School District of Marshfield Course Syllabus

Course Name: 8th Grade Career Quest (Technology Rotation)
Length of Course: 3-18 day Rotations = 1 Trimester
Credit: 1

Program Goal(s):

Empower learners to be college and career ready through standards-based experiences in the classroom and career-based learning experiences with business and industry partners. Learners will engage through technology in design, building, problem-solving, repair or service, in a collaborative environment through theory and hands-on experiences.

Course Description:

Students will utilize decision making and problem solving skills while exploring a variety of career choices within the area of Technology Education. Hands-on activities will be offered in Engineering, Construction/Manufacturing, Design, and Electricity/Electronics.

Standards:

Wisconsin Technology & Engineering Broad Based (BB)		
Standard	**Learning Priority**	**Performance Indicators**
Students will analyze the core concepts of technology.	BB1.a: Analyze and use technological systems.	BB1.a.3.m: Identify inputs, processes, outputs and, at times, feedback components for technological systems. BB1.a.4.m: Explain how common energy, power and transportation systems have provisions that detect, bypass or compensate for failures within a system.

	BB1.b: Analyze and use tools and materials.	BB1.b.3.m: Students will describe how resources are the things needed to complete a task (e.g., tools, machines, materials, information, energy, people, capital and time). BB1.b.4.m: Use appropriate tools to measure and layout a piece of material (e.g., length, width, thickness, angles, circles, arcs and volume) within tolerances.
	BB1.c: Analyze and use mechanisms.	BB1.c.2.m: Explain the relationship between the inputs and outputs of linear, rotary and compound motion mechanisms in terms of direction, distance and force. BB1.c.3.m: Define mechanical concepts such as force, work, power, torque, velocity, mechanical advantage and gear ratio.
	BB1.d: Analyze and use electricity and electronic systems.	BB1.d.2.m: Define basic electrical concepts (i.e., voltage, direct and alternating current, resistance, power, polarity, conductor, insulator, series circuit, parallel circuit, series-parallel circuit, inductance, capacitance, continuity, digital, analog). BB1.d.3.m: Measure current, voltage and resistance in series, parallel and series-parallel circuits and components. BB1.d.4.m: Locate and identify shorts to power & ground, opens and high resistance problems in circuits and components.
	BB1.e: Analyze, explain and use control systems.	BB1.e.4.m: Explain how quality control is a planned process to ensure that a product, service or system meets established criteria.
Wisconsin Technology & Engineering- Architecture and Construction (AC)		
Standard	**Learning Priority**	**Performance Indicators**
Standard: AC1: Students will be able to select and use architecture and construction technologies.	AC1.a: Analyze construction requirements, materials, structures, techniques and maintenance.	AC1.a.5.m: Select designs for structures based on factors such as building codes and requirements, style, convenience, cost, climate, culture and function. AC1.a.8.m: Identify a variety of materials and subsystems that buildings generally contain. AC1.b.8.m: Demonstrate basic dimensioning skills including the use of: dimension, extension, center and leader lines. AC1.b.9.m: Demonstrate use of the Standard Measuring System to the

		1/16” and the Metric Measuring System to millimeters. AC1.b.10.m: Add, subtract, multiply and divide in the Standard Measuring System to the 1/16” and the Metric Measuring System to millimeters.
	AC1.c: Demonstrate the safe and appropriate use of hand tools common to the residential and commercial construction industry.	AC1.c.3.m: Demonstrate proficiency in the use of simple hand tools such as hammers, screwdrivers, handsaws, planes, sandpaper, nail sets, tin shears, framing squares, utility knives, chalk lines, etc. AC1.c.4.m: Demonstrate proficiency in obtaining and storing simple hand tools.
	AC1.d: Demonstrate the safe and appropriate use of portable power tools that are common to the residential construction industry and are appropriate to the individual student’s level.	AC1.d.2.m: Demonstrate the safe and proper use of power tools. AC1.d.4.m: Demonstrate proficiency in the proper care of all tools used in a class or lab.
	AC1.e: Demonstrate project management procedures and processes as they occur in a construction project.	AC1.e.11.m: Explain the importance of positive and constructive communication skills.
	AC1.f: Demonstrate the value and necessity of practicing occupational safety in the construction industry facility and job site.	AC1.f.4.m: Recognize the potential accidents and injuries that may occur in a given work environment.
Wisconsin Technology & Engineering – Electronics (EL)		
Standard	**Learning Priority**	**Performance Indicators**
Standard: EL1: Students will develop, use and apply basic electronics and electricity concepts.	EL1.a: Apply electronic theory to practice.	EL1.a.5.m: Describe atomic structure, the components of the atom, their charges and importance to electronics technology. EL1.a.6.m: Construct electrical systems and explain material’s tendency toward being a conductor or insulator. EL1.a.7.m: Identify the fundamental and supplementary units that are the bases of the International System of Units (SI). EL1.a.8.m: Describe current, voltage, resistance, power and their application to DC electronics. EL1.a.9.m: Summarize Ohms law.
Standard: EL2: Students will develop the ability to use symbols, measurements and schematics to build, test and troubleshoot electronic circuits and systems.	EL2.a: Construct and measure a basic circuit using electronic components.	EL2.a.4.m: Identify the following electronic components and their usages: source, load, insulator conductor and control device.

