

# Standards Correlations

## Manufacturing Systems II

8427 (36 weeks)

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
<b>Demonstrating Personal Qualities and Abilities</b>			
Demonstrate creativity and innovation.	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 History and Social Science: CE.1, CE.4, 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, 6.7, 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*,		

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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		
<b>Demonstrating Interpersonal Skills</b>			
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		
<b>Demonstrating Professional Competencies</b>			
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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	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		

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
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		
<b>Examining All Aspects of an Industry</b>			
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		

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
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		
<b>Addressing Elements of Student Life</b>			
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.			
<b>Exploring Work-Based Learning</b>			

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
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.			
<b>Practicing Safety</b>			
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	

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
Operate lab equipment according to instructor guidelines.	History and Social Science: VUS.8, WHIL.8	Use and Maintain Technological Products and Systems	
<b>Understanding Manufacturing</b>			
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
<b>Designing for Manufacturing</b>			

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
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)
<b>Applying Automation Technology to Manufacturing</b>			
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)

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
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	
<b>Exploring Mechatronics</b>			
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	

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
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
<b>Applying Business Concepts</b>			
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

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
		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	
<b>Using Advanced Manufacturing Systems Processes</b>			
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

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
	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
<b>Examining Product Quality</b>			
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

<b>Task</b>	<b>SOL Correlation</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
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