

Curriculum Vitae

Lindsay Marie Owens

CASTLE – Center for the Advancement of STEM
Teaching Learning and Evaluation

Rochester Institute of Technology
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EMPLOYMENT

Associate Professor of Physics
Norco College
08/2021 – Present

Post-Doctoral Project Coordinator
Project Focus: Holistic Admissions and Retention Practices in Physics Graduate Programs
Rochester Institute of Technology
Project PIs: Casey W. Miller, Benjamin M. Zwickl, Scott V. Franklin
08/2017 - 08/2021 (Assumed part time status 7/20)

Physics Teacher
Purcell Marian High School
Principal: Andy Farfsing
07/2020 - 07/2021

EDUCATION

Ph.D. Educational Studies: Curriculum Studies Strand; Physics Education Research Concentration
Certificates: Preparing Future Faculty
University of Cincinnati (Cincinnati, OH)
Graduation Date: May 2018
Advisor: Dr. Kathy Koenig, Associate Professor in Physics

M.S. Physics Graduation Date: June 2012
Wright State University (Dayton, Ohio)
Thesis Topic: Characterization of Ceramic Composite Materials using Terahertz Time Domain Techniques
Advisor: Dr. Jason A. Deibel, Associate Professor in Physics, Joint Appt. in Electrical Engineering

B.S. Physics, Graduation Date: June 2010

Wright State University (Dayton, Ohio)

Senior Thesis Topic: Thin Film Spectroscopy using a Terahertz Parallel Plate Waveguide

Advisors: Dr. Jason A. Deibel, Associate Professor in Physics, Joint Appt. in Electrical Engineering

University Honors Scholar, Departmental Honors, Society of Physics Students, Sigma Pi Sigma

TEACHING

All courses below were taught at Purcell Marian High School

2020-2021

- ✦ College Credit Physics I (affiliated with Cincinnati State Community College Phys 151)
- ✦ CP Physics (2 sections)
- ✦ Physical Science (3 sections)

Subjects Taught for Princeton Review

2017-2020

- ✦ Algebra-Based Physics
- ✦ Calculus-Based Physics
- ✦ Algebra
- ✦ Elementary Science and Astronomy

All courses below were taught at the University of Cincinnati.

2017

- ✦ (Summer Semester, 2017) Physics 2001, "Co-Instructor", *General Physics I*
- ✦ (Summer Semester, 2017) Physics 2002, "Instructor", *General Physics II*

2016

- ✦ Physics 2001, "Instructor", *General Physics I*
- ✦ Physics 2002, "Instructor", *General Physics II*
- ✦ Physics 2001, "Preparing Future Faculty – Teaching Assistant," *General Physics I*

2015

- ✦ Physics 2001, "Instructor", *General Physics I*
- ✦ Physics 2002, "Instructor", *General Physics II*
- ✦ Physics 2002 Laboratory, "Teaching Assistant," *General Physics II*

2014

- ✦ Physics 2001, "Instructor", *General Physics I*
- ✦ Physics 2002 Laboratory, "Teaching Assistant," *General Physics II*

2013

- ✦ Physics 2001 Laboratory, "Teaching Assistant", *General Physics I*
 - ✦ Physics 2002 Laboratory, "Teaching Assistant", *General Physics II*
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All courses below were taught at Reading High School during the 2012-2013 academic year.

- ✦ Physics, "Long Term Substitute", College Preparatory Level
- ✦ Physics, "Long Term Substitute", Advanced Placement (C) Level
- ✦ Chemistry, "Long Term Substitute", College Preparatory Level
- ✦ Chemistry, "Long Term Substitute", Advanced Placement Level
- ✦ Algebra I, "Long Term Substitute", College Preparatory Level
- ✦ Geometry, "Long Term Substitute", College Preparatory Level

All courses below were taught at Wright State University.

