DIGITAL DESIGN, TECHNOLOGY, AND INNOVATION (DDTI)

Digital Design, Technology, and Innovation (DDTI) Courses

DDTI 1001. Data Science and AI for All. (1-0) 1 Credit Hour.
The course is designed for students from all academic backgrounds to develop an interest in data science and artificial intelligence. Introduction to the concept of analyzing data culled from a variety of sources, and understanding the methods of aggregating data, forming coherent queries, and building machine learning models to derive insights from data. Topics may include Python programming using Jupyter Notebook, R programming, text analysis, database, data analytics, and data visualization. (Same as DS 1001. Credit cannot be earned for both DS 1001 and DDTI 1001.). Course Fees: LRMS $12.50; DL01 $25.

DDTI 1423. Data Driven Thinking in the Age of AI. (3-0) 3 Credit Hours.
This course equips students with foundational data-literacy skills needed to succeed in an artificial intelligence (AI)-driven world. The course introduces core concepts in data visualization, statistical reasoning, and computational thinking, and connects these concepts to how modern AI models learn from data. Students will learn to (1) understand fundamental principles of AI, (2) visualize, interpret, and recognize patterns in data, and (3) use state-of-the-art AI tools to answer real-world questions through hands-on activities. To further prepare students for AI-related careers, essential professional skills—such as presentation, project management, teamwork, and leadership—are integrated alongside technical learning and practice. No prior programming experience is required. Course Fee: LRMS $37.50.

DDTI 2153. Game Programming. (3-0) 3 Credit Hours.
Prerequisite: Computer literacy and CS 2153 or equivalent. Introduction to game design and programming. Common practices used in the video game industry today will also be introduced. Students will learn the basics of creating a PC game through lecture materials, hands-on laboratories, and a final project in which the students will build a simple game. (Same as CS 1153. Credit cannot be earned for both CS 1153 and DDTI 2153.) Generally offered: Fall. Course Fees: LRMS $37.50; DL01 $75.

DDTI 3003. Applied Data Science and AI for All. (3-0) 3 Credit Hours.
This course introduces students from all academic backgrounds to the practical applications of data science and artificial intelligence. Moving beyond theory, students engage in hands-on projects using real-world datasets to explore data collection, cleaning, visualization, and analysis. Core topics include Python programming in Jupyter Notebook, data analytics, machine learning fundamentals, and data storytelling. The course also introduces generative AI tools and concepts, such as large language models (LLMs), AI-generated content, and ethical considerations in generative applications. Students will apply these tools to solve problems and communicate insights across disciplines. No prior coding experience is required. Course Fees: LRMS $37.50; DL01 $75.

DDTI 3013. Game Architecture. (3-0) 3 Credit Hours.
Prerequisite: CS 1153, DDTI 2153, or CS 2123. This course provides a "from-scratch" approach to understanding game program structure without relying on commercial game engines. Topics include rendering, game loops, input handling, collision detection, physics, game AI, procedural generation, and game architecture. Students will create many small game projects that demonstrate these principles. It is ideal for students seeking a deeper understanding of game systems. (Same as CS 3003. Credit cannot be earned for both CS 3003 and DDTI 3013.). Course Fee: DL01 $75; LRMS $37.50.

DDTI 3023. Statistical Analysis for Data Science. (3-0) 3 Credit Hours.
Prerequisite: MAT 1073 or the equivalent. Introduction to the scientific method; principles of sampling and experimentation; scales of measurement; exploratory data analysis; basic probability; models for discrete and continuous data; simple simulations and inferences based on resampling; fundamentals of hypothesis testing and confidence intervals; analysis of variance and linear regression model; tensors and matrices. The course will emphasize data analysis and interpretation and effective communication of results through reports or presentations within data science contexts. (Same as DS 3023. Credit cannot be earned for both DS 3023 and DDTI 3023.). Course Fee: DL01 $75; LRMS $37.50.

