



Delaware Department of Education
CTE & STEM Office
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Dover, DE 19901
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DELAWARE CTE PROGRAM OF STUDY APPLICATION

LOCAL EDUCATION AGENCY INFORMATION		
Local Education Agency (LEA):		
School(s) where the Program of Study will be Located:		Program of Study Start Date:
LEA CTE Coordinator Name:	Phone:	E-Mail Address:
Career Cluster Title: Manufacturing	Career Pathway Title: Manufacturing Production Process Development	Program of Study Title: Manufacturing Production Technician
CTE Program of Study Course Titles & Sequence: 1. MSS100 - Principles of Manufacturing 2. MSS111 – Electrical Systems and Controls 3. MSS112 – Fluid Power 4. MSS113 – Electro-Mechanical Systems		
CTE Program of Study Request: ☒ State-model CTE Program of Study ☐ Local CTE Program of Study		
ASSURANCES & SIGNATURES		
CTE Program of Study approval and funding is contingent upon the following assurances: 1. The LEA will comply with Delaware Administrative Code, 14 Del.C. §525, Requirements for Career and Technical Education Programs and the Delaware State Plan for the Carl D. Perkins Career and Technical Education Act of 2006; 2. The LEA will submit CTE program data as required by the Delaware Department of Education; 3. All teachers are certified in the appropriate CTE area and participate in program specific professional learning; 4. The LEA will convene and engage a program advisory committee for the purposes of program development, implementation, and continuous improvement; 5. All students have equal access to the program of study as well as early career/early college options; 6. Career and Technical Student Organizations are integral components of the program of study; 7. The LEA will maintain safe facilities and equipment aligned with the program of study goals; and 8. A process for continuous improvement has been established, which includes a model of evaluation and program improvement.		
LEA CTE Coordinator Signature:		Date:
LEA Chief School Officer Signature:		Date:

PROGRAM ADVISORY COMMITTEE MEMBER INFORMATION

The Delaware Manufacturing Association (DMA) serves as the program advisory committee for the program of study (POS). The POS district representative must be the CTE/curriculum district coordinator.

Name:

Title:

Affiliation:

Address:

Phone:

E-Mail:

Area of Expertise:

Representing:

☒ Secondary Education

LABOR MARKET DEMAND

Certify that a labor market needs analysis has been completed for the proposed CTE program of study. Attach the [Labor Market Information \(LMI\) Review](#) document.

Access the [Labor Market Information \(LMI\) Review](#) document.

- ☒ The LEA certifies that regional, state, and local labor market data have been reviewed to assure a demand exists for the POS occupations and that the number of POS completers will not significantly exceed this demand. Department of Labor data are available and/or documented. Supporting evidence of supply and demand is submitted with this proposal.
- ☐ No data exist for POS due to a unique labor market demand. Supporting evidence of demand is submitted with this proposal. Evidence may include, but is not limited to: real-time labor market information, documentation of national, regional, state, or local labor trends, or letters from employers or workforce agencies documenting projected employment specific to the career pathway.

ACADEMIC AND TECHNICAL SKILL STANDARDS

List the academic, technical, and workplace skills and knowledge used to develop the program of study.

Title and source of academic standards:

[Common Core State Standards \(CCSS\)](#)

The Common Core State Standards (CCSS) are national standards that set clear college- and career-ready expectations for kindergarten through 12th grade in English language arts/literacy and Mathematics. The standards help to ensure that students graduating from high school are prepared to take credit bearing introductory courses in two- or four-year college programs and enter the workforce. The standards were developed by the nation's governors and education commissioners, through their

representative organizations, the National Governors Association Center for Best Practices (NGA) and the Council of Chief State School Officers (CCSSO). Teachers, parents, school administrators, and experts from across the country provided input into the development of the standards. The implementation of the Common Core, including how the standards are taught, the curriculum developed, and the materials used to support teachers as they help students reach the standards, is led entirely at the state and local levels. For more information on CCSS, please visit the link above.

Within the Manufacturing Production Technician program of study, the CCSS have been embedded in each course. The program has students apply the CCSS English language arts/literacy standards, specifically the College and Career Readiness Anchor Standards for Reading, Writing, and Speaking & Listening as well as the Literacy Standards for Science and Technical Subjects to engage in coursework and work as a team. Additionally, the program has students apply the CCSS Mathematics standards, specifically the Standards for Mathematical Practice as well as standards at the High School level to solve technical problems and operations.