2012

- ✦ Philosophy 681, "Teaching Assistant", *Philosophy of Physical Science 2011*
- ✦ Physics 240 Recitation, "Peer Instructor", *General Physics I*
- ✦ Physics 242 Supplemental Instruction, "Peer Instructor", *General Physics II*

2010

- ✦ Physics 240 Recitation, "Peer Instructor", *General Physics I*
- ✦ Physics 244 Recitation, "Peer Instructor", *General Physics III*
- ✦ Science and Mathematics 101, "Peer Instructor" *Scientific Thought and Method (science intent majors)*

2009

- ✦ Physics 240 Recitation, "Peer Instructor", *General Physics I*
- ✦ Physics 242 Recitation, "Peer Instructor", *General Physics II*
- ✦ Physics 244 Recitation, "Peer Instructor", *General Physics III*
- ✦ Physics 260 Laboratory, "Teaching Assistant", *Introduction to Modern Physics*
- ✦ Engineering Physics 231, "Peer Instructor", *Learning Community for EP and Physics Majors*

2008

- ✦ Physics 242 Recitation, "Peer Instructor", *General Physics II*
- ✦ Physics 242 Laboratory, "Teaching Assistant", *General Physics II*
- ✦ Physics 244 Recitation, "Peer Instructor", *General Physics III*
- ✦ Science and Mathematics 198, "Peer Instructor", *Physics Learning Community*

STUDENT ADVISING

- ✦ Jacob Mekker, Undergraduate Research Assistant, April 2018 – May 2019
- ✦ Kelli Shar, REU Summer Student, March 2019 – August, 2019

PUBLICATIONS

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1. Lindsay Owens, Kelli Shar, Benjamin M. Zwickl, and Casey W. Miller, "Student Deficits vs. Sense of Belonging: Exploring Faculty and Student Perspectives on Retention in Physics Graduate Programs," (Under review at Physical Review PER, submitted December 2020).
 2. Krista Wood, Kathleen Koenig, Lindsay Owens, and Lei Bao. "Development of Student Abilities in Control of Variables at a Two-Year College." (2018). Association for University Regional Campuses of Ohio.
 3. Lindsay Owens, Chad Heulsman, and Helen Meyer. (2015). STEM Faculty Perceptions of Concept Map Assessments. G. Weaver, D. Wilella, A. Childress, and L. Slakey (Eds.) *Transforming Institutions: Undergraduate STEM education for the 21st century*. West Lafayette, IN: Perdue University Press.
 4. Steven T. Fiorino, Jason A. Deibel, Phillip M. Grice, Markus H. Novak, Julian Spinoza, Lindsay Owens, and Satya Ganti. "A Technique to Measure Optical Properties of Brownout Clouds for Modeling Terahertz Propagation," *Applied Optics*, 06/2012, Volume 51, Issue 16, p.3605.

NON-REFEREED CURRICULUM AND LAB MANUALS

1. Lindsay Owens and Casey Miller (2018). Graduate Admissions Training Modules for Physics Faculty. Partnered with APS. Current Available Modules:
 - ✦ Module 01: An Overview of Holistic Review
 - ✦ Module 02: The Legal Landscape of Admissions
 - ✦ Module 03: The Use of GRE Scores
 - ✦ Module 04: Identifying and Preventing Bias in Admissions
 - ✦ Module 05: Identifying Non-Cognitive Qualities in Graduate Applications
 - ✦ Module 06: The Use of Rubrics in Graduate Admissions
 - ✦ Module 07: Best Practices for Recruiting New Students
 - ✦ Module 08: Best Practices for Orienting New Students to Graduate School
 - ✦ Module 09: Facilitating and Sustaining Change
2. Kathy Koenig, Krista Wood, Lindsay Owens, and Larry Bortner (2017). Physics I Lab Manual: Targeting Student Misconceptions. Used by ~800 students per academic year in both algebra- and calculus-based second semester physics lab course.
3. Kathy Koenig, Zach Haurd, Lindsay Owens, and Larry Bortner. (2014). Physics II Lab Manual: Targeting Student Misconceptions. Used by ~800 students per academic year in both algebra- and calculus-based second semester physics lab course.

INVITED TALKS

1. University of Central Florida, Identifying Student Difficulties in Causal Reasoning (January, 2018)
 2. University of Denver, Identifying Student Difficulties in Causal Reasoning (January, 2018)
 3. Cornell University, Homophily – What's The Message? (March, 2019)
 4. University of Rochester – Holistic Review Module Implementation (October 2019 – Present)
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5. Kanas State University – Why Graduate Physics Students Leave Their Programs – Perspective Comparison of Faculty and Graduate Students (February 2020).
6. University of Maine - Identifying Student Difficulties in Causal Reasoning (scheduled – March, 2020; canceled due to COVID-19).

