

Standards Correlations

Precision Machining II (8540)

| Task | SOL Correlations |
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| Demonstrating Personal Qualities and Abilities | |
| Demonstrate creativity and innovation. | <p>English: 6.1, 6.3, 6.4, 6.6, 6.7, 6.9, 7.1, 7.3, 7.4, 7.6, 7.7, 7.9, 8.1, 8.3, 8.4, 8.6, 8.7, 8.9, 9.1, 9.5, 9.6, 9.8, 10.1, 10.5, 10.6, 10.8, 11.1, 11.5, 11.6, 11.8, 12.1, 12.5, 12.6, 12.8</p> <p>History and Social Science: CE.1, CE.4, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WG.4, WHI.1, WHII.1</p> <p>Mathematics: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.10, 6.11, 6.12, 7.2, 7.3, 7.8, 7.9, 8.2, 8.4, 8.6, 8.7, 8.11, 8.12, 8.17, 8.18, A.9, AFDA.3, AFDA.4, AFDA.5, AFDA.6, AFDA.7, AFDA.8, AII.9, COM.1, COM.3, COM.4, COM.5, COM.8, DM.7, DM.1*, DM.10, DM.2*, DM.3*, PS.3*, PS.4*, PS.7*, PS.9*, PS.10*</p> <p>Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PS.1</p> |
| Demonstrate critical thinking and problem solving. | <p>English: 6.1, 6.3, 6.4, 6.5, 6.6, 6.7, 6.9, 7.1, 7.3, 7.4, 7.5, 7.6, 7.7, 7.9, 8.1, 8.3, 8.4, 8.5, 8.6, 8.7, 8.9, 9.1, 9.5, 9.6, 9.8, 10.1, 10.5, 10.6, 10.8, 11.1, 11.5, 11.6, 11.8, 12.1, 12.5, 12.6, 12.8</p> <p>History and Social Science: CE.1, CE.4, CE.11, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WG.4, WHI.1, WHII.1</p> <p>Mathematics: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.10, 6.11, 7.2, 7.3, 7.8, 7.12, 7.13, 8.2, 8.4, 8.8, 8.9, 8.10, 8.11, A.8, A.9, G.1, G.13, G.14, AFDA.3, AFDA.5, AFDA.8, AII.9, AII.10, AII.11, COM.1, COM.3, COM.4, COM.5, COM.8, DM.4, DM.7, DM.1*, DM.2*, DM.3*, DM.9*, PS.9*, PS.10*</p> <p>Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PS.1</p> |
| Demonstrate initiative and self-direction. | <p>English: 6.1, 6.4, 6.6, 6.7, 6.9, 7.1, 7.4, 7.6, 7.7, 7.9, 8.1, 8.4, 8.6, 8.7, 8.9, 9.1, 9.5, 9.6, 9.8, 10.1, 10.5, 10.6, 10.8, 11.1, 11.5, 11.6, 11.8, 12.1, 12.5, 12.6, 12.8</p> <p>History and Social Science: CE.1, CE.4, CE.11, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1</p> |

| Task | SOL Correlations |
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| Demonstrate integrity. | English: 6.1, 7.1, 8.1, 9.1, 9.5, 10.1, 10.5, 11.1, 11.5, 12.1, 12.5 History and Social Science: CE.1, CE.3, CE.4, GOVT.1, GOVT.16, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 |
| Demonstrate work ethic. | English: 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, GOVT.16, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Science: CH.1 |
| Demonstrating Interpersonal Skills | |
| Demonstrate conflict-resolution skills. | English: 6.1, 6.2, 6.4, 6.6, 6.7, 6.9, 7.1, 7.2, 7.4, 7.6, 7.7, 7.9, 8.1, 8.2, 8.4, 8.6, 8.7, 8.9, 9.1, 10.1, 11.1, 12.1 History and Social Science: CE.1, CE.4, GOVT.1, USI.1, VUS.1 |
| Demonstrate listening and speaking skills. | English: 6.1, 6.2, 6.4, 6.6, 7.1, 7.2, 7.4, 7.6, 8.1, 8.2, 8.4, 8.6, 9.1, 10.1, 11.1, 12.1 History and Social Science: CE.1, CE.4, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 |
| Demonstrate respect for diversity. | English: 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1 History and Social Science: CE.1, CE.3, CE.4, GOVT.1, GOVT.16, USI.1, USII.1, USII.9, VUS.1, VUS.13, WG.1, WHI.1, WHII.1 |
| Demonstrate customer service skills. | English: 6.1, 6.4, 6.7, 7.1, 7.4, 7.7, 8.1, 8.4, 8.7, 9.1, 9.5, 9.6, 10.1, 10.5, 10.6, 11.1, 11.5, 11.6, 12.1, 12.5, 12.6 History and Social Science: CE.1, CE.4, GOVT.1, GOVT.16, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 |
| Collaborate with team members | English: 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1 History and Social Science: CE.1, CE.3, CE.4, GOVT.1, GOVT.16, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 |
| Demonstrating Professional Competencies | |
| Demonstrate big-picture thinking. | English: 6.1, 6.4, 7.1, 7.4, 8.1, 8.4, 9.1, 9.5, 10.1, 10.5, 11.1, 11.5, 12.1, 12.5 History and Social Science: CE.1, CE.4, CE.12, GOVT.1, GOVT.15, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 |

