Ricardo Arturo Gallopp Ramírez rgalloppr@ufl.edu

TEACHING STATEMENT

My goal as an educator is to prepare students to lead and innovate within the construction industry by developing the critical thinking, problem-solving, communication, and technological skills needed to address complex challenges in a rapidly evolving built environment. I aim to bridge construction practice and digital innovation by helping students understand how emerging technologies can be strategically applied to improve project delivery, collaboration, and decision-making.

Teaching Methodology: My teaching philosophy is deeply rooted in the learning-by-doing paradigm, where students develop a deeper understanding of construction concepts by actively applying knowledge to realistic industry challenges. I believe emerging technologies should be taught within the context of construction processes rather than as isolated technical skills. Technologies such as Building Information Modeling (BIM), digital twins, automation, and computational workflows serve as tools for addressing practical challenges related to information management, collaboration, coordination, and decision-making. Therefore, my approach focuses on helping students understand both the technical capabilities of digital solutions and the construction problems they are intended to solve.

Since beginning my Ph.D. studies at the University of Florida, I have gained teaching experience through graduate and undergraduate instruction in construction information systems. I have contributed to BCN 6785: Construction Information Systems, BCN 5905: Advanced Construction Information Systems, and BCN 4905: Construction Information Systems through classroom instruction, student mentoring, course development, project guidance, and assessment. My teaching responsibilities have progressively expanded from supporting students during technology demonstrations and troubleshooting digital workflows to independently developing course modules and leading instructional activities. For example, I developed and taught modules focused on BIM automation using Python and the Revit API, including emerging AI-assisted workflows through Revit MCP. These experiences have allowed me to refine my instructional approach, understand diverse student learning needs, and develop educational activities that connect construction theory with practical technology applications.

My teaching approach is also strongly shaped by my over 13 years of professional experience across construction management, cost estimating, preconstruction, BIM/VDC implementation, and project delivery in the United States and internationally. Before pursuing my doctoral studies, I worked directly with construction organizations and project teams implementing digital workflows and technology-driven processes. This industry experience allows me to bring authentic project challenges into the classroom and help students understand not only how technologies work but also how they must be evaluated and implemented in real organizational and project contexts. Throughout my professional career, I have implemented digital workflows, supported technology adoption within construction environments, and conducted hands-on training and knowledge-sharing activities to help professionals understand how new tools could improve their daily practices. This experience has shaped my belief that construction technology education should extend beyond software instruction and prepare students to become professionals who can identify problems, evaluate solutions, and lead successful technology implementation.

Consistent with this philosophy, I create active, student-focused learning environments that emphasize demonstrations, hands-on activities, and problem-based learning. Drawing on the same practical orientation that guided my industry training and professional development activities, my classroom activities connect digital concepts with authentic construction scenarios, allowing students to explore how technologies can improve real project workflows. For example, when teaching BIM automation and computational approaches, I emphasize how these methods can reduce repetitive tasks, improve information coordination, and support more efficient decision-making. I also encourage student collaboration and discussion because successful technology adoption in construction requires professionals who can communicate effectively across disciplines and work with diverse project stakeholders.

Through this teaching approach, I aim to prepare students who are not only capable of using emerging digital technologies but also understand their broader value within construction organizations. My goal is to develop adaptable construction professionals who can bridge industry knowledge and technological innovation, contribute

to digital transformation efforts, and become future leaders in an increasingly connected and data-driven built environment

Infusing Research into My Teaching: As an educator and researcher, I believe teaching and research should be closely interconnected to create meaningful learning experiences. My research focuses on advancing the digital transformation of the built environment through digital twins, cyber-physical systems, automation, and interoperable information frameworks. I integrate these research experiences into my teaching by exposing students to emerging technologies, current industry challenges, and the practical considerations associated with technology adoption. This approach allows students to move beyond learning established methods and develop an understanding of how research and innovation are shaping the future of construction practice.

