Jordan Harshman

harshmanresearchgroup.com

Discipline-Based Education Research ● Department of Chemistry and Biochemistry ●
jharshman@auburn.edu ● Chemistry Building 268, Auburn University

Experience/Education

Associate Professor Auburn University, Chemistry and Biochemistry	2023 - present
Assistant Professor Auburn University, Chemistry and Biochemistry	2017 - 2023
Postdoctoral Researcher University of Nebraska - Lincoln, Chemistry *Advisor: Dr. Marilyne Stains*	2016 - 2017
Postdoctoral Researcher / Visiting Assistant Professor Iowa University, Chemistry *Advisor: Dr. Nicole Becker*	2015 - 2016
Ph.D. Chemistry Miami University, Chemistry and Biochemistry *Advisor: Dr. Ellen Yezierski*	2011 - 2015

Honors/Awards

C. Harry Knowles Endowed Professor for Research Leadership in Physical Science Education	2024
NSF CAREER Award (#2142873)	2022

Research Funding

Description	Years	Research Team	Role	Agency	Amount
Collaborative: Chemistry Instrument Review and Assessment Library (CHIRAL)	2018 – 2023	Barbera, J., Komperda, R., & **Harshman, J.**	PI	NSF IUSE #1914996; #1915414; **#1915343**	$710,493
Equity and Diversity in Undergraduate STEM (EDU-STEM)	2018 – 2023	Cotner, S., Fagbodun, S., Ballen, M., **Harshman, J.,** Robnett, R.	co-PI	NSF RCN #1919462	$499,385
CAREER: Defining a Model of Doctoral Education in Chemistry	2022 – 2027	**Harshman, J.**	PI	NSF CAREER #2142873	$737,146
The Writing SySTEM in Engineering Graduate Education	2022 – 2025	Mailen, R., LaMondia, J., **Harshman, J.** Brown, A., & Basgier, C.	co-PI	NSF IGE #2224967	$434,807
				Total Extramural	**$2,381,831**

Publications

Publications related to research and/or improvement of chemistry doctoral education

(1) Donkor, B., Collini, M., & **Harshman, J.** (2024). "The Goal of Doctoral Education in Chemistry: Faculty Perspectives." *J. Chem. Educ. 101(8),* 3050-3061. DOI: 10.1021/acs.jchemed.4c00087

(2) Donkor, B. & **Harshman, J.** (2023). Learning Goals and Priorities Identified by an Examination of Chemistry Graduate Handbooks. *J. Chem. Educ.* ASAP. DOI: 10.1021/acs.jchemed.3c00062

(3) Cui, Q. & **Harshman, J.** (2023). Reforming Doctoral Education through the Lens of Professional Socialization to Train the Next Generation of Chemists. *JACS Au 3* (2), 409-418. DOI: 10.1021/jacsau.2c00561

(4) Qu, T. & **Harshman, J.** (2022). Situational Interview Based Investigation of Advisor–Advisee Conflict Communication in US Chemistry Graduate Education. *J. Chem. Educ. 99 (3),* 1400-1409. DOI: 10.1021/acs.jchemed.1c01117

(5) **Harshman, J.** (2021). "A Review of the Challenges that Face Doctoral Education in Chemistry." *J. Chem. Educ. 98* (2), 259–269. DOI: 10.1021/acs.jchemed.0c00530

(6) Busby, B. & **Harshman, J.** (2021). "Program elements' impact on chemistry doctoral students' professional development: A longitudinal study." *Chem. Educ. Res. & Pract.* 22, 347-363. DOI: 10.1039/D0RP00200C

(7) Cui, Q. & **Harshman, J.** (2020). "Qualitative Investigation to Identify the Knowledge and Skills That U.S.-Trained Doctoral Chemists Require in Typical Chemistry Positions." *J. Chem. Educ. 97*(5), 1247–1255. DOI: 10.1021/acs.jchemed.9b01027

Publications related to research and/or improvement of instructional practices and assessment

(8) **EDITOR'S CHOICE** Qi, C., **Harshman, J.**, & Komperda, R. (2024) "Validity and Reliability of Survey Data: Key to Empowering Chemical Health and Safety Research." *Chem. Health & Safety. 31(2),* 121-126. DOI: 10.1021/acs.chas.3c00111

(9) Murphy, K.L., Schreurs, D.G., Teichert M.A., Luxford, C.J., Trate, J.M., **Harshman, J.**, & Schneider, J. (2024, ASAP) "Optimizing testing feedback in introductory chemistry: a multi-treatment study exploring varying levels of assessment feedback and subsequent performance." *Chem. Educ. Res. & Pract.* DOI: 10.1039/D4RP00077C

