CURRICULUM MAP

Cluster: Science, Technology, Engineering and Mathematics Cluster

CTE Program of Study: ST2175 Energy, Power & Engineered Systems (Advanced Career)

STANDARD	%	SKILL SET/COMPETENCY Workplace Readiness Test Code: 3033	REQUIRED CORE COURSES FOR COMPLETION			
			1st Course AC Energy, Power, and Engineered Systems I* **2485**	2nd Course AC Energy, Power, and Engineered Systems II* **2486**	3rd Course AC Energy, Power, and Engineered Systems III* **2487**	4th Course AC Energy, Power, and Engineered Systems IV* **2488**
Communication:	**24%**	Apply strategies to enhance effectiveness of all types of communications in the workplace	X	X	X	X
Communicate in multiple modes to address needs within the career technical field		Apply reading strategies as needed for a variety of purposes	X	X	X	X
		Evaluate information contained in documents	X	X	X	X
		Apply basic communication skills when writing	X	X	X	X
		Write technical materials	X	X	X	X
		Develop presentations using appropriate technologies (e.g., tables, charts, and visual graphics)	X	X	X	X
		Apply oral communication skills	X	X	X	X
		Deliver presentations	X	X	X	X
		Apply active listening skills	X	X	X	X
		Apply nonverbal communication skills	X	X	X	X
		Communicate with others in a workforce of diversity (e.g., age, ethnicity, religion, gender)	X	X	X	X
		Share information using a range of appropriate communications technologies	X	X	X	X
Problem Solving and Critical Thinking:	**19%**	Define the problem	X	X	X	X
Solve problems using critical thinking		Analyze the problem	X	X	X	X

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		Research reliable information relevant to the problem	X	X	X	X
		Investigate alternatives based on reasoned criteria	X	X	X	X
		Identify appropriate solutions	X	X	X	X
		Make recommendations	X	X	X	X
		Implement solutions	X	X	X	X
		Evaluate solutions	X	X	X	X
Information Technology Applications:	**8%**	Identify efficient, effective, and ethical uses of technology in the workplace	X	X	X	X
Apply information technology resources in the workplace		Use information technology tools to access, manage, integrate, and create new information	X	X	X	X
		Use writing/publishing/presentation applications	X	X	X	X
Systems:	**9%**	Demonstrate an understanding of how business and industry systems function within the economy	X	X	X	X
Work within organizational culture and technological systems		Demonstrate an understanding of the functions of systems in an organization (e.g., management, human resources, production and services)	X	X	X	X
		Demonstrate principles of internal/external customer service	X	X	X	X
		Apply industry quality standards and practices	X	X	X	X
Safety, Health, and Environment:	**9%**	Ensure safe working conditions	X	X	X	X
Ensure safe and healthful working conditions		Demonstrate safe use of tools and equipment	X	X	X	X
		Ensure healthful working conditions	X	X	X	X

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		Practice environmental conservation and safety	X	X	X	X
Leadership and Teamwork:	**11%**	Demonstrate leadership skills	X	X	X	X
Enhance work outcomes through leadership, management, and teamwork		Organize work	X	X	X	X
		Apply management techniques	X	X	X	X
		Demonstrate group process techniques	X	X	X	X
		Perform work tasks in a team	X	X	X	X
Ethics and/or Legal Responsibilities:	**6%**	Apply professional and ethical standards to workplace conduct	X	X	X	X
Practice professional, ethical, and legal behavior consistent with workplace standards		Adhere to established laws, policies, and procedures	X	X	X	X
Employability and/or Career Development:	**14%**	Develop a career plan			X	X
Progress on a purposeful career path through application of employability skills		Seek employment				X
		Apply for employment				X
		Evaluate job offers				X
		Demonstrate employability skills needed to keep a job			X	X
		Demonstrate personal qualities appropriate to the work environment			X	X

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		Assess alternative occupational opportunities (e.g., working conditions, benefits, and opportunities for change)			X	X
Literacy and Numeracy		literacy and numeracy skills required to solve complex.	X	X	X	X
		real-world problems associated with their career/technical content area.	X	X	X	X
		improve their thinking and reasoning skills.	X	X	X	X
		utilize a variety of technical sources (e.g., Internet, manuals, journals, directions, reports, etc.) to complete career/technical assignments and projects.	X	X	X	X
		demonstrate writing skills required to complete career/technical assignments and projects.	X	X	X	X
		demonstrate accuracy in calculating and measuring graphical work required to complete career/technical assignments and projects.	X	X	X	X
		analyze tables, charts, graphs and multiple data sources to complete career/technical assignments and projects.	X	X	X	X
		Students discover how industrial equipment uses electricity			X	
		Determine horse power of motors			X	
		Determine power used by motors/equipment in Watts			X	
		Evaluate the power factor of equipment load			X	

