# CONSTANCE M. DOTY, PhD.

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## SUMMARY OF QUALIFICATIONS

*Accomplished instructor and academic researcher with a Ph.D. in Physics and over 9 years of experience in Physics Education. Proven track record of facilitating active learning instruction in multiple learning environments and conducting impactful research with a focus on graduate teaching assistant (GTA) training initiatives and student learning experiences in physics. Published author with articles featured in peer-reviewed journals such as Physics Review Special Topics: Physics Education Research (PRPER) and International Journal of STEM Education (IJ STEM Ed). Extensive experience in classroom management, using evidence-based teaching practices, and effective communication.. Proficient in using research methodologies and statistical analysis to design and develop studies in Discipline-Based Education Research (DBER) and for the Scholarship of Teaching and Learning (SoTL). Demonstrated success in mentoring graduate students and collaborating on interdisciplinary research projects. Committed to the advancement of physics education to cultivate success and belonging for future generations of scientists.*

## EDUCATION

**University of Central Florida**
*Doctor of Philosophy in Physics,* Fall 2021

- Dissertation: *Optimizing Mixed-reality Simulation to Support STEM Graduate Teaching Assistants in Developing Student-centered Pedagogical Skills*

*Master's Degree in Physics*, Summer 2018
*Bachelor of Science in Physics,* Fall 2015

## SKILLS

- Learning management platforms
- Statistical software (R, SPSS)
- Microsoft Suite (Word, Excel, PowerPoint)
- Qualitative software (NVivo, Dedoose)
- Programming (C++)

## TEACHING EXPERIENCE

**Lecturer,** University of Central Florida, Department of Physics, Fall 2024 – Present.
Studio Mode Courses
*College Physics I with Algebra, Fall 2025.*
*General Physics Using Calculus II, Spring 2025.*
*College Physics II with Algebra, Fall 2024.*

Main Tasks:

- Implemented research-supported student-centered instruction including group work paired with minimized lecture as well as connected physics to examples relevant for a variety of majors (i.e., pre-medical, engineering, physics, etc.)
- Managed one GTA and one LA to assist with group work in the classroom

Lecture Mode Courses
*College Physics I with Algebra (6-week course), Summer 2025.*
*Conceptual Physics, Spring 2025.*
*College Physics II with Algebra (Lecture), Fall 2024.*

Main Tasks:

- Implemented an interactive lecture approach (mix of lecture & active learning activities)
- Managed one UTA to assist with grading
- Implemented Next Gen PET curriculum to support conceptual understanding of physics for non-science majors
- Managed one LA to assist with group work and experiments in the classroom

**Instructor (Adjunct),** University of Central Florida, Department of Physics.
*General Physics I with Calculus (Studio),* Fall 2022.
*College Physics I with Algebra (Lecture),* Spring 2022, Fall 2022, and Spring 2024.

**Graduate Teaching Assistant,** University of Central Florida, College of Engineering and Computer Science in collaboration with Initiatives in STEM.
*Learning Assistant (LA) Pedagogy Seminar (Virtual),* Fall 2020 – Summer 2021

- Facilitated whole class discussions and provided resources and feedback to LAs for developing teaching skills
- Worked with a faculty member to create and facilitate courses

**Graduate Teaching Assistant,** University of Central Florida, Department of Physics.
*College Physics I Lab (mini studio),* Summer 2017 – Spring 2018

- Facilitated small group work during recitation and lab
- Graded student assignments and created weekly quizzes

*General Physics Using Calculus I Lab,* Fall 2016 – Spring 2017

- Facilitated small group work during lab
- Graded student assignments

## SPECIAL TEACHING EXPERIENCE AND HIGHLIGHT

**Invited Lecturer** for Fundamentals of Discipline-Based Education Research (DBER) in STEM Disciplines, April 15, 2025.

- Invited for one class session to discuss Universal Design for Learning and Accessibility Research.

**Featured in an article** about Learning Assistants in the Chronicle of Higher Education (an online journal focused on education) titled, "The Students Who Help Teach Their Peers: How undergraduate learning assistants make large-enrollment courses feel more human."

## CURRENT RESEARCH

**Co-Principal Investigator** on grant titled "Creating Holistic Advising and Mentoring to Advance Student Success in Physical Sciences" (DUE - 2424312)

Award Start Date: October 21, 2025

Main Tasks:

- Provide scholarships for physics, chemistry, forensics science, and photonics science and engineering majors (CHAMPS scholars)
- Make available other resources to CHAMPS scholars such as priority class enrollment, tutoring, paid research opportunities, monthly lunch-and-learns, etc.
- Advise and mentor CHAMPS scholars about class scheduling, future careers, etc.