(10) **EDITOR'S CHOICE** Barbera, J., **Harshman, J.**, & Komperda, R. (2023). The Chemistry Instrument Review and Assessment Library (CHIRAL): A New Resource for the Chemistry Education Community. *J. Chem. Educ. 100* (4), 1455-1459. DOI: 10.1021/acs.jchemed.2c00762

(11) Popova, M., Kraft, A., **Harshman, J.**, Stains, M. (2021). Changes in teaching beliefs of early-career chemistry faculty: a longitudinal investigation. *Chem. Educ. Res. & Pract.* 22, 431-442. DOI: 10.1039/D0RP00313A

(12) Jackson, B., **Harshman, J.**, & Milordos, E. (2020). "Addressing the Hypervalent Model: A Straightforward Explanation of Traditionally Hypervalent Molecules." *J. Chem. Educ. 97* (10), 3638–3646. DOI: 10.1021/acs.jchemed.0c00368

(13) Hebert, S., Berk, S., Brunelli, R., Creech, C., Drake, A.G. Fagbodun, S., Garcia-Ojeda, M., Hall, C., **Harshman, J.**, Lamb, T., Robnett, R., Shuster, M., Cotner, S., & Ballen, C. (2020). "A call for data-driven networks to address equity in the context of undergraduate biology." *Cell Bio. Educ. – Life Sci. Educ. 19* (4), mr2 DOI: 10.1187/cbe.20-05-0085

(14) Popova, M., Shi, L., **Harshman,** J., Kraft, A., & Stains, M. (2019) "Untangling a complex relationship: teaching beliefs and instructional practices of assistant chemistry faculty at research-intensive institutions." *Chem. Educ. Res. Pract*. 21(2), 513-527. DOI: 10.1039/C9RP00217K

(15) Stains, M., **Harshman, J.**, Barker, M.K., *et al.* (2018). Anatomy of STEM Teaching in American Universities. *Science*. 359(6383), 1468-1470. DOI: 10.1126/science.aap8892

(16) **Harshman, J.**, & Stains, M. (2017). A review and evaluation of the internal structure and consistency of the Approaches to Teaching Inventory" *Int. J. Sci. Educ. 39*(7), 918-936. DOI: 10.1080/09500693.2017.1310411

(16) Husting, C., **Harshman, J.**, Yezierski, E. (2017). Using teacher action research in high school chemistry to develop novel assessment tools. *J. Teach. Action Res. 3*(2), 14-29. Article link

(17) **Harshman, J.** & Yezierski, E. (2016). Assessment data-driven inquiry: A review of how to use assessment results to inform chemistry teaching. *Sci. Educ.*, *25*(2), 97-107. eric.ed.gov/?id=EJ1132091

(18) **Harshman, J.** & Yezierski, E. (2016). Characterizing High School Chemistry Teachers' Use of Assessment Data via Latent Class Analysis. *Chem. Educ. Res. Pract*. 17, 296-308. DOI: 10.1039/C5RP00215J

(19) **Harshman, J.** & Yezierski, E. (2016). Test-Retest Reliability of the Adaptive Chemistry Assessment Survey for Teachers: Measurement Error and Alternatives to Correlation. *J. Chem. Educ*. *93*(2), 239-247. DOI: 10.1021/acs.jchemed.5b00620

(20) Sandlin, B., **Harshman, J.**, & Yezierski, E. (2015). Formative Assessment in High School Chemistry Teaching: Investigating the Alignment of Teachers' Goals with Their Items. *J. Chem. Educ*. *92*(10), 1619-1625. DOI: 10.1021/acs.jchemed.5b00163

(21) **Harshman, J.** & Yezierski, E. (2015). Guiding teaching with assessments: High school chemistry teachers' use of data-driven inquiry. *Chem. Educ. Res. Pract*. 16, 93-103. DOI: 10.1039/C4RP00188E

(22) **Harshman, J.**, Bretz, S.L., & Yezierski, E. (2013). Seeing chemistry through the eyes of the blind: A case study examining information processing of multiple gas law representations. *J. Chem. Educ*. *90*(6), 710-716. DOI: 10.1021/ed3005903

Non-education related publications

(23) Stanbury, D. & **Harshman, J.** (2019). "Large-Scale Models of Radiation Chemistry and the Principle of Detailed Balancing." *J. Phys. Chem A.* 123(*47*), 10240-10245. DOI: 10.1021/acs.jpca.9b07470