CONFERENCE PROCEEDINGS

1. Lindsay Owens, Benjamin M. Zwickl, Scott V. Franklin, and Casey W. Miller, Physics GRE Requirements Create Uneven Playing Field for Graduate Applicants, 2020 PERC Proceedings [Virtual Meeting, July 22-23, 2020], doi:10.1119/perc.2020.pr.Owens
2. Lindsay Owens, Benjamin M. Zwickl, Scott V. Franklin, and Casey W. Miller, Identifying Qualities of Physics Graduate Students Valued by Faculty, 2019 PERC Proceedings [Provo, UT, July 24-25, 2019], doi:10.1119/perc.2019.pr.Owens
3. Lindsay Owens, Benjamin M. Zwickl, Scott V. Franklin, and Casey W. Miller, Misaligned Visions for Improving Graduate Diversity: Student Characteristics vs. Systemic/Cultural Factors, 2018 PERC Proceedings [Washington, DC, August 1-2, 2018], edited by A. Traxler, Y. Cao, and S. Wolf, doi:10.1119/perc.2018.pr.Owens.
4. Lindsay Owens, Matthew Bischoff, Adam Cooney, Douglas T. Petkie, Jason A. Deibel, "Characterization of Ceramic Composite Materials using Terahertz Reflection Imaging Technique," IRMMW-THz Conference, Oct. 2011, Houston, Texas.
5. Matthew Bischoff, Lindsay Owens, Adam Cooney, Douglas T. Petkie, Jason A. Deibel, "Characterization of Composite Materials using Millimeter-wave Techniques," IRMMW-THz Conference, Oct. 2011, Houston, Texas.
6. Douglas T. Petkie, Izaak V. Kemp, Carla Benton, Christopher Boyer, Lindsay Owens, Jason A. Deibel, Christopher D. Stoik, Matthew J. Bohn, "Nondestructive terahertz imaging for aerospace applications," SPIE Europe Remote Sensing Meeting, Aug. – Sept. 2009, Berlin, Germany, Proceedings Vol. 7485. Millimetre Wave and Terahertz Sensors and Technology II, Keith A. Krapels; Neil A. Salmon, Editors,

CONFERENCE PRESENTATIONS (Presented by Lindsay Owens)