| Task | SOL Correlations |
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| Demonstrate career- and life-management skills. | English: 6.1, 6.7, 7.1, 7.7, 8.1, 8.7, 9.1, 9.6, 10.1, 10.6, 11.1, 11.6, 12.1, 12.6 History and Social Science: CE.1, CE.4, CE.12, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 8.4 |
| Demonstrate continuous learning and adaptability. | English: 6.1, 6.4, 6.7, 6.9, 7.1, 7.4, 7.7, 7.9, 8.1, 8.4, 8.7, 8.9, 9.1, 9.5, 9.6, 9.8, 10.1, 10.5, 10.6, 10.8, 11.1, 11.5, 11.6, 11.8, 12.1, 12.5, 12.6, 12.8 History and Social Science: CE.1, CE.3, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Science: BIO.1, CH.1, LS.1, PH.1, PH.4, PS.1 |
| Manage time and resources. | English: 6.1, 6.2, 6.4, 6.7, 6.9, 7.1, 7.2, 7.4, 7.7, 7.9, 8.1, 8.2, 8.4, 8.7, 8.9, 9.1, 9.5, 9.6, 9.8, 10.1, 10.5, 10.6, 10.8, 11.2, 11.5, 11.6, 11.8, 12.2, 12.5, 12.6, 12.8 History and Social Science: CE.1, CE.4, CE.11, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 6.10, 6.11, 6.12, 7.2, 7.3, 7.8, 7.9, 7.10, 7.11, 7.12, 7.13, 8.4, 8.11, 8.12, 8.13, 8.14, 8.17, 8.18, A.4, A.5, A.8, A.9, AFDA.3, AFDA.4, AFDA.5, AFDA.6, AFDA.7, AFDA.8, COM.1, COM.3, COM.5, COM.8 |
| Demonstrate information-literacy skills. | English: 6.1, 6.2, 6.4, 6.6, 6.7, 6.9, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 7.9, 8.1, 8.2, 8.3, 8.4, 8.6, 8.7, 8.9, 9.2, 9.5, 9.6, 9.8, 10.2, 10.5, 10.6, 10.8, 11.2, 11.5, 11.6, 11.8, 12.2, 12.5, 12.6, 12.8 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 6.10, 6.11, 7.8, 7.9, 8.11, 8.12, A.8, A.9, AFDA.3, AFDA.4, AFDA.6, AFDA.7, AFDA.8, DM.8, PS.1*, PS.2*, PS.3*, PS.4*, PS.7*, PS.8*, PS.9*, PS.10* Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PH.1, PS.1 |
| Demonstrate an understanding of information security. | English: 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 6.8, 6.9, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 7.8, 7.9, 8.1, 8.2, 8.3, 8.4, 8.6, 8.7, 8.8, 8.9, 9.1, 9.2, 9.5, 9.6, 9.8, 10.1, 10.2, 10.5, 10.6, 10.8, 11.1, 11.2, 11.5, 11.6, 11.8, 12.1, 12.2, 12.5, 12.6, 12.8 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: COM.10 |