(24) **Harshman, J.**, Nielsen, S., Yezierski, E. (2016). Putting the R in CER: How the Statistical Program R Transforms Research Capabilities. In Gupta, T., Mehta, A., and Cartrette, D Computer-Aided Data Analysis in Chemical Education Research (CADACER): Advances and Avenues. American Chemical Society Symposium Series, American Chemical Society, Washington, DC. DOI: 10.1021/bk-2017-1260.ch006

Presentations

ACS = American Chemical Society National Meeting
GRC = Gordon Research Conference, Chemistry Education Research and Practice
BCCE = Biennial Conference on Chemical Education
*** indicates invited presentation

Presentations related to research and/or improvement of chemistry doctoral education

(1) Qu, T. & **Harshman, J.** *Advisor-Advisee Relationships in Chemistry Doctoral Programs: Conflict Resolution and Mental Health*, Biennial Conference of Chemical Education, Lexington, KY, 2024.

(2) Donkor, B., Collini, M.A. & **Harshman, J.** *Faculty Perspectives on the Overall Goal of Doctoral Education in Chemistry*, Biennial Conference of Chemical Education, Lexington, KY, 2024.

(3) Collini, M.A., Donkor, B. & **Harshman, J.** *Faculty Influence on Transforming Chemistry Doctoral Education*, Biennial Conference of Chemical Education, Lexington, KY, 2024.

***(4) **Harshman, J.** (2024) *An Evidence-Based Discussion About the Design of Chemistry Doctoral Education.* University of Virginia

***(5) **Harshman, J.** (2023) *An Evidence-Based Discussion About the Design of Chemistry Doctoral Education.* University of Wisconsin-Madison

***(6) **Harshman, J.** (2023) *An Evidence-Based Discussion About the Design of Chemistry Doctoral Education.* University of North Texas.

(7) Muten, Y., **Harshman, J.** (2023) A Mixed method study to explore the impact of factors and criteria on CHIRAL ACS Spring 2023 meeting, Indianapolis,
IN

(8) Muten, Y., **Harshman, J.** (2023) Exploring factors and criteria chemistry education faculty use in their decision process when selecting an educational instrument. Chemistry Education Research GRC 2023, Lewiston,
ME.

(9) Muten, Y., **Harshman, J.** (2023) A qualitative study to capture classroom patterns/behaviors based on COPUS Chemistry Education Research GRC 2023, Lewiston, ME.

(10) Donkor, B., **Harshman, J.** (2023) *The Graduate Student Handbook: Focus on the Individual Elements of Chemistry Doctoral Education* ACS Spring 2023 meeting, Indianapolis, IN.

(11) Collini, M.A., Donkor, B., **Harshman, J.** (2023) *Chemistry doctoral education from the faculty perspective.* ACS Spring 2023 meeting, Indianapolis, IN.

(12) Donkor, B., Collini, M.A., **Harshman, J.** (2023) *Faculty perspectives on how each element of doctoral programs in chemistry contribute to goals*. Chemistry Education Research GRC 2023, Lewiston, ME.

(13) Donkor, B., **Harshman, J.** (2023) *The Stated Learning Goals Found in Chemistry Graduate Student Handbooks*. GRC 2023, Lewiston, ME.

(14) Collini, M.A., Donkor, B., **Harshman, J.** (2023) *What are the goals of the programmatic elements of doctoral education in chemistry?* Chemistry Education Research 2023 GRC, Lewiston, ME.

***(15) **Harshman, J.** *Chemistry doctoral programs: Goals, limitations, and student perspectives*, Grand Valley State University (remote visit), January 27, 2022

***(16) **Harshman, J.** *Characterizing Uncertainty in Models of Instructional Profiles and Chord Diagrams as an Tool for Educational Insights*, Michigan State University (remote visit), January 26, 2022

***(17) **Harshman, J.** *Chemistry doctoral programs: Goals, limitations, and student perspectives.* University of Michigan (remote visit), January 25, 2022

(18) **Harshman, J.** & Busby, B. *Situational interview based investigation of advisor-advisee conflict communication in U.S. chemistry graduate education*, 261st ACS, San Diego, CA, March 2021

(19) Qu, T. **& Harshman, J**. *Situational interview based investigation of advisor-advisee conflict communication in U.S. chemistry graduate education*, 261st ACS, San Diego, CA, March 2021

