

Standards Correlations

Engineering Studies (8491)

Task	SOL Correlations
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,</p>

Task	SOL Correlations
	WG.1, WHI.1, WHIL.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, USIL.1, VUS.1, WG.1, WHI.1, WHIL.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, USIL.1, VUS.1, WG.1, WHI.1, WHIL.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, USIL.1, VUS.1, WG.1, WHI.1, WHIL.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, USIL.1, USIL.9, VUS.1, VUS.13, WG.1, WHI.1, WHIL.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, USIL.1, VUS.1, WG.1, WHI.1, WHIL.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, USIL.1, VUS.1, WG.1, WHI.1, WHIL.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, USIL.1,

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	VUS.1, WG.1, WHI.1, WHIL.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, WHIL.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, WHIL.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, WHIL.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, WHIL.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, WHIL.1

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	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 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 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	

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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.	
Examining the Engineering Profession	
Describe how engineering and technology have significantly influenced contemporary society and the environment.	<p>English: 10.5, 11.5, 12.5</p> <p>History and Social Science: GOVT.9, GOVT.15, VUS.13, VUS.14, WHII.13, WHII.14</p> <p>Science: PH.4</p> <p>ITEEA National Standards: 5. The Effects of Technology on the Environment 6. The Role of Society in the Development and Use of Technology</p> <p>TSA Competitive Events:</p>

Task	SOL Correlations
	Essays on Technology Extemporaneous Speech Prepared Presentation
Explore career opportunities for the engineering graduate, both within and outside the field of engineering.	English: 10.5, 10.8, 11.5, 11.8, 12.5, 12.8 TSA Competitive Events: Engineering Design Structural Design and Engineering
Examine the breadth of topics within an engineering plan of study.	English: 10.5, 11.5, 12.5
Explain application of ethics within the field of engineering.	English: 10.5, 11.5, 12.5 History and Social Science: GOVT.1, GOVT.16 ITEEA National Standards: 6. The Role of Society in the Development and Use of Technology TSA Competitive Events: Debating Technological Issues Essays on Technology Extemporaneous Speech Prepared Presentation
Practicing Engineering Fundamentals	
Identify the benefits of a case study analysis.	English: 10.5, 11.5, 12.5 ITEEA National Standards: 13. Assess the Impact of Products and Systems 14. Medical Technologies 15. Agricultural and Related Biotechnologies

Task	SOL Correlations
	<p>17. Information and Communication Technologies 18. Transportation Technologies 19. Manufacturing Technologies 20. Construction Technologies 7. The Influence of Technology on History 8. The Attributes of Design</p> <p>TSA Competitive Events: Animatronics Architectural Design Biotechnology Design Career Prep Engineering Design Structural Design and Engineering Video Game Design</p>
Perform a case study analysis.	<p>English: 10.8, 11.5, 11.8, 12.5, 12.8</p> <p>Science: PH.3</p> <p>ITEEA National Standards: 13. Assess the Impact of Products and Systems 14. Medical Technologies 15. Agricultural and Related Biotechnologies 16. Energy and Power Technologies 17. Information and Communication Technologies 18. Transportation Technologies 19. Manufacturing Technologies 20. Construction Technologies</p> <p>TSA Competitive Events: Animatronics</p>

Task	SOL Correlations
	Architectural Design Structural Design and Engineering Video Game Design
Apply measuring skills using instrumentation.	Science: PH.2 TSA Competitive Events: Architectural Design
Demonstrate conversion techniques for units of measurement.	Science: PH.1 TSA Competitive Events: Architectural Design
Demonstrate the use of engineering design graphics and descriptive geometry.	English: 10.3, 10.5, 11.3, 11.5, 12.3, 12.5 Mathematics: G.14, MA.7 Science: PH.2 ITEEA National Standards: 11. Apply the Design Processes 2. The Core Concepts of Technology TSA Competitive Events: Architectural Design Computer-Aided Design (CAD), Architecture Computer-Aided Design (CAD), Engineering Dragster Design Structural Design and Engineering
Demonstrate the techniques and benefits of sketching.	English: 10.5, 11.5, 12.5

