

Standards Correlations

Power Generation Design and Function (PG8411)

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>

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	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.	
Reading and Interpreting Technical and Engineering Drawings	
Explain types of schematics and diagrams.	<p>English: 10.5, 11.5</p> <p>History and Social Science: VUS.14, WHII.14</p> <p>Science: PH.11</p> <p>ITEEA National Standards: 10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving 12. Use and Maintain Technological Products and Systems 16. Energy and Power Technologies</p>
Interpret computer-aided design (CAD)	English: 10.5, 11.5

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drawings and blueprints.	<p>Mathematics: A.1, A.4, AII.3</p> <p>ITEEA National Standards: 10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving 12. Use and Maintain Technological Products and Systems 16. Energy and Power Technologies 2. The Core Concepts of Technology</p>
Interpret site plans.	<p>English: 10.5, 11.5</p> <p>ITEEA National Standards: 16. Energy and Power Technologies 20. Construction Technologies</p>
Perform linear measurements.	<p>ITEEA National Standards: 16. Energy and Power Technologies 2. The Core Concepts of Technology 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields</p>
Describe characteristics of series, parallel, and combination circuits.	<p>English: 10.5, 11.5</p> <p>Mathematics: A.1, A.4, AII.3</p> <p>Science: PH.11</p>
Performing Tests, Calibrations, and Measurements	
Apply safety guidelines in appropriate circumstances.	<p>English: 10.5, 10.8, 11.5, 11.8</p> <p>History and Social Science: GOVT.7, GOVT.8, GOVT.9, GOVT.14, GOVT.15</p> <p>ITEEA National Standards:</p>

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	12. Use and Maintain Technological Products and Systems 2. The Core Concepts of Technology
Demonstrate the use of tools and applications in electricity and gas.	ITEEA National Standards: 16. Energy and Power Technologies 2. The Core Concepts of Technology
Demonstrate the use of instruments to measure units.	English: 10.5, 11.5 ITEEA National Standards: 12. Use and Maintain Technological Products and Systems 16. Energy and Power Technologies
Interpret units of measure.	English: 10.5, 11.5 Mathematics: A.1, A.4, AII.3, COM.15 Science: PH.11 ITEEA National Standards: 10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving 12. Use and Maintain Technological Products and Systems 16. Energy and Power Technologies
Produce a model of part of a generation system.	English: 10.5, 11.5 ITEEA National Standards: 10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving 11. Apply the Design Process 16. Energy and Power Technologies 9. Engineering Design
Maintaining and Operating Power Generation Systems	

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Describe the types of maintenance schedules.	<p>English: 10.5, 11.5</p> <p>ITEEA National Standards: 16. Energy and Power Technologies 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields</p>
Design a preventative maintenance schedule.	<p>English: 10.1, 10.5, 10.6, 11.1, 11.5, 11.6</p> <p>ITEEA National Standards: 16. Energy and Power Technologies 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields</p>
Design a predictive maintenance schedule.	<p>English: 10.1, 10.5, 11.1, 11.5</p> <p>ITEEA National Standards: 16. Energy and Power Technologies 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields</p>
Explain Supervisory Control and Data Automation (SCADA) systems.	<p>English: 10.5, 11.5</p> <p>ITEEA National Standards: 16. Energy and Power Technologies</p>
Describe responsibilities of power plant operators.	<p>English: 10.5, 11.5</p> <p>ITEEA National Standards: 16. Energy and Power Technologies</p>
Operations of Power Generation Systems	
Identify generation systems.	English: 10.5, 11.5

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	Science: ES.6 ITEEA National Standards: 16. Energy and Power Technologies
Distinguish among system types.	English: 10.5, 11.5 ITEEA National Standards: 16. Energy and Power Technologies
Identify indicators (symptoms) of potential issues in a generation system.	English: 10.5, 11.5 ITEEA National Standards: 10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving 12. Use and Maintain Technological Products and Systems 16. Energy and Power Technologies
Diagnose indicators of potential issues (symptoms).	English: 10.5, 11.5 ITEEA National Standards: 12. Use and Maintain Technological Products and Systems 16. Energy and Power Technologies
Design a model of an energy generation system or parts that interact in a system.	English: 10.1, 11.1 Mathematics: AFDA.3, AFDA.4, AII.9, AII.10, COM.1 ITEEA National Standards: 10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving 11. Apply the Design Process 16. Energy and Power Technologies 9. Engineering Design

Task	SOL Correlations
Upgrading Generation Operational Systems	
Define <i>digital instrumentation and control systems</i> .	<p>English: 10.3, 10.5, 11.3, 11.5</p> <p>Mathematics: PS.1*, PS.2*, PS.4*</p> <p>ITEEA National Standards: 16. Energy and Power Technologies</p>
Research digital instrumentation and control systems.	<p>English: 10.5, 10.8, 11.5, 11.8</p> <p>ITEEA National Standards: 10. The Role of Troubleshooting, Research and Development, Invention and Innovation, and Experimentation in Problem Solving 16. Energy and Power Technologies</p>
Exploring Trends and Technology Development	
Explore factors that lead to technological development in power generation.	<p>English: 10.5, 10.8, 11.5, 11.8</p> <p>History and Social Science: GOVT.12, VUS.14, WG.17, WHII.14</p> <p>ITEEA National Standards: 16. Energy and Power Technologies 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields 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</p>
Explore advantages and disadvantages of hydroelectric power.	<p>English: 10.5, 10.8, 11.5, 11.8</p> <p>History and Social Science: VUS.14, WHII.14</p>

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	ITEEA National Standards: 16. Energy and Power Technologies 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields 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
Explore obstacles with onshore/offshore wind power and technological solutions.	English: 10.5, 10.8, 11.5, 11.8 History and Social Science: VUS.14, WHII.14 ITEEA National Standards: 16. Energy and Power Technologies 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields 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
Identify benefits and disadvantages of nuclear technologies.	English: 10.5, 11.5 History and Social Science: VUS.14, WHII.14 ITEEA National Standards: 16. Energy and Power Technologies 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields 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
Explain advantages and disadvantages of solar	English: 10.5, 11.5

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generation plants or farms.	<p>History and Social Science: VUS.14, WHII.14</p> <p>ITEEA National Standards:</p> <ul style="list-style-type: none"> 16. Energy and Power Technologies 3. The Relationships Among Technologies and the Connections Between Technology and Other Fields 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