EDGE (9-10) grade summer camps
  + Solicited applications, interviewed, hired, and trained camp facilitators and chaperones
  + Created and coordinated hands-on activities to engage campers in engineering learning
  + Managed communication with campers, parents, camp staff and guest speakers/tour guides
  + Determined and implemented a master schedule for three week-long camps serving almost 100 students from across the country
  + Designed and analyzed evaluations from campers, parents and camp staff
* Teaching Assistant**,** Women in Engineering Seminar
  + Led all logistical arrangements for speakers
  + Facilitated networking lunches between guest speakers and 8-10 students weekly
  + Mentored over 200 first-year women engineering students

**Mathematics and Engineering Teacher, Grady High School, Atlanta, GA 2009-2011**

* Launched and led Project Lead the Way Engineering curriculum for the first time at my school
* Developed standards-based lesson plans for a new math curriculum
* Maintained complete responsibility of over 180 students simultaneously
* Worked to address the gaps in urban students’ understanding between math in the classroom and real world, engineering applications

**Peer Instructor, Kansas State University, Manhattan, KS Fall 2007, 2008**

* Developed and taught lesson plans for both new and review material in an earth science course
* Conducted both lecture and recitation style classes 2-3 times a week
* Maintained accurate student records and designated semester letter grades for each student

**Engineer, Caterpillar Work Tools, Wamego, KS July 2008-December 2008**

* Implemented engineering changes on current Cat products including shears, grapples, and hydraulic kits
* Developed/verified specification sheets for hydromechanical shear tools
* Participated in design process for grapple stiff link quick coupler

**Undergraduate Research Assistant, Argonne National Laboratory, Argonne, IL Summer 2006, 2007**

* Validated Computational Fluid Dynamics code for external aerodynamics of tractor-trailer vehicles
* Set up engine test cells and collected test data for engine performance, efficiency, and emissions
* Authored technical reports and presentations for U.S. Department of Energy Journal of Undergraduate Research and Argonne Symposium for Undergraduates in Science, Engineering & Mathematics

**SERVICE/COMMUNITY**

* Flint Hills Discovery Center Advisory Board **2016-2017**
* Women in Engineering Lab Experience Advisor **2015-2017**
* Tau Beta Pi Chief Advisor, Kansas Gamma Chapter **2015-2017**
* Purdue Engineering Graduate School Recruiter **2012-2015**
* Science Olympiad Facilitator **2014, 2015**
* Imagination Station Children’s Museum Board of Directors Member **2012-2015**
* Purdue EPICS Design Review Panel **2011-2015**

**PROFESSIONAL ENGAGEMENT**

* ASEE Member Divisions ERM **2012-Current**
* ASEE Purdue Student Chapter Vice President **2012**
* Purdue Women in Engineering Graduate Mentor Program **2012-2015**
* ASEE Conference Paper Reviewer **2013-Current**
* JEE Reviewer **2015-Current**
* NSF Panel Reviewer **2016, 2018, 2020**

**PEER REVIEWED JOURNAL ARTICLES**

*Student Coauthor Key: \*Graduate Student,\*\*Undergraduate Student*

15) Kramer, A.\*, Ruffin, D., Morris, C.\*\*, Dringenberg, E. (In preparation). Effort is Important, But…: Growth mindset and self-efficacy beliefs of high school science and engineering students. For submission to *Journal of Pre-College Engineering Education Research.*

14) Braaten, B., **Dringenberg, E.,** Kramer, A.\*, Kajfez, R. (In preparation). You’re an engineer? Wow, you must be really smart! A case for making smartness an explicit consideration for research and practice related to engineering identity. For submission to *Studies in Engineering Education.*

13) Leonard, A.\*, Guanes., G.\*, **Dringenberg, E**. (In preparation). Exploring Change in Engineering Students’ Beliefs about Diverse Approaches to Decision-Making During Capstone Design Coursework. *International Journal of Technology and Design Education.*

12) Guanes, G.\*, Leonard, A.\*, **Dringenberg, E**. (In preparation). Undergraduate student beliefs about diverse forms of reasoning in engineering design decision making. *For submission to Journal of Engineering Education.*