Task	SOL Correlations
	<p>History and Social Science: GOVT.1, VUS.1, WHIL.1</p> <p>Mathematics: G.3, G.14</p> <p>Science: PH.2</p> <p>ITEEA National Standards: 11. Apply the Design Processes 8. The Attributes of Design 9. Engineering Design</p> <p>TSA Competitive Events: Digital Video Production Dragster Design Scientific Visualization (SciVis) Technology Problem Solving Transportation Modeling Video Game Design</p>
Sketch orthographic and isometric projections.	<p>Mathematics: G.3, G.14</p> <p>ITEEA National Standards: 11. Apply the Design Processes</p> <p>TSA Competitive Events: Computer Integrated Manufacturing (CIM) Computer-Aided Design (CAD), Architecture Dragster Design Engineering Design</p>
Demonstrate research techniques/strategies used by engineers.	<p>English: 9.8, 10.5, 10.8, 11.5, 11.8, 12.5, 12.8</p> <p>History and Social Science: GOVT.1, VUS.1, WHIL.1</p>

Task	SOL Correlations
	<p>ITEEA National Standards: 13. Assess the Impact of Products and Systems 9. Engineering Design</p> <p>TSA Competitive Events: Biotechnology Design Structural Design and Engineering</p>
Define <i>risk</i> and <i>safety</i> .	<p>English: 10.3, 11.3, 12.3</p> <p>ITEEA National Standards: 4. The Cultural, Social, Economic, and Political Effects of Technology</p> <p>TSA Competitive Events: Biotechnology Design Dragster Design Engineering Design</p>
Describe the three types of accidents.	<p>English: 10.5, 11.5, 12.5</p> <p>ITEEA National Standards: 12. Use and Maintain Technological Products and Systems</p> <p>TSA Competitive Events: Biotechnology Design Engineering Design Structural Design and Engineering</p>
Identify major precursors of accidents.	<p>English: 10.5, 11.5, 12.5</p> <p>ITEEA National Standards: 12. Use and Maintain Technological Products and Systems 2. The Core Concepts of Technology</p>

Task	SOL Correlations
	<p>TSA Competitive Events: Structural Design and Engineering System Control Technology</p>
Evaluate the safety of designs.	<p>Mathematics: COM.3</p> <p>Science: PH.1</p> <p>ITEEA National Standards: 11. Apply the Design Processes 12. Use and Maintain Technological Products and Systems</p> <p>TSA Competitive Events: Dragster Design Engineering Design Transportation Modeling</p>
Reverse-engineer a product, process, or idea.	<p>English: 10.5, 11.5, 12.5</p> <p>ITEEA National Standards: 10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving 11. Apply the Design Processes 12. Use and Maintain Technological Products and Systems 9. Engineering Design</p> <p>TSA Competitive Events: Biotechnology Design Engineering Design</p>
Define <i>algorithm</i> .	<p>English: 10.3, 11.3, 12.3</p> <p>ITEEA National Standards:</p>

Task	SOL Correlations
	<p>13. Assess the Impact of Products and Systems</p> <p>TSA Competitive Events: System Control Technology Video Game Design</p>
<p>Create an algorithm to solve an engineering problem.</p>	<p>Mathematics: AFDA.1, AFDA.3, AFDA.4, AII.6, AII.7, AII.9, AII.10, COM.1, COM.4, COM.5, COM.6, COM.8, COM.9, COM.13, COM.14, COM.15, DM.8, DM.10, DM.5*, MA.2, MA.3, MA.7, MA.11, MA.14</p> <p>ITEEA National Standards: 11. Apply the Design Processes</p> <p>TSA Competitive Events: System Control Technology Video Game Design</p>
<p>Explain the benefits of modeling and simulation.</p>	<p>English: 10.5, 11.5, 12.5</p> <p>Mathematics: COM.1, COM.3, COM.5, COM.8, COM.10, COM.17, COM.18</p> <p>Science: PH.1</p> <p>ITEEA National Standards: 11. Apply the Design Processes</p> <p>TSA Competitive Events: Computer-Aided Design (CAD), Architecture Computer-Aided Design (CAD), Engineering Engineering Design Scientific Visualization (SciVis) System Control Technology Video Game Design</p>