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		Students understand basic consumer energy conservation implementations that conserve energy, save money and help the environment			X	
		Discuss topics in energy conservation techniques for industrial processes			X	
		Measure motor loads to determine if equipment is energy efficient			X	
		Students utilize the ideas of energy, work, power, and force to explain how systems convert, control, transmit, and/or store energy and power			X	
		Students describe processes by which energy stored in a system may be used to do work			X	
		Students determine the amount of work done by or on a system			X	
		Students design technological problem solutions, using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication, while considering economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints			X	
		Demonstrate fundamental principles of design			X	
		Design and conduct experiments along with analysis and interpretation of data.			X	
		Identify and consider realistic constraints relevant to the design of a system, component, or process			X	

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		Students understand generation system overview			X	
		Explain and use the fundamental laws and principles of electricity & magnetism (e.g., electric charge, electric current, etc.)			X	
		Explain the components of electrical generating systems including boilers, generators, alternators, turbines, motors, engines, pumps, and switchgear			X	
		Explain the differences and similarities of power generation, including use of different fuel types, and different power plant uses (i.e., base load, peaking, load following, and co-generation).			X	
		Students understand methods used to analyze simple structures			X	
		Understand load transfer mechanisms Understand stress-strain relationships of building structures Understand structural design considerations, including load-bearing relationships of shear walls, columns, and beams Design a simple structure by using structural analysis principles			X	
		Students develop a logical argument to determine why a nuclear power plant should or should not be constructed			X	
		Conduct research about how nuclear power plants work			X	

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		Determine the risks and benefits of nuclear energy			X	
		Investigate nuclear by-products and ways in which nuclear waste is disposed			X	
		Formulate an opinion based on research			X	
		Develop a logical argument to support that opinion			X	
		Design communication materials to support that argument			X	
		Utilize a persuasive argument to inform the public about nuclear energy and try to influence public opinion based on that argument			X	
		Students demonstrate a fundamental understanding of nuclear fuel and how it is harvested.			X	
		Investigate how uranium is extracted, and which isotopes of uranium are used to make nuclear fuel.			X	
		Understand how uranium is converted and enriched to produce the uranium isotope used for nuclear fuel			X	
		Students explain the difference between fission and fusion			X	
		Balance simple nuclear reaction equations to show the conservation of nucleons			X	
		Describe nuclear fission and fusion as a powerful energy sources in nature			X	
		Compare and contrast the characteristics of fission and fusion reactions			X	

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		Students investigate the effect of mutagens and radiation on genes and chromosomes			X	
		Describe the nature and properties, including the biological effects, of alpha, beta and gamma radiation			X	
		Write nuclear equations, using isotope notation, for alpha, beta-negative and beta-positive decays, including the appropriate neutrino and antineutrino			X	
		Use the law of conservation of charge and mass number to predict the particles emitted by a nucleus			X	
		Students discover how radioactive isotopes decay over time			X	
		Perform simple, non-logarithmic half-life calculations			X	
		Students identify points of failure and modes of failure in natural and built			X	
		Investigate and analyze forces within structures, and forces applied to them			X	
		Identify tension, compression, shearing and bending forces within a structure; and describe how these forces can cause the structure to fail			X	
		Analyze a design, and identify properties of materials that are important to individual parts of the structure			X	

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		(Demonstrate and describe methods to increase the strength of materials through changes in design.			X	
		Students design and fabricate a working prototype of a steam turbine generator.			X	
		Explain reasons for choosing materials used and what they compare to on a large scale			X	
		Explain how material choices and their dimensions affect speed, efficiency and electrical output of the system			X	
		Explain how changes in fuel source, combustion type, and boiler size affect the output of the system.			X	
		Critique and analyze the system and how it can be improved.			X	
		Use the laws of thermodynamics to explain the conservation of energy throughout the system/steam cycle			X	
		Students analyze different types of steam cycles and estimate efficiencies in a steam power plant.			X	
		Calculate pressure and temperature differentials across the boiler, turbine, condenser and pump in a typical steam cycle for a power plant			X	
		Explain why throttle valves are used to regulate steam flow rate into the turbine.			X	