11) Delaine, D., Desing, R., Wang, L.\*, **Dringenberg, E.,** Walther, J. (Under Review). Identifying and disrupting problematic implicit beliefs about engineering held by students in service-learning. *International Journal for Service Learning in Engineering, Humanitarian Engineering and Social Entrepreneurship.*

10) **Dringenberg, E.,** Kramer, A. \* Betz, A.R. (Under Review). Smartness in Engineering Education: Undergraduate Student Beliefs and Experiences. *Journal of Engineering Education.*

9) **Dringenberg, E.,** Guanes, G., Leonard, A. (Accepted). Beliefs about Diverse Approaches to Engineering Design Decisions: Students vs. Faculty. *Studies in Engineering Education.*

8) Guanes, G.\*, Wang, J.\*, Delaine, D., **Dringenberg, E.** (2021). Empathic Approaches in Engineering Capstone Design: Student Beliefs and Reported Behavior. *European Journal of Engineering Education.*

7) Bodnar, C., **Dringenberg, E.,** Butler, B.⯏,Burkey, D.,Anastasio, D., Cooper, M (2020). Revealing the Decision-Making Processes of Chemical Engineering Students in Process Safety Contexts. *Journal of Chemical Engineering Education*. 54(1) p. 22-30.

6) **Dringenberg, E**., Baird, C., Spears, J., Heiman, S., Betz, A.R. (2020). The Influence of a Growth Mindset Intervention on Middle School Girls’ Beliefs about the Nature of Intelligence. *Journal of Women and Minorities in Science and Engineering.* 26(3) p. 245-262.

5) **Dringenberg, E**., Kramer, A.★ (2019). The Influence of Both a Basic and In-Depth Introduction of Growth Mindset on First-Year Engineering Students’ Intelligence Beliefs. *International Journal of Engineering Education,* 35(4)*.*

4) **Dringenberg, E.,** Abell, A., Guanes, G.★ (2019). Decision Making in Engineering Capstone Design: Participants’ Reactions to a Workshop about Diverse Types of Reasoning. *International Journal of Engineering Education.* 35(6B) p. 1907-1917

3) Rubin, L. **Dringenberg, E.,** Lane, J., Wefald, A. (2019). Faculty Beliefs about the Nature of Intelligence. *Journal of the Scholarship of Teaching and Learning*, 19(4).

2) **Dringenberg, E.,** Purzer, Ş. (2018). First-Year Engineering Students’ Experiences Working on Ill-Structured Problems in Teams. *Journal of Engineering Education*. 107(3) p. 442-467.

1) Fila, N. D., Hess, J. L., Purzer, Ş., & **Dringenberg, E**. (2016). Engineering Students’ Utilization of Empathy during a Non-Immersive Conceptual Design Task. *International Journal of Engineering Education,* 32(3B).

**REFEREED PAPERS PUBLISHED IN CONFERENCE PROCEEDINGS**

*Student Coauthor Key:* ★*PhD Advisee,* ⯏*Graduate Student,*▪ *Undergraduate Student*

25) Grifski, J.\*, Delpech, D.\*, **Dringenberg, E.** (Under Review). Thinking as Argument: A Theoretical Framework for Studying How Faculty Arrive at their Deeply-Held Beliefs about Inequity in Engineering. Proceedings of the *American Society for Engineering Education Annual Conference and Exposition, Montréal, Canada.*

24) Kramer, A. ★, Dringenberg, E., Kajfez, R. L. (2020). Development and Refinement of Interview Protocol to Study Engineering Students’ Beliefs and Identities. Proceedings of the *American Society for Engineering Education Annual Conference and Exposition, Montréal, Canada.*

23)Kramer, A., **Dringenberg, E**. (2020). Who is Smart? High School Science and Engineering Students’ Beliefs about Smartness. *Proceedings of the Collaborative Network for Engineering and Computing Diversity Annual Conference. Crystal City, VA.*