[Next Generation Science Standards \(NGSS\)](#)

The Next Generation Science Standards (NGSS) are national standards for science that lay out the disciplinary core ideas, science and engineering practices, as well as crosscutting concepts that students should master in preparation for college and careers. The standards were developed through a state-led effort that was managed by Achieve. The development of the NGSS involved the National Research Council (NRC), the National Science Teachers Association (NSTA), the American Association for the Advancement of Science (AAAS), and other critical partners such as K–12 teachers, state science and policy staff, higher education faculty, scientists, engineers, cognitive scientists, and business leaders. For more information on the NGSS, please visit the link above.

Within the Manufacturing Production Technician program of study, the NGSS have been embedded in each course. The program has students apply the NGSS standards at the high school level, specifically the Physical Sciences as well as Engineering, Technology, and Applications of Science to develop and use models, analyze data, and design solutions.

Title and source of technical skill standards:

[Manufacturing Skill Standards Council \(MSSC\); Certified Production Technician \(CPT\)](#)

The Manufacturing Skill Standards Council (MSSC) is a professional certification board whose standards are the measures that validate the Certified Production Technician (CPT) to serve as the core skills and knowledge necessary for production-support workers through to supervision workers to become successful in the manufacturing cluster. The Certified Production Technician (CPT) certification is an industry-recognized, and nationally portable credential that measures and validates core skills 4 critical areas:

1. Safety
2. Quality Practices & Measurement
3. Manufacturing Processes & Production
4. Maintenance Awareness

Successful certification in all of the four assessment areas will earn the candidate the full Certified Production Technician (CPT) certification.

Title and source of workplace or other skill standards, as applicable:

[Common Career Technical Core \(CCTC\)](#)

The Common Career Technical Core (CCTC) are national standards for Career & Technical Education (CTE) that help to inform the establishment of state standards and/or programs of study. The CCTC were developed by educators, school administrators, representatives from business and industry, faculty from higher education, as well as workforce and labor markets economists. The CCTC includes a set of standards for each of the sixteen (16) Career Clusters and the corresponding Career Pathways that help to define what students should know and be able to do after completing instruction in a program of study. For more information on the CCTC, please visit the link above.

Within the Manufacturing Production Technician program of study, the CCTC standards for the Manufacturing Career Cluster have been embedded in each course. The program has students apply the CCTC Manufacturing standards, specifically the Production Career Pathway and the Manufacturing Production Process Career Pathway standards.

[Career Ready Practices \(CRP\)](#)

The Career Ready Practices (CRP) are a component of the CCTC framework and includes twelve (12) statements that address the knowledge, skills, and dispositions that are important to becoming career ready. The CRP describes the career-ready skills that educators should seek to develop in their students. These practices are not exclusive to a Career Pathway, program of study, discipline, or level of education and should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a career pathway. For more information on the CRP, please visit the link above.

Within the Manufacturing Production Technician program of study, the CRP statements are embedded throughout the program to ensure students display the appropriate workplace and soft skills required to be successful in a career.

EARLY CAREER AND EARLY COLLEGE OPPORTUNITIES

Identify CTE program of study early career opportunities, industry-recognized certifications and licenses, options for early college credit, two- and four-year degree and certification program alignment, and the technical skill attainment measures for the program of study. *Attach articulation/dual enrollment agreement(s).*

Describe early career opportunities (i.e. work-based learning experiences and industry-mentored projects):

The Manufacturing Production Technician program of study provides students with paid work-based learning experiences or Craftsmanship Placements upon successful completion of the MSS100 - Principles of Manufacturing and MSS111 – Electrical Systems and Controls courses. Craftsmanship

Placements will be organized and supported by the Delaware Manufactures Association and by the Delaware Technical Community College. The administration and supervision of the Craftsmanship Placements will be conducted by the participating local education agency, Delaware Technical Community College faculty, and the participating manufacturing supervisor(s).