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		Investigate the methods and advantages of reheating steam and explain the advantages of regeneration.			X	
		Explain the conservation of energy around the steam cycle			X	
		Students describe basic working principles of steam and gas turbine plants and define the performance characteristics and components of such plants.			X	
		Explain startup times and cost implications.			X	
		Calculate efficiency of systems			X	
		Understand cogeneration or combined heat and power (CHP) and combined cycles.			X	
		Students determine how steam generators account for fluctuations in power requirements and how those variations are monitored and regulated.			X	
		Students understand energy resources and the effects of these resources and systems on the environment			X	
		Students know how to classify various conventional energy resources by type: depletable, nondepletable, renewable, and nonrenewable.			X	
		Know the new and emerging energy resources.			X	

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		Understand the advantages and disadvantages of energy resources in terms of the effects on the environment.			X	
		Students understand the environmental implications of energy conversion processes and energy transmission systems:			X	
		Know energy conversion processes and energy transmission systems as they relate to activities across the environment			X	
		Know the basic terms, characteristics, and concepts of physical and chemical processes related to components and systems operations and maintenance in energy conversion and transmission systems			X	
		Know the basic gas, electrical, and electronic terms, units, definitions and concepts in energy conversion and transmission systems.			X	
		Know the influences of three different energy conversion processes and energy transmission systems			X	
		Understand the basic principles of energy systems: chemical, hydraulic, pneumatic, electrical, nuclear, solar, wind, and geothermal			X	
		Understand basic energy production systems and components, including the main components and system flow-paths			X	

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		in energy conversion and transmission systems				
		Students understand the applications and environmental effects of energy extraction processes, energy conservation systems, and energy storing systems			X	
		Know the common energy extraction processes, energy conservation systems, and energy storage systems			X	
		Understand the environmental implications of energy conservation principles related to energy extraction processes, conservation systems, and storage systems			X	
		Understand the pragmatic applications of energy extraction processes, energy conservation systems, and energy storing methods			X	
		Students know the practical and theoretical applications of voltage, amperage, and resistance in electrical circuits and systems.			X	
		Students understand the advantages and disadvantages of energy resources in use or under research that influence or will influence the public utilities industry			X	
		Know the new and emerging energy resources used in the public utilities industry			X	

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		Understand the advantages and disadvantages of energy resources used in the public utilities industry			X	
		Understand the effects of energy resource and conservation systems on the environment			X	
		Students understand the basic principles of pipelines, conveyors, elevators, and related alternative transport systems used in energy extraction processes, energy conservation systems, and energy storage.			X	
		Students understand and interpret circuit, process, and structural drawings, diagrams, and blueprints used in the public utilities industry.			X	
		Students understand the basic concepts of heat transfer and flow.			X	
		Students utilize the ideas of energy, work, power, and force to explain how systems convert, control, transmit, and/or store energy and power.			X	
		Describe processes by which energy stored in a system may be used to do work			X	
		Use Newton's Laws to calculate the net force acting or exerted by a system			X	
		Determine the amount of work done by or on a system			X	
		Outline the difference between energy and power			X	

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		Give examples of how conduction, convection, and radiation are considered in the selection of materials for buildings and in the design of a heating system			X	
		Students differentiate between fluid power systems and apply the laws that govern each.			X	
		Explain the difference between open fluid systems (e.g., irrigation, forced hot air system, air compressors) and closed fluid systems (e.g., force hot water system, hydraulic brakes).			X	
		Explain what is meant by fluid power			X	
		Compare and contrast how the volume of a gas varies with the changes in pressure and temperature			X	
		Describe how a fluid is able to transfer force as well as change the relationship between force and distance or speed			X	
		Calculate the ability of a hydraulic system to multiply distance, force and effect directional change			X	
		Solve mathematical problems involving changes in pressure, temperature, and volume in fluid power systems			X	
		Students understand generation system overview			X	
		Explain and use the fundamental laws and principles of electricity & magnetism (e.g., electric charge, electric current, etc.)			X	

