

DIGITAL AGRICULTURE SYSTEMS & TECHNOLOGY (DAST)

DAST 201, AI APPLICATIONS IN AGRICULTURAL SCIENCES, 3 Credits

Provides a hands-on experience applying artificial intelligence (AI) tools to agricultural systems. Explores foundational AI concepts, including supervised learning, computer vision, ensemble modeling, time-series analysis, and natural language processing. Emphasizes agricultural technology innovation and training for practical, data-driven agricultural decision-making.

Prerequisite: AI 100 with C- or better

Recommended: Python, particularly via a Jupyter Notebooks environment

DAST 202, AI APPLICATIONS IN NATURAL RESOURCE MANAGEMENT, 3 Credits

Explores the intersection of artificial intelligence and natural resource management through real-world case studies in water, forestry, wildlife, soil, and climate systems. Provides hands-on experience with AI tools such as machine learning, computer vision, and predictive modeling to address sustainability and conservation challenges. Emphasizes data-to-decision workflows and ethical considerations in applying AI to complex environmental systems.

Prerequisite: AI 100 with C- or better

Recommended: Python, particularly via a Jupyter Notebooks environment

DAST 213, INTRODUCTION TO DIGITAL AGRICULTURE & CONSERVATION SYSTEMS, 2 Credits

Introduces digital agriculture systems and technologies that integrate sensors, data workflows, and decision-support tools to improve outcomes in crop production, environmental management, and food systems. Covers hardware (e.g., sensors, IoT, UAVs), software and platforms (farm management and geospatial tools), data interpretation, and decision-making frameworks. Integrates core concepts into students' own disciplines through guest presentations from College of Agricultural Sciences departments and a collaborative project. Emphasizes systems thinking and the end-to-end ecosystem of digital agriculture rather than algorithm development.

DAST 413, SENSOR DESIGN, DEPLOYMENT, AND ANALYTICS FOR DIGITAL AGRICULTURE & CONSERVATION, 4 Credits

Emphasizes applied, hands-on learning in digital agriculture and conservation data analytics using Python and Arduino-class microcontrollers. Develops skills to acquire, clean, analyze, and visualize sensor data; implement communication protocols (Serial, I2C, Wi-Fi); and build a progressive hardware-software workflow culminating in an integrated IoT prototype for agricultural, conservation, or natural resource applications. Discusses best practices for data, reproducible code, and stakeholder-oriented dashboards.

Prerequisite: BDS 310 with C or better or BIS 272 with C or better or CS 161 with C or better or CS 201 with C or better or DS 231 with C or better or ENGR 103 with C or better or ENGR 103H with C or better

Recommended: DAST 213 and basic Python programming competency

DAST 513, SENSOR DESIGN, DEPLOYMENT, AND ANALYTICS FOR DIGITAL AGRICULTURE & CONSERVATION, 4 Credits

Emphasizes applied, hands-on learning in digital agriculture and conservation data analytics using Python and Arduino-class microcontrollers. Develops skills to acquire, clean, analyze, and visualize sensor data; implement communication protocols (Serial, I2C, Wi-Fi); and build a progressive hardware-software workflow culminating in an integrated IoT prototype for agricultural, conservation, or natural resource applications. Discusses best practices for data, reproducible code, and stakeholder-oriented dashboards.

Recommended: Python programming competency