List industry-recognized certifications and/or licenses, as appropriate (include the partner organization and credential):

- [Manufacturing Skill Standards Council \(MSSC\); Certified Production Technician \(CPT\)](#)
The Manufacturing Skill Standards Council (MSSC) is a professional certification board whose standards are the measures that validate the Certified Production Technician (CPT) to serve as the core skills and knowledge necessary for production-support workers through to supervision workers to become successful in the manufacturing cluster. The Certified Production Technician (CPT) certification is an industry-recognized, and nationally portable credential that measures and validates core skills 4 critical areas:
 1. Safety
 2. Quality Practices & Measurement
 3. Manufacturing Processes & Production
 4. Maintenance Awareness

Students successfully completing all four assessment areas will earn the Certified Production Technician (CPT) certification.
- [Occupational Safety and Health Administration; 10-Hour Construction Safety Certification:](#)
The OSHA 10-hour training is an entry level certification in the recognition, avoidance, abatement, and prevention of safety and health hazards in the construction workplace. The program also provides information regarding workers' rights, employer responsibilities, and how to file a complaint.
- [Occupational Safety and Health Administration; 3 Hour Safety Refresher Certification:](#)
The OSHA 3-hour training is a refresher certification in the recognition, avoidance, abatement, and prevention of safety and health hazards in the construction workplace as well as information regarding workers' rights, employer responsibilities, and how to file a complaint.
- [Delaware Technical Community College Certification:](#)
Upon successful completion of the program, students will earn a certification of completion from the DTCC office of Workforce Development and Community Education. The document will certify the students have successfully completed the core coursework and program competencies.

Describe early college credit options (i.e. advanced placement, dual enrollment, transcribed and/or articulated credit, credit by exam, pre-apprenticeship, other) and options for two- and four-year degree and/or certification program alignment (attach articulation/dual enrollment agreement). The partner organization and hours of credit earned should be included, as applicable:

The Manufacturing Production Technician Pathway is a two (2) year, four (4) semester program of study that is articulated with Delaware Technical Community College. Students may gain articulated credits that can be applied in the College of Energy and Engineering Technologies in the following associate degree programs:

[Electromechanical Engineering Technology](#): 10 articulated credits

- ELM130 – Industrial Electricity: 3 credits
- ELM205 - Mechanisms & Design: 3 credits
- ELC243 – Programmable Logic Controllers: 4 credits

[Electronics Engineering Technology](#): 7 articulated credits

- ELC125 – Electrical Circuits I: 3 credits
- ELC243 – Programmable Logic Controllers: 4 credits

[Mechanical Engineering Technology](#): 7 articulated credits

- MET115 – Mechanical Engineering Technology: 3 credits
- ELC248 – Electro-Mechanical Systems: 4 credits

For more information, please review the attached articulation agreement(s).

List technical skill attainment measures for the program of study (i.e. industry recognized certification or license, advanced placement, dual enrollment, transcribed and/or articulated credit, dual enrollment, credit by exam):

☒ Certification/credentialing exam (specify):

[Manufacturing Skill Standards Council \(MSSC\); Certified Production Technician \(CPT\)](#)

☐ Licensing exam (specify):

☐ Nationally recognized exam (specify):

☒ Advanced standing (specify):

Delaware Technical Community College:

ELM130 – Industrial Electricity: 3 credits

ELM205 - Mechanisms & Design: 3 credits

ELC243 – Programmable Logic Controllers: 4 credits

ELC125 – Electrical Circuits I: 3 credits

MET115 – Mechanical Engineering Technology: 3 credits

ELC248 – Electro-Mechanical Systems: 4 credits

☐ Other (specify):

POS OVERVIEW, COURSE DESCRIPTIONS, END-OF-COURSE, AND PROGRAM ASSESSMENTS

Provide a CTE program of study overview that broadly describes the program and student expectations. Identify end-of-program assessment(s) and opportunities for students to participate in early college and early career experiences. List each course title in the CTE program of study. Provide an overview of each course and define what students should know and be able to demonstrate upon completion of each level. Identify appropriate end-of-course assessment(s).

CTE Program of Study Overview:

The Manufacturing Production Technician program of study is a two (2) year; four (4) semester Career & Technical Education (CTE) instructional program that engages students in open-ended problem solving where they learn and apply manufacturing processes and use modern, industry-leading technology and software. The program prepares students for further education and careers in manufacturing and logistics. The CTE program consists of four courses that are completed on the campus of the Delaware Technical Community College.