DDTI 4003. Introduction to Data Science. (3-0) 3 Credit Hours.
Prerequisite: MAT 1073 or the equivalent; students may not enroll without 30 credit hours completed. An introduction to foundational data science knowledge and lifecycle. Focus areas on data visualization, data curation, ethics, and tools available for analysis will be covered. (Same as DS 4003. Credit cannot be earned for both DS 4003 and DDTI 4003.). Course Fee: DL01 $75; LRMS $37.50.

DDTI 4013. Programming for Data Science. (3-0) 3 Credit Hours.
Prerequisite: MAT 1073 or the equivalent. An introduction to data-driven programming emphasizing problem solving and critical thinking. Topics will focus on foundational concepts and skills in computer programming. (Same as DS 4013. Credit cannot be earned for both DS 4013 and DDTI 4013.). Course Fee: LRMS $37.50; DL01 $75.

DDTI 4023. Data Organization and Visualization. (3-0) 3 Credit Hours.
Prerequisite: DDTI 3023, DDTI 4003, and DDTI 4013 or the equivalents. This course focuses on programming concepts, file input/output, and recursion that are involved in integrating, loading, processing, and transforming data from external sources for exploratory data analysis and visualization using data science software packages and APIs. (Same as DS 4023. Credit cannot be earned for both DS 4023 and DDTI 4023.). Course Fee: LRMS $37.50; DL01 $75.

DDTI 4033. Data Mining and Machine Learning. (3-0) 3 Credit Hours.
Prerequisite: Completion of or concurrent enrollment in DDTI 4023 or equivalent. This course utilizes fundamental data science concepts to introduce in-depth analysis, data mining, machine learning, and artificial intelligence. Topics may include clustering, classification, evaluation metrics, supervised and unsupervised learning, search algorithms, intelligent agents, and AI applications in select areas. (Same as DS 4033. Credit cannot be earned for both DS 4033 and DDTI 4033.). Course Fee: DL01 $75; LRMS $37.50.

DDTI 4043. Generative Artificial Intelligence. (3-0) 3 Credit Hours.
Prerequisite: DDTI 4033 or equivalent, or instructor consent. This course covers the transformer architecture and fundamental topics such as tokenization, context windows, embeddings, etc. Students will learn to use various APIs, host language models locally, and explore the trade-offs between various state-of-the-art open-source models. Coursework will cover fine-tuning, prompt engineering, hallucination mitigation, and alignment. (Same as DS 4043. Credit cannot be earned for both DS 4043 and DDTI 4043.). Course Fee: DL01 $75; LRMS $37.50.

DDTI 4913. Independent Study in Digital Design, Technology, and Innovation. (0-0) 3 Credit Hours.
Prerequisite: Permission in writing (form available) from the instructor, the student's advisor, the Program Director, and the Dean of the College in which the course is offered. In-depth independent exploration of a focused topic in digital design, creative technologies, or innovation under faculty supervision. Projects may involve design research, prototyping, app or media development, or strategic innovation planning. May be repeated for credit, but not more than 6 semester credit hours of independent study, regardless of discipline, will apply to a bachelor's degree. Course Fees: LRMS $37.50; DL01 $75.

DDTI 4933. Internship in Digital Design, Technology, and Innovation. (0-0) 3 Credit Hours.
Prerequisite: Consent of internship coordinator. Supervised professional experience in a workplace or project environment aligned with digital design, technology, innovation, or user experience. Internship placements may include design studios, tech startups, UX teams, innovation labs, or digital media organizations. A reflective component and final report are required. May be repeated for credit, but not more than 6 semester credit hours of internship will apply to a bachelor's degree. Course Fees: LRMS $37.50; DL01 $75.

DDTI 4953. Special Topics in Digital Design, Technology, and Innovation. (3-0) 3 Credit Hours.
Prerequisite: Consent of instructor. An organized course offering specialized study in an emerging or advanced topic within digital design, creative technology, or innovation practice not regularly offered in the standard curriculum. Topics may include AI in design, virtual production, interactive installations, or speculative design. May be repeated for credit when topics vary, but not more than 9 semester credit hours, regardless of discipline, will apply to a bachelor's degree. Course Fees: LRMS $37.50; DL01 $75.