## RESEARCH EXPERIENCE

**Post Doctoral Scholar,** University of Central Florida, Department of Physics, December 2022 – July 2024.
Project Title: *Towards Equality in the Physics Community: Identifying Supports and Barriers in the Paths of Physicists with Disabilities*

- Analyze survey data
- Collect and analyze interview data
- Contribute to STEM education literature (including SoTL and DBER)
- Mentor graduate student

Project Title: *Simulated Practice: Using Socially-Responsive Avatars to Prepare STEM GTAs for Student-Centered Instruction*

- Contribute to STEM education literature (including SoTL and DBER)
- Mentor graduate student

**Research Associate,** University of Central Florida, Department of Physics, Spring 2022 – Summer 2022
Project Title: *Simulated Practice: Using Socially-Responsive Avatars to Prepare STEM GTAs for Student-Centered Instruction*

- Analyze impact of GTA training program on GTAs and undergraduate student outcomes
- Contribute to STEM education literature (including SoTL and DBER)
- Disseminate findings at national conferences

**Graduate Research Assistant,** University of Central Florida, Department of Physics, Summer 2017 – Fall 2021.
Project Title: *Simulated Practice: Using Socially-Responsive Avatars to Prepare STEM GTAs for Student-Centered Instruction*

- Co-designed and co-facilitated training sessions with mixed-reality simulator for STEM GTAs to practice using pedagogical skills
- Co-collected and co-analyzed training sessions, classroom observations and student interviews
- Contribute to STEM education literature (including SoTL and DBER)

## COORDINATOR AND TRAINER EXPERIENCE

**GTA and Introductory Physics Lab Coordinator,** University of Central Florida, Fall 2024 – Present.

- Co-generated GTA scheduling for entire physics department and co-supervised lab GTAs
- Led weekly preparation meetings for Introductory Physics II Labs (PHY 2054L and PHY 2049L)
- Developed new lab assignments for Introductory Physics II Labs (PHY 2054L and PHY 2049L)

**GTA Lab Trainer (Head GTA),** University of Central Florida, Fall 2017 – Spring 2020.

- Managed communication between lecture instructors and administrators
- Facilitated weekly preparation meetings for College Physics I and II Mini studio (lab and discussion)

## PEER-REVIEWED PUBLICATIONS

E. R. Richards, E. R. Dolcine, D. Sharkey, **C. M. Doty**, C. A. Nix, AJ Sona, A. A. Geraets, T. Wan, J. J. Chini, and E. K. H. Saitta, Stretching the Applications of Simulator Rehearsal: Preparing Chemistry GTAs in Questioning Techniques, Journal of Science Education and Technology (under review).

D. Oleynik, E. Scanlon, **C. Doty**, and J. Chini, Practicing Physicist's Perception of the Viability of Physics Teacher and Professor Careers for Individuals with Disabilities, presented at the Physics Education Research Conference 2024, Boston, MA, 2024, <https://www.compadre.org/Repository/document/ServeFile.cfm?ID=16913&DocID=5980>.

**C. M. Doty**, D. Oleynik, E. M. Scanlon, and J. J. Chini, Using clusters of models of disabilities to describe support for mentees with disabilities, presented at the Physics Education Research Conference 2023, Sacramento, CA, (2023).

D. Oleynik, **C. M. Doty**, E. M. Scanlon, and J. J. Chini, Three axes for expressing disability models and experiences: The cause, the effect, and the ability/disability dichotomy, presented at the Physics Education Research Conference 2023, Sacramento, CA, (2023).

D. Sharkey, **C. M. Doty,** T. Wan, E. K. H. Saitta, and J. J. Chini (accepted). Physics graduate teaching assistant use of error framing in recitations and laboratories, presented at the Physics Education Research Conference 2023, Sacramento, CA, (2023).

**C. M. Doty**, A. A. Geraets, T. Wan, C. A. Nix, E. K. H. Saitta and J. J. Chini, Impact of high-intensity training with a mixed-reality simulator on graduate teaching assistants use of questioning, Physical Review Physics Education Research, **19**, 020101 (2023).

T. Wan, **C. M. Doty**, A. A. Geraets, E. K. H. Saitta, and J. J. Chini, Responding to incorrect ideas: science graduate teaching assistants' operationalization of error framing and undergraduate students' perception, International Journal of STEM Education **10**, 5 (2023).

