My interests are in how to ensure important properties are designed into complex, engineering systems and that they are sustained during operations and managed appropriately. The topics include system engineering, system safety, system analysis, cybersecurity, human-computer interaction and human-centered design, human factors, and software system engineering. We take a sociotechnical approach by including a technology, management, and social and cultural view of complex systems today. One particular common element throughout all her work is an emphasis on applying systems thinking to complex systems.

While the majority of the work is in aerospace, we also have projects in other engineering arenas and on occasion in areas such as hospital patient safety. I try to match the topic with the interests and experience of the students, the best result being the student selecting their own project. We work a lot with industry and government, and most of our theses and dissertations involve real industry or defense projects. My students often work directly with engineers on real projects outside MIT. I want my students to work on solving real problems and not simply academic topics. My role is to ensure that my students learn what they need to be successful in the type of career they want to pursue, either in academia, industry, or government.

While I meet with students individually when appropriate, much of our interaction occurs weekly in small group meetings. I believe that learning from each other, helping each other, and working in groups is an important career skill. My lab was at one time very large (15 students) but I have reduced the size to a more manageable 3-5 graduate students with whom I can have more intense interaction. At the same time, graduate students need to learn to work on their own to be successful in the future, so I try to give as much freedom as possible to students to come up with their own problems they want to work on and their own solutions to these problems, intervening when necessary to make sure that progress is made and the results are successful and useful. Graduate theses and dissertations are ways to learn how to do research, not the culmination of the student's life work, and I encourage students to finish as quickly as possible while, at the same time, learning what they need to be successful.