

Teaching: I have extensive teaching experience with a wide range of learners in many different environments, including teaching in a middle school physical science classroom, teaching undergraduate majors and non-majors astronomy courses as a professor at San Jose State University, teaching undergraduate astronomy to incarcerated students as part of the Boston University Prison Education Program, and teaching a career and professional development seminar to graduate students at Boston University. One of the most important lessons I have learned in teaching is that my background is not representative of the diversity of students today. As an educator, my goal is to recognize and reward the wide range of strengths that students bring with them into the classroom. Teaching at Ithaca College, my main objective will be to create an inclusive environment which respects that students backgrounds and learning styles vary from my own, and provides in response a variety of instruction and assessment styles that cater to a broad range of students strengths and needs

A primary component of building an inclusive classroom environment is giving students the support they need in order to embrace growth and challenges. I work to strike a balance between both formative assessment (work that gives feedback on the effectiveness of both my own teaching methods as well as students' learning strategies) and summative assessment (graded work). This sends the message that practice and effort are rewarded, and that students should not be afraid to attempt new and difficult tasks.

As a professor of physics and astronomy at San Jose State University, I challenged undergraduate students in my course on star formation to learn material at a high level. I communicated to students that I believed in their ability to succeed, and that while the material might be challenging, their growth and performance in this class would reflect the effort they put in. I also made sure that the graded assignments and materials sent the same message. By valuing the path to an answer as much as the answer itself, students learned that being able to tell me why they thought an answer was wrong was often as important as being right, and that they should consult me, classmates, textbooks, and the internet rather than leave a problem unattempted. By intentionally reinforcing how past topics and strategies could be applied to new material, offering a wide range of ways that students could demonstrate mastery (e.g., group work, presentations, and open-book exams), and seeking feedback from students on all of these strategies, I ensured that students rose to the level of this course and ultimately succeeded.

As a professor at Ithaca College, I am excited to continue focusing on undergraduate education. My path has been shaped by having a foundation of supportive and challenging undergraduate instruction with significant personal interaction with my professors, who have continued to be mentors throughout my career. I look forward to bringing this experience into teaching a wide range of established courses in the department, including Solar System Astronomy, Stars, Galaxies and the Universe, Astrophysics, Mathematical Methods in Physics, and the Professional Physics and Astronomy Seminars. In all courses I teach, I will incorporate a broad range of skills-building activities, complementing the primary subjects being taught, and modeling the full range of activities involved in scientific research. These include reading, writing and assessing scientific proposals, debating issues with peers, and communicating results to the public. These activities not only give students broader context for the details of the topics covered in these course, they also emphasize the diversity of skills involved in STEM disciplines. This allows students to build on their individual strengths while challenging them to develop

new core competencies that will prepare them to excel not just in an academic setting, but in the workplace and the community.

I am also enthusiastic about the opportunity to develop new courses. I plan to develop observational-based courses that will engage students in the hands-on nature of real scientific research, from exploration and hypothesis construction to hardware development, data acquisition, coding and data analysis. I already have extensive experience implementing active learning strategies that promote one-on-one teacher-student interactions in class sizes from 10-50, and I have used my training in inquiry-based learning to develop a set of interactive classroom activities for introductory astronomy¹. At Ithaca College, I would use this experience to design a course centered around astrophotography using the Ford Observatory that would focus on the physics of light and color, and the design and use of CCDs and other detectors to image objects in the night sky. I am also interested in designing a course based on the techniques used in my own radio astronomy research. This course will be focused on designing, constructing, and using radio receivers to map the structure of our Galaxy and the signature of dark matter in its rotation, and will allow students to explore methods of remote sensing that astronomers use to obtain detailed information on the universe around us without ever having left our solar system. Both courses will incorporate a project-based and inquiry-oriented learning approach, and will be centered around student-led semester long investigations with the goals of developing students' curiosity and self-direction.

Mentoring: In contrast to teaching, I believe the longer-term nature of mentoring means student success depends as much on interactions outside of classroom as inside of it. In mentoring students, I have worked to maintain this balance by focusing both on research skills (including reading papers, giving presentations, and choosing a career path) and holistic professional development (including discussions of work-life balance, mental health resources, and how to combat impostor syndrome). I work to facilitate student growth and independence by giving students research projects for which they can take ownership, and ultimately publish their results. As an advisor at Ithaca College, my students will be a priority in my schedule, and I will work to build a relationship where they are comfortable discussing their needs for success, not just as a researcher in my group, but as a student in and outside of school. Ultimately, I see my role as a mentor not to be the single point of support for my students, but to connect them with a larger professional network of training, research expertise, personal role models, and sources of encouragement that can most completely meet their needs and challenge them to grow.

¹<http://eacmills.com/teaching.html>