

Teaching Philosophy

“True educators are like mother nature. They are able to transform coal into diamonds, revealing hidden brilliance and nurturing the innate potential within each student” – My Mother

My motivation and outlook for teaching is mostly shaped by the legacy of two professors in my family, my mother and grandfather. I believe in making learning interesting to all students of diverse capabilities, regardless of the method of learning they are comfortable in. I aim to accommodate these different groups by allowing them to learn and be assessed in their preferred formats. From the point of view of a teacher, I would like to give my utmost care to facilitate the learning of the students-something that will impact them and encourage them to be enthusiastic about learning. I believe fostering a deep understanding and mastery of geographic principles and concepts are vital, but the responsibilities of teaching extend much further. As an enthusiastic educator in GIScience, I recognize the significance of thinking and problem-solving skills that can be universally applied across disciplines, benefiting students' future academic and professional growth. As an engaged scholar, I aim to bring the latest practical solutions and research breakthroughs to my students, giving them insight into how the world is currently evolving and how they position themselves in this complex, ever-changing landscape. Moving forward, I will outline my past experiences and key strategies that solidify my teaching philosophy.

As a teaching assistant in the Department of Geography at Texas A&M University, I taught courses across various levels within the Geographic Information Science and Geography spectrum. This has been disseminated in both offline and online (for MGSc online degree) formats. WebGIS is a course designed for both undergraduate and graduate students, focusing on the fundamentals of web-based GIS technologies and applications. Cartography and Visualization emphasizes the principles and techniques of map design and data visualization to effectively communicate spatial information. In Geodatabases, an advanced course, I provide students with essential database knowledge and explore current trends in geodatabase applications for GIS research. The Application in GIS course integrates practical GIS tools and methodologies to solve real-world problems, preparing students for professional practice. Introduction to Human Geography introduces students to the study of human societies and their relationship with the environment, while Economic Geography explores the spatial aspects of economic activities and their impacts on regions and communities. I have been actively involved in designing and maintaining these courses in the Canvas Learning Management System for our university.

I have also taught a writing intensive course - Environmental Geoscience, where groups of students picked different research topics, focusing on environmental and social processes and considered its policy implications. Beyond lecturing, I have delivered several guest lectures over several semesters to enrich the learning experience of the graduate and undergraduate students in other courses. These include three instructional lectures in Principles of GIS, and five lectures in Frontiers in GIScience course which integrated my current research, demonstrating how advanced GIS methods underpin my work, tailored to engage students from varied backgrounds. In addition to university lectures, I have delivered lectures in national and international workshops as well like AAG Summer Workshop Series and Urban Climates Workshop. I also possess extensive mentoring experience through the professional organization of Academy for Future Faculty by facilitating the training of graduate and postgraduate students for faculty jobs as their future career. These experiences have built my confidence in mentoring students with diverse backgrounds and different technical readiness, discovering their uniqueness and strengths, and offering tailored training and mentoring plans to help them achieve academic success and advance their careers.

While direct instruction and a set schedule are essential for establishing foundational knowledge for students, relying solely on a didactic form usually has limited impact on students. I firmly believe that learning is an active process where knowledge is constructed, not merely absorbed. I strive to create a learning environment that prioritizes open dialogue and exploration. To create a learning environment that prioritizes open dialogue and exploration, I make it clear from the first lecture that asking questions at any time is not only allowed but encouraged. As I prepare each lecture, I intentionally divide the content

into segments based on the underlying knowledge structure. For example, when elaborating on spatial joins, I ensure students understand different types of topologies before moving on to how attribute tables are joined. At the end of each segment, I pose open-ended questions for discussion. Engaging with these questions and tackling real-world problems sharpens critical thinking and ignites students' natural curiosity and interest. This approach ensures that students are actively involved and benefit from the experience.

Retention is the gateway to mastery, and the human brain prioritizes visuals for learning and memory. Our ability to absorb, comprehend, and synthesize large volumes of new information is enhanced through the effective use of visuals. Therefore, I incorporate visual-based strategies in my lectures, connecting new information to existing experiences, establishing links between abstract concepts and visual representations, and using videos and imageries effectively in my slides. For example, in a guest lecture on using digital twins to enhance disaster resilience of a community, I showed them the results of a simulation of water levels in 4D for a rainfall event and combined it with how this is being done in real-time and what the associated benefits to the stakeholders of the city are. I favor flowcharts over bullet points and include relevant images to reinforce new concepts. Alongside that I prefer a quick revision in classes about the previous topic through a slide and questions.

Applying theory to practice and solving real-world problems is an effective way to fully comprehend the material. I strive to lead the students into a flipped classroom setup at times for them to benefit from cooperative learning as well as practical applications. For instance, in environmental geosciences, after learning the concept of green gentrification, the students were encouraged to identify areas where they think such a phenomenon may have occurred, find relevant data sources for checking the hypothesis by themselves. This allowed for a noticeable increase in student engagement, and while it was a chaotic mess at times - but at the end of the day, they learnt the application properly. To continue the discussions and additional help, I have usually turned to heavy use of an anonymous discussion site online comprising of students and me in a portal like Moodle. In most of my classes, I had kept my time open for students who needed help even apart from the curriculum, if it was related to my subject. I plan to keep continuing that practice and usher them forward.

At the core of my teaching philosophy, I plan to account for the inherent diversity amongst students – to understand the pulse of the target students through simple questionnaires and then tailor my approach to suit them the most. Herein, I take a leaf out of my mentor during undergraduate studies who would go into any length to make materials and facilities available to his students based on their diverse capabilities. First, I leverage diversity to foster mutual discussion, encouraging students to think critically about their own perspectives and question their preconceptions. Second, I create inclusive instructions and incorporate slideshows, videos, and real-world examples to engage students and demonstrate their benefits universally. Third, I innovate my pedagogical approach by diversifying teaching materials and providing customized instructions to promote both equality and equity. For instance, in the WebGIS course, both graduate students with advanced programming skills and undergraduates new to coding are enrolled. I crafted distinct sets of instructions and assignment prompts tailored to the students' varying levels of experience, allowing them to challenge themselves appropriately while still being able to complete the assignments without undue difficulty. For non-traditional students I offered extensive office hours at night to help them meet their objectives.

The world is evolving rapidly, influenced by leapfrog technological advancements and ever-changing socio-economic landscapes. Therefore, my teaching philosophy emphasizes the principles of reflection and evolution in both content delivery and pedagogical approaches. I view the classroom as a microcosm of this ever-changing world, and the strategies and methodologies I use must be adaptable. Central to this belief is student feedback. I consistently encourage students to provide feedback during and after the semester on any aspect they wish to share. I have had students give me good PICO reports while noting down their thoughts about how the material could be improved. By understanding their experiences, insights, challenges, and suggestions, I can reflect on my practices. This reflective process acts as a catalyst for continual improvement, ensuring that my teaching remains relevant, responsive, and attuned to the diverse needs of my students. To wrap up, as an educator, I attempt to kindle creative minds through inclusive lectures and customized practices.