22) Morris, C.▪, Ramaswami, A.▪, Kramer, A.★, **Dringenberg, E.** (2019). A Preliminary Study of How Undergraduate Engineering Students Describe Intelligence and Smartness. *Proceedings of the Frontiers in Education Annual Conference. Cincinnati, OH.*

21) Kramer, A.★, Thanh, G.▪, **Dringenberg, E.,** Kajfez, R., Wallwey, C.⯏ (2019). A Narrative-Style Exploration of Undergraduate Engineering students’ Beliefs about Smartness and Identity. *Proceedings of the Frontiers in Education Annual Conference. Cincinnati, OH.*

20) Christy, A., Johnson, T., Froyd, J., Grzybowski, D., Delaine, D., **Dringenberg, E.,** Kecskemety, K., Kajfez, R., Casado, A., Kalish, A. (2019). Outcomes-Based Design of a New Graduate Program. *Proceedings of the American Society for Engineering Education Annual Conference and Exposition, Tampa, FL.*

19) **Dringenberg, E.,** Kramer, A.★, Secules, S. (2019). Smartness in Engineering Culture: An Interdisciplinary Dialogue. *Proceedings of the American Society for Engineering Education Annual Conference and Exposition, Tampa, FL.*

18) Guanes, G.★, **Dringenberg, E.,** (2019). Engineering Students’ Beliefs about Decision Making in Capstone Design: A revised Model for Informal Reasoning. *Proceedings of the American Society for Engineering Education Annual Conference and Exposition, Tampa, FL.*

17) Adams, A.⯏, **Dringenberg, E.,** Betz, A. R. (2019). Preliminary Findings on Students’ Beliefs about Intelligence. Presented at NSF Grantees Poster Session at the American Society for Engineering Education Annual Conference. Tampa, FL.

16) Carroll, T.⯏, Kramer, A.★, **Dringenberg, E.** (2019). Construction of Intelligence in Engineering: A

Gatekeeper to Diversity and Inclusion. *Proceedings of the Collaborative Network for Engineering and Computing Diversity Annual Conference. Crystal City, VA.*

15) **Dringenberg, E.,** Kajfez, R. (2018).What Does it Mean to be Smart? A Narrative Approach to Exploring Complex Constructs.*Proceedings of the Frontiers in Education Annual Conference, San Jose, CA.*

14) **Dringenberg, E.,** Abell, A. (2018). Characterizations and Portrayals of Intuition in Decision-Making: A Systematic Review of Management Literature to Inform Engineering Education. *Proceedings of the American Society for Engineering Education Annual Conference and Exposition, Salt Lake City, Utah.*

13) **Dringenberg, E.,** Shermadou, A.⯏, Betz, A. (2018). Reactions from First-Year Engineering Students to an In-Depth Growth Mindset Intervention. *Proceedings of the American Society for Engineering Education Annual Conference and Exposition, Salt Lake City, Utah.*

12) Adams, A.⯏, Betz, A., **Dringenberg, E**. (2018). Validation of an Interview Protocol to Understand Students’ Beliefs about Intelligence. *Proceedings of the American Society for Engineering Education Annual Conference and Exposition, Salt Lake City, Utah.*

11) Feldhausen, T.⯏, & Babin, B., & **Dringenberg, E**. (2017). Connected Mechanical Engineering Curriculum through a Fundamental Learning Integration Platform. *Proceedings of the American Society for Engineering Education Annual Conference and Exposition, Columbus, Ohio*.

10) Vesper, M., **Dringenberg, E.** (2017). The Implementation and Preliminary Impact of Intrusive Advising and an Academic Peer-Mentoring Program for Engineering Students. *Proceedings of the* *American Society for Engineering Education Midwest Regional Conference, Manhattan, KS*.

