

David Cereceda, PhD

Teaching Statement

My teaching philosophy is strongly rooted in my position as an Assistant Professor in the Department of Mechanical Engineering, where I pursue excellence in both research and education. While it is sometimes a challenge to balance high achievement goals in both of these facets of my academic life, it is also what motivates me and makes me enjoy being a faculty member at Villanova. I truly believe that excellence in teaching fosters excellence in research and vice versa. In fact, the existing synergies between research and teaching help me improve as a teacher-scholar. Villanova offers me the resources and the support to make this happen.

My teaching principles are briefly summarized below:

- **I have high expectations of my students while providing them with extensive yet not overwhelming learning resources:** The courses I enjoyed and learned the most from when I was a student had two things in common: they were the most challenging ones and their instructors offered generous resources to their students. The moment I decided to become a faculty member I knew that I wanted to help students the way my former professors guided me: setting high learning expectations but also providing inordinate learning resources. I share this principle with students from the first day I teach core required courses like Statics, Materials Science, and when I meet students in my research group. Examples of these initiatives where I make myself available to support students in their learning include: (i) extended office hours before midterm exams, (ii) recordings of study sessions for those who can not attend synchronously, and (iii) additional office hours late in the evening to accommodate students available at that time of the day.
- **I strive to develop independent thinkers:** I have always been motivated by Socrates. The Socratic method helped me when I was a student, and it is something I try to apply every time I interact with students in my courses and research group. For example, by asking students a sequence of questions instead of providing them with direct answers, I am able to guide them through a deep understanding of fundamental concepts that allows them to excel in problem-solving on their own.



Figure 1: Word cloud composed with students' answers to the following mid-term survey question: What do you like best about this class? [Fall 2020, ME 2100]

- **My teaching develops from the cultural moment we are in and the reality of the students' cultural context:** Despite their potential to lead the world in creative and innovative pedagogy, university classrooms are still not fully harnessing the current technologies to create interactive and student-centered learning environments. This is particularly critical given the characteristics of our current Gen Z students. Since I started teaching at Villanova, I have sought to advance active learning technological platforms in my courses and across campus. My goal when developing and implementing these educational technologies is to facilitate and maximize the learning experience of every student. For example, in my first semester teaching at Villanova, I co-led with Prof. Gang Feng the pilot program of Top Hat active-learning platform. Since then, I have been an ambassador for Top Hat across the University, helping other colleagues use it in their courses and sharing my positive experience with this platform to increase student engagement and participation. I am thrilled to know that we currently have more than 75 courses and 1300 students using Top Hat at Villanova. Furthermore, last Fall 2021 semester, I led a new Pilot program with Kritik, a peer-to-peer learning and evaluation platform that helps students to develop critical thinking skills according to Bloom's Taxonomy. Both the feedback received from the students and my experience have been very positive, so we are now exploring possibilities to expand its usage on campus as we did with Top Hat.
- **I care about my students as vulnerable, growing young adults:** Educational scholars have emphasized that students are more motivated and willing to learn when their instructors care about them. I work to build their confidence in me and the Caritas mission I represent. I key into moments to acknowledge and support them when they express that they are challenged, for these moments of challenge are often critical moments of important growth.

In summary, teaching is central to my role as a teacher-scholar at Villanova. It can be challenging to balance exceptional efforts toward students with the scientific and funding pursuits that guide me as a researcher. Yet guiding students to learn, grow, and become independent thinkers remains the most appealing part of my role as a Villanovan and my support of Villanova's Augustinian mission.