By incorporating research into my curriculum, I aim to provide students with opportunities to understand not only the capabilities of emerging technologies but also their applications, limitations, and implementation challenges within real construction environments. For example, in my courses on construction information systems, I integrate concepts from my research on digital twins, BIM automation, and computational workflows to demonstrate how digital technologies can improve information management, coordination, and decision-making throughout the construction lifecycle. Through hands-on assignments and project-based activities, students apply these concepts by developing BIM models, automating repetitive workflows, and exploring how connected digital environments can support more efficient construction processes.

My doctoral research on digital twin-enabled cyber-physical systems and industrialized construction also provides opportunities to introduce students to the future direction of the construction industry. Concepts such as automated production systems, robotic construction, semantic information exchange, and intelligent decision-support systems are incorporated into discussions and learning activities to help students understand how emerging technologies are transforming construction operations. By connecting classroom learning with active research developments, students gain exposure to technologies and methodologies that are expected to influence the future workforce.

Furthermore, bringing research questions and emerging findings into the classroom creates opportunities for students to contribute perspectives that can inform how complex technological concepts are taught and understood. Students bring diverse academic and professional experiences into the classroom, providing perspectives that help identify effective approaches for communicating complex technological concepts. Their engagement, questions, and feedback allow me to continuously refine my instructional strategies and better understand educational challenges associated with technology adoption in construction. This reciprocal relationship between teaching and research enables students to develop the knowledge and adaptability needed to navigate an increasingly digital construction industry.

Through this integration of research and education, I aim to create learning environments where students are not only consumers of existing knowledge but active participants in understanding and shaping the future of construction innovation.

Mentoring and Service: Teaching extends beyond classroom instruction; it represents an opportunity to mentor students, support their professional development, and contribute to the broader construction education community. As an educator, I view mentoring as an essential responsibility in helping students develop the confidence, skills, and curiosity needed to succeed academically and professionally. During my doctoral studies at the University of Florida, I have mentored students from diverse academic backgrounds, including construction management and related disciplines, through research and technology-focused projects. For example, I have guided undergraduate students in developing research skills, including conducting literature reviews, understanding research methodologies, defining research problems, and communicating technical ideas. These experiences have strengthened my ability to support students through different stages of their academic development and reinforced my appreciation for the important role faculty members play in preparing the next generation of construction professionals and researchers.

My commitment to mentorship is also shaped by my professional experience in construction technology implementation. Throughout my industry career, I have supported colleagues and project stakeholders in adopting new digital workflows through hands-on demonstrations, training activities, and knowledge sharing. These experiences have influenced my approach to mentoring by emphasizing patience, communication, and the importance of connecting technical knowledge with practical needs. Whether working with students or industry professionals, I strive to create supportive learning environments where individuals can develop the skills and confidence needed to successfully apply new knowledge.

Beyond mentoring individual students, I believe educators have a responsibility to contribute knowledge and expertise to the broader academic and professional community. I have contributed to this mission through research dissemination activities, including invited presentations and workshops focused on BIM, digital twins, and construction technology applications. I have also supported academic communities through service activities within the Center for Advanced Construction Information Modeling, including research communication, website development, and the creation of technical materials that help disseminate construction technology research. Through these activities, I aim to promote greater awareness of digital transformation opportunities within the construction profession and encourage broader engagement with emerging technologies.

Continued Improvement of My Teaching: I view teaching as a continuous process of learning, reflection, and improvement for both educators and students. As the construction industry continues to evolve through digital transformation, automation, and data-driven approaches, construction education must adapt to prepare students for emerging professional challenges. I am committed to continuously evaluating and refining my teaching strategies to ensure that my courses remain relevant, engaging, and connected to industry needs.

I continue strengthening my instructional approaches through pedagogical training, faculty development opportunities, and engagement with educational communities focused on construction and engineering education. These efforts allow me to enhance course design, assessment strategies, and innovative teaching methods while creating learning environments that encourage critical thinking, collaboration, and lifelong learning.

Teaching is one of my primary motivations as an educator, and I am passionate about creating learning experiences that connect construction practice, technological innovation, and academic knowledge. My teaching interests include construction management, construction technology and information systems (including BIM/VDC, digital twins, computational workflows, and interoperable information systems), and industrialized construction. Through these areas, I aim to help students understand how emerging technologies can improve project delivery, construction processes, and information management while preparing them to contribute to the future of the built environment.