Paid work-based learning experiences or Craftsmanship Placements will be available to students upon successful completion of the MSS100 - Principles of Manufacturing and MSS111 - Manufacturing Electrical Systems and Controls courses. Craftsmanship Placements will be organized and supported by the Delaware Manufactures Association and by the Delaware Technical Community College. The administration and supervision of the Craftsmanship Placements will be conducted by the participating local education agency, Delaware Technical Community College faculty, and the participating manufacturing supervisor(s).

- **(Semester 1) MSS100 – Principles of Manufacturing** provides students with the foundational skills needed to start a career in today's manufacturing industry. In this course, students will learn about proper tool use, production assembly, mechanical print reading, electrical wiring, welding, lock out-tag out, OSHA safety, and key manufacturing mathematical concepts. At the conclusion of this course, students will be prepared for entry into the workforce and/or continued training in a Manufacturing Pathway.
- **(Semester 2) MSS111 – Electrical Systems and Controls** provides students with real-world applications in electrical systems and controls. This course will focus on applied mathematics for electricity, AC and DC electrical circuits, electrical motor controls, and concepts of Lean Manufacturing and 5-S.
- **(Semester 3) MSS112 – Fluid Power** provides students with real-world applications in fluid power. This course will focus on hydraulics, pneumatics, and electro-fluid power.
- **(Semester 4) MSS113 – Electro-Mechanical Systems** provides students with real-world applications in electro-mechanical systems. This course will focus on mechanical drives and programmable logic controllers (PLCs).

End-of-Program Assessment(s):

- ☒ Certification/credentialing exam (specify): Completion of MSSC Certified Production Technician Certification
- ☐ Licensing exam (specify):
- ☐ Nationally recognized exam (specify):
- ☐ Other (specify):

Course title: MSS100 – Principles of Manufacturing
Course description (include prerequisites): MSS100 – The Principles of Manufacturing course provide students with the foundational skills needed to start a career in today’s manufacturing industry. In this course, students will learn about proper tool use, production assembly, mechanical print reading, electrical wiring, welding, lock out-tag out, OSHA safety, and key manufacturing mathematical concepts. At the conclusion of this course, students will be prepared for entry into the workforce and/or continued training in a Manufacturing Pathway. Prerequisite or Concurrent Enrollment Requirement : Algebra I
Course knowledge and skills (what students will know and be able to do): By the end of this course, students will: 1. Perform algebraic operations and solve applied mathematical problems needed in manufacturing to: manipulate algebraic operations; solve linear equations; apply rates, ratios and proportions; apply US and metric measurement system to model solutions; perform dimensional analysis using decimals and percentages; as well as solve applied problems using plane and solid geometry. 2. Interpret and demonstrate blueprint and schematic reading to: identify line types and interpret their meaning; identify abbreviations, symbols, and terminology and their appropriate applications; dissect orthographic projections; interpret geometric, dimensioning, and tolerance standards; as well as describe the types and functions of technical drawings and language. 3. Demonstrate techniques, skills and process in order to: properly select and use electrical tools; troubleshoot electrical circuits and components; demonstrate electrical safety practices; practice lock-out/tag-out procedures; install electrical components; and perform proper installation of circuit protection (circuit breaker in service panel). 4. Apply proper mechanical fabrication techniques that include: selection of fasteners for manufacturing; use of production tools for mechanical fabrication; installation of pressurized pneumatic tubes and fittings; manufacturing of parts using industrial fasteners; as well as practice safe and proper use of equipment and tools. 5. Practice modern production assembly techniques to: apply the safe and proper use of torque wrenches; demonstrate proper assembly of mechanical fasteners with the selection and proper installation of pressurized various seals; as well as install hydraulic hoses, fittings and tubing to industrial equipment. 6. Apply OSHA construction and safety practices and procedures through: explanation of the function and purpose of worker rights; selection of Personal Protective Equipment (PPE) to industry standards; identification of health hazards encountered on worksites; prevention techniques to

identify and reduce injuries associated with material handling, storage, use, and disposal; practice the elimination of hazards in lifting, using forklifts, cranes, scaffolding, slings and/or when storing, using, or disposing of materials; perform an environmental survey to prevent slipping, tripping, and falling hazards; demonstrate safe use of ladders on a site; illustrate precautions for the safe use of tools; and debate OSHA rules and regulations as applied to safety and health in the workplace.

