DIGITAL AGRICULTURE & CONSERVATION SYSTEMS TECHNOLOGY MINOR

This program is available at the following location:

- **Corvallis**

The Digital Agriculture & Conservation Systems Technology minor equips graduates with the skills to design and implement systems of technology in agricultural, conservation, and natural resource systems. Students will gain training in programming, data science, hardware, software, and systems thinking to understand complex systems and inform management decisions. Through interdisciplinary learning and emphasis on real-world applications, the credential fosters a workforce prepared to deliver technology-enabled solutions that benefit producers, consumers, and ecosystems. Students will apply systems thinking to guide data collection, analysis, interpretation, and communication of findings to stakeholders. They will analyze and develop data-driven solutions for agricultural and conservation systems, including evaluating predictions, describing limitations of analyses, and communicating findings to end users. Finally, students will identify emerging and established tools and techniques to characterize systems of interest for agriculture and conservation, develop novel hardware and software tools to inform decision support and management, and demonstrate the role of geospatial data and remote sensing in applications to digital agriculture and conservation.

Minor Code: A069

Upon successful completion of the program, students will meet the following learning outcomes:

- Analyze the hardware, software, data, and human components of agricultural, conservation, and natural resource systems.
- Apply artificial intelligence and data science approaches to problems in agricultural and natural resource systems.
- Assess established and emerging technologies to inform the management of agricultural and conservation systems.

Code	Title	Credits
Required Core		
DAST 213	INTRODUCTION TO DIGITAL AGRICULTURE & CONSERVATION SYSTEMS	2
DAST 413	SENSOR DESIGN, DEPLOYMENT, AND ANALYTICS FOR DIGITAL AGRICULTURE & CONSERVATION	4
CROP 414/HORT 414	PRECISION AGRICULTURE	4
Foundational Skills		
Programming & Coding Foundation		
Select one course from the following: [1]		3-4
BDS 310	FOUNDATIONS OF BIOLOGICAL DATA SCIENCES	
BIS 272	BUSINESS APPLICATION DEVELOPMENT	
CS 161	INTRODUCTION TO COMPUTER SCIENCE I	
CS 201	COMPUTER PROGRAMMING FOR NON-CS MAJORS	
DS 231	PYTHON PROGRAMMING FOR DATA SCIENCE	
ENGR 103	ENGINEERING COMPUTATION AND ALGORITHMIC THINKING	
Data Science Foundation		
BDS 311	COMPUTATIONAL APPROACHES FOR BIOLOGICAL DATA	3-4
or DS 431	STATISTICAL LEARNING FOR DATA SCIENCE	
Artificial Intelligence Foundation		
DAST 201	AI APPLICATIONS IN AGRICULTURAL SCIENCES	3
or DAST 202	AI APPLICATIONS IN NATURAL RESOURCE MANAGEMENT	
or ENSC 204	AI & THE ENVIRONMENT	
Tools & Skills Electives		
Select 8 credits from any of the following categories: [2]		8
Geospatial Data, Remote Sensing, & Surveying		
CE 202	CIVIL ENGINEERING: GEOSPATIAL INFORMATION AND GIS	
FE 208	FOREST SURVEYING	
FE 257	GIS AND FOREST ENGINEERING APPLICATIONS	
FW 303	SURVEY OF GEOGRAPHIC INFORMATION SYSTEMS IN NATURAL RESOURCE	
GEOG 201	+*FOUNDATIONS OF GEOSPATIAL SCIENCE AND GIS	
GEOG 360	GISCIENCE I: GEOGRAPHIC INFORMATION SYSTEMS AND THEORY	
GEOG 380	REMOTE SENSING: PRINCIPLES AND APPLICATIONS	
Programming, Computation, Data Science, AI & Statistics		
AI 100	AI FOR EVERYONE	
CS 162	INTRODUCTION TO COMPUTER SCIENCE II	
GEOG 361	QUANTITATIVE GEOSPATIAL ANALYSIS AND MODELING	
GEOG 463	ANALYTICAL WORKFLOWS FOR EARTH SYSTEMS SCIENCE	
ST 243Z	+ELEMENTARY STATISTICS I	
ST 314	INTRODUCTION TO STATISTICS FOR ENGINEERS	
ST 351	INTRODUCTION TO STATISTICAL METHODS	
ST 352	INTRODUCTION TO STATISTICAL METHODS	
ST 411	METHODS OF DATA ANALYSIS	
ST 412	METHODS OF DATA ANALYSIS	
ST 413	METHODS OF DATA ANALYSIS	
ST 421	INTRODUCTION TO MATHEMATICAL STATISTICS	
TOX 480	COMPUTATIONAL TOXICOLOGY AND RISK ASSESSMENT	
Human Dimensions of Digital Agriculture & Conservation		
AEC 250	+*INTRODUCTION TO ENVIRONMENTAL ECONOMICS AND POLICY	
AEC 251	+*INTRODUCTION TO AGRICULTURAL AND FOOD ECONOMICS	
AEC 252	DATA FOUNDATIONS FOR APPLIED ECONOMICS	
AEC 388	AGRICULTURAL LAW	
BDS 211	USE AND ABUSE OF DATA: CRITICAL THINKING IN SCIENCE	
HORT 217	+*SCIENCE FOR SELF AND SOCIETY	
PHL 131	AI ETHICS: THE GOOD, THE BAD, AND THE UGLY	
PHL 330	*TECHNOLOGY AND ETHICS	
PHL 456	*MINDS, BRAINS, AND MACHINES	
Experiential Learning		
AGRI 401	RESEARCH	
AGRI 410	INTERNSHIP	
Total Credits		**27-29**

* Baccalaureate Core course. Applies to general education requirements for undergraduate students in a catalog year up to 2024-2025

\+ Core Education course. Applies to general education requirements for undergraduate students in catalog year 2025-2026 and beyond

1 For students with demonstrated proficiency in Python, this requirement may be waived with permission from an advisor and students will select additional credits from the Tools & Skills Electives to meet the required credit total. Examples may include prior coursework in programming, demonstrated completion of an online training program (e.g., free options through Khan Academy (https://www.khanacademy.org/computing/intro-to-python-fundamentals) and Codecademy (https://www.codecademy.com/learn/learn-

	python-3)), sharing example code with an instructor, prior coursework not listed here, or similar demonstration of skills
2	In consultation with an academic advisor, select elective credits from any of the categories to meet a minimum requirement of 12 upper-division credits and 27 total credits in the minor

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