| Task | SOL Correlations |
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| Maintain working knowledge of current information-technology (IT) systems. | English: 6.1, 6.3, 6.4, 6.6, 6.9, 7.1, 7.3, 7.4, 7.6, 7.9, 8.1, 8.3, 8.4, 8.6, 8.9 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 7.8, COM.1, COM.2, COM.7, COM.9, COM.10, COM.11, COM.16, COM.18, PS.17 Science: BIO.1, CH.1, ES.1, PH.1 |
| Demonstrate proficiency with technologies, tools, and machines common to a specific occupation. | History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 6.10, 6.11, 7.9, 8.4, A.7, A.8, A.9, AFDA.1, AFDA.3, AFDA.5, AII.4, AII.7, AII.9, COM.1, COM.7, COM.10, COM.11, COM.12, COM.16 Science: CH.1, ES.1, LS.1, PH.1, PS.1 |
| Apply mathematical skills to job-specific tasks. | English: 6.4, 6.6, 6.7, 7.4, 7.6, 7.7, 8.4, 8.6, 8.7, 9.5, 9.6, 10.5, 10.6, 11.5, 11.6, 12.5, 12.6 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 6.1, 6.2, 6.5, 6.6, 6.12, 6.13, 6.14, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.8, 7.9, 7.11, 7.12, 7.13, 8.4, 8.5, 8.6, 8.8, 8.9, 8.10, 8.11, 8.12, 8.13, 8.14, 8.15, 8.16, 8.17, 8.18, A.1, A.3, A.4, A.5, A.7, A.8, A.9, AFDA.1, AFDA.3, AFDA.5, AFDA.8, AII.3, AII.7, AII.9, AII.10, COM.1, COM.7 Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PH.1, PS.1 |
| Demonstrate professionalism. | English: 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 |
| Demonstrate reading and writing skills. | English: 6.1, 6.6, 6.7, 7.1, 7.6, 7.7, 8.1, 8.6, 8.7, 9.1, 9.5, 9.6, 9.7, 10.1, 10.5, 10.6, 10.7, 11.1, 11.5, 11.6, 11.7, 12.1, 12.5, 12.6, 12.7 History and Social Science: CE.1, CE.4, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Science: 6.1, PH.1, PS.1 |
| Demonstrate workplace safety. | English: 6.4, 7.4, 8.4, 9.5, 10.5, 11.5, 12.5 History and Social Science: CE.1, CE.4, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Science: CH.1 |
| Examining All Aspects of an Industry | |

| Task | SOL Correlations |
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| Examine aspects of planning within an industry/organization. | History and Social Science: GOVT.16 |
| Examine aspects of management within an industry/organization. | |
| Examine aspects of financial responsibility within an industry/organization. | |
| Examine technical and production skills required of workers within an industry/organization. | |
| Examine principles of technology that underlie an industry/organization. | |
| Examine labor issues related to an industry/organization. | History and Social Science: GOVT.16 |
| Examine community issues related to an industry/organization. | History and Social Science: GOVT.16 |
| Examine health, safety, and environmental issues related to an industry/organization. | History and Social Science: GOVT.16 |
| Addressing Elements of Student Life | |

| Task | SOL Correlations |
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| Identify the purposes and goals of the student organization. | |
| Explain the benefits and responsibilities of membership in the student organization as a student and in professional/civic organizations as an adult. | |
| Demonstrate leadership skills through participation in student organization activities, such as meetings, programs, and projects. | |
| Identify Internet safety issues and procedures for complying with acceptable use standards. | |
| Exploring Work-Based Learning | |
| Identify the types of work-based learning (WBL) opportunities. | |
| Reflect on lessons learned during the WBL experience. | |
| Explore career opportunities related to the WBL experience. | |
| Participate in a WBL experience, when appropriate. | |

| Task | SOL Correlations |
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| Ensuring Industrial Safety and Environmental Protection | |
| Comply with federal, state, and local safety requirements. | English: 11.5, 12.5 History: Govt 7, 8, 9, 15 Science: CH.1 |
| Identify personal protective equipment (PPE) requirements. | English: 11.5, 12.5 Science: CH.1 |
| Identify emergency first-aid procedures. | English: 11.5, 12.5 |
| Identify the types of fires and the methods used to extinguish them. | English: 11.5, 12.5 Science: CH.1 |
| Inspect course-specific hand and power tools to visually identify defects. | English: 11.5, 12.5 |
| Demonstrate lifting and carrying techniques. | |
| Report personal injuries and environmental and equipment safety violations to the appropriate authority. | English: 11.5, 11.6, 11.7, 12.5, 12.6, 12.7 |
| Pass a safety exam for lab/site safety and the use of tools and equipment specific to the manufacturing industry. | English: 11.5, 12.5 Science: CH.1 |