***(20) *A little bit of everything: Classroom observation, cluster analysis, and effective graduate education*, Auburn University Physics Department, September 13, 2019, **Harshman, J.**

(21) **Harshman, J**. *Effective Graduate Education in Chemistry: The Century-Old Problem*, Gordon Research Conference: Using Education Research to Foster Meaningful Chemistry Learning. Lewiston, ME, June, 2019

(22) [a]Cui, Q., **Harshman, J**. *Identifying the knowledge and skills that chemists require in workplace*, Biennial Conference of Chemical Education, Notre Dame, IN, 2018

Presentations related to research and/or improvement of instructional practices and assessment

***(23) *Validity and Reliability of Assessment Data*. Auburn University SoTL Project Development Institute (SPDI), February 10, 2022, **Harshman, J.**

***(24) *Why R?* Auburn University Libraries, November 4, 2021, **Harshman, J.**

***(25) *Discipline-Based Educational Research Perspectives on SOTL*, Auburn SoTL Hackathon, July 30, 2021, **Harshman, J.** & McNeal, K.

***(26) *Preparing Students for Collaborative Work Beyond Graduation.* ACS Webinar Series, April 15, 2021**, Harshman, J.** & Kondo, A.

(27) Kable, E., & **Harshman, J**. *Chord Diagrams as a Visual Tool in Chemistry Education Research*. Auburn 2021 Research Symposium

***(28) *Characterizing instructional practices with cluster analysis: An exercise in reducing uncertainty*, National Meeting of the Geological Society of America, October, 26-30, 2020**, Harshman, J.**

***(29) *R Workshop at MTSU*, Middle Tennessee State University, October 24, 2019**, Harshman, J.**

***(30) *Instructional Profiles of STEM Instructors and Optimization of Cluster Analysis Techniques*, Middle Tennessee State University, October 24, 2019**, Harshman, J.**

***(31) *R Workshop at SEER 2019*, Scientists Engaged in Education Research Conference, University of Georgia, April 25-26, 2019**, Harshman, J.**

***(32) *Instructional Profiles of STEM Instructors and Optimization of Cluster Analysis Techniques*, Scientists Engaged in Education Research Conference, University of Georgia, April 25-26, 2019**, Harshman, J.**

(33) **Harshman, J.** *Opportunities in the academy: Discipline-Based Education Research*, 257th ACS, Orlando, FL April 2019

(34) Usher, N. & **Harshman, J.** *Identifying the knowledge and skills needed for chemistry: An exercise in precision of language*, 257th ACS, Orlando, FL April 2019

(35) Lopez, I. & **Harshman, J.** *Using the COPUS Analyzer to interpret results from the COPUS*, 257th ACS, Orlando, FL April 2019

(36) Cui, Q. & **Harshman, J.** *Identifying the knowledge and skills that chemists require in workplace*, 257th ACS, Orlando, FL April 2019

(37) **Harshman, J.,** McDevitt, A., Cui, Q., & Kolarkar, A. *Attempting to find the most accurate clustering method for chemistry education research: Simulating 3.6 million cluster analyses*, 257th ACS, Orlando, FL April 2019

***(38) *Instructional Profiles of STEM Instructors and Optimization of Cluster Analysis Techniques,* Kennesaw State University, Kennesaw, GA, January 22, 2019**, Harshman, J.**

***(39) *STEM Teaching in American Universities: Trends, Research, and Preparing the Next Generation of Chemists*, Wake Forest University, Winston-Salem, NC, February 13, 2019**, Harshman, J.**

(40) **Harshman, J.** & Stains, M. *The instructional profiles of undergraduate science classes: Characterizing teacher and student behaviors in over 2,000 classes*, 255th Meeting, New Orleans, LA, 2018

(41) **Harshman, J.** *Data Science in R Workshop*, Society for the Advancement of Biology Education Research National Meeting, Minneapolis, MN, 2018

(42) **Harshman, J.** *There are ___ types of people in this world: Providing the empirical evidence for groups of people through cluster analysis*, Biennial Conference of Chemical Education, Notre Dame, IN, 2018

(43) **Harshman, J.** *Determining Empirically-Based Groupings in Education Research: A Cluster Analysis Simulation*, Inorganic Seminar, September 17, 2018

(44) **Harshman, J.** *Research-grade evidence for assessments for measuring chemists' knowledge and skills*, Graduate Student Invitational, Auburn University, AL, 2018