A. Geraets, I. Nottolini, **C. M. Doty**, T. Wan, J. J. Chini and E. K. H. Saitta, Preparing GTAs for active learning in the general chemistry lab: Development of an evidence-based rehearsal module for a mixed-reality teaching simulator, Journal of Science Education and Technology, **30**, 829 (2021).

T. Wan, **C. M. Doty**, A. A. Geraets, C. A. Nix, E. K. H. Saitta and J. J. Chini, Evaluating the impact of a classroom simulator on graduate teaching assistants' instructional practices and undergraduate student learning, Physical Review Physics Education Research, **17**, 010146 (2021).

**C. Doty**, T. Wan, A. Geraets, C. Nix, E. Saitta, and J. Chini, Impact of changing physical learning space on GTA and student behaviors, presented at the Physics Education Research Conference 2020, Virtual Conference, 2020.

T. Wan, A. A. Geraets, **C. Doty**, E. K. H. Saitta and J. J. Chini, Characterizing science graduate teaching assistants' instructional practices in reformed laboratories and tutorials. International Journal of STEM Education, **7**, 1-21 (2020).

**C. Doty**, A. Geraets, T. Wan, E. Saitta, and J. Chini, Student perspective of GTA strategies to reduce feelings of anxiousness with cold-calling, presented at the Physics Education Research Conference 2019, Provo, UT, 2019.

T. Wan, **C. Doty**, A. Geraets, E. Saitta, and J. Chini, Characterizing graduate teaching assistants' teaching practices in physics "mini-studios", presented at the Physics Education Research Conference 2019, Provo, UT, 2019.

B. Zamarripa Roman, **C. Doty**, M. Wilcox, N. Klinger, J. Pond, J. Von Korff, and J. Chini, Differences between the SCALE-UP model and instructors' perceptions of implementation, presented at the Physics Education Research Conference 2017, Cincinnati, OH, 2017.

## MANUSCRIPTS IN PROGRESS

**C. M. Doty**, D. P. Oleynik, E. M. Scanlon, and J. J. Chini, Physics instructors' perceptions of and who they consider when implementing inclusive teaching practices, (in progress)

**C. M. Doty**, A. A. Geraets, T. Wan, C. A. Nix, E. K. H. Saitta and J. J. Chini, Student emotional responses towards involuntarily sharing ideas in physics recitations and labs, (in progress).

## PRESENTATIONS

### *Invited Talks*

C. M. Doty, T. Wan, A. A. Geraets, E. K. H. Saitta and J. J. Chini. Impact of practice in a mixed-reality classroom simulator on GTAs' questioning strategies, presented at American Association of Physics Teachers Summer Meeting 2020, Virtual, 2020.

### *Contributed Talks*

C. Doty, Erin M. Scanlon, D. Oleynik, and J. J. Chini, Positive Conceptions of Impairment Espoused by Physics Mentors Who Work with Disabled Students, presented at American Association of Physics Teachers Summer Meeting 2024, Boston, MA, 2024.

C. M. Doty, D. Oleynik, E. M. Scanlon, and J. J. Chini, Cognitive Theory Explains Influences on Self-Reported Inclusive Teaching Practices, presented at the 2024 American Physical Society April Meeting, 2024.

C. Doty, C. Coffie, D. Oleynik, E. Scanlon, and J. J. Chini, Physics Instructor Perspective of Students Who Need Flexible Instructional Strategies, presented at American Association of Physics Teachers Summer Meeting 2023, Sacramento, CA, 2023.

C. M. Doty, T. Wan, A. A. Geraets, E. K. H. Saitta and J. J. Chini, Student Perspectives of GTAs' Roles in Resolving Group Challenges in Mini-Studio, presented at American Association of Physics Teachers Summer Meeting 2022, Grand Rapids, MI, 2022.

C. M. Doty, A. A. Geraets, T. Wan, C. A. Nix, E. K. H. Saitta and J. J. Chini, GTAs' Use of Pedagogical Skills in Remote Mixed-reality Training Session, presented American Association of Physics Teachers Summer Meeting 2021, Virtual, 2021.

C. M. Doty, A. A. Geraets, T. Wan, E. K. H. Saitta and J. J. Chini. Impact of GTA Practice with Questioning Strategies Using a Mixed-reality Simulator, presented at NARST 94$^{th}$ Annual International Conference, Summer 2021, Virtual, 2021.