| Task | SOL Correlations |
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| Demonstrate safe workplace practices. | English: 11.5, 11.6, 11.7, 12.5, 12.6, 12.7 |
| Handle hazardous materials as assigned. | English: 11.5, 11.6, 11.7, 12.5, 12.6, 12.7 History: Govt 7, 8, 9, 15 |
| Describe the importance of Occupational Safety and Health Administration (OSHA) standards and Environmental Protection Agency (EPA) regulations. | English: 11.5, 12.5 History: Govt 7, 8, 9, 15 |
| Applying the Fundamentals of Machining | |
| Apply the properties of various nonmetals to cutting conditions and problems. | English: 11.5, 12.5 |
| Describe the importance of quality assurance, process planning, and quality control. | English: 11.5, 11.6, 11.7, 12.5, 12.6, 12.7 Mathematics: PS.1*, PS.2*, PS.4* |
| Applying Measurements | |
| Apply surface plate instruments. | English: 11.5, 12.5 |
| Convert measurements. | English: 11.5, 12.5 Mathematics: AII.3 |

| Task | SOL Correlations |
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| Inspect samples for the required data, according to a sampling plan. | English: 11.1, 11.5, 12.1, 12.5 Science: CH.1, PH.1 Mathematics: PS.8*, PS.10*, AFDA.8 |
| Planning and Managing Machining Jobs | |
| Develop a process plan for a part requiring milling, drilling, turning, and/or grinding. | English: 11.5, 12.5 |
| Write instructions for producing a part. | English: 11.6, 11.7 |
| Make process adjustments or improvements to the production of a single part. | English: 11.5, 12.5 |
| Performing Machining Jobs | |
| Perform routine power feed milling, using power feeds. | English: 11.1, 11.5, 12.1, 12.5 |
| Perform routine surface grinding, using manual surface grinders with a wheel 10 inches or smaller in diameter. | English: 11.1, 11.5, 12.1, 12.5 |
| Explain the functions and operations of various CNC machines. | English: 11.5, 11.6, 12.5, 12.6 |
| Write programs for a CNC machine using a machine | English: 11.2, 11.5, 12.2, 12.5 Mathematics: COM.1, COM.7, COM.17 |

| Task | SOL Correlations |
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| control unit and a personal computer. | |
| Performing General Maintenance | |
| Perform general machine maintenance. | English: 11.5, 12.5 |
| Manage the CNC tooling library. | English: 11.5, 12.5 |
| Set tool offsets on a machine. | English: 11.5, 11.6, 11.7, 12.5, 12.6, 12.7 |
| Using Engineering Drawings and Sketches | |
| Interpret geometric dimensioning and tolerancing (GDT) from orthographic blueprints. | English: 11.5, 12.5 |
| Interpret engineering drawings with multiple auxiliary views. | English: 11.5, 12.5 |
| Interpret GDT drawings with multiple datums. | English: 11.1, 11.5, 12.1, 12.5 |
| Applying Metalworking Theory | |
| Create specialized fixtures. | |
| Machine a variety of materials. | English: 11.5, 12.5 |
| Exploring CNC Machining | |
| Describe the main computer systems used across the industry. | English: 11.5, 12.5 |

| Task | SOL Correlations |
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| Describe the variety of machines in the industry that are controlled by CNC programming. | English: 11.2, 11.5, 12.2, 12.5 |
| Write a basic G-code program. | English: 11.2, 12.2 Mathematics: COM.1, COM.7, COM.17 |
| Model a part, using CAD software. | English: 11.2, 11.5, 12.2, 12.5 |
| Produce the designed part, using a 3D printer or CNC machine. | English: 11.1, 11.5, 12.1, 12.5 |
| Analyze the part design for improvements. | English: 11.5, 12.5 |
| Exploring Automation | |
| Define <i>automation process</i> . | English: 11.3, 12.3 |
| Identify sub-assembly and complete product assembly or packaging techniques. | English: 11.5, 12.5 |
| Compare a variety of final finishes and their effects. | English: 11.5, 12.5 |
| Describe the advantages of automation. | English: 11.5, 12.5 |