

Standards Correlations

Biomedical Engineering (8467)

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
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>		

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
	Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PS.1		
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.	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,		

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	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		
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		

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	History and Social Science: CE.1, CE.4, GOVT.1, USI.1, VUS.1		
Demonstrate listening and speaking skills.	English: 6.1, 6.2, 6.4, 6.6, 7.1, 7.2, 7.4, 7.6, 8.1, 8.2, 8.4, 8.6, 9.1, 10.1, 11.1, 12.1 History and Social Science: CE.1, CE.4, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		
Demonstrate respect for diversity.	English: 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1 History and Social Science: CE.1, CE.3, CE.4, GOVT.1, GOVT.16, USI.1, USII.1, USII.9, VUS.1, VUS.13, WG.1, WHI.1, WHII.1		
Demonstrate customer service skills.	English: 6.1, 6.4, 6.7, 7.1, 7.4, 7.7, 8.1, 8.4, 8.7, 9.1, 9.5, 9.6, 10.1, 10.5, 10.6, 11.1, 11.5, 11.6, 12.1, 12.5, 12.6 History and Social Science: CE.1, CE.4, GOVT.1, GOVT.16, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		
Collaborate with team members	English: 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1		

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	History and Social Science: CE.1, CE.3, CE.4, GOVT.1, GOVT.16, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		
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		

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	History and Social Science: CE.1, CE.3, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Science: BIO.1, CH.1, LS.1, PH.1, PH.4, PS.1		
Manage time and resources.	English: 6.1, 6.2, 6.4, 6.7, 6.9, 7.1, 7.2, 7.4, 7.7, 7.9, 8.1, 8.2, 8.4, 8.7, 8.9, 9.1, 9.5, 9.6, 9.8, 10.1, 10.5, 10.6, 10.8, 11.2, 11.5, 11.6, 11.8, 12.2, 12.5, 12.6, 12.8 History and Social Science: CE.1, CE.4, CE.11, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 6.10, 6.11, 6.12, 7.2, 7.3, 7.8, 7.9, 7.10, 7.11, 7.12, 7.13, 8.4, 8.11, 8.12, 8.13, 8.14, 8.17, 8.18, A.4, A.5, A.8, A.9, AFDA.3, AFDA.4, AFDA.5, AFDA.6, AFDA.7, AFDA.8, COM.1, COM.3, COM.5, COM.8		
Demonstrate information-literacy skills.	English: 6.1, 6.2, 6.4, 6.6, 6.7, 6.9, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 7.9, 8.1, 8.2, 8.3, 8.4, 8.6, 8.7, 8.9, 9.2, 9.5, 9.6, 9.8, 10.2, 10.5, 10.6, 10.8, 11.2, 11.5,		

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	11.6, 11.8, 12.2, 12.5, 12.6, 12.8 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 6.10, 6.11, 7.8, 7.9, 8.11, 8.12, A.8, A.9, AFDA.3, AFDA.4, AFDA.6, AFDA.7, AFDA.8, DM.8, PS.1*, PS.2*, PS.3*, PS.4*, PS.7*, PS.8*, PS.9*, PS.10* Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PH.1, PS.1		
Demonstrate an understanding of information security.	English: 6.1, 6.2, 6.3, 6.4, 6.6, 6.7, 6.8, 6.9, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 7.8, 7.9, 8.1, 8.2, 8.3, 8.4, 8.6, 8.7, 8.8, 8.9, 9.1, 9.2, 9.5, 9.6, 9.8, 10.1, 10.2, 10.5, 10.6, 10.8, 11.1, 11.2, 11.5, 11.6, 11.8, 12.1, 12.2, 12.5, 12.6, 12.8 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: COM.10		
Maintain working knowledge of current information-technology (IT) systems.	English: 6.1, 6.3, 6.4, 6.6, 6.9, 7.1, 7.3, 7.4, 7.6, 7.9, 8.1, 8.3, 8.4, 8.6, 8.9		

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	History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 7.8, COM.1, COM.2, COM.7, COM.9, COM.10, COM.11, COM.16, COM.18, PS.17 Science: BIO.1, CH.1, ES.1, PH.1		
Demonstrate proficiency with technologies, tools, and machines common to a specific occupation.	History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Mathematics: 6.10, 6.11, 7.9, 8.4, A.7, A.8, A.9, AFDA.1, AFDA.3, AFDA.5, AII.4, AII.7, AII.9, COM.1, COM.7, COM.10, COM.11, COM.12, COM.16 Science: CH.1, ES.1, LS.1, PH.1, PS.1		
Apply mathematical skills to job-specific tasks.	English: 6.4, 6.6, 6.7, 7.4, 7.6, 7.7, 8.4, 8.6, 8.7, 9.5, 9.6, 10.5, 10.6, 11.5, 11.6, 12.5, 12.6 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		

