

ALYSSE WEIGAND

219 Flarsheim Hall, 5110 Rockhill Road, Kansas City, MO 64110 USA

📞 660-238-0497 ✉ weiganda@umkc.edu alysseweigand.com

Education

Doctor of Philosophy in Natural Sciences - Physics Emphasis

Expected 2026

University of Missouri - Kansas City

Preparing Future Faculty: Certificate in College Teaching and Career Preparation

Dissertation: Ab Initio calculation of Low Frequency Material Response

Committee: Paul Rulis (Chair), Anthony Caruso, Fred Leibsle, Elizabeth Stoddard, Xiabao Chen

Master of Science in Physics

2022

University of Missouri - Kansas City

Thesis: MAX-phase Partial Optical Properties

Committee: Paul Rulis (Chair), Fred Leibsle, Da-Ming Zhu

Bachelor of Arts in Physics

2020

University of Missouri - Kansas City

Bachelor of Arts in Psychology

2017

University of Missouri - Kansas City

Magna Cum Laude

Teaching Experience

Graduate Instructor University of Missouri – Kansas City

June 2023 - Present

General Physics I

- Developed and taught course curriculum for General Physics I; class sizes ranging from 20 to 120 students.
- Conducted lectures, led discussions, and facilitated interactive learning activities.
- Developed materials and content for the HSCP.
- Provided individual student support during office hours.
- Designed and administered assessments to measure student progress.

Critical Thinking in the Natural and Physical Sciences

- Developed and taught course curriculum for general education critical thinking course for 60 freshman and sophomore undergraduate students.
- Conducted lectures, led discussions, and facilitated interactive learning activities focused on the development of critical thinking skills.
- Provided individual student support during office hours, including advising on semester research projects.

Curriculum Development University of Missouri – Kansas City

April 2023 - Present

Critical Thinking in the Natural and Physical Sciences

- Develop all curriculum for a freshman/sophomore science-centered critical thinking course for non-science majors.

General Physics I

- Develop personalized curriculum and lecture material for the general physics course.
- Distribute personalized curriculum for the HSCP.

Undergraduate Physics Labs

- Work with faculty to develop and revise lab curriculum for introductory undergraduate physics courses.
- Ensuring experiments align with course learning objectives and promote student engagement, critical thinking, and are feasible to conduct.

Publications

Thesis and Dissertation

Weigand, A. V. (2022). MAX-Phase Partial Optical Properties. University of Missouri-Kansas City.

Journal Articles

Weigand, A., & Rulis, P. (2025). Elemental and layer based analysis of optical properties: A new technique applied to four MAX-phases. *Computational Materials Science*, 246, 113393.
doi: [10.1016/j.commatsci.2024.113393](https://doi.org/10.1016/j.commatsci.2024.113393).

Presentations

Poster

2023 A. Weigand, *MAX-Phase Partial Optical Properties*, Community of Scholars, UMKC

2017 A. Weigand, *Emotion Regulation and Substance Use Among Late Adolescents*, SEARCH, UMKC

Research Experience

Graduate Research Assistant

2021 - Present

Computational Physics Group, Dr. Paul Rulis, Dept. of Physics, University of Missouri - Kansas City

- Design, test, and execute programs to calculate partial optical properties and dipole moments for bulk materials.
- Translate complex mathematical concepts into programming languages to optimize simulations.
- Collaborate closely with faculty to refine research goals and strategies.
- Provide mentorship and guidance to undergraduate and new graduate researchers.

Undergraduate Research Assistant

2015 - 2017

Dr. Tamera Murdock, Department of Psychology, University of Missouri - Kansas City

Academic Awards

2024 Preparing Future Faculty Scholar Fellowship - University of Missouri - Kansas City

2024 Dr. Marvin Query Graduate Fellowship in Physics - University of Missouri - Kansas City

2023 Wai-Yim Ching and Mon Yin Lung Graduate Scholarship - University of Missouri - Kansas City

2023 Everett Trost Scholarship - University of Missouri - Kansas City

2023 James M. Phillips Scholarship in Physics - University of Missouri - Kansas City

2022 K L Cheng Physics Scholarship - University of Missouri - Kansas City

2017 Undergraduate Research and Creative Scholarship, UMKC

Service Activities

2024 Judge SEARCH Undergraduate Research Symposium, UMKC

2024 Judge KC STEM Alliance - Project Lead The Way, High School Senior Showcase

2024 Demonstration Linda Hall Library Invention Convention

2023 President & Co-Founder of the Organization of Physics and Astronomy Graduate Students

2023 Judge KC STEM Alliance - Project Lead The Way, High School Senior Showcase

2023 Demonstration Linda Hall Library Invention Convention

2022 Judge SEARCH Undergraduate Research Symposium, UMKC

Professional Organizations

American Physical Society

American Association of Physics Teachers

Psi Chi, International Honor Society of Psychology Students