***(45) *Characterizing teacher and student behaviors in over 2,000 classes: A journey into mixed-model clustering,* Auburn University, Department of Statistics, Auburn, AL, November 3, 2017, **Harshman, J.**

***(46) Pentecost, T., Komperda, R., **Harshman, J.** *CheapeR, PrettieR, and ShaReable: Introduction to R for Chemistry Education*. Workshop for the BCCE, Greeley, CO, August, 2016

(47) **Harshman, J.,** Nielsen, S., Yezierski, E., & Becker, N. New approach to data mining and visual communication of data via R. 251st Meeting, San Diego, CA, April 2016

(48) **Harshman, J.** & Becker, N. Characterizing students' reasoning about graphical models of reaction rate. 251st Meeting, San Diego, CA, April, 2016

***(49) **Harshman, J.** & Yezierski, E. *Characterizing High School Teachers' Assessment Practices via the Adaptive Chemistry Assessment Survey for Teachers*. GRC, Lewiston, ME, July, 2015

(50) **Harshman, J.** & Yezierski, E. Using the ACAST to characterize high school chemistry teachers' data-driven inquiry practices. 249th Meeting, Denver, CO, April, 2015

(51) Bancroft, S., Carmel, J., **Harshman, J.,** Yezierski, E., & Herrington, D. (2015). Describing and characterizing the affective domain in middle and high school science students. 249th Meeting, Denver, CO, April, 2015

(52) Carmel, J., **Harshman, J.,** & Yezierski, E. Target Inquiry at Miami University (TIMU): Uncovering novel relationships among affective and cognitive measures of high school chemistry students. 249th Meeting, Denver, CO, April, 2015

(53) **Harshman, J.** & Yezierski, E. Data-Driven Inquiry: High school chemistry teachers' use of classroom assessments. 2015 NARST Annual International Conference, Chicago, IL, April, 2015

(54) **Harshman, J.,** Yezierski, E. Teachers' use of assessment results in high school chemistry classrooms: The practice of data-driven inquiry. 2014 Biennial Conference on Chemical Education. Allendale, MI, August, 2014

(55) **Harshman, J.,** Yezierski, E. Developing a survey to measure how high school chemistry teachers use data generated by formative assessment to guide their practice. 247th Meeting, Dallas, TX, March, 2014

***(56) Supalo, C., **Harshman, J.** *The revolutionary shift of the educational paradigms towards the blind in science.* 200th Conference of the Two Year College Chemistry Consortium, New Orleans, LA, April, 2013

(57) **Harshman, J.,** Yezierski, E. Interpreting formative assessment to meaningfully guide chemistry teaching. 246th Meeting, Indianapolis, IN, September, 2013

(58) **Harshman, J.,** Yezierski, E. The Process of Assessment Interpretation to Enhance Chemistry Teachers' Practice: Assessment as Scientific Inquiry. 245th Meeting, New Orleans, LA, March, 2013

***(59) **Harshman, J.**, Bretz, S.L., Yezierski, E. *Practical, implementable suggestions and considerations for undergraduate chemistry instructors in their task of accommodating blind students.* Presentation for the 2012 Independent Science: Learning in a New Direction (ISLAND) Conference. West Lafayette, IN, November, 2012

(60) **Harshman, J.,** Herrington, D., Yezierski, E. Determining the effect of the Target Inquiry professional development program: A multilevel analysis of student achievement. 243rd Meeting, San Diego, CA, March, 2012

(61) **Harshman, J.,** Bretz, S.L., Yezierski, E. (2012). Seeing chemistry through the eyes of the blind: A case study following one blind student through the math and concepts of gas laws. 2012 Biennial Conference on Chemical Education. University Park, PA, July, 2012

(62) **Harshman, J.,** Schneider, J. (2011). Immediate versus delayed feedback in chemistry assessment. 25th National Conference on Undergraduate Research (NCUR). Ithaca, NY, April, 2011

Non-education related presentations

(63) Muten, Y., Olajide, O., Hamid, A., & **Harshman, J.** *Paper spray ion mobility mass spectrometry for effective rapid bacteria discrimination*, 261st ACS, San Diego, CA, March 2021

Supervised Students and Researchers

Postdoctoral Researchers

- Melissa Collini (2022 – 2024)
- Brittany Busby (2019 – 2021)

Graduate Students

- Erhunmwense Obayuwana (2024 – present)
- Zahra Pirkhooi (2024 – present)
- Benedicta Donkor (2022 – present)
- Yousif Muten (2021 – present)
- Tingting Qu (2018 – 2024) – Ph.D.
- Qi Cui (2017 – 2021) – Ph.D.