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		Explain the components of electrical generating systems including boilers, generators, alternators, turbines, motors, engines, pumps, and switchgear			X	
		Explain the differences and similarities of power generation, including use of different fuel types, different power plant uses (i.e., base load, peaking, load following, and co-generation).			X	
		Explain the basic operating principles of fossil, hydro-electric, internal combustion and nuclear reactor systems, which supply the bulk of the North American power grid			X	
		Discuss the electric power generation job functions			X	
		Students demonstrate competency applying hydraulic principles to calculate values and solve problems related to industrial hydraulic systems			X	
		Define hydraulics, hydrostatics, and hydrodynamics			X	
		Define fluid, liquid, and gas			X	
		Compare the differences between atmospheric, gauge, and absolute pressure			X	
		Calculate the values of force, pressure, and area in a hydraulic system			X	
		Analyze the factors that affect fluid flow			X	
		Measure for volume, capacity, velocity, flow, and speed in a hydraulic system			X	

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		Explain mechanical advantage and demonstrate its application in a hydraulic system.			X	
		Calculate efficiency, horsepower, and torque.			X	
		Students demonstrate competency in the practical application of hydraulic principles in industrial hydraulic systems			X	
		Explain the functions of hydraulic fluid			X	
		Explain the functions of a reservoir			X	
		Identify the function and types of hydraulic pumps applied in industrial hydraulic systems			X	
		Identify the function, types, and application of hydraulic pressure in industrial hydraulic systems			X	
		Students demonstrate competency applying fluid principles to calculate and solve problems related to industrial pumping systems			X	
		Define fluid, liquid, and gas			X	
		Compare the differences between atmospheric, gauge, and absolute pressure			X	
		Calculate the values of force and pressure in a pump system			X	
		Analyze the factors that affect fluid flow			X	
		Measure for volume, capacity, velocity, flow, and speed across a pump			X	

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		Students apply principles of science, technology, engineering, mathematics, interpersonal communication, and teamwork to the solution of technological problems			X	
		Work cooperatively in multi-disciplinary teams			X	
		Apply knowledge of mathematics, science, and engineering design			X	
		Demonstrate strategies for identifying, formulating, and solving technological problems			X	
		Demonstrate techniques, skills, and knowledge necessary to use and maintain technological products and systems			X	
		Students model the transmission system for the newly created power station.			X	
		Analyze the need for high voltage transmission lines			X	
		Support substation placement with population details and voltage calculations			X	
		Students collaborate with peers, experts and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information			X	
		Apply appropriate writing techniques to prepare recommendations, documentation, analysis, and future projections for the power system.			X	

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		Determine horse power of motors				X
		Determine power used by motors/equipment in Watts				X
		Evaluate the power factor of equipment load				X
		Students understand basic consumer energy conservation implementations that conserve energy, save money and help the environment				X
		Discuss topics in energy conservation techniques for industrial processes				X
		Measure motor loads to determine if equipment is energy efficient				X
		Students utilize the ideas of energy, work, power, and force to explain how systems convert, control, transmit, and/or store energy and power				X
		Students describe processes by which energy stored in a system may be used to do work				X
		Students determine the amount of work done by or on a system				X
		Students design technological problem solutions, using scientific investigation, analysis and interpretation of data, innovation, invention, and fabrication, while considering economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability constraints				X

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		Demonstrate fundamental principles of design				X
		Design and conduct experiments along with analysis and interpretation of data.				X
		Identify and consider realistic constraints relevant to the design of a system, component, or process				X
		Students understand generation system overview				X
		Explain and use the fundamental laws and principles of electricity & magnetism (e.g., electric charge, electric current, etc.)				X
		Explain the components of electrical generating systems including boilers, generators, alternators, turbines, motors, engines, pumps, and switchgear				X
		Explain the differences and similarities of power generation, including use of different fuel types, and different power plant uses (i.e., base load, peaking, load following, and co-generation).				X
		Students understand methods used to analyze simple structures				X
		Understand load transfer mechanisms				X
		Understand stress-strain relationships of building structures				X
		Understand structural design considerations, including load-bearing relationships of shear walls, columns, and beams				X

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		Design a simple structure by using structural analysis principles				X
		Students develop a logical argument to determine why a nuclear power plant should or should not be constructed				X
		Conduct research about how nuclear power plants work				X
		Determine the risks and benefits of nuclear energy				X
		Investigate nuclear by-products and ways in which nuclear waste is disposed				X
		Formulate an opinion based on research				X
		Develop a logical argument to support that opinion				X
		Design communication materials to support that argument				X
		Utilize a persuasive argument to inform the public about nuclear energy and try to influence public opinion based on that argument				X
		Students demonstrate a fundamental understanding of nuclear fuel and how it is harvested.				X
		Investigate how uranium is extracted, and which isotopes of uranium are used to make nuclear fuel.				X
		Understand how uranium is converted and enriched to produce the uranium isotope used for nuclear fuel				X