7. Perform career exploration activities in the manufacturing industry through: research and reporting on career opportunities in manufacturing; presentation of need, demand, knowledge and skills required for entry into a career in manufacturing; practice career ready skills expected for growth into careers in manufacturing; and perform inquiries using engineering reference materials to solve technical problems.

End-of-Course Assessment(s):

- ☐ Teacher designed assessment
- ☐ LEA designed assessment
- ☒ Certification/credentialing exam (specify): [OSHA, 10 Hour Construction Safety Certification](#)
- ☐ Licensing exam (specify):
- ☒ Nationally recognized exam (specify): [Manufacturing Skill Standards Council \(MSSC\) Safety Assessment](#) and [Manufacturing Skill Standards Council \(MSSC\) Quality Practices & Measurement Assessment](#)
- ☐ Other (specify):

Course title:

MSS111 – Electrical Systems and Controls

Course description (include prerequisites):

MSS111 – The Electrical Systems and Controls course provides students with real-world applications in electrical systems and controls. This course will focus on applied mathematics for electricity, AC and DC electrical circuits, electrical motor controls, and concepts of Lean Manufacturing and 5-S.

Prerequisite: MSS100 – Principles of Manufacturing

Course knowledge and skills (what students will know and be able to do):

By the end of this course, students will:

1. Solve applied mathematical problems related production that are needed to: perform conversions of equations using rates , proportions, fractions, decimals, and percentages; analyze power and energy calculations using powers of 10 and logarithms; solve algebraic problems relates to Current, Ohm’s Law, Kirchoff’s Law, with positive and negative quantities; determine resistance and wire sizes needed for production circuitry; conduct circuit analysis involving both series and parallel circuits, voltage dividers; use ammeters and voltmeters to troubleshoot circuitry.
2. Demonstrate the application of Alternating Current/Direct Current (AC/DC) Electrical Systems to: apply principles of voltage, current, resistance, inductance, and capacitance in circuits; construct

series and parallel circuits based on schematic diagrams; demonstrate use of input and output components in circuits. Use of electrical meters and tools; select proper sizes of electrical transformers; perform electrical troubleshooting methods.

3. Demonstrate proper control of electrical motors to: use proper motors safely; apply principles of three-phase power; demonstrate the use and control of AC/DC motor components; interpret electrical schematic diagrams, including picture and ladder diagrams; install proper motor starters and electrical overload protection; describe the function and operation of a control transformers; demonstrate the proper use of AC induction motors, motor sequencing, reversing motors, motor jogging, safety interlocks, time-delay relays, and component operation; practice methods of electrical control system troubleshooting; explain fundamental concepts for the operation of inductive and magnetic devices such as motors, transformers and generators.
4. Demonstrate proper control of variable frequency electrical motors to: install 2-wire and 3-wire motor controls; demonstrate proper manual control of variable frequency drive motors; apply basic and advanced motor speed controls; demonstrate torque control; define ramping, acceleration, and braking; troubleshoot to detect variable frequency motor faults.
5. Demonstrate proper electrical component wiring skills to: interpret electrical blueprints and schematic diagrams; perform proper panel wiring and wiring between panels; identify proper control systems wiring fundamentals and wire color coding; practice proper wire bundling; install proper component and motor wiring in electrical control panels.
6. Examine the Lean/5-S Approach to manufacturing to: define and explain Lean Manufacturing; debate the role of standards organizations. Determine common sources of waste in manufacturing process; compare and contrast Lean goals for various companies; select methods to reduce product changeover times, reduce inventory and encourage continuous product flow; apply concepts of cell and a pull systems in production; determine sources of process variation; select activities to apply the 5-S approach; Illustrate the importance of continuous improvement.
7. Practice essential workplace readiness and effective communication skills to: discuss essential workplace readiness competencies; demonstrate effective communication as it relates to the workplace; Employ effective communication and workplace readiness skills.