Task	SOL Correlations
Explain rapid prototyping to develop models.	English: 10.3, 10.5, 11.3, 11.5, 12.3, 12.5
Create a model or simulation for an engineering product, process, or idea.	<p>English: 10.1, 10.5, 11.1, 12.1, 12.5</p> <p>Mathematics: AFDA.1, AFDA.2, AFDA.3, AFDA.4, AII.3, AII.6, AII.7, AII.8, AII.9, AII.10, COM.1, COM.4, COM.6, COM.8, COM.14, COM.15, MA.2, MA.3, MA.7, MA.10, MA.11</p> <p>ITEEA National Standards: 10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving 11. Apply the Design Processes 9. Engineering Design</p> <p>TSA Competitive Events: Animatronics Engineering Design Video Game Design</p>
Communicating Technical Information	
Write a business letter to request information or materials.	<p>English: 10.6, 10.7, 11.6, 11.7, 12.6, 12.7</p> <p>ITEEA National Standards: 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields</p>
Present an oral technical report on an engineering project.	<p>English: 10.1, 11.1, 12.1</p> <p>History and Social Science: GOVT.1, VUS.1, WHIL.1</p> <p>ITEEA National Standards: 10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving</p>

Task	SOL Correlations
	<p>3. The Relationships Among Technologies and the Connections Between Technology and Other Fields</p> <p>TSA Competitive Events: Animatronics Biotechnology Design Engineering Design Prepared Presentation</p>
Participate in a mock interview.	<p>English: 10.1, 11.1, 12.1</p> <p>ITEEA National Standards: 10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields</p>
Explain applications of mathematics in the engineering design process.	<p>English: 10.5, 11.5, 12.5</p> <p>Mathematics: A.1, A.4, A.7, A.9, G.11, G.12, AFDA.1, AFDA.3, AFDA.4, AFDA.5, AII.3, AII.4, AII.5, AII.6, AII.7, AII.10, COM.4, MA.4, MA.7, PS.8*, PS.12*</p> <p>Science: PH.1</p> <p>ITEEA National Standards: 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields</p> <p>TSA Competitive Events: Engineering Design</p>
Explain applications of scientific principles.	English: 10.5, 11.5, 12.5

Task	SOL Correlations
	Science: PH.1 ITEEA National Standards: 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields
Explain applications of investigative technology.	English: 10.5, 11.5, 12.5 ITEEA National Standards: 10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving TSA Competitive Events: Animatronics Biotechnology Design Engineering Design
Exploring the Physics Concepts of Selected Energy Systems	
Identify the primary concepts and components of mechanical systems.	English: 10.5, 11.5, 12.1 Science: PH.5, PH.7
Identify the primary concepts and components of fluid energy systems.	English: 10.5, 11.5, 12.5 Science: PH.7
Explore electrical systems.	English: 10.5, 11.5, 12.5 Science: PH.11
Identify the primary concepts and components of thermodynamic systems.	English: 10.5, 11.5, 12.5 Science: PH.7
Applying the Engineering Design Process	

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Identify the need for a product or system.	English: 10.3, 10.5, 11.3, 11.5, 12.3, 12.5
Explain the validity of designing alternative solutions to an engineering design problem.	English: 10.5, 11.5, 12.5
Design an engineering solution to a real-world problem.	English: 10.5, 10.8, 11.5, 11.8, 12.5, 12.8
Implement the design.	English: 11.5, 12.5 Mathematics: AFDA.1, AFDA.2, AFDA.3, AFDA.4, AII.3, AII.6, AII.7, AII.8, AII.9, AII.10, COM.1, COM.4, COM.6, COM.8, COM.14, COM.15, COM.17, MA.2, MA.3, MA.7, MA.10, MA.11
Iterate the design.	
Maintain documentation.	English: 10.6, 10.7, 11.6, 11.7, 12.6, 12.7 Science: PH.1
Present a solution.	English: 10.1, 11.1, 12.1
Demonstrating College Readiness Skills	
Evaluate study skills needed by an engineering student.	English: 10.5, 12.5 ITEEA National Standards: 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields TSA Competitive Events: Engineering Design
Demonstrate teamwork skills necessary for success when working in a technological team.	English: 10.1, 11.1, 12.1 History and Social Science: GOVT.1, GOVT.16, VUS.1, WHII.1

Task	SOL Correlations
	<p>ITEEA National Standards: 10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving</p> <p>TSA Competitive Events: Animatronics Chapter Team Computer Integrated Manufacturing (CIM) Engineering Design Geospatial Technology (Virginia only) Structural Design and Engineering System Control Technology Technology Problem Solving</p>