

## Program Planning Tool

Program Title: CIP 48.0501 MACHINE SHOP TECHNOLOGY

Student Name: \_\_\_\_\_

This document has been designed as a tool to facilitate student placement decisions and provides important information about the program. The chart on the reverse side is designed to assist in the identification of necessary skills, present educational levels, and supports, if any, that are needed to foster program success.

### ***Program Completion Requirements***

#### ***A successful student will...***

- Secondary Academic Course Requirements: The PA Dept. of Education's focus is to ensure every student is college and career ready, therefore all students are recommended to follow a college prep sequence of academic classes. Courses such as applied math or general science are not appropriate for this program. PDE's goal is to have all students perform at the competent or advanced level on the Keystone Exams and Program of Study end-of-program assessment (NIMS).
- Complete an Occupational Competency Assessment (i.e. NIMS end-of -program exam) and score at the "competent" or "advanced" level. This end-of -program exam will cover the full scope of the program of study curriculum and includes (1) a multiple choice test and (2) a performance test consisting of occupational related tasks scored and evaluated by industry judges.
- Earn a minimum of four industry recognized certification. Students will be encouraged and expected to earn all recognized industry certifications that make up the scope of the curriculum. Accommodations are not permitted for industry certifications. These include: National Institute for Metal Working Skills (NIMS): Level I Machining, Level II Machining, Job Planning, Benchwork & Layout, Manual Milling Skills, Drill Press Skills, Grinding Skills, Turning Operations: Turning Between Centers, Turning Operations: Turning Chucking Skills, CNC Milling: Programming Setup & Operations, CNC Milling: Programming Setup & Operations and Wire EDM II.
- Complete the approved program curriculum and earn a minimum of one RMCTC Job Title aligned with the student's career objective. Job titles are identified on the program task list, aligned with local workforce needs and high priority employment occupations, and annually reviewed and approved by the program's occupational advisory committee.
- Successful completion of Keystone Exams as determined by sending school district.
- Maintain a 95% attendance rate or better.
- Transition on to a post-secondary institution, military or related fulltime employment aligned to their CTC program of study.

### ***Instructional Process/Specifications***

#### ***A successful student will...***

- Perform a wide variety of tasks in a laboratory environment with equipment consistent with industry standards. Up to 25 students are assigned to work "independently" and in "small teams". Students progress through using learning guides in a self-directed manner.
- In lab, students will be required to use precision measuring tools, operate grinders, lathes, milling machines, drill presses, hand tools, band saws, surface grinders, CNC milling machines, CNC lathes, CNC wire electrical discharge machines, machinist microscopes, CAD/CAM milling and turning programs. Students will work with chemicals including cutting oils, solvents, and coolants. Using equipment requires self-discipline and strict adherence to rules to ensure safety of self and others. The lab simulates a real working environment and students will be exposed to the noise levels, dust, debris, and fumes associated with a modern precision machining environment.
- Participate in classroom theory and laboratory applications for generally 2 ½ hours each day; students will spend 20% of their time in classroom theory and 80% of their time doing laboratory applications and live work.
- Participate in Career & Technical Student Organizations including SkillsUSA and/or National Technical Honor Society.
- Participate in a paid or unpaid work based learning related to the Program of Study (cooperative education, clinical internship, and/or job shadowing).
- Complete written and performance tests. Students will be evaluated weekly on occupational skill performance using rubrics. In addition, students will be evaluated daily on work ethics. Progress is measured by test performance, task completion and work ethic.
- Read and study textbooks and technical manuals. Most textbooks are written at a 11<sup>th</sup> to 13<sup>th</sup> grade reading level and most technical manuals are written at a higher level.
- Complete homework on time. Homework typically involves chapter or workbook assignments, on line research assignments and writing assignments.
- Purchase appropriate work and safety attire, tools, and equipment.

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CTE Requirements	Present Educational Ability/Level	Support Needs
<p><b>Program Completion</b> – Strong self-determination skills and understanding of personal strengths and weaknesses. Ability to meet industry established standards of performance, complete the program of study without curriculum modifications, and earn industry certifications without testing accommodations.</p>		
<p><b>Reading &amp; Language Arts Level</b>- Text and manuals written on a 11<sup>th</sup>-13<sup>th</sup> grade reading level. Proficient on end-of-course exam (Keystone). Understanding written sentences and paragraphs in work related documents. Must have ability to read blueprints, wiring diagrams, schematic drawings, and engineering instructions. NOCTI Assessment &amp; Industry Certification Exams require a proficiency in English language skills.</p>		
<p><b>Math Level</b> - At grade level and proficient on end-of-course exam (Keystone). Knowledge of arithmetic, algebra, geometry and their applications. Ability to make calculations relating to dimensions, tooling, feeds and speeds of machinery. Ability to calculate dimensions and tolerances using knowledge of mathematics and instrumentation. Ability to use Cartesian coordinates.</p>		
<p><b>Aptitude</b> – Mechanical, design skills, problem solving and trouble shooting skills, attention to detail, thinking creatively, critical thinking.</p>		
<p><b>Safety &amp; Physical</b> – Arm / hand steadiness, hand-eye coordination, fine motor skills, quick reaction time, near vision, multi-limb coordination, trunk strength, oral comprehension and expression. Ability to stand for long periods of time. High degree of self-discipline and focus needed for safety around moving equipment, hand tools, power tools and other equipment found in the industry. Physical strength and stamina with the ability to lift 50 lbs. overhead. Good eye/hand coordination, stamina to stand for long periods of time.</p>		
<p><b>Interpersonal/ Social</b> – Active listening, general communication skills, ability to work independently and in a team.</p>		
<p><b>Other Occupational/Program Considerations</b> - Self-discipline a must due to safety issues. Learning and work environment includes various chemical, odors, dust, dirt and debris, loud and sometime startling noises, and ongoing background noise.</p>		