9) **Dringenberg, E.,** Wertz, R. E. H. (2016). Work in Progress: How Do First-Year Engineering Students Experience Ambiguity in Engineering Design Problems: The Development of a Self-Report Instrument. *Proceedings of the American Society for Engineering Education Annual Conference and Exposition, New Orleans, LA.*

8) **Dringenberg, E.,** Mendoza-Garcia, J. A., Tafur, M., Hsu, M., Fila, N. (2015). Using Phenomenography: What are Key Considerations when Selecting a Specific Research Approach? *Proceedings of the American Society for Engineering Education Annual Conference and Exposition, Seattle, WA.*

7) Chua, M., **Dringenberg, E.** (2014). Work In Progress: The Quest for the Mythical Phoenix: Attendee Narratives at an Engineering Education Faculty Workshop. *Proceedings of the Frontiers in Education Annual Conference, Madrid, Spain.*

6) **Dringenberg, E**., Chua, M. (2014). What Can Reflections From an "Innovation in Engineering Education" Workshop Teach Workshop Designers and New Faculty? *Proceedings of the American Society for Engineering Education Annual Conference and Exposition, Indianapolis, IN.*

5) **Dringenberg, E**. (2014). First Year Students’ Understanding of Normal Distributions: A Preliminary Study of Previous Exposure, Self-Efficacy and Content Knowledge*. Proceedings of the* *American Society for Engineering Education IL-IN Regional Conference, Terre Haute, IN*.

4) Denick, D., **Dringenberg, E.,** Fayyaz, F., Nelson, L., Pitterson, N., Tolbert, D., Yatchmeneff, M., Cardella, M. (2013). STEM Thinking in Informal Environments: Integration and Recommendations for Formal Settings. In Proceedings of the *American Society for Engineering Education IL-IN Regional Conference*, *Angola, IN.*

3) **Dringenberg, E**., Wertz, R. E. H.,  Purzer, Ş., & Strobel, J. (2012). Development of the Science and Engineering Classroom Learning Observation Protocol. In Proceedings ofthe *American Society for Engineering Education Annual Conference and Exposition*, *San Antonio, TX.*

2) **Dringenberg, E**., Wiener, J., Purzer, Ş., Groh, J. (2012). Measuring the impact of engineering outreach on middle school students’ perceptions. In Proceedings of the *American Society for Engineering Education IL-IN Regional Conference*. *Valparaiso, IN.*

1) Mondisa, J., Fila, N., **Dringenberg, E**., Zephirin, T. (2012). Work in Progress: A Case Study of the Types and Frequencies of Conflict in Engineering Design Dyads. *In Proceedings of the Frontiers in Education Annual Conference, Seattle, WA.*

**BOOK CHAPTER**

*Student Coauthor Key:* ★*PhD Advisee,* ⯏*Graduate Student,*▪ *Undergraduate Student*

1) Purzer, S., Moore, T. J., & **Dringenberg, E.** (2018). Engineering cognition: A process of knowledge acquisition and application. In Y. J. Dori, Z. R. Mevarech, & D. R. Baker (Eds.), Cognition, metacognition, and culture in STEM education (pp. 167-190). Springer.

**INVITED TALKS**

*Student Coauthor Key:* ★*PhD Advisee,* ⯏*Graduate Student,*▪ *Undergraduate Student*

8) **Dringenberg, E.,** Kramer, A. (November 5). Who is Smart? Educational Research on Smartness in Engineering. Invited talk for the Ohio State University Student Cognitive Science Club. Virtual (COVID-19).

7) **Dringenberg, E.** (May 7, 2020). Department of Engineering Education: Research Related to Equity and Diversity in STEMM. Invited lecture at the Ohio State University Office of Diversity and Inclusion 4th Annual Diversity in STEMM Meeting. Virtual (COVID-19).

6) **Dringenberg, E.** (July 2019). Engineering Education at The Ohio State University. Invited lecture at the National Institute of Technology, Suzuka College. Japan.

5) **Dringenberg, E.** (October 2018). Student beliefs in engineering: A vision for inclusive engineering culture. Invited lecture for Penn State Leonhard Center for Enhancement of Engineering Education. State College, PA.

4) Cox, M., **Dringenberg, E.,** Kajfez, R. (January 2018). Integrating Engineering Education Research and Entrepreneurial Minded Learning in Undergraduate Engineering. Invited Workshop Session. KEEN National Conference. Dallas, TX.

