Colorado CTE Course – Scope and Sequence

Course Name	**Applied Ag Technology**	**Course Details** **Course = 0.50 Carnegie Unit Credit**	**Level 4 course in the Power Structure & Technology pathway. This course would be applicable to any of the three strands in pathway.**
Course Description	Advanced Welding Technology is an advanced course educating students in the advanced skills and knowledge in metal fabrication. Students will build on the skills and competencies presented in prerequisite courses. Students will learn cutting and welding applications of increasing complexity used in the manufacturing/metal fabrication industry. Students will be proficient in fundamental safety practices in welding, general industry-based metal fabrication skills, multiple welding processes, project management, quality control methods and further advanced welding/metal fabrication technology and processes.		
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 instructional time in semester. 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

Instructional Unit Topic	**Suggested % of Instructional Time**	**CTE or Academic Standard Alignment**	**Competency / Performance Indicator**	**Outcome / Measurement**	**CTSO Integration**
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.	**PST.05.01.01.a**. Research and categorize computer technologies used to solve problems and increase efficiency in AFNR systems.	
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.	**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.).	
Arduino applications & programming	5%	**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.	**PST.05.01.01.a.** Research and categorize computer technologies used to solve problems and increase efficiency in AFNR systems.	

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.	**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.).	
GIS & GPS technology systems & 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.	
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.	**PST.05.01.01.b.** Analyze data using computer programs and other current technologies used in AFNR systems.	
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.).	
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 increase the efficiency of AFNR systems.	**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.	