1. Lindsay Owens, Benjamin Zwickl, and Casey Miller. "'Optional' General and Physics GRE Requirements: The Impact on Prospective Graduate Students." presented as an oral presentation at the American Association of Physics Teachers, July, 2020, Virtual.
 2. Lindsay Owens, Benjamin Zwickl, Scott Franklin, and Casey Miller. "Physics GRE Requirements Create Uneven Playing Field for Graduate Applicants." presented as a poster presentation at the Physics Education Research Conference, July, 2020, Virtual.
 3. Lindsay Owens, Benjamin Zwickl, Scott Franklin, and Casey Miller. "Identifying Qualities of Physics Graduate Students Valued by Faculty." presented as a poster presentation at the Physics Education Research Conference, July, 2019, Provo, UT
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4. Lindsay Owens, Benjamin Zwickl, Scott Franklin, and Casey Miller. "Physics and Astronomy Faculty Hiring Trends." presented as a poster presentation at the American Association of Physics Teachers Conference, July, 2019, Provo, UT
 5. Lindsay Owens, Benjamin Zwickl, Scott Franklin, and Casey Miller. "The Role of Elite University in Improving (Gender) Diversity among Physics Faculty." presented as a poster presentation at the American Association of Physics Teachers Conference, July, 2019, Provo, UT
 6. Lindsay Owens, Benjamin Zwickl, Scott Franklin, and Casey Miller. "Identifying Qualities of Physics Graduate Students Valued by Faculty." presented as a poster presentation at the FPER Conference, June, 2019, Bar Harbor, ME
 7. Lindsay Owens, Benjamin Zwickl, Scott Franklin, and Casey Miller. "The Ideal Physics Graduate Student." presented as a poster presentation at the PERC Conference, July, 2018, Washington D.C.
 8. Lindsay Owens, Benjamin Zwickl, Scott Franklin, and Casey Miller. "Misaligned Visions for Improving Graduate Diversity: Student Characteristics vs Systemic/Cultural Factors." presented as an oral presentation at the PERC Conference, July, 2018, Washington D.C.
 9. Lindsay Owens, Benjamin Zwickl, Scott Franklin, and Casey Miller. "Increasing Visibility to Increase Diversity in Physics Graduate Programs" presented as an oral presentation at the AAPT International Conference, July, 2018 hosted by the American Association of Physics Teachers, Washington D.C.
 10. Lindsay Owens, Lei Bao, and Kathy Koenig. "Interference of Control of Variable Skills with Causal Reasoning" presented as a poster presentation at the AAPT International Conference, July, 2018 hosted by the American Association of Physics Teachers, Washington D.C.
 11. Lindsay Owens, Lei Bao, and Kathy Koenig. "Identifying Three Common Difficulties in Causal Reasoning Using Think-Aloud Protocols" presented as an oral presentation at the AAPT International Conference, July, 2017 hosted by the American Association of Physics Teachers, Cincinnati, OH.
 12. Lindsay Owens, Lei Bao, and Kathy Koenig. "Identifying Common Difficulties in Causal Reasoning: The Effects of Bias" presented as a poster presentation at the AAPT International Conference, July, 2017 hosted by the American Association of Physics Teachers, Cincinnati, OH.
 13. Lindsay Owens. "Using Concept Maps to Visualize Learning Gains in Physics" presented as an oral presentation at the Ohio Project Kaleidoscope Regional Conference, May 20th, 2017 hosted by the Ohio - Project Kaleidoscope (OH-PKAL), Findlay, OH.
 14. Lindsay Owens, Lei Bao, and Kathy Koenig. "Identifying Student Difficulties in Causal Reasoning", presented as an oral presentation at the AAPT International Conference, July 16-20, 2016 hosted by the American Association of Physics Teachers, Sacramento, CA.
 15. Lindsay Owens, and Helen Meyer "Implementation of Engineering Units in Secondary Science and Mathematics Classrooms," presented as an oral presentation at the AAPT International Conference, January 09-13, 2016 hosted by the American Association of Physics Teachers, New Orleans, LA.
 16. Lindsay Owens, Lei Bao, and Kathy Koenig. "Identifying Student Difficulties in Causal Reasoning", presented as an oral presentation at the AAPT International Conference, July 25-29, 2016 hosted by the American Association of Physics Teachers, College Park, MD.
 17. Lindsay Owens, "A Single Subject Case Study on Teachers' Perceptions of Engineering," presented as an oral presentation at the Spring Research Conference, March 28th, 2015 hosted by the University of Louisville, Louisville, KY
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18. Lindsay Owens, Chad Huelsman, and Helen Meyer, "Evolution of STEM Faculty Perceptions of Concept Map Assessments," presented as an oral presentation at the Transforming Institutions International Conference, October 23-24, 2014 hosted by the Discovery Learning Research Center at Perdue University, Indianapolis, IN.
19. Lindsay Owens, Helen Meyer, Lori Cargile, and Kathy Koenig, "Science teachers' conceptions of teaching engineering in science," presented as an oral presentation at the ASTE International Conference, January 15-18, 2014 hosted by Association of Science Teacher Education, San Antonio, TX.
20. Lindsay Owens, Douglas T. Petkie, and Jason A. Deibel, "Non-Destructive Evaluation of Aerospace Materials using Terahertz Time-Domain Imaging," presented as an oral presentation at the OSASensors Conference, June 24-28, 2012 hosted by Optical Society of America, Monterey CA.
21. Lindsay Owens, Matthew Bischoff, Adam Cooney, Douglas T. Petkie, and Jason A. Deibel, "Characterization of Ceramic Composite Materials using Terahertz Reflection Imaging Technique," presented as an oral presentation at the IRMMW-THz Conference, October 2-7, 2011 hosted by Rice University, Houston TX.
22. Lindsay Owens and Jason A. Deibel, "Non Destructive Evaluation using Terahertz Time Domain Spectroscopy and Imaging," presented as an oral presentation at the Joint Fall 2010 Meeting of the APS Ohio Section and AAPT Appalachian and Southern Ohio Sections October 8-9, 2010 at Marietta College, Marietta, OH.
23. Lindsay Owens and Jason A. Deibel, "Terahertz Time Domain Spectroscopy with a Parallel Plate Waveguide," presented as an oral presentation at the WSU UROP 2010 Celebration of Research, Scholarship, and Creative Activities, April 16, 2010, Wright State University, Dayton, OH.
24. Lindsay Owens, Stanley Smith, Doug Petkie, and Jason A. Deibel, "Non-Destructive Corrosion Detection Using Terahertz Time-Domain Spectroscopy and Imaging," presented as an oral presentation at the Fall 2008 Meeting of the Ohio Section of the American Physical Society, October 2008, Dayton, OH.

