

Colorado AFNR Course Scope and Sequence

Course Name	Applied Agriculture Technology		Course Details	Level 4 course in the Power, Structure, & Technology pathway. This course aligns with any of the three strands.	
			Course = 0.50 Carnegie Unit Credit		
Course Description	The Applied Agriculture Technology course provides students with the opportunity to focus on topic areas related to the use of technology in agriculture, applying technological processes to solve real problems and developing knowledge and skills to design, modify, use, and apply technology appropriately. Students may design and assemble projects and learn to work with different digital applications to complete tasks as seen in the agriculture industry.				
Note:	This is a suggested scope and sequence for the course content. The content will work with any textbook or instructional resource. If locally adapted, make sure all essential knowledge and skills are covered.				
SCED Identification #	18499	Schedule calculation based on 60% of a semester instructional time. Scope and sequence allows for additional time for guest speakers, student presentations, field trips, remediation, or other content topics.			
All courses taught in an approved CTE program must include Essential Skills embedded into the course content. The Essential Skills Framework for this course can be found at https://www.cde.state.co.us/standardsandinstruction/essentialskills					
Unit Number, Title and Brief Description	Suggested % of Instructional Time	CTE or Academic Standard Alignment	Competency / Performance Indicator	Outcome / Measurement	CTSO Integration
Unit 1: CAD/CAM Design Software	10%	PST.05. Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.	PST.05.01. Apply computer and other technologies (e.g., robotics, CNC, UAS, etc.) to solve problems and increase the efficiency of AFNR systems. SCIENCE: NGSS.ETS.1.3 SC.HS.3.9	PST.05.01.01.a. Research and categorize computer technologies used to solve problems and increase efficiency in AFNR systems.	
Unit 2: CNC Applications - Plasma - Router - Laser & Additive Manufacturing processes	12%	PST.05. Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.	PST.05.01. Apply computer and other technologies (e.g., robotics, CNC, UAS, etc.) to solve problems and increase the efficiency of AFNR systems. SCIENCE: NGSS.ETS.1.3 SC.HS.3.9	PST.05.01.02.a. Examine and summarize the specific intent of technologies used to solve problems and increase the efficiency of AFNR systems (e.g., robotics, UAS, CNC, etc.).	
Unit 3: Arduino Applications & Programming	5%	PST.05. Use control, monitoring, geospatial and other technologies in AFNR	PST.05.01. Apply computer and other technologies (e.g., robotics, CNC, UAS,	PST.05.01.01.a. Research and categorize computer technologies used to solve	

		power, structural and technical systems.	etc.) to solve problems and increase the efficiency of AFNR systems. SCIENCE: NGSS.ETS.1.3 SC.HS.3.9	problems and increase efficiency in AFNR systems.	
Unit 4: Remote Sensing Device, Components, DC & Data Circuits	10%	PST.05. Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.	PST.05.01. Apply computer and other technologies (e.g., robotics, CNC, UAS, etc.) to solve problems and increase the efficiency of AFNR systems. SCIENCE: NGSS.ETS.1.3 SC.HS.3.9	PST.05.01.02.a. Examine and summarize the specific intent of technologies used to solve problems and increase the efficiency of AFNR systems (e.g., robotics, UAS, CNC, etc.).	
Unit 5: GIS & GPS technology systems and Applications	7%	PST.05. Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.	PST.05.03. Apply geospatial technologies to solve problems and increase the efficiency of AFNR systems.	PST.05.03.01.a. Research and summarize the impact of utilizing geospatial technologies (i.e., GPS, GIS, remote sensing, telematics, etc.) in AFNR systems.	
Unit 6: Drone & AV Technology Applications • IR sensing	3%	PST.05. Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.	PST.05.01. Apply computer and other technologies (e.g., robotics, CNC, UAS, etc.) to solve problems and increase the efficiency of AFNR systems. SCIENCE: NGSS.ETS.1.3 SC.HS.3.9	PST.05.01.01.b. Analyze data using computer programs and other current technologies used in AFNR systems.	
Unit 7: RFID, Cellular, WiFi technology application/animal & Plant ID and Data Collection	3%	PST.05. Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.	PST.05.02. Prepare and/or use electrical drawings to design, install and troubleshoot electronic control systems in AFNR settings.	PST.05.02.01.a. Examine and summarize the specific intent of technologies used to solve problems and increase the efficiency of AFNR systems (e.g., robotics, UAS, CNC, etc.).	
Unit 8: Robotics Application in Manufacturing, animal production, greenhouse, Servo motors, controls	11%	PST.05. Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.	PST.05.01. Apply computer and other technologies (e.g., robotics, CNC, UAS, etc.) to solve problems and	PST.05.01.02.a. Examine and summarize the specific intent of technologies used to solve problems and increase the	