Undergraduate Researchers

- Zoe Tehranchian (2021 – present)
- Josh Campbell (2022 – 2022)
- Kathleen Spoor (2021 – 2021)
- Mercedes Langston (2021 – 2021)
- Emily Kable (2020 – present)
- Allison Epperson (2020 – 2020)
- Natalie Usher (2018 – 2019)
- Isabella Lopez (2017 – 2019)
- Marie Harris (2017 – 2018)

- Whee Nguyen (2017 – 2018)

Teaching Experience

2024	Fall	CHEM 1117: Honors General Chemistry I	3 Hrs	19 students
2024	Spring	*CHEM 5450/6450: Foundations of R for DBER	3 Hrs	19 students
2023	Spring	CHEM 1120: General Chemistry II (Majors)	3 Hrs	99 students
2022	Fall	CHEM 1117: Honors General Chemistry I	3 Hrs	40 students
2022	Spring	*CHEM 5450/6450: Foundations of R for DBER	3 Hrs	14 students
2021	Fall	CHEM 1117: Honors General Chemistry I	3 Hrs	45 students
2021	Spring	CHEM 1127: Honors General Chemistry II	3 Hrs	37 students
2020	Fall	CHEM 1110: General Chemistry I	3 Hrs	128 students
2020	Spring	*CHEM 5450/6450: Foundations of R for DBER	3 Hrs	14 students
2019	Fall	CHEM 1110: General Chemistry I (Majors)	3 Hrs	126 students
2019	Spring	*CHEM 7410: A DBER Approach to Teaching and Learning in Chemistry	3 Hrs	12 students
2018	Fall	CHEM 1110: General Chemistry I	3 Hrs	133 students
2017	Fall	CHEM 1030 EA1-3: Fundamentals of Chemistry I	3 Hrs	137 students
2016	Spring	CHEM 1120: Principles of Chemistry II (University of Iowa)	3 Hrs	~ 400 students
2015	Fall	CHEM 1120: Principles of Chemistry II (University of Iowa)	3 Hrs	~ 600 students

*Independently built and proposed new course

Service

Conferences

- Webmaster, SERMACS 2020 – 2021
- Symposium Organizer – Biennial Conference on Chemical Education 2022

American Chemical Society

- Chair, Younger Chemistry Education Scholars (now ECCES) 2016 – 2020 Chair
- Parliamentarian, ACS DivCHED 2017
- Secretary, Auburn Local ACS Section 2018 – 2019

Journal Reviewer (61 Reviews)

- Journal of Chemical Education (24); Chemistry Education Research and Practice (13); International Journal of Science Education (6); Cell Biology Education: Life Sciences Education (4); Science Advances (1); PLOS ONE (1); Educational Measurement (1)

Proposal Reviewer (31 Reviews)

- NSF BCSER (5), IUSE (9), IGE (16); Auburn Research Support Program (1)

Service to Department of Chemistry and Biochemistry

- Graduate Admissions Committee Chair 2024 – present
- Faculty Development Committee 2022 - present
- Graduate Recruitment Committee 2017 – 2018
- Graduate Admissions Committee 2020 – 2021

Service to College of Science and Mathematics

- DBER Faculty Search (Biology) 2018
- DBER Faculty Search (Physics) 2019, 2021

Service to Auburn University

- Scientific Reasoning Assessment Committee 2018
- New Faculty Scholars Mentor 2018

Society Memberships

- American Chemical Society, Division of Chemical Education 2011 – present
- Society for the Advancement of Biology Education Research 2018 – present
- National Association for Research in Science Teaching 2017 - 2020

Outreach

Active learning in undergraduate STEM

- Biggio SoTL Hackaton (**July 2021**): introduce faculty to Scholarship of Teaching and Learning (SoTL), action research, and Discipline-Based Education Research (DBER)
- Biggio ACLC Preparation (**2021 – present**): Design professional development
- SoTL Project Development Institute (**SPDI, February 2022**): Guest lecture
- COPUS Analyzer website (https://www.copusprofiles.org, 2017 - present): Feedback on active learning implantation in classes

R Workshops – Statistical coding tutorials

- Auburn University, Why R? Seminar 2021
- University of Georgia, SEER Conference 2019
- Middle Tennessee State University, Seminar 2019
- University of Minnesota, SABER Conference 2018
- Biennial Conference of Chemical Education 2016

Graduate education in sciences

- Internship coordinator (2019)