C. M. Doty, A. A. Geraets, T. Wan, E. K. H. Saitta and J. J. Chini. Comparing physics GTAs' use of teaching strategies in tutorials and labs, presented at American Association of Physics Teachers Winter Meeting 2021, Virtual, 2021.

C. M. Doty, A. A. Geraets, T. Wan, E. K. H. Saitta and J. J. Chini. Practice with dysfunctional avatar-student groups in a mixed-reality classroom simulator, presented at American Association of Physics Teachers Winter Meeting 2020, Orlando, FL, 2020.

C. M. Doty, T. Wan, A. A. Geraets, E. K. H. Saitta and J. J. Chini. Teaching Assistant Reflections on Practice Sessions in a Mixed-reality Classroom Simulator, presented at American Association of Physics Teachers Summer Meeting 2019, Provo, UT, 2019.

C. M. Doty, E. K. H. Saitta and J. J. Chini. Graduate Teaching Assistants' Expectations and Perceptions of Essential Pedagogical Skills, presented at American Association of Physics Teachers Summer Meeting 2018, Washington D.C., 2018.

C. Doty, D. Cerkoney, A. Gramajo, T. Campbell, C. Reid, M. Morales, K. Delfanazari, T. Yamamoto, M. Tsujimoto, T. Kashiwagi, C. Watanabe, H. Minami, K. Kadowaki, and R. Klemm. Cavity mode enhancement of terahertz emission from equilateral triangular microstrip antennas of the high-Tc superconductor $Bi_2SR_2CaCu_2O_{8+\delta}$*, American Physical Society March Meeting 2017, New Orleans, LA, 2017.

***Poster Presentations***

C. M. Doty, D. Sharkey, T. Wan, E. K. H. Saitta, J. J. Chini, Rehearsal sessions support teaching assistants' use of error framing which impacts students, presented at 2024 Improving Undergraduate STEM Education Initiative (IUSE) National Summit, Washington D.C., 2024.

C. Doty, D. Oleynik, E. M. Scanlon, and J. J. Chini, Using clusters of models of disabilities to describe support for mentees with disabilities, presented at Physics Education Research Conference Summer Meeting 2023, Sacramento, CA, 2023.

C. M. Doty, T. Wan, A. A. Geraets, C. A. Nix, E. K. H. Saitta and J. J. Chini, Impact of changing physical learning space on GTA and student behaviors, presented at Physics Education Research Conference Summer Meeting 2020, Virtual, 2020.

C. M. Doty, A. A. Geraets, T. Wan, E. K. H. Saitta and J. J. Chini, Student perspective of GTA strategies to reduce feelings of anxiousness with cold-calling, presented at Physics Education Research Conference Summer Meeting 2019, Provo, Utah, 2019.

C. M. Doty, E. K. H. Saitta and J. J. Chini, Graduate teaching assistants' Perspectives of leading student-centered classes in physics and chemistry, presented at University of Central Florida Graduate Research Forum, Spring 2019, Orlando, FL, 2019.

C. M. Doty, E. K. H. Saitta and J. J. Chini, Graduate teaching assistants' Perspectives of leading student-centered classes in physics and chemistry, presented at Physics Education Research Conference Summer Meeting 2018, Washington D.C., 2018.

***Workshops***

C. Doty and T. Wan, Preparing Undergraduate Learning Assistants: An Example Pedagogy Class Session for Facilitating Discourse, presented at Summer Faculty Development Institute by the UCF Faculty Center for Teaching and Learning, Orlando, FL, 2025.

***Critical Conversation (Presentation/Panel)***

T. Moore, C. Doty, E. Scanlon, L. McDermott, and R. Lindell, Ableism the unconscious bias affecting your Education Research, presented at Physics Education Research Conference 2024, Boston, MA, 2024.

## PROFESSIONAL ACTIVITIES

**Grant Reviewer,** Office of Undergraduate Research, University of Central Florida, Orlando, FL, Fall 2023.

**Moderator,** American Association of Physics Teachers Summer Meeting 2023, Sacramento, CA, July 2023 & American Association of Physics Teachers Summer Meeting 2023, Boston, MA, July 2024.

**Reviewer,** Physics Education Research Conference (PERC) Proceedings for PERC 2018, PERC 2019, PERC 2020, and PERC 2023.