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		Students explain the difference between fission and fusion				X
		Balance simple nuclear reaction equations to show the conservation of nucleons				X
		Describe nuclear fission and fusion as a powerful energy sources in nature				X
		Compare and contrast the characteristics of fission and fusion reactions				X
		Students investigate the effect of mutagens and radiation on genes and chromosomes				X
		Describe the nature and properties, including the biological effects, of alpha, beta and gamma radiation				X
		Write nuclear equations, using isotope notation, for alpha, beta-negative and beta-positive decays, including the appropriate neutrino and antineutrino				X
		Use the law of conservation of charge and mass number to predict the particles emitted by a nucleus				X
		Students discover how radioactive isotopes decay over time				X
		Perform simple, non-logarithmic half-life calculations				X
		Students identify points of failure and modes of failure in natural and built				X
		Investigate and analyze forces within structures, and forces applied to them				X

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		Identify tension, compression, shearing and bending forces within a structure; and describe how these forces can cause the structure to fail				X
		Analyze a design, and identify properties of materials that are important to individual parts of the structure				X
		(Demonstrate and describe methods to increase the strength of materials through changes in design.				X
		Students design and fabricate a working prototype of a steam turbine generator.				X
		Explain reasons for choosing materials used and what they compare to on a large scale				X
		Explain how material choices and their dimensions affect speed, efficiency and electrical output of the system				X
		Explain how changes in fuel source, combustion type, and boiler size affect the output of the system.				X
		Critique and analyze the system and how it can be improved.				X
		Use the laws of thermodynamics to explain the conservation of energy throughout the system/steam cycle				X
		Students analyze different types of steam cycles and estimate efficiencies in a steam power plant.				X

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		Calculate pressure and temperature differentials across the boiler, turbine, condenser and pump in a typical steam cycle for a power plant				X
		Explain why throttle valves are used to regulate steam flow rate into the turbine.				X
		Investigate the methods and advantages of reheating steam and explain the advantages of regeneration.				X
		Explain the conservation of energy around the steam cycle				X
		Students describe basic working principles of steam and gas turbine plants and define the performance characteristics and components of such plants.				X
		Explain startup times and cost implications.				X
		Calculate efficiency of systems				X
		Understand cogeneration or combined heat and power (CHP) and combined cycles.				X
		Students determine how steam generators account for fluctuations in power requirements and how those variations are monitored and regulated.				X
		Students understand energy resources and the effects of these resources and systems on the environment				X
		Students know how to classify various conventional energy resources by type:				X

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		depletable, nondepletable, renewable, and nonrenewable.				
		Know the new and emerging energy resources.				X
		Understand the advantages and disadvantages of energy resources in terms of the effects on the environment.				X
		Students understand the environmental implications of energy conversion processes and energy transmission systems:				X
		Know energy conversion processes and energy transmission systems as they relate to activities across the environment				X
		Know the basic terms, characteristics, and concepts of physical and chemical processes related to components and systems operations and maintenance in energy conversion and transmission systems				X
		Know the basic gas, electrical, and electronic terms, units, definitions and concepts in energy conversion and transmission systems.				X
		Know the influences of three different energy conversion processes and energy transmission systems				X
		Understand the basic principles of energy systems: chemical, hydraulic, pneumatic,				X

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		electrical, nuclear, solar, wind, and geothermal				
		Understand basic energy production systems and components, including the main components and system flow-paths in energy conversion and transmission systems				X
		Students understand the applications and environmental effects of energy extraction processes, energy conservation systems, and energy storing systems				X
		Know the common energy extraction processes, energy conservation systems, and energy storage systems				X
		Understand the environmental implications of energy conservation principles related to energy extraction processes, conservation systems, and storage systems				X
		Understand the pragmatic applications of energy extraction processes, energy conservation systems, and energy storing methods				X
		Students know the practical and theoretical applications of voltage, amperage, and resistance in electrical circuits and systems.				X
		Students understand the advantages and disadvantages of energy resources in use				X