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	Mathematics: 6.1, 6.2, 6.5, 6.6, 6.12, 6.13, 6.14, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.8, 7.9, 7.11, 7.12, 7.13, 8.4, 8.5, 8.6, 8.8, 8.9, 8.10, 8.11, 8.12, 8.13, 8.14, 8.15, 8.16, 8.17, 8.18, A.1, A.3, A.4, A.5, A.7, A.8, A.9, AFDA.1, AFDA.3, AFDA.5, AFDA.8, AII.3, AII.7, AII.9, AII.10, COM.1, COM.7 Science: 6.1, BIO.1, CH.1, ES.1, LS.1, PH.1, PS.1		
Demonstrate professionalism.	English: 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1 History and Social Science: CE.1, CE.4, CE.14, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1		
Demonstrate reading and writing skills.	English: 6.1, 6.6, 6.7, 7.1, 7.6, 7.7, 8.1, 8.6, 8.7, 9.1, 9.5, 9.6, 9.7, 10.1, 10.5, 10.6, 10.7, 11.1, 11.5, 11.6, 11.7, 12.1, 12.5, 12.6, 12.7 History and Social Science: CE.1, CE.4, GOVT.1, USI.1, USII.1, VUS.1, WG.1, WHI.1, WHII.1 Science: 6.1, PH.1, PS.1		

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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 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		

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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.			
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			

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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.			
Exploring Foundations of Biomedical Engineering			
Describe biomedical engineering.	English: 11.3, 12.3 History and Social Science: VUS.8	14. Medical Technologies	Biotechnology Design Engineering Design Essays on Technology
Define terms related to biomedical engineering.	English: 11.3, 12.3 History and Social Science: VUS.8		Biotechnology Design
Relate biomedical engineering milestones to the current historical context.	English: 11.5, 12.5 History and Social Science: VUS.8	6. The Role of Society in the Development and Use of Technology 7. The Influence of Technology on History	
Explain the nature and manufacturing of biomaterials.	English: 11.1, 11.5, 12.1, 12.5	2. The Core Concepts of Technology	Biotechnology Design Engineering Design

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
	History and Social Science: VUS.8, VUS.14, WG.17, WHII.14		
Demonstrate laboratory safety.	Science: BIO.1, CH.1	2. The Core Concepts of Technology	
Describe sociocultural effects of biomedical engineering.	English: 11.5, 12.5 History and Social Science: VUS.14, WG.17, WHII.14	4. The Cultural, Social, Economic, and Political Effects of Technology	Debating Technological Issues Essays on Technology Extemporaneous Speech
Practice the engineering design process to solve biomedical problems.	English: 11.3, 11.8, 12.3, 12.8 History and Social Science: WHII.4 Mathematics: AFDA.8, COM.1, PS.8*, PS.10* Science: BIO.1, CH.1, PH.1	9. Engineering Design	Biotechnology Design
Analyze data generated from lab activities.	English: 11.5, 12.5 History and Social Science: WHII.4 Mathematics: AFDA.1, AFDA.3, AFDA.4, AFDA.5, AFDA.7, AFDA.8, AII.3, AII.7, AII.9, AII.10, AII.11, MA.1, MA.2, MA.3, MA.4, MA.5, PS.5, PS.1*, PS.17,	3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	

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	PS.18, PS.19, PS.2*, PS.20, PS.3*, PS.4*, PS.7* Science: BIO.1, CH.1, PH.2		
Identify postsecondary opportunities related to biomedical engineering.	English: 11.5, 11.8, 12.8 History and Social Science: VUS.1, VUS.14, WG.1, WG.17, WHI.1, WHI.14	14. Medical Technologies	
Exploring Cell and Tissue Engineering and Regenerative Medicine			
Apply mathematics and science in cell and tissue engineering and regenerative medicine.	History and Social Science: WHI.4 Mathematics: DM.4, DM.1*, DM.2*, DM.3*, M.9*, MA.7, MA.10, MA.11, PS.10*	3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	
Produce cellular models and simulations.	History and Social Science: WHI.4 Mathematics: T.3, COM.1, COM.2, COM.5, COM.7, COM.9, MA.7, MA.10, MA.11	3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Scientific Visualization (SciVis)
Explain techniques of cellular and tissue engineering.	English: 11.1, 12.1	3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	
Explain techniques of genetic engineering.	English: 11.1, 11.3, 12.1, 12.3	3. The Relationships Among Technologies and the	Debating Technological Issues

