

Standards Correlations

Engineering Analysis and Applications II (8451)

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
Demonstrating Personal Qualities and Abilities			
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*, 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		

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
	<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>		
Demonstrate integrity.	<p>English: 6.1, 7.1, 8.1, 9.1, 9.5, 10.1, 10.5, 11.1, 11.5, 12.1, 12.5</p> <p>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</p>		
Demonstrate work ethic.	<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, GOVT.16, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1</p> <p>Science: CH.1</p>		
Demonstrating Interpersonal Skills			

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
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		

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
	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 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,		

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
	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		
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		

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	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		

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	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		
Examine community issues related to an industry/organization.	History and Social Science: GOVT.16		
Examine health, safety, and environmental	History and Social Science: GOVT.16		

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issues related to an industry/organization.			
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			
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	ITEEA Correlations	TSA Correlations
Applying Safety in Engineering Activities			
Demonstrate knowledge of appropriate personal safety procedures.	English: 10.5, 11.5, 12.5 History and Social Sciences: GOVT. 16 Science: CH.1	8P. Apply appropriate methods to diagnose, adjust and repair systems to ensure precise, safe and proper functionality.	
Comply with safety rules in laboratory activities.	English: 10.5, 11.5, 12.5 History and Social Sciences: GOVT. 16 Science: CH.1	8N. Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.	
Demonstrate lab safety.	English: 10.5, 11.5, 12.5 History and Social Sciences: GOVT. 16 Science: CH.1	8N. Use various approaches to communicate processes and procedures for using, maintaining, and assessing technological products and systems.	
Describe hazards associated with machines and tools.	English: 10.5, 11.5, 12.5	8Q. Synthesize data and analyze trends to make decisions about technological products, systems, or processes. 8R. Interpret the results of technology assessment to guide policy development.	
Exploring Engineering Systems as Applied to Areas of the Designed World			

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
Analyze differences between the various areas of the <i>designed world</i> .	English: 10.5, 11.5, 12.5 History and Social Sciences: WHII.1, VUS.1,GOVT. 1	5H. Evaluate a technological innovation that arose from a specific society’s unique need or want. 5I. Evaluate a technological innovation that was met with societal resistance impacting its development.	Manufacturing Prototype Biotechnology Design Transportation Modeling
Describe major engineering disciplines.	English: 10.5, 11.5, 12.5	6H. Evaluate how technology has been a powerful force in reshaping the social, cultural, political, and economic landscapes throughout history	Manufacturing Prototype Biotechnology Design Engineering Design Transportation Modeling
Analyze the interdisciplinary nature of engineering projects.	English: 10.5, 11.5, 12.5	6H. Evaluate how technology has been a powerful force in reshaping the social, cultural, political, and economic landscapes throughout history	Manufacturing Prototype Biotechnology Design Engineering Design Transportation Modeling
Integrate the parts of a project.	English: 10.5, 11.5, 12.5	2T. Demonstrate the use of conceptual, graphical, virtual, mathematical, and physical modeling to identify conflicting considerations before the entire system is developed and to aid in design decision making	
Analyze the impact of an engineering design solution on	English: 10.5, 11.5, 12.5	5I. Evaluate a technological innovation that was met with	Manufacturing Prototype

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industry, economy, society, and environment.	History and Social Sciences: WHII.1, 14, VUS.1,14, GOVT. 1,15	societal resistance impacting its development.	Biotechnology Design Engineering Design Transportation Modeling
Applying the Engineering Design Process			
Identify the need for an engineered product or system.	English: 10.5, 11.5, 12.5	7AA. Illustrate principles, elements, and factors of design.	Manufacturing Prototype Biotechnology Design Engineering Design Transportation Modeling
Explain the validity of designing alternative solutions to an engineering design problem.	English: 10.5, 11.5, 12.5 History and Social Sciences: WHII.1, VUS.1,GOVT. 1	7CC. Apply a broad range of design skills to their design process.	Engineering Design
Design an engineering solution to a real-world problem.	English: 10.1, 10.5, 10.8, 11.1, 11.5, 11.8, 12.1, 12.5, 12.8 History and Social Sciences: WHII.1, 14, VUS.1,14, GOVT. 1 Science: PH.1	4Q. Critique whether existing or proposed technologies use resources sustainably 7W. Determine the best approach by evaluating the purpose of the design 7W. Determine the best approach by evaluating the purpose of the design	Manufacturing Prototype Engineering Design Transportation Modeling

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		<p>7Z. Apply principles of human-centered design</p> <p>7AA. Illustrate principles, elements, and factors of design</p>	
Implement a design.	<p>English: 10.1, 10.5, 11.1, 11.5, 12.1, 12.5</p> <p>History and Social Sciences: WHII.1, VUS.1, GOVT. 1</p>	<p>2Z. Use management processes in planning, organizing, and controlling work</p> <p>7DD. Apply a broad range of making skills to their design process</p>	<p>Manufacturing Prototype</p> <p>Engineering Design</p> <p>Transportation Modeling</p>
Iterate on the solution.	<p>English: 10.5, 10.6, 10.7, 11.5, 11.6, 11.7, 12.5, 12.6, 12.7</p> <p>History and Social Sciences: WHII.1, VUS.1, GOVT. 1</p>	<p>7BB. Implement the best possible solution to a design.</p> <p>8P. Apply appropriate methods to diagnose, adjust and repair systems to ensure precise, safe and proper functionality</p>	<p>Manufacturing Prototype</p> <p>Engineering Design</p> <p>Transportation Modeling</p>
Maintain documentation of project.	<p>English: 10.1, 10.5, 11.1, 11.5, 12.1, 12.5</p> <p>History and Social Sciences: WHII.1, VUS.1, GOVT. 1</p>	<p>7X. Document trade-offs in the technology and engineering design process to produce the optimal design</p>	<p>Manufacturing Prototype</p> <p>Engineering Design</p> <p>Transportation Modeling</p>
Present a solution.	<p>English: 10.1, 10.5, 11.1, 11.5, 12.1, 12.5</p> <p>History and Social Sciences: WHII.1, VUS.1, GOVT. 1</p>	<p>4P. Evaluate ways that technology can impact individuals, society, and the environment</p> <p>4Q. Critique whether existing or proposed technologies use resources sustainably</p>	<p>Prepared Presentation</p>

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
Using Logic and Problem-Solving Techniques			
Reverse-engineer a product, process, or idea.	English: 10.5, 11.5, 12.5	<p>5J. Design an appropriate technology for use in a different culture</p> <p>7W. Determine the best approach by evaluating the purpose of the design</p> <p>7X. Document trade-offs in the technology and engineering design process to produce the optimal design</p>	
Define <i>algorithm</i> .	English: 10.3, 10.5, 11.3, 11.5, 12.3, 12.5	<p>1O. Assess how similarities and differences among scientific, mathematics, engineering, and technological knowledge and skills contributed to the design of a product or system</p> <p>2T. Demonstrate the use of conceptual, graphical, virtual, mathematical, and physical modeling to identify conflicting considerations before the entire system is developed and to aid in design decision making</p> <p>2X. Cite examples of the criteria and constraints of a product or system and how they affect final design</p>	

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Create an algorithm to solve an engineering problem.	<p>English: 10.1, 11.1, 12.1</p> <p>Mathematics: COM.4</p>	<p>1O. Assess how similarities and differences among scientific, mathematics, engineering, and technological knowledge and skills contributed to the design of a product or system</p> <p>2T. Demonstrate the use of conceptual, graphical, virtual, mathematical, and physical modeling to identify conflicting considerations before the entire system is developed and to aid in design decision making</p> <p>2X. Cite examples of the criteria and constraints of a product or system and how they affect final design</p>	
Program a microcontroller.	English: 10.2, 10.5, 11.2, 11.5, 12.2, 12.5	8P. Apply appropriate methods to diagnose, adjust and repair systems to ensure precise, safe and proper functionality	
Explain the benefits of modeling and simulation.	<p>English: 10.5, 11.5, 12.5</p> <p>History and Social Sciences: WHII.1, VUS.1, GOVT. 1</p>	<p>2Z. Use management processes in planning, organizing, and controlling work</p> <p>7DD. Apply a broad range of making skills to their design process</p>	
Create a model or simulation for an engineering product, process, or idea.	<p>English: 10.1, 10.5, 11.1, 11.5, 12.1, 12.5</p> <p>History and Social Sciences: WHII.1, VUS.1, GOVT. 1</p>	2Z. Use management processes in planning, organizing, and controlling work	

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		7DD. Apply a broad range of making skills to their design process	
Examining Engineering Materials and Manufacturing			
List common engineering materials and common applications of each.	English: 10.5, 10.6, 11.7, 11.5, 11.6, 11.7, 12.5, 12.6, 12.7	7DD. Apply a broad range of making skills to their design process	Technology Bowl
Describe properties of engineering materials in terms of their internal structures.	English: 10.5, 11.5, 12.5	7DD. Apply a broad range of making skills to their design process	Technology Bowl
Identify the correct engineering material for a specific function.	English: 10.5, 11.5, 12.5	7DD. Apply a broad range of making skills to their design process	Manufacturing Prototype Engineering Design
List common causes of material failure.	English: 10.6, 10.7, 11.6, 11.7, 12.6, 12.7	7DD. Apply a broad range of making skills to their design process	Technology Bowl
Demonstrate processes used with metal, wood, polymer, ceramic, and composite materials, including adhesives.		7DD. Apply a broad range of making skills to their design process	Manufacturing Prototype Engineering Design Transportation Modeling
Identify common hand tools and fasteners.		7DD. Apply a broad range of making skills to their design process	Manufacturing Prototype Engineering Design Transportation Modeling
Examining Engineering Systems			

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Explore electrical systems.	English: 10.5, 11.5, 12.5 Mathematics: AII.3 Science: PH.8	5H. Evaluate a technological innovation that arose from a specific society’s unique need or want. 5I. Evaluate a technological innovation that was met with societal resistance impacting its development.	Principles of Technology (Virginia only)
Explain primary concepts and components of a fluid power system.	English: 10.5, 11.5, 12.5	5H. Evaluate a technological innovation that arose from a specific society’s unique need or want. 5I. Evaluate a technological innovation that was met with societal resistance impacting its development.	
Identify the primary concepts and components of thermodynamic systems.	English: 10.5, 11.5, 12.5	1O. Assess how similarities and differences among scientific, mathematics, engineering, and technological knowledge and skills contributed to the design of a product or system. 1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system.	Technology Bowl
Identify the primary concepts and components of mechanical systems.	English: 10.5, 11.5, 12.5	1O. Assess how similarities and differences among scientific, mathematics, engineering, and	Technology Bowl

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		<p>technological knowledge and skills contributed to the design of a product or system.</p> <p>1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system.</p>	
Demonstrate control of systems.		<p>1O. Assess how similarities and differences among scientific, mathematics, engineering, and technological knowledge and skills contributed to the design of a product or system.</p> <p>1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system.</p>	Principles of Technology (Virginia TSA only)
Design a system that transforms energy from one type to another.	History and Social Sciences: WHII.1, VUS.1, GOVT. 1	<p>1O. Assess how similarities and differences among scientific, mathematics, engineering, and technological knowledge and skills contributed to the design of a product or system.</p> <p>1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve</p>	Manufacturing Prototype Engineering Design

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		a technological product or system.	
Applying Engineering Knowledge			
Identify an engineering need for a local issue.	English: 10.5, 11.5, 12.5 History and Social Sciences: VUS.14, GOVT. 8	6H. Evaluate how technology has been a powerful force in reshaping the social, cultural, political, and economic landscapes throughout history 7W. Determine the best approach by evaluating the purpose of the design 7Y. Optimize a design by addressing desired qualities within criteria and constraints	Engineering Design
Develop a solution for an engineering problem.	English: 10.5, 11.5, 12.5 History and Social Sciences: WHII.1, VUS.1, GOVT. 1	6H. Evaluate how technology has been a powerful force in reshaping the social, cultural, political, and economic landscapes throughout history 7W. Determine the best approach by evaluating the purpose of the design 7Y. Optimize a design by addressing desired qualities within criteria and constraints	Manufacturing Prototype Engineering Design