GRADUATE CERTIFICATE IN APPLIED AI IN DATA SCIENCE

Web Site: https://twu.edu/computer-science/degree-programs/

The Graduate Certificate in Applied AI in Data Science will equip students with the essential knowledge and hands-on skills to leverage artificial intelligence techniques to solve real-world data-driven challenges. The program will focus on the practical application of AI, including machine learning, generative AI, and statistical analysis, to extract insights and create value from complex datasets.

Unlike theoretical computer science-focused AI programs, this certificate emphasizes an applied approach, making it accessible and relevant to a broad audience from various academic and professional backgrounds. The curriculum is designed to build upon foundational knowledge in programming, databases, and statistics, and will provide a strong pathway for individuals seeking to upskill, transition into the data science field, or enhance their existing expertise.

Marketable Skills

Marketable skills prepare students for success in a variety of professional settings. Developed through academic coursework, co-curricular engagement, and extracurricular involvement, these skills include communication, critical thinking, teamwork, ethical reasoning, adaptability, and digital literacy. Whether directly related to a student's major or serving as complementary strengths, marketable skills enhance career readiness and reflect TWU's commitment to producing graduates who are prepared to thrive in today's dynamic workforce.

- Applied Machine Learning: Implementing and evaluating supervised and unsupervised learning models to solve real-world problems.
- Generative AI Application: Using and controlling state-of-the-art generative models (GANs, Transformers, Diffusion Models) for practical tasks.
- Prompt Engineering: Designing effective prompts to elicit desired, context-aware outputs from Large Language Models.
- Synthetic Data Generation: Creating artificial datasets to enhance privacy, augment small datasets, and improve model fairness.
- AI Project Management: Formulating, managing, and executing an end-to-end applied AI project, from ideation to presentation.
- Ethical AI Analysis: Critiquing AI systems for potential bias, fairness, and transparency issues and proposing mitigation strategies.
- Technical Communication: Effectively communicating the results and implications of complex AI projects to diverse audiences.

Admissions

All students must meet the University requirements as outlined in the Admission to the TWU Graduate School (https://catalog.twu.edu/graduate/graduate-school/admission-graduate-school/) section of the catalog.

The academic program may have additional admission criteria that must also be completed as outlined on the program's website.

Certificate Requirements

Course	Title	Credits
CSCI 5103	Fundamentals of Data Science and Informatics	3
CSCI 5173	Applied Generative AI	3
CSCI 5663	Statistical Programming	3
or MATH 5483	Theory of Probability and Statistics I	
CSCI 5823	Modeling Machine Learning and Artificial Intelligence	3
CSCI 5923	Capstone in Informatics	3
Total SCHs		**15**