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
	Mathematics: MA.7 Science: BIO.5	Connections Between Technology and Other Fields	Extemporaneous Speech
Perform experiments related to cell function.	Mathematics: AFDA.8, PS.8*, PS.10*	3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	
Design a solution for a regenerative medicine problem.	History and Social Science: WHII.4 Mathematics: AFDA.8, PS.1*, PS.2*, PS.3*, PS.4*, PS.10*	11. Apply the Design Process	Engineering Design
Describe bioinformatics as a database technology.	English: 11.1, 12.1 History and Social Science: VUS.14, WG.7, WHII.14 Mathematics: COM.7		
Exploring Medical Imaging and Bioinstrumentation			
Apply mathematics and science in imaging and instrumentation.	Mathematics: MA.7, MA.10, MA.11, PS.5, PS.1*, PS.18, PS.19, PS.2*, PS.20, PS.3*, PS.4*, PS.7*, PS.10*	3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	
Produce models and simulations of bioinstruments.	Mathematics: T.3, MA.1, MA.3, MA.5	11. Apply the Design Process	Scientific Visualization (SciVis)
Analyze images and biosignals.	English: 11.1, 12.1 Mathematics: T.3, AII.11, PS.5, PS.6, PS.1*, PS.2*, PS.3*, PS.4*	13. Assess the Impact of Products and Systems	

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Perform experiments using basic biosensors.	History and Social Science: WHII.4 Mathematics: AFDA.7, AII.11, PS.5, PS.6, PS.1*, PS.2*, PS.3*, PS.4*	12. Use and Maintain Technological Products and Systems	Biotechnology Design
Design solutions requiring creation of a bioinstrument.	English: 11.1, 11.3, 11.8, 12.1, 12.3, 12.8 History and Social Science: WHII.4 Mathematics: T.3, AII.11, MA.1, MA.3, MA.5, PS.5, PS.6, PS.1*, PS.2*, PS.3*, PS.4*	11. Apply the Design Process	Essays on Technology Extemporaneous Speech
Compare the mechanisms of medical imaging technologies.	English: 11.1, 12.1 History and Social Science: VUS.14, WG.17, WHII.14 Mathematics: G.14	13. Assess the Impact of Products and Systems	Computer-Aided Design (CAD), Engineering
Analyze the design of biomedical instruments and devices.	English: 11.1, 11.5, 12.1, 12.5 Mathematics: PS.5, PS.6, PS.1*, PS.2*, PS.3*, PS.4*, PS.7*, PS.10*	13. Assess the Impact of Products and Systems	Biotechnology Design
Identify the role of computational modeling in bioinstrumentation.	English: 11.1, 12.1	3. The Relationships Among Technologies and the	

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	Mathematics: T.3, AII.7, AII.9, AII.10, COM.1, MA.1, MA.2, MA.3, MA.4, MA.7, MA.10, MA.11	Connections Between Technology and Other Fields	
Exploring Biomechanics and Biomaterials			
Apply mathematics and science in biomechanics.	Mathematics: T.9, AII.10, MA.7, MA.8, MA.9, MA.10	3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	Biotechnology Design Scientific Visualization (SciVis)
Apply scientific principles to biomaterials for biocompatibility.	History and Social Science: WHII.4	3. The Relationships Among Technologies and the Connections Between Technology and Other Fields	
Use models and simulations in biomechanics.	Mathematics: T.9, AII.10, MA.7, MA.8, MA.9, MA.10	10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving	Engineering Design
Perform experiments related to biomaterials and biomechanics.	Mathematics: AFDA.3, AII.9, AII.10, AII.11, COM.1, COM.7, MA.7, PS.5, PS.6, PS.1*, PS.2*, PS.3*, PS.4*, PS.7*, PS.8*, PS.10*	10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving	Biotechnology Design
Design solutions to a biomechanics problem.	English: 11.3, 11.5, 12.3, 12.5 History and Social Science: WHII.4	11. Apply the Design Process	Engineering Design

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	Mathematics: AII.11, COM.1, MA.1, MA.3, MA.5, PS.5, PS.6, PS.1*, PS.2*, PS.3*, PS.4*		
Analyze the design of implants.		13. Assess the Impact of Products and Systems	
Exploring Rehabilitation			
Explain concepts related to disability and rehabilitation.	English: 11.1, 12.1 History and Social Science: VUS.13, VUS.14, WG.17, WHIL.14	6. The Role of Society in the Development and Use of Technology	Engineering Design Extemporaneous Speech
Explain the different areas of rehabilitation engineering.	English: 11.1, 12.1 History and Social Science: VUS.14, WG.17, WHIL.14	6. The Role of Society in the Development and Use of Technology	
Examine the design of assistive technologies.	History and Social Science: VUS.14, WG.17, WHIL.14	6. The Role of Society in the Development and Use of Technology	Biotechnology Design
Examine the design of prosthetics.	History and Social Science: VUS.14, WG.17, WHIL.14	10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving	Biotechnology Design
Examine the design of rehabilitative devices.	History and Social Science: VUS.14, WG.17, WHIL.14	10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and	Engineering Design