3) **Dringenberg, E.,** Betz, A. (June 3, 2016). Growth Mindset: How do your perceptions of intelligence help or hinder the teaching and learning environments that you create? Closing Plenary Session. Big XII Teaching and Learning Conference. Manhattan, KS**.**

2) **Dringenberg, E.** (February, 2016) Introduction to Implicit Bias. Guest lecture for the K-State Office for the Advancement of Women in Science and Engineering. Manhattan, KS.

1) **Dringenberg, E.** (October, 2015) Recognizing Patterns in Gender Bias. Women in Engineering seminar at Kansas State University. Manhattan, KS.

**PRESENTATIONS**

*Student Coauthor Key:* ★*PhD Advisee,* ⯏*Graduate Student,*▪ *Undergraduate Student*

14) Braaten, B. ⯏, Kramer, A.\*, Henderson, E.▪, Kajfez, R.L., **Dringenberg, E.** (2020) Accessing Complex Constructs: Refining an Interview Protocol. Special Session at the Annual Frontiers in Education Conference. Uppsala, Sweden.

13) **Dringenberg, E.,** Wertz, R. E. H., Atman, C., Cross, K., Miskioglu, E., Guanes, G★. (2019). Surfacing the Hidden Brain (System 1) in Engineering Education Teaching, Learning and Research. Special Session at the Annual Frontiers in Education Conference. Cincinnati, OH.

12) Butler, B.⯏, **Dringenberg, E.,** Anastasio, D., Burkey, D., Cooper, M., Bodnar, C. (October 2018). Revealing the Decision-Making Processes of ChE Students in Process Safety Contexts. American Institute of Chemical Engineers Conference. Pittsburgh, PA.

11) **Dringenberg, E.** & Abell, A. (June 2018)**.** Developing Robust Forms of Reasoning for Engineering Decision-Making. Workshop presented at the Capstone Design Conference. Hosted by Rochester Institute of Technology. Rochester, NY.

10) Rubin, L.; **Dringenberg, E**.; Lane, J.; Wefald, A. (2017). Faculty Beliefs about the Nature of Intelligence. Presentation at Annual Conference for Association for the Study of Higher Education. Houston, TX.

9) **Dringenberg, E.;** Nieto, N. (2018). Supporting First-Year Students: An Introduction to and Application of Growth Mindset. Presentation Focusing on the First Year Conference. Columbus, OH

8) Zoltowski, C., Fila, N. D., **Dringenberg, E**. (2017). A Qualitative Approach to Understanding Variations in Experiences and its Relationship to Learning: An Introduction to Phenomenography. Special Session at the Annual Frontiers in Education Conference. Indianapolis, IN.

7) Wertz, R. E. H. and **Dringenberg, E.** (2016). The CAP Model: Using Engineering Design Principles to Design Engineering Courses. Workshop presented at the ASEE Midwest Section Conference. Manhattan, KS.

6) **Dringenberg, E.** (October, 2014). Engineering students engaging with ill-defined problems. Research Seminar in Engineering Education presented for Kansas State University Faculty. Manhattan, KS.

5) **Dringenberg, E**. (April & September, 2014) How do first-year engineering students experience the introduction of ill-defined problems? Poster presented at Women in Engineering Program GMP Conference & Big 10 Conference Graduate Expo. West Lafayette, IN.

4) **Dringenberg, E.** (November, 2012) A review of literature on transfer of knowledge theories. Presentation at Purdue Engineering Education Research Seminar. West Lafayette, IN.

3) **Dringenberg, E.** (October, 2011) From the HS Engineering Classroom to Engineering Education Research. Poster presented at New Directions in ENE Research Symposium. West Lafayette, IN.

2) **Dringenberg, E.** & Ciatti, S. (2007). Four-Cylinder, 22L Direct-Injection, Omnivorous Engine Project. U.S. Department of Energy Journal of Undergraduate Research, 191. Retrieved from https://applicationlink.labworks.org/scied/Abstracts2007/ANL.htm

1) **Dringenberg, E.** (2006). Validation of CFD Code for Heavy-Vehicle External Aerodynamics Simulation. Power point presented at Argonne National Laboratory’s Undergraduate Research Symposium. Argonne, IL.