PROFESSIONAL ORGANIZATIONS

American Association of Physics Teachers, (Member Since September 2013)

- ✦ A professional membership association of scientists dedicated to enhancing the understanding and appreciation of physics through teaching.

American Physical Society, (Member Since July 2017)

- ✦ A nonprofit membership organization working to advance and diffuse the knowledge of physics through its outstanding research journals, scientific meetings, and education, outreach, advocacy, and international activities. APS represents over 55,000 members, including physicists in academia, national laboratories, and industry in the United States and throughout the world.

Committee on Graduate Education in AAPT, (January 2014 – January 2017)

- ✦ Responsibilities include advising the Executive Board, the Executive Office, and the Association at large on issues relating to their particular areas of focus. Looked upon to identify related issues
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and practices of significance and to carry out projects and initiatives that will advance education in physics in general and the mission of AAPT.

Physics Education Research Consortium of Graduate Students, (January 2014 - January 2017)

- ✦ Responsibilities include advising the Executive Board, the Executive Office, and the Association at large on issues relating to their particular areas of focus. Looked upon to identify related issues and practices of significance and to carry out projects and initiatives that will advance education in physics in general and the mission of AAPT.

REFEREE

- ✦ Physics Education Research Conference Proceedings, (July 2017-Present)
- ✦ Physical Review Physics Education Research, (October 2018 – Present)
- ✦ Studies in Graduate and Postdoctoral Education, (October 2018 – Present)
- ✦ California Learning Lab Project Proposals, (January 2019)

TECHNICAL SKILLS

- ✦ Proficient with Microsoft Office Suite Products and corresponding Google Office Products
- ✦ Proficient with the R programming language, Latex programing, and Nvivo 11/12 software
- ✦ Proficient with a variety of multivariate statistical analyses including IRT, SEM, and MLM
- ✦ Proficient with a variety of methodologies including
 - Quantitative methods: designing quantitative studies; descriptive and multivariate statistics
 - Qualitative methods: designing qualitative studies; interview skills; coding skills
 - Mixed methods: designing and analyzing mixed method studies
 - Action research methods: designing action-researched based research collaborations
- ✦ Curriculum Development
 - Self-guided Modules for Faculty Transformation in Graduate Admissions and Retention
 - Introductory Physics Curriculum
 - Introductory Physics Laboratory Curriculum
- ✦ Instrument Development
 - Assessment of Scientific Reasoning Skills
 - Assessment of Non-Cognitive Constructs
 - Open-ended Faculty Change Readiness Survey
- ✦ Active Learning and Metacognitive Teaching Techniques

OUTREACH

Imagine RIT (April 2018, 2019)

- ✦ Worked with undergraduate physics majors to provide physics demos to local families in the greater Rochester area.

Rochester Institute of Technology: SPS Outreach (March 2018, 2019)

- ✦ Worked with undergraduate physics majors to provide physics demos to local junior high students.

Science and Engineering Expo, (March 2015, 2017)

- ✦ Judged Middle School physics project in science fair setting. Two physics presentations were chosen to receive \$1,500 dollar scholarships to the University of Cincinnati.

TechFest, (January 2006, 2007, 2008, 2009, 2010, 2011, 2012)

- ✦ Physics Demonstrations performed and explained which targeted elementary school children.

NanoDays at Boonshoft Museum of Discovery, (March 2009, 2010, 2011)

- ✦ Demonstrations for exploring and understanding nanoscience and nanoscale phenomena were performed and explained which targeted elementary school children.

Physics Days at Boonshoft Museum of Discovery, (October 2009, 2010)

- ✦ Demonstrations for exploring and understanding physical phenomena were performed and explained which targeted elementary school children.

Summer Camp: Busted, Myth or Fact, (July 2008, 2010)

- ✦ Week long camp for children in junior high. Activities included designing and performing experiments to test common myths. Over the week a Rube Goldberg machine was designed and constructed. Tests of the Rube Goldberg machines were performed on the final day.

References (Alphabetical)

Jason Deibel

Associate Professor of Physics and Department Chair

Wright State University

jason.deibel@wright.edu

Scott V. Franklin

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