End-of-Course Assessment(s):

- ☐ Teacher designed assessment
- ☐ LEA designed assessment
- ☒ Certification/credentialing exam (specify): [OSHA 3 Hour Safety Refresher Certification Course](#)
- ☐ Licensing exam (specify):
- ☒ Nationally recognized exam (specify): [Manufacturing Skill Standards Council \(MSSC\)](#)
[Manufacturing Processes & Production Assessment](#)
- ☐ Other (specify):

Course title: MSS112 –Fluid Power
Course description (include prerequisites): MSS112 – The Fluid Power course provides students with real-world applications in fluid power. This course will focus on hydraulics, pneumatics, and electro-fluid power. Prerequisite: MSS111 –Electrical Systems and Controls
Course knowledge and skills (what students will know and be able to do): By the end of this course, students will: 1. Construct basic hydraulic power systems in order to: interpret hydraulic circuit symbols and schematics; apply hydraulic power safety and precautions; determine flow rates in a hydraulic power circuits; demonstrate proper installation and use of various valves in a hydraulic power circuits; design and assemble hydraulic power circuits; use hydraulic power systems for industrial applications. 2. Construct basic pneumatic power systems to: interpret pneumatics symbols and schematics; describe pneumatic power safety and precautions; determine air pressure in pneumatic power circuits; install and use of various valves in a pneumatic power circuits; design and assemble pneumatic power circuits; use pneumatic power systems for production applications. 3. Demonstrate the proper use of electro-fluid power to: interpret electro-fluid ladder diagram schematics; demonstrate the proper use of various switches, relays, circuit breakers and fuses; use hydraulics and pneumatics in the operation of various control circuits. 4. Construct advanced pneumatic power systems to: demonstrate proper installation and use of various two-way valves in a pneumatic circuits; design a pneumatic circuit using an externally air-piloted valves; operate an air logic circuits; demonstrate proper pneumatic component maintenance; explain how to size a pneumatic cylinders; calculate safe pneumatic cylinder loads; connect and operate various vacuum components; demonstrate proper operation, measurement, and usage of various compressors. 5. Apply the appropriate pneumatic troubleshooting techniques to: determine proper pneumatic circuit troubleshooting techniques; use the appropriate troubleshooting techniques for various pneumatic power systems. 6. Present and analyze technical data in an organized manner through: the use of tables, graphs, and charts; create and modify Excel workbooks; use data to make decisions production logistics; apply formulas and measurements to solve production problems; analyze data to make statistical models; evaluate formulas for missing or irrelevant data; construct charts/tables/graphs from functions and

data; analyze data when interpreting operational documents; evaluate conclusions, conflicting data, controls, inferences, limitations, questions, sources of errors, and variables when using Excel.

End-of-Course Assessment(s):

- ☐ Teacher designed assessment
- ☐ LEA designed assessment
- ☐ Certification/credentialing exam (specify):
- ☐ Licensing exam (specify):
- ☒ Nationally recognized exam (specify): [Manufacturing Skill Standards Council \(MSSC\) Maintenance Awareness Assessment](#)
- ☐ Other (specify):

Course title:

MSS113 – Electro-Mechanical Systems

Course description (include prerequisites):

MSS113 – The Electro-Mechanical Systems course provides students with real-world applications in electro-mechanical systems. This course will focus on mechanical drives and programmable logic controllers (PLCs).

Prerequisite: MSS112 –Fluid Power

Course knowledge and skills (what students will know and be able to do):

By the end of this course, students will:

1. Select and use proper mechanical drive components in order to: apply methods of mechanical energy transmission; and practice mechanical equipment safety and precautions.
2. Install and align various belt drive systems in order to: troubleshoot belt drive systems; troubleshoot synchronous drive belt systems; select appropriate mechanical oils, greases, and lubricants for production applications; install and align chain and gear couplings; perform vibration testing procedures.
3. Develop and employ various PLC logic in order to: identify and describe the uses, functions, and components of PLCs; create PLC programs using ladder logic diagrams; and use PLC programming to operate mechanical and electrical components.
4. Create ladder logic diagrams using advanced PLC programming techniques in order to: design PLC programs to perform productive functions; identify basic PLC interfacing; troubleshoot PLC input and output devices; design sequencing for PLC programs; design PLC motor control programs; design PLC programs using ADD, SUB, MUL and DIV instructions; enter and edit PLC programs.
5. Practice and prepare for outstanding requirements for the MSSC Certified Production Technician certifications

End-of-Course Assessment(s):

- ☐ Teacher designed assessment
- ☐ LEA designed assessment
- ☒ Certification/credentialing exam (specify): [Completion of Manufacturing Skill Standards Council \(MSSC\) Certified Production Technician \(CPT\) Certification](#)
- ☐ Licensing exam (specify): _____
- ☐ Nationally recognized exam (specify): _____
- ☐ Other (specify): _____

PROGRAM OF STUDY CURRICULUM

Identify the method of technical and academic curriculum development (adopted, adapted, or developed in accordance with guidance from the program advisory committee).

