Standards Correlations

Electronics Systems III

8413 36 weeks

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		

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
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, 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		

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
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 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		

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
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 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,		

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
	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, 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		

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
	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 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,		

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
	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 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			

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
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 organizations as an adult.			

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
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.			
Analyzing Microprocessors			
Demonstrate adherence to safety procedures and guidelines for using lab tools and equipment.	English: 11.5, 12.5 History and Social Sciences: GOVT.16 Science: PH.1, CH.1	5J. Design an appropriate technology for use in a different culture.	
Analyze digital and microprocessor circuit characteristics, using circuit simulation software.	English: 11.5, 12.5 History and Social Sciences: VUS.1 GOVT.16	1R. Develop a plan that incorporates knowledge from science, mathematics, and other	Principles of Technology (Virginia TSA only)

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Describe the primary functions of the components of a microprocessor.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Technology Bowl
Correlate electricity principles to circuitry and microprocessors.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Principles of Technology (Virginia TSA only)

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
Describe the atomic structure and construction methods of semiconductors.	English: 11.5, 12.5 Science: CH.2	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Biotechnology Design Principles of Technology (Virginia TSA only)
Describe complex direct current (DC) circuits.	English: 11.5, 12.5 Mathematics: AII.3	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Design a simple microprocessor circuit, including user input and feedback to the user.	English: 11.5, 12.5 Mathematics: COM.2, COM.2, COM.3, COM.4, COM.6, COM.8, COM.10, COM.11, COM.17, COM.18	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge.	Principles of Technology (Virginia TSA only) Senior Solar Sprint

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Using Sensors			
Identify sensors.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Technology Bowl Principles of Technology (Virginia TSA only)
Describe types of conversions.	English: 11.5, 12.5 History and Social Sciences: VUS.1	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Digital Video Production
Use sensors in circuit design.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other	Principles of Technology (Virginia TSA only)

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Examining Magnetism and Coils			
Describe the principles of magnetism as applied to electronics and robotics.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Describe the characteristics of magnetism.	English: 11.5, 12.5 Mathematics: AII.3 Science: PH.7, PH.8	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge.	Biotechnology Design

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Identify coil technology.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Principles of Technology (Virginia TSA only)
Design a coil.		1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Principles of Technology (Virginia TSA only)
Investigating Motors			
Describe the components of electric motors.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other	Principles of Technology (Virginia TSA only) Senior Solar Sprint

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Describe the design principles and concepts related to electric motors and generators.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Principles of Technology (Virginia TSA only)
Describe the process of selecting a motor for application.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Principles of Technology (Virginia TSA only) Senior Solar Sprint Dragster Design

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
Design gear ratios for a specified application.		1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Principles of Technology (Virginia TSA only)
Design an electric motor.			Principles of Technology (Virginia TSA only)
Introducing Motor Controllers			
Identify motor controllers.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Identify the purpose of servo motors.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other	Principles of Technology (Virginia TSA only)

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Technology Bowl
Examine quadcopters.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Introducing Power Supplies			
Identify types of power supply circuits.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Principles of Technology (Virginia TSA only)

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
Compare types of rectifier circuits and their functions.	English: 11.5, 12.5 History and Social Sciences: VUS.1	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Principles of Technology (Virginia TSA only)
Describe the function of voltage regulators.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Describe the function of oscillators.	English: 11.5, 12.5 Mathematics: T.3	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge.	

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Describe types of oscillators.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Describe the function of pulse for control circuits.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Principles of Technology (Virginia TSA only)
Describe modulation.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system.	

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Connect a power supply, using a rectifier circuit.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Principles of Technology (Virginia TSA only) Senior Solar Sprint
Analyzing Digital Logic Circuits			
Describe digital characteristics, techniques, numbering systems, and binary arithmetic.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
Analyze digital and microprocessor circuit characteristics, using circuit simulation software.	English: 11.5, 12.5 History and Social Sciences: VUS.1 GOVT.1	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Construct analog-to-digital (ADC) and digital-to-analog (DAC) circuits.		1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Convert between the binary and decimal number systems.	English: 11.5, 12.5 Mathematics: COM.15	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge.	Technology Bowl

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Describe data representation.	English: 11.5, 12.5	8Q. Synthesize data and analyze trends to make decisions about technological products, systems or processes.	Technology Bowl Principles of Technology (Virginia TSA only)
Compare the function of digital logic circuits.	English: 11.5, 12.5 History and Social Sciences: VUS.1 Mathematics: COM.8	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Compare practical logic circuits.	English: 11.5, 12.5 History and Social Sciences: VUS.1	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Principles of Technology (Virginia TSA only)

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
Use Boolean algebra to express logic operations and minimize logic circuits in design.		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. 6J. Investigate the widespread changes that have resulted from the Information Age, which has placed emphasis on the processing and exchange of information. 7CC. Apply a broad range of design skills to their design process.	
Describe the methods used to calculate values in logical expressions.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 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.	