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		Experimentation in Problem Solving	
Synthesize biomedical engineering concepts to produce solutions.	English: 11.5, 12.5 History and Social Science: VUS.14, WG.17, WHII.14	11. Apply the Design Process	
Describe the effects of human factors.	English: 11.1, 12.1 History and Social Science: VUS.14, WG.17, WHII.14	4. The Cultural, Social, Economic, and Political Effects of Technology	Debating Technological Issues
Produce models and simulations for rehabilitation.	History and Social Science: WHII.4 Mathematics: T.9, AII.11, MA.7, PS.5, PS.6, PS.1*, PS.2*, PS.3*, PS.4*, PS.10*	12. Use and Maintain Technological Products and Systems	Engineering Design
Perform experiments to determine rehabilitation need.	English: 11.8, 12.8 History and Social Science: WHII.4 Mathematics: PS.5, PS.6, PS.1*, PS.2*, PS.3*, PS.4*, PS.10*	10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving	Essays on Technology
Design solutions for a rehabilitation problem.	English: 11.1, 11.3, 12.1, 12.3 History and Social Science: WHII.4	11. Apply the Design Process	Engineering Design

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	Mathematics: G.14, T.9, COM.1		
Using the Engineering Design Process to Solve a Biomedical Problem			
Document the design process.	English: 11.6, 12.6 History and Social Science: WHII.4 Mathematics: G.3, G.14, PS.7*, PS.9* Science: PH.1	11. Apply the Design Process	Biotechnology Design Engineering Design
Define a biomedical engineering design problem.	English: 11.3, 11.5, 12.3, 12.5 History and Social Science: WHII.4 Mathematics: COM.1	9. Engineering Design	Biotechnology Design Engineering Design
Identify the constraints and criteria of the design problem.	History and Social Science: WHII.4 Mathematics: COM.1, COM.3 Science: PH.1, PH.4	9. Engineering Design	Engineering Design
Research potential solutions to the design problem.	History and Social Science: WHII.4 Science: PH.1, PH.4	9. Engineering Design	Engineering Design

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
Generate multiple solutions to the design problem.	History and Social Science: WHII.4 Mathematics: COM.7 Science: PH.1, PH.4	9. Engineering Design	Engineering Design
Sketch the solutions to the design problem.	History and Social Science: WHII.4 Mathematics: G.14 Science: PH.1, PH.4	9. Engineering Design	Engineering Design
Evaluate the constraints and criteria of each solution to the design problem.	History and Social Science: WG.2, WHII.4 Science: PH.1, PH.4	9. Engineering Design	Engineering Design
Explain the application of quality control and the importance of regulatory agencies to the manufacture of biomedical products.	History and Social Science: VUS.13, VUS.14, WG.17, WHII.14	6. The Role of Society in the Development and Use of Technology 11. Apply the Design Process	Engineering Design Essays on Technology Extemporaneous Speech
Justify an optimal solution to the design problem.	History and Social Science: WHII.4 Mathematics: DM.4, DM.2*, DM.3*	11. Apply the Design Process	Engineering Design
Determine the objectives for a biomedical engineering test of the solution to the design problem.	History and Social Science: WHII.4	10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and	Engineering Design

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
		Experimentation in Problem Solving	
Create a prototype for the chosen solution to the design problem, using appropriate materials and processes (e.g., 3D rapid prototyping).	History and Social Science: WHII.4	10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving	Biotechnology Design Computer-Aided Design (CAD), Engineering Engineering Design
Test the solution to the design problem.	History and Social Science: WHII.4 Mathematics: PS.10* Science: PH.1, PH.4	13. Assess the Impact of Products and Systems	Engineering Design
Evaluate test results.	History and Social Science: WHII.4 Mathematics: PS.5, PS.1*, PS.13, PS.2*, PS.20, PS.3*, PS.4*, PS.7*, PS.16* Science: PH.1, PH.4	13. Assess the Impact of Products and Systems	Engineering Design
Formulate an improved solution to the design problem.	History and Social Science: WHII.4 Mathematics: PS.10* Science: PH.1, PH.4	9. Engineering Design	Engineering Design

Task	SOL Correlation	ITEEA National Standards	TSA Competitive Events
Prepare the final project report.	History and Social Science: WHII.4 Mathematics: PS.8*, PS.10*	9. Engineering Design	Engineering Design
Present the final project report.	History and Social Science: WHII.4 Mathematics: COM.7, COM.12	9. Engineering Design	Engineering Design Extemporaneous Speech Prepared Presentation