			increase the efficiency of AFNR systems. SCIENCE: NGSS.ETS.1.3 SC.HS.3.9	efficiency of AFNR systems (e.g., robotics, UAS, CNC, etc.)	
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Academic Standards Alignment

Colorado CTE courses are required to integrate academic and essential skills into course content. The following academic standards have been identified as aligned to this course and should be integrated throughout instruction.

[CO CTE Academic Standards Resources](#) (Rubrics, integration strategies, etc)

[CDE Colorado Academic Standards Online](#) (Online standards lookup tool)

Standard 1: Oral Expression and Listening

Prepared Graduate 1: Collaborate effectively as group members or leaders who listen actively and respectfully; pose thoughtful questions, acknowledge the ideas of others; and contribute ideas to further the group's attainment of an objective.

Students collaborate to design technology-based solutions, program and operate agricultural technologies, troubleshoot equipment, and complete engineering and precision agriculture projects while working effectively as members of a technical team.

Prepared Graduate 2: Deliver effective oral presentations for varied audiences and varied purposes.

Students communicate technology applications, engineering designs, project outcomes, and recommendations through demonstrations, technical discussions, and presentations using appropriate agricultural technology terminology.

Standard 2: Reading for All Purposes

Prepared Graduate 4: Read a wide range of informational texts to build knowledge and to better understand the human experience.

Students interpret technical manuals, CAD drawings, GIS data, software documentation, manufacturer specifications, programming resources, and precision agriculture information to design, operate, and evaluate agricultural technologies.

Prepared Graduate 5: Understand how language functions in different contexts, command a variety of word-learning strategies to assist comprehension, and make effective choices for meaning or style when writing and speaking.

Students apply engineering and agricultural technology vocabulary while interpreting technical documentation, programming automated systems, operating digital technologies, and communicating technical information.

Prepared Graduate 3 (literary texts) is not directly addressed by this course.

Standard 3: Writing and Composition

Prepared Graduate 7: Craft informational/explanatory texts using techniques specific to the genre.

Students prepare design documentation, project plans, programming documentation, technical reports, and project summaries that explain engineering processes, technology applications, and solutions to agricultural problems.

Prepared Graduate 9: Demonstrate mastery of their own writing process with clear, coherent, and error-free polished products.

Students produce organized technical documentation, engineering records, project reports, and technology implementation plans that accurately communicate design decisions, testing results, and project outcomes.

Prepared Graduate 6 (argument writing) and Prepared Graduate 8 (narrative writing) are not explicitly supported by the course standards.

Standard 4: Research Inquiry and Design

Prepared Graduate 10: Gather information from a variety of sources; analyze and evaluate its quality and relevance; and use it ethically to answer complex questions.

Students research emerging agricultural technologies, engineering applications, programming resources, geospatial data, precision agriculture systems, and industry specifications to design solutions, improve agricultural efficiency, and solve real-world agricultural problems.

Note: *Mathematics and Science standards will be added in the future. Visit the [Colorado Academic Standards](#) page for the most current version.*