

Standards Correlations

Manufacturing Systems II

8427 (36 weeks)

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
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*,</p>		

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	PS.3*, PS.4*, PS.7*, PS.9*, PS.10* Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PS.1		
Demonstrate critical thinking and problem solving.	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 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 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* Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PS.1		
Demonstrate initiative and self-direction.	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,		

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	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 History and Social Science: CE.1, CE.4, CE.11, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		
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		

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	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		

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	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		
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		

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	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,		

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	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		
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		

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	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		

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	<p>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</p> <p>Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PH.1, PS.1</p>		
Demonstrate professionalism.	<p>English: 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1</p> <p>History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1</p>		
Demonstrate reading and writing skills.	<p>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</p> <p>History and Social Science: CE.1, CE.4, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1</p> <p>Science: 6.1, PH.1, PS.1</p>		

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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			
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		

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
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			
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			

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
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.			
Practicing Safety			
Use required personal protective equipment (PPE).	English: 11.5, 12.5 History and Social Science: VUS.8, WHII.8 Science: CH.1	Use and Maintain Technological Products and Systems	
Implement a safety plan.	English: 11.5, 12.5 History and Social Science: VUS.8, WHII.8	Use and Maintain Technological Products and Systems	
Maintain safe working practices in the production laboratory.	History and Social Science: GOVT.7, GOVT.8, GOVT.14, GOVT.15, VUS.8, VUS.13, VUS.14, WHII.8, WHII.14 Science: CH.1	Use and Maintain Technological Products and Systems	

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
Operate lab equipment according to instructor guidelines.	History and Social Science: VUS.8, WHIL.8	Use and Maintain Technological Products and Systems	
Understanding Manufacturing			
Explain the goals of lean manufacturing.	English: 11.5, 12.5	Assess the Impact of Products and Systems Manufacturing Technologies	Prepared Presentation
Describe manufacturing as a technological system.	English: 11.5, 12.5	Manufacturing Technologies	Essays on Technology Prepared Presentation
Use manufacturing terminology.			Essays on Technology Prepared Presentation Technology Bowl
Project future trends in manufacturing.	English: 11.5, 12.5 History and Social Science: VUS.1, VUS.13, VUS.14, WG.17, WHIL.1, WHIL.13, WHIL.14	Assess the Impact of Products and Systems The Influence of Technology on History	Webmaster
Investigate careers in manufacturing.	English: 11.5, 11.8, 12.5, 12.8 History and Social Science: GOVT.7, GOVT.8, GOVT.14, GOVT.15	The Cultural, Social, Economic, and Political Effects of Technology The Influence of Technology on History	Prepared Presentation Technology Bowl
Designing for Manufacturing			

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
Apply problem-solving strategies.		The Attributes of Design The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving	Engineering Design Technology Problem Solving
Design with computer-aided design (CAD).	English: 11.2, 12.2 Mathematics: G.14	Manufacturing Technologies	Computer-Aided Design (CAD), Architecture Computer-Aided Design (CAD), Engineering
Use computer-assisted engineering (CAE).	Mathematics: G.14, AII.3, COM.12	Manufacturing Technologies	Computer Integrated Manufacturing (CIM)
Applying Automation Technology to Manufacturing			
Explain the key components of automated systems in the manufacturing environment.	English: 11.5, 12.5 History and Social Science: VUS.1, VUS.13, VUS.14, WG.17, WHII.1, WHII.13, WHII.14 Science: PH.4	Manufacturing Technologies	Computer Integrated Manufacturing (CIM) Prepared Presentation
Explain numerical control (NC), computer numerical control (CNC), direct numerical control (DNC), and computer-assisted manufacturing (CAM).	English: 11.5, 12.5 Mathematics: COM.10, COM.12		Computer Integrated Manufacturing (CIM)

