Faisal Shah Khan

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TEACHING STATEMENT

As an educator specializing in quantum computing, mathematical modeling, and game theory, my goal is to create a classroom environment that encourages curiosity, sharpens analytical thinking, and prepares students to lead in emerging fields. I emphasize connecting theoretical foundations to practical relevance, helping students apply mathematical ideas to real-world challenges.

My teaching philosophy reflects the idea of *Mathematics and Science as a Business Enterprise*—integrating technical depth with applications in business, data science, and emerging technologies. This approach enables students to master abstract concepts and apply them creatively in areas such as quantum computing, artificial intelligence, and finance. I strive to cultivate an inclusive, collaborative, and innovation-oriented classroom.

I have taught and supervised undergraduate and graduate students at SKEMA Business School USA, Khalifa University (UAE), and North Carolina State University. My experience includes a broad range of courses, from core undergraduate mathematics to graduate-level differential equations, information theory, and specialized topics such as business intelligence and AI-driven consulting methods. In addition to teaching, I have mentored students on interdisciplinary research projects, including work on quantum random number generators, quantum imaging, finance applications of quantum computing, and postdoctoral research in quantum optics.

At SKEMA, I also served as faculty advisor to the Quantum Computing & AI student club, supporting student-led exploration at the intersection of quantum technologies and intelligent systems. I support project-based learning and have designed course proposals such as:

- **Quantum Computing Fundamentals** – introducing quantum mechanics, complex linear algebra, and computational algorithms

- **Quantum Game Theory** – applying quantum strategies and correlations to decision-making and optimization problems

These offerings emphasize applied problem-solving in areas like secure communications, quantum sensing, and algorithmic finance.

Mentorship remains central to my approach. I value personalized guidance and work to build a supportive environment that helps students grow intellectually and professionally. I look forward to contributing to a university's mission through interdisciplinary, research-driven teaching and meaningful engagement with students.