TEACHING STATEMENT

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My teaching philosophy, objectives, strategies, and experience will enable me to inspire students to become leaders in today's dynamic and fast-paced digital environment, both in the United States and around the world.

Teaching Philosophy

Teaching is a crucial first step in the process of preparing the next generation of scientists and engineers to meet the societal need for better technology. This process lays the all-important groundwork that students will build upon as they put theory into practice and establish patterns of lifelong learning that will serve them well in their future careers. Both undergraduate and graduate students should be prepared to meet not just current needs but also those that will emerge in the future, and we must equip them to become leading professionals and scholars in the 21st century's fast-paced environment. I plan to encourage my students to become technical leaders and critical thinkers by developing both their knowledge and their ability to utilize fundamental physics, mathematics, and engineering skills to solve challenging societal problems.

In this context, I will expand the scope of my teaching beyond traditional teacher-student interactions within the classroom to include an interactive process that integrates a clear vision of the future, the design and implementation of corresponding teaching activities, and a continuous review of those activities' effectiveness.

Teaching Statement

My primary goals are to support my students as they learn and to provide a high-quality physics education by integrating experiment and theory. To this end, my teaching strategies are based on the following four concepts:

Intellectual curiosity: I will contribute to students' intellectual and social development by providing a rich scholarly environment that will help them attain their academic and professional goals.

Collaboration: I will encourage responsibility and professionalism, both inside and outside of the engineering disciplines.

Diversity: I will create a culture of inquiry by exposing students to new global and multicultural perspectives.

Creativity: I will encourage students to engage in creative problem solving

Teaching Interest

My major teaching interests include:

- Electrodynamics
- Mechanics
- Quantum Mechanics
- Condensed-matter physics
- Thermal and Statistical Physics
- Mathematical Methods for Physicists
- Experimental Modern Physics
- Device Design and Integration
- Fundamentals of Photonics
- Electronics
- Micro- and Nanoscale engineering physics
- Advanced transistor design
- Solid-state physics

Based on my educational preparation and expertise, these are my specific strategies:

- Teaching in a scholarly manner by recognizing problems, implementing a variety of teaching activities, sharing my analyses with colleagues, and reflecting on the lessons I have learned in both research and teaching
- Facilitating students' efforts to form collaborative partnerships and to communicate across disciplines
- Emphasizing the quantitative and statistical approaches that are especially suited to engineering research.
- Encouraging students to apply critical thinking to engineering topics
- Participating in advanced statistical analyses of big data sets
- Motivating students to take advantage of research-presentation opportunities and to meet with professionals to exchange knowledge

Class Development

Current textbooks are focused on bulk semiconductors and thus lack the latest information on recent trends in nanoscale research. Because of this, students face challenges as they seek to survive in this rapidly changing world, which demands highly multidisciplinary new technologies. I am thus highly interested in developing new classes that will explore recent trends in nanotechnology. My experiences in both academia and industry will help them and me to inspire students and to provide with up-to-date knowledge on technological trends.

Conclusion

As a physics educator, I will provide leadership and will be wholeheartedly devoted to teaching students through critical inquiry and innovative scientific approaches. My teaching goals, philosophy, strategies, and experience will enable me to ensure that my students become leaders in today's dynamic and fast-paced digital environment, both in the United States and around the world.