POS technical and academic curriculum will be:

- ☒ Adopted (specify source): [Adopted State-model CTE POS](#)
- ☐ Adapted (specify source): _____
- ☐ Developed locally (describe): _____
- ☐ Other (specify): _____

TEACHER CERTIFICATION

Provide valid teacher certification(s), candidate experience, pre-requisite and requisite licensure or certification requirement(s) for POS teachers.

POS teacher requirements include:

- ☒ Teacher certification(s) (list): [Skilled and Technical Sciences \(STS\) Manufacturing Production Process Development \(Manufacturing Production Technician\)](#)
- ☒ Candidate experience (describe): [Verified completion of at least 576 hours of specific Industrial Mechanics/Maintenance and/or Millwright formal training above the high school level; or a DDOE approved Millwright Journeyman Certificate; or a DDOE approved Industrial Mechanics or Industrial Maintenance Journeyman Certificate](#)
- ☒ Pre-requisite professional licensure or certification requirement(s) (list): [Manufacturing Skill Standards Council \(MSSC\) Certified Production Technician \(CPT\) certification.](#)
- ☐ Requisite professional licensure or certification requirement(s) (list): _____
- ☐ Other (describe): _____

VALUE-ADDED OPPORTUNITIES

List extended early career and college credit opportunities available during the student's senior year. Document transition services, cooperative learning experiences, additional dual enrollment, or other.

Opportunities for extended and accelerated learning include:

- ☐ Cooperative education (describe): _____
- ☐ Structured internship (describe): _____
- ☐ Dual enrollment (list): _____
- ☐ Advanced Placement (list): _____
- ☐ Transition services (describe): _____

☐ Other (describe):

CAREER AND TECHNICAL STUDENT ORGANIZATIONS

Indicate the Career and Technical Student Organization (CTSO) affiliation by checking the appropriate box.

☐ SkillsUSA

☐ TSA

PROGRAM OF STUDY MATRIX

Complete the program of study matrix to demonstrate the alignment of academic and technical courses, culminating early career and/or early college experiences. Identify appropriate certification and licensure options, opportunities for obtaining early college credit (courses with articulated or dual enrollment credit agreements should be appropriately designated within the matrix), the post-secondary program sequence, and potential career options. *Attach the Program of Study Matrix.*

Access the [Program of Study Matrix](#).

DEPARTMENT OF EDUCATION PROGRAM OF STUDY APPROVAL		
The following section will be completed by staff from the Delaware Department of Education, CTE & STEM Office and reported to the LEA as part of the CTE program of study approval process.		
Date Delaware CTE Program of Study Application Received:		
Local Education Agency (LEA): School(s):		Program of Study Start Date:
LEA CTE Coordinator Name:	Phone:	E-Mail Address:
Career Cluster & Code: Manufacturing / 13	Career Pathway & Code: Manufacturing Production Process Development / 13.02	Program of Study Title & Code: Manufacturing Production Technician / 13.02902
CTE Program of Study Course Titles, Course Codes, and Funding Levels 1. Principles of Manufacturing / 13.0290211 / 3 2. Electrical Systems and Controls / 13.0290222 / 3 3. Fluid Power / 13.0290233 / 3 4. Electro-Mechanical Systems / 13.0290244 / 3		
CTE Concentrator/Completer Course Titles: Concentrator Course: <u>Electrical Systems and Controls</u> Completer Course: <u>Electro-Mechanical Systems</u>		
CTE Program of Study Request: ☒ State-model CTE Program of Study ☐ Local CTE Program of Study		
CTE Program of Study Attachments: ☒ Labor Market Information (LMI) Review; ☒ Articulation/Dual Enrollment Agreement(s); and ☒ Program of Study Matrix.		
DDOE CTE & STEM Director Signature:		Date:
DDOE Chief Academic Officer Signature:		Date: