

# Standards Correlations

## Engineered Energy Systems (EES8411)

Task	SOL Correlations	ITEEA National Standards	TSA Competitive Events
<b>Demonstrating Personal Qualities and Abilities</b>			
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>		

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	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, 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>			

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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		
<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		

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	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,		

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	AFDA.7, AFDA.8, COM.1, COM.3, COM.5, COM.8		
Demonstrate information-literacy skills.	<p>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</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> <p>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*</p> <p>Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PH.1, PS.1</p>		
Demonstrate an understanding of information security.	<p>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</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> <p>Mathematics: COM.10</p>		
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 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		

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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		
<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.			

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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		
<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			



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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>			
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 National Standards	TSA Competitive Events
<b>Introducing Energy Systems</b>			
Define <i>system</i> and <i>engineered system</i> .	English: 10.3, 10.5, 11.3, 11.5, 12.3, 12.5	2. The Core Concepts of Technology	Technology Bowl
Describe the engineering design process.	English: 10.5, 11.5, 12.5  Mathematics: AFDA.8, COM.1, PS.8*, PS.10*  Science: PH.1, PH.3	9. Engineering Design	Animatronics  Engineering Design  Flight Endurance
Apply the engineering design process.	History and Social Science: GOVT.12, VUS.14, WG.17, WHII.14  Science: PH.4	11. Apply the Design Process	Animatronics  Engineering Design
Summarize how energy is captured.	English: 10.5, 11.5, 12.5  History and Social Science: GOVT.12, VUS.14, WG.17, WHII.14	16. Energy and Power Technologies  3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Prepared Presentation
Compare the engineered systems involved in mining, drilling, and harnessing sources of energy.	English: 10.5, 11.5, 12.5  History and Social Science: GOVT.12, VUS.14, WG.17, WHII.14	16. Energy and Power Technologies  7. The Influence of Technology on History	Essays on Technology
<b>Exploring Applications of Engineered Systems</b>			

Task	SOL Correlations	ITEEA National Standards	TSA Competitive Events
Define <i>turbine</i> and <i>generator</i> .	English: 10.3, 11.3, 12.3	16. Energy and Power Technologies	Technology Bowl
Summarize how turbines are used to generate electricity.	English: 10.5, 11.5, 12.5 History and Social Science: GOVT.12, VUS.14, WG.17, WHII.14	16. Energy and Power Technologies	Essays on Technology
Describe non-turbine electricity generation.	English: 10.5, 11.5, 12.5 History and Social Science: GOVT.12, VUS.14, WG.17, WHII.14	16. Energy and Power Technologies	Animatronics
Summarize how energy is used (aside from electricity).	English: 10.5, 11.5, 12.5 History and Social Science: GOVT.12, GOVT.15, VUS.14, WG.17, WHII.14	3. The Relationships Among Technologies and the Connections Between Technology and Other Fields  6. The Role of Society in the Development and Use of Technology	Principles of Technology (Virginia only)
Design an energy system for a renewable resource.	English: 10.1, 11.1, 12.1	11. Apply the Design Process  2. The Core Concepts of Technology	Animatronics

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		9. Engineering Design	
Model a subsystem of an energy system.	English: 10.2, 11.2, 12.2	16. Energy and Power Technologies  2. The Core Concepts of Technology  3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Computer-Aided Design (CAD), Engineering
<b>Complying with Safety and Health Standards</b>			
Identify safety and health standards.	English: 10.5, 10.8, 11.5, 11.8, 12.5, 12.8  History and Social Science: GOVT.7, GOVT.8, GOVT.9, GOVT.14, GOVT.15	16. Energy and Power Technologies  4. The Cultural, Social, Economic, and Political Effects of Technology	
Apply safety standards in the lab.	English: 10.5, 11.5, 12.5  History and Social Science: GOVT.7, GOVT.8, GOVT.9, GOVT.14, GOVT.15	16. Energy and Power Technologies	

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Analyze how systems are engineered for safety.	English: 10.5, 11.5, 12.5	13. Assess the Impact of Products and Systems  2. The Core Concepts of Technology	Animatronics  Cybersecurity
Model an engineered system for fossil fuel.	English: 10.2, 11.2, 12.2	3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Animatronics  Engineering Design
<b>Describing Energy Supply Chain Management</b>			
Define <i>supply chain</i> and its importance.	English: 10.3, 11.3, 12.3	16. Energy and Power Technologies  3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Technology Bowl
Diagram a supply chain for an energy system.		16. Energy and Power Technologies  3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Principles of Technology (Virginia only)

Task	SOL Correlations	ITEEA National Standards	TSA Competitive Events
Explain the importance of record keeping.	English: 10.5, 11.5, 12.5	3. The Relationships Among Technologies and the Connections Between Technology and Other Fields  9. Engineering Design	
<b>Describing Utility/Producer and Consumer Relationships</b>			
Identify the relationship between utilities/producers and consumers.	English: 10.5, 11.5, 12.5  History and Social Science: GOVT.7, GOVT.8, GOVT.9, GOVT.14, GOVT.15	16. Energy and Power Technologies  4. The Cultural, Social, Economic, and Political Effects of Technology	Technology Bowl
Explain how systems affect utility/producer and consumer relationships.	English: 10.5, 11.5, 12.5  Mathematics: DM.4, DM.1*, DM.2*, DM.3*, PS.1*, PS.2*, PS.3*, PS.4*, PS.7*	16. Energy and Power Technologies  3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Animatronics

Task	SOL Correlations	ITEEA National Standards	TSA Competitive Events
Simulate a relationship between a utility/producer and a consumer.		16. Energy and Power Technologies	Debating Technological Issues
<b>Understanding the Societal Effect of Engineered Systems</b>			
Identify societal effects of engineered systems.	English: 10.5, 11.5, 12.5  History and Social Science: GOVT.7, GOVT.8, GOVT.9, GOVT.14, GOVT.15, VUS.14, WG.17, WHII.14	16. Energy and Power Technologies  4. The Cultural, Social, Economic, and Political Effects of Technology	Biotechnology Design  Engineering Design
Analyze environmental, health, and safety considerations of engineered systems.	English: 10.5, 11.5, 12.5  History and Social Science: GOVT.12, VUS.14, WG.17, WHII.14	16. Energy and Power Technologies  4. The Cultural, Social, Economic, and Political Effects of Technology  5. The Effects of Technology on the Environment  6. The Role of Society in the Development and Use of Technology	Biotechnology Design
Present research of societal effects of an	English: 10.1, 11.1, 12.1	16. Energy and Power Technologies	Essays on Technology  Extemporaneous Speech

<b>Task</b>	<b>SOL Correlations</b>	<b>ITEEA National Standards</b>	<b>TSA Competitive Events</b>
energy system in Virginia.	History and Social Science: GOVT.9, GOVT.12, VUS.14, WG.17, WHIL.14	3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Prepared Presentation
<b>Exploring Career Paths in Energy and Engineered Systems</b>			
Identify technical careers in energy and engineered systems.	English: 10.5, 11.5, 12.5	16. Energy and Power Technologies	Animatronics Engineering Design
Identify supporting careers in energy and engineered systems.	English: 10.5, 11.5, 12.5	16. Energy and Power Technologies	
Research selected career(s) in energy and engineered systems.	English: 10.5, 10.8, 11.5, 11.8, 12.5, 12.8	16. Energy and Power Technologies  3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Essays on Technology  Extemporaneous Speech  Prepared Presentation