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		6J. Investigate the widespread changes that have resulted from the Information Age, which has placed emphasis on the processing and exchange of information. 7CC. Apply a broad range of design skills to their design process.	
Design a logic circuit, using Boolean algebra and methods.		1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 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. 6J. Investigate the widespread changes that have resulted from the Information Age, which has placed emphasis on the processing and exchange of information. 7CC. Apply a broad range of design skills to their design process.	

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
Compare the functions of flip-flops and registers.	English: 11.5, 12.5 History and Social Sciences: VUS.1	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	Principles of Technology (Virginia TSA only)
Describe the operation of memory circuits.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Describe the characteristics of the most commonly used sequential and combinational logic circuits.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge.	

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Describe the operation and application of binary and binary coded decimal (BCD) counters, shift registers, and other sequential logic circuits.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Develop combinational and sequential logic circuits for an application.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Test digital integrated circuits.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system.	Animatronics Principles of Technology (Virginia TSA only)

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	VEX Robotics
Troubleshoot digital circuits.	English: 11.5, 12.5 History and Social Sciences: VUS.1 GOVT.1	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 3J. Connect technological progress to the advancement of other areas of knowledge. 4R. Assess a technology that minimizes resource use and resulting waste to achieve a goal.	
Exploring Robotic Programming			
Compare automated system programming options.	English: 11.5, 12.5 History and Social Sciences: VUS.1	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 2G. Illustrate how, when parts of a system are missing, it may not work as planned. 2N. Illustrate how systems thinking involves considering	Animatronics Principles of Technology (Virginia TSA only) VEX Robotics

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		relationships between every part, as well as how the system interacts with the environment in which it is used. 2P. Create a closed-loop system that has a feedback path and requires no human intervention. 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. 6J. Investigate the widespread changes that have resulted from the Information Age, which has placed emphasis on the processing and exchange of information. 7CC. Apply a broad range of design skills to their design process.	
Troubleshoot a malfunctioning robot.	English: 11.5, 12.5 History and Social Sciences: VUS.1 GOVT.1	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system.	Animatronics Principles of Technology (Virginia TSA only) VEX Robotics

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		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. 6J. Investigate the widespread changes that have resulted from the Information Age, which has placed emphasis on the processing and exchange of information. 7CC. Apply a broad range of design skills to their design process.	
Troubleshoot robot programming and control problems.	English: 11.5, 12.5 History and Social Sciences: VUS.1 GOVT.1	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 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. 6J. Investigate the widespread changes that have resulted from	Animatronics Principles of Technology (Virginia TSA only) VEX Robotics

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		the Information Age, which has placed emphasis on the processing and exchange of information. 7CC. Apply a broad range of design skills to their design process.	
Describe emerging technologies in robotics.	English: 11.5, 12.5 History and Social Sciences: VUS.14	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 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. 6J. Investigate the widespread changes that have resulted from the Information Age, which has placed emphasis on the processing and exchange of information. 7CC. Apply a broad range of design skills to their design process.	

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
Implement basic programming procedures.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 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. 6J. Investigate the widespread changes that have resulted from the Information Age, which has placed emphasis on the processing and exchange of information. 7CC. Apply a broad range of design skills to their design process.	Animatronics Principles of Technology (Virginia TSA only) VEX Robotics Senior Solar Sprint
Program an automated system.	English: 11.5, 12.5	1R. Develop a plan that incorporates knowledge from science, mathematics, and other disciplines to design or improve a technological product or system. 2T. Demonstrate the use of conceptual, graphical, virtual, mathematical, and physical modeling to identify conflicting	Animatronics Principles of Technology (Virginia TSA only) Software Development VEX Robotics

Task	SOL Correlations	ITEEA Correlations	TSA Correlations
		considerations before the entire system is developed and to aid in design decision making. 6J. Investigate the widespread changes that have resulted from the Information Age, which has placed emphasis on the processing and exchange of information. 7CC. Apply a broad range of design skills to their design process.	