**Panelist,** American Physics Society Conference for Undergraduate Women in Physics 2023, Orlando, FL, January 2023.

- Sessions: Research Frontiers: Optics or Physics Education/Outreach and Social Issue: Navigating Male Dominated Spaces

**Co-creator and co-facilitator,** Physics GTA Orientation Workshop, August 2019.

## SERVICE AND LEADERSHIP AT CURRENT INSTITUION

**Committee Member**, Search Committee for Physics Education Assistant Professor, Fall 2025 – Spring 2026.

**Committee Member**, Outreach Committee, Fall 2024 – Present

**Committee Member**, Physics BA/BS Committee, Fall 2024 – Present

**Committee Member**, Search Committee for Chair of Physics Department, Spring 2025

## SERVICE AND LEADERSHIP OUTSIDE OF INSTITUTION

**Committee Member,** Working Group for Conference Accessibility, Spring 2020 - Present

- Affiliated with American Association of Physics Teachers and the Physics Education Research Topical Group

**Secretary,** Physics Education Research Consortium of Graduate Students, Fall 2019 – Summer 2020

- Affiliated with American Association of Physics Teachers and the Physics Education Research Topical Group
- Worked with other officers to provide resources to PER graduate students
- Organized professional skills and community building sessions for graduate students at AAPT

**Secretary,** Graduate Students Physics Society, Fall 2018 – Summer 2019

- Affiliated with Department of Physics at University of Central Florida
- Worked with other officers to provide resources to physics graduate students at UCF

## OUTREACH

**Energy Conversion and Storage - a UCF Physics Department Event at Orlando Science Center,** November 1, 2025.

**Invited Panelist for Physics Career Forum for APS UCF Chapter,** April 16, 2025.

**UCF STEM Day**, November 2024 and April 2025.

**Faculty Judge for Student Scholar Symposium at UCF**, March 2024 and March 2025.

**Jackson Heights STEAM Night**, November 2024.

**2024 Spark STEM Fest at Orlando Science Center**, November 2024.

**2023 Spark STEM Fest at Orlando Science Center**, February 2023.

## AWARDS AND FELLOWSHIPS

**Learner-Centered Badge** (evolving into Learner-Centered Design Badge) for College Physics I course, awarded April 25, 2025.

**Recognition for Participating in the Affordable Instructional Materials Initiative,** awarded Feb. 2023 and Feb. 2025.

- Awarded for using Open-Source teaching materials during Fall 2022 and Fall 2024 semesters.

**UCF Presentation Fellowship,** Summer 2019 and Summer 2019

- Awarded to attend AAPT Summer Meetings and PERCs

**2017 Physics Education Research Conference Proceedings Notable Paper Award,** Summer 2017

- Awarded for publication of B. Zamarripa Roman, C. Doty, et al., (2017). Differences between the SCALE-UP model and instructors' perceptions of implementation. *Proceedings of the Physics Education Research Conference 2017, Cincinnati, OH.*

## PROFESSIONAL DEVELOPMENT

**Knighted Program,** presented by UCF Faculty Center for Teaching and Learning, Fall 2025.

**Summer Institute 2025,** presented by UCF Faculty Center for Teaching and Learning, May 5 - 7, 2024.

**Holiday Retreat 2024,** presented by UCF Faculty Center for Teaching and Learning, December 12, 2024.

**National Postdoctoral Association (Virtual),** Fall 2023.

**Accessibility by Design: From Social Justice to Classroom Access (Online Course)** offered by Student Accessibility Services at University of Central Florida (Virtual), Summer 2023**.**

**Introductory to Personalized Adaptive Learning Course** sponsored by Center for Distributed Learning at University of Central Florida (Virtual), Spring 2022.

**Preparing Tomorrow's Faculty Course,** offered by Karen L. Smith Faculty Center for Teaching and Learning at University of Central Florida (Virtual), Fall 2021.

**Cottrell Scholars Collaborative: 2019 National Teaching Assistant Workshop** facilitated at Georgia Institute of Technology (Atlanta, GA), Summer 2019.

**GTA Pedagogy Seminar** offered by Department of Physics at University of Central Florida (Orlando, FL), Fall 2016

- Offered by Department of Physics at University of Central Florida

## PROFESSIONAL ASSOCIATIONS

*International/National*

- American Association of Physics Teachers (AAPT)
- Physics Education Research Topical Interests Group (PERTG)
- American Physical Society (APS)
- National Postdoctoral Association (NPA)
- National Association for Research in Science Teaching (NARST)

*University/Department*

- Discipline-Based Education Research (DBER) Group at UCF
- Women In Physics Society (WIPS)