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Apply CAM in additive and subtractive processes.		Manufacturing Technologies	
Communicate through examples the importance of flexibility in computer-integrated manufacturing (CIM) production systems.	English: 11.5, 12.5	Manufacturing Technologies	Computer Integrated Manufacturing (CIM)
Demonstrate an understanding of industrial control systems and the role they play in synchronizing and controlling the operation of work cells in the plant.	English: 11.6, 12.6 Mathematics: COM.1, COM.10, COM.11, COM.16	Manufacturing Technologies Use and Maintain Technological Products and Systems	Computer Integrated Manufacturing (CIM) Transportation Modeling
Program a PLC.	English: 11.2, 12.2 Mathematics: COM.4, COM.5, COM.8	Manufacturing Technologies	
Exploring Mechatronics			
Define <i>mechatronics</i> .	English: 11.5, 12.5	Manufacturing Technologies Relationships Among Technologies and the Connections Between Technology and Other Fields	
Explain the role of fluid power in mechatronic systems.	English: 11.5, 12.5	Manufacturing Technologies Relationships Among Technologies and the Connections Between Technology and Other Fields	

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
Explain the role of electricity and electronics in mechatronics systems.	English: 11.5, 12.5 Mathematics: AII.3	Manufacturing Technologies Relationships Among Technologies and the Connections Between Technology and Other Fields	
Explain the role of mechanics in mechatronics systems.	English: 11.5, 12.5	Manufacturing Technologies Relationships Among Technologies and the Connections Between Technology and Other Fields	Transportation Modeling
Explain the role of computer systems in mechatronics systems.	English: 11.5, 12.5	Manufacturing Technologies Relationships Among Technologies and the Connections Between Technology and Other Fields	Software Development
Applying Business Concepts			
Describe the effect of labor and human resources issues on manufacturing.	English: 11.5, 12.5 History and Social Science: GOVT.9, GOVT.15	Manufacturing Technologies Relationships Among Technologies and the Connections Between Technology and Other Fields	
Create a marketing plan.		Manufacturing Technologies Relationships Among Technologies and the	Promotional Design

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		Connections Between Technology and Other Fields	
Explain the effect of supply and demand on manufacturing.	English: 11.5, 12.5 History and Social Science: GOVT.14, GOVT.15	Manufacturing Technologies Relationships Among Technologies and the Connections Between Technology and Other Fields	Essays on Technology
Explain fiscal and fiduciary responsibilities associated with running a successful enterprise.	English: 11.5, 12.5 History and Social Science: GOVT.9, GOVT.15	Manufacturing Technologies The Cultural, Social, Economic, and Political Effects of Technology The Role of Society in the Development and Use of Technology	
Using Advanced Manufacturing Systems Processes			
Explain supply chain management.	English: 11.5, 12.5		Essays on Technology Transportation Modeling
Describe philosophies of continuous improvement.	English: 11.5, 12.5	The Cultural, Social, Economic, and Political Effects of Technology	
Plan for production.	English: 11.1, 11.2, 11.5, 11.6, 12.1, 12.2, 12.5, 12.6 History and Social Science: GOVT.1, GOVT.15	Engineering Design Manufacturing Technologies The Attributes of Design	Computer Integrated Manufacturing (CIM) Engineering Design Transportation Modeling

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	Mathematics: COM.7		
Design the manufacturing process.	English: 11.1, 12.1 History and Social Science: VUS.14, WG.1, WG.16, WG.17, WHIL.14	Engineering Design Manufacturing Technologies The Attributes of Design	Computer Integrated Manufacturing (CIM) Engineering Design Transportation Modeling
Implement the manufacturing process.	History and Social Science: GOVT.1, GOVT.9, GOVT.15	Engineering Design Manufacturing Technologies The Attributes of Design	Computer Integrated Manufacturing (CIM) Engineering Design
Evaluate the process.	English: 11.5, 12.5 Mathematics: PS.18, PS.10*	Engineering Design Manufacturing Technologies The Attributes of Design	Engineering Design
Modify the process according to specific measures.	English: 11.5, 12.5 Mathematics: COM.4, COM.5, DM.10, DM.3*	Engineering Design Manufacturing Technologies The Attributes of Design	Computer Integrated Manufacturing (CIM) Engineering Design
Examining Product Quality			
Explain product quality.	English: 11.5, 12.5	Manufacturing Technologies The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving	Prepared Presentation

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
Apply root-cause analysis to identify problems in product quality.	History and Social Science: GOVT.1	Manufacturing Technologies The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving	Transportation Modeling
Implement a continuous improvement plan.		Manufacturing Technologies Relationships Among Technologies and the Connections Between Technology and Other Fields	Computer Integrated Manufacturing (CIM) Prepared Presentation