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		or under research that influence or will influence the public utilities industry				
		Know the new and emerging energy resources used in the public utilities industry				X
		Understand the advantages and disadvantages of energy resources used in the public utilities industry				X
		Understand the effects of energy resource and conservation systems on the environment				X
		Students understand the basic principles of pipelines, conveyors, elevators, and related alternative transport systems used in energy extraction processes, energy conservation systems, and energy storage.				X
		Students understand and interpret circuit, process, and structural drawings, diagrams, and blueprints used in the public utilities industry.				X
		Students understand the basic concepts of heat transfer and flow.				X
		Students utilize the ideas of energy, work, power, and force to explain how systems convert, control, transmit, and/or store energy and power.				X
		Describe processes by which energy stored in a system may be used to do work				X

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		Use Newton's Laws to calculate the net force acting or exerted by a system				X
		Determine the amount of work done by or on a system				X
		Outline the difference between energy and power				X
		Give examples of how conduction, convection, and radiation are considered in the selection of materials for buildings and in the design of a heating system				X
		Students differentiate between fluid power systems and apply the laws that govern each.				X
		Explain the difference between open fluid systems (e.g., irrigation, forced hot air system, air compressors) and closed fluid systems (e.g., force hot water system, hydraulic brakes).				X
		Explain what is meant by fluid power				X
		Compare and contrast how the volume of a gas varies with the changes in pressure and temperature				X
		Describe how a fluid is able to transfer force as well as change the relationship between force and distance or speed				X
		Calculate the ability of a hydraulic system to multiply distance, force and effect directional change				X

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		Solve mathematical problems involving changes in pressure, temperature, and volume in fluid power systems				X
		Students understand generation system overview				X
		Explain and use the fundamental laws and principles of electricity & magnetism (e.g., electric charge, electric current, etc.)				X
		Explain the components of electrical generating systems including boilers, generators, alternators, turbines, motors, engines, pumps, and switchgear				X
		Explain the differences and similarities of power generation, including use of different fuel types, different power plant uses (i.e., base load, peaking, load following, and co-generation).				X
		Explain the basic operating principles of fossil, hydro-electric, internal combustion and nuclear reactor systems, which supply the bulk of the North American power grid				X
		Discuss the electric power generation job functions				X
		Students demonstrate competency applying hydraulic principles to calculate values and solve problems related to industrial hydraulic systems				X
		Define hydraulics, hydrostatics, and hydrodynamics				X
		Define fluid, liquid, and gas				X

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		Compare the differences between atmospheric, gauge, and absolute pressure				X
		Calculate the values of force, pressure, and area in a hydraulic system				X
		Analyze the factors that affect fluid flow				X
		Measure for volume, capacity, velocity, flow, and speed in a hydraulic system				X
		Explain mechanical advantage and demonstrate its application in a hydraulic system.				X
		Calculate efficiency, horsepower, and torque.				X
		Students demonstrate competency in the practical application of hydraulic principles in industrial hydraulic systems				X
		Explain the functions of hydraulic fluid				X
		Explain the functions of a reservoir				X
		Identify the function and types of hydraulic pumps applied in industrial hydraulic systems				X
		Identify the function, types, and application of hydraulic pressure in industrial hydraulic systems				X
		Students demonstrate competency applying fluid principles to calculate and solve problems related to industrial pumping systems				X
		Define fluid, liquid, and gas				X

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		Compare the differences between atmospheric, gauge, and absolute pressure				X
		Calculate the values of force and pressure in a pump system				X
		Analyze the factors that affect fluid flow				X
		Measure for volume, capacity, velocity, flow, and speed across a pump				X
		Students apply principles of science, technology, engineering, mathematics, interpersonal communication, and teamwork to the solution of technological problems				X
		Work cooperatively in multi-disciplinary teams				X
		Apply knowledge of mathematics, science, and engineering design				X
		Demonstrate strategies for identifying, formulating, and solving technological problems				X
		Demonstrate techniques, skills, and knowledge necessary to use and maintain technological products and systems				X
		Students model the transmission system for the newly created power station.				X
		Analyze the need for high voltage transmission lines				X
		Support substation placement with population details and voltage calculations				X

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		Students collaborate with peers, experts and others to contribute to a content-related knowledge base by using technology to compile, synthesize, produce, and disseminate information				X
		Apply appropriate writing techniques to prepare recommendations, documentation, analysis, and future projections for the power system.				X

AC Energy, Power, and Engineered Systems III **ST 2487**

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http://www.sreb.org/page/1608/Advanced_Career.html

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