Advanced Manufacturing Programs of Study (Dual Enrollment at TCAT Pulaski)

Mechatronics Courses and Sequencing (Dual Enrollment at TCAT Pulaski)

Level 1- C13H04 Dual Enrollment Mechatronics 1

- **Open to 11th and 12th-grade students**
- **EPSO: Dual Enrollment course through TCAT**
- Mechatronics I is an applied course in the manufacturing cluster for students interested in learning more about careers as a mechatronics technician, maintenance technician, electromechanical technician, and manufacturing engineer. Upon completion of this course, proficient students are able to describe and explain the basic functions of physical properties and electrical components within a mechatronic system. They can logically trace the flow of energy through a mechatronic system and can communicate this process to others. They know how to effectively use technical documentation such as datasheets, schematics, timing diagrams, and system specifications to troubleshoot basic problems with equipment.

Level 2- C13H21 Dual Enrollment Mechatronics 2

- **EPSO: Dual Enrollment course through TCAT**
- Mechatronics II is an advanced course in the manufacturing career cluster for students interested in learning more about such careers as mechatronics technician, maintenance technician, or electromechanical technician. Following the groundwork of mechanics and electronics laid in Mechatronics I, this course covers the basics of pneumatic, electro-pneumatic, and hydraulic control circuits in a complex mechatronic system. In addition, the course addresses basic digital logic and programmable logic controllers (PLCs) employed in the mechanical, electronic, and control systems in a mechatronics system.

Level 3 -C13H36 Dual Enrollment Mechatronics 3

- **Open to 11th and 12th-grade students**
- **EPSO: Dual Enrollment course through TCAT**

Level 4 -C13H37 Dual Enrollment Mechatronics 4

- **Open to 11th and 12th-grade students**
- **EPSO: Dual Enrollment course through TCAT**

Optional Course Work Based Learning Course

C13H42 Work-Based Learning: Mechatronics Career Practicum (WBL)

- **1 credit, up to 2 credits per year, open to grades 11 & 12**
- Admission into this class is by application only. A student must have a 90% attendance rate for the semester immediately preceding enrollment in this class. Their place of employment must correlate to their chosen Elective Focus, and a significant portion of the hours worked must be during the normal school day. Students must be enrolled in a CTE that is related to their job. Students must maintain school attendance of a minimum of 90%, pass grades in all courses, and be able to legally drive to the job site. This course allows students to leave the school campus daily to gain real-world occupational experience.

Welding Courses (Dual Enrollment at TCAT Pulaski)

Level 1- C13H03 WELDING I DE

- **open to 11th and 12th-grade students that meet dual enrollment requirements**
- **EPSO: Dual Enrollment course through TCAT**

- Welding I is designed to provide students with the skills and knowledge to effectively perform cutting and welding applications used in the advanced manufacturing industry. Students enrolled in this course will develop proficiency in fundamental safety practices in welding, interpreting drawings, creating computer-aided drawings, identifying and using joint designs, efficiently laying out parts for fabrication, basic shielded metal arc welding (SMAW), mechanical and thermal properties of metals, and quality control. Upon completion of the Welding I course, students will understand the requirements to pursue the American Welding Society (AWS) Entry Welder qualification and examination and will be prepared to undertake more advanced welding coursework.

Level 2- C13H18 WELDING II DE

- **open to 11th and 12th-grade students that meet dual enrollment requirements**
- **EPSO: Dual Enrollment course through TCAT**
- Welding II is a continuation of Welding I as it is designed to provide students with the skills and knowledge to effectively perform cutting and welding applications used in the advanced manufacturing industry. Students enrolled in this course will develop proficiency in fundamental safety practices in welding, interpreting drawings, creating computer-aided drawings, identifying and using joint designs, efficiently laying out parts for fabrication, basic shielded metal arc welding (SMAW), mechanical and thermal properties of metals, and quality control. Upon completion of the Welding I course, students will understand the requirements to pursue the American Welding Society (AWS) Entry Welder qualification and examination and will be prepared to undertake more advanced welding coursework.

Level 3- C13H38 WELDING III DE

- **open to 11th and 12th-grade students that meet dual enrollment requirements**
- **EPSO: Dual Enrollment course through TCAT**
- Welding II is a continuation of Welding I as it is designed to provide students with the skills and knowledge to effectively perform cutting and welding applications used in the advanced manufacturing industry. Students enrolled in this course will develop proficiency in fundamental safety practices in welding, interpreting drawings, creating computer-aided drawings, identifying and using joint designs, efficiently laying out parts for fabrication, basic shielded metal arc welding (SMAW), mechanical and thermal properties of metals, and quality control. Upon completion of the Welding I course, students will understand the requirements to pursue the American Welding Society (AWS) Entry Welder qualification and examination and will be prepared to undertake more advanced welding coursework.

Level 4- C13H39 WELDING IV DE

- **open to 11th and 12th-grade students that meet dual enrollment requirements**
- **EPSO: Dual Enrollment course through TCAT**
- Welding II is a continuation of Welding I as it is designed to provide students with the skills and knowledge to effectively perform cutting and welding applications used in the advanced manufacturing industry. Students enrolled in this course will develop proficiency in fundamental safety practices in welding, interpreting drawings, creating computer-aided drawings, identifying and using joint designs, efficiently laying out parts for fabrication, basic shielded metal arc welding (SMAW), mechanical and thermal properties of metals, and quality control. Upon completion of the Welding I

course, students will understand the requirements to pursue the American Welding Society (AWS) Entry Welder qualification and examination and will be prepared to undertake more advanced welding coursework.