		EL2.a.5.m: Build a DC motor to identify the primary parts and demonstrate how it functions. EL2.a.6.m: Identify electrical generation including mechanical, solar, chemical, thermocouple, piezo and fuel cells. EL2.a.7.m: Construct a basic circuit using a solder-less breadboard to demonstrate a source, load, connector, safety device and control device.
	EL2.b: Demonstrate electronic measurement to series, parallel and combination circuits.	EL2.b.3.m: Construct a series circuit and explain its basic concepts. EL2.b.4.m: Construct a parallel circuit, explain its basic concepts and be able to calculate resistance total.
Standard: EL3: Students will analyze and use digital electronics.	EL3.a: Analyze, develop, use and apply digital electronics.	EL3.a.2.m: Demonstrate basic logic decision making using switches.
Standard: EL4: Students will analyze and use combinational logic analysis and design.	EL4.a: Design and build a combinational logic circuit that satisfies a need, to design constraints.	EL4.a.4.m: Use switches to create circuits that function as AND and OR gates.
Standard: EL7: Demonstrate safe and appropriate use of tools, machines and materials in electronics technology.	EL7.a: Demonstrate, apply and measure electronic safety concepts applied to circuits.	EL7.a.3.m: Demonstrate good organization at workstation within total laboratory. EL7.a.4.m: Explain precautions needed in the area of electronic safety. EL7.a.5.m: Describe solder safety as it pertains to burns and potential fires or damage to facilities or customer products.
Wisconsin Technology & Engineering -Engineering (ENG)		
Standard	**Learning Priority**	**Performance Indicators**
Standard: ENG1: Students will analyze and demonstrate the attributes of design.	ENG1.a: Analyze engineering design theory.	ENG1.a.5.m: Design is a creative planning process that leads to useful products and systems. ENG1.a.6.m: There is no perfect design. ENG1.a.7.m: Explain how the design process has many criteria which ultimately lead to a solution. ENG1.a.8.m: Requirements for a design are made up of criteria and constraints.
Standard: ENG2: Students will analyze and demonstrate engineering design.	ENG2.a: Analyze the attributes of engineering design.	ENG2.a.3.m: Design involves a set of steps, which can be performed in different sequences and repeated as needed. ENG2.a.4.m: Examine how brainstorming is an individual or

		group design process step used to generate ideas to solve a problem. ENG2.a.5.m: Discuss the engineering design process involves defining a problem, generating ideas, selecting a solution, testing the solution(s), making the item, evaluating it and presenting the results.
	ENG2.b: Describe and apply engineering design.	ENG2.b.3.m: Modeling, testing, evaluating and modifying are used to transform ideas into practical solutions.
Standard: ENG3: Students will demonstrate and analyze the role of troubleshooting, research and development, invention and innovation and experimentation in problem solving.	ENG3.a: Discuss the importance of the problem solving process.	ENG3.a.4.m: Explain troubleshooting is a problem-solving method used to identify the cause of a malfunction in a system.
	ENG3.b: Analyze the procedures for innovation and invention.	ENG3.b.3.m: Invention is a process of turning ideas and imagination into devices and systems. Innovation is the process of modifying an existing product or system to improve it. ENG3.b.4.m: Explain some technological problems are best solved through experimentation.
Standard: ENG4: Students will develop abilities to apply the design process.	ENG4.a: Research the background information of a proposed design.	ENG4.a.3.m: Specify criteria and constraints for the design. ENG4.a.4.m: Demonstrate two-dimensional and three-dimensional representations of the designed solution.
	ENG4.b: Design solutions based on gathered information.	ENG4.b.3.m: Apply a design process to solve problems in and beyond the laboratory-classroom.
	ENG4.c: Evaluate completed solutions and provide feedback.	ENG4.c.4.m: Test and evaluate the design in relation to pre-established criteria and constraints and refine as needed. ENG4.c.5.m: Make a product or system and document the solution.
Standard: ENG5: Students will develop the abilities to use and maintain technological products and systems.	ENG5.a: Use information to describe and design systems.	ENG5.a.4.m: Identify information provided in manuals, protocols or by experienced people to identify how things work. ENG5.a.5.m: Demonstrate and use tools, materials and machines safely to create, diagnose, adjust and repair systems.
	ENG5.b: Use tools to maintain systems.	ENG5.b.4.m: Operate and maintain systems in order to achieve a given purpose.

		ENG5.b.5.m: Use computers, calculators and technology in various applications.
Standard: ENG6: Students will develop the abilities to assess the impact of products and systems.	ENG6.a: Collect information about products and systems.	ENG6.a.2.m: Design and use instruments and technology to gather data.
	ENG6.b: Interpret data from collected information to assess impacts of products and systems.	ENG6.b.4.m: Collect data to analyze and interpret trends in order to identify the positive and negative effects of a technology. ENG6.b.5.m: Identify trends and monitor potential consequences of technological development. ENG6.b.6.m: Interpret and evaluate the accuracy of the information obtained and determine if it is useful.
Wisconsin Technology & Engineering - Manufacturing (MNF)		
Standard	**Learning Priority**	**Performance Indicators**
Standard: MNF1: Students will be able to select and use manufacturing technologies.	MNF1.a: Identify, select and safely use tools, machines, products and systems for specific tasks.	MNF1.a.4.m: Discuss health and safety procedures in the workplace that keep workers safe. MNF1.a.5.m: Use tools, materials and machines safely to diagnose, adjust and repair systems. MNF1.a.6.m: Explore both customary and metric systems of measurement and conversions.
	MFN1.b: Create and communicate alternative solutions.	MNF.1.b.3.m: Practice appropriate problem-solving approaches and critical thinking skills to on-the-job issues and tasks. MNF.1.b.4.m: Comprehend and engage in communication methods to convey ideas, concepts and requirements to other individuals and teams.
	MNF1.c: Demonstrate cooperation with others in ways to exhibit respect for individual and cultural differences and for the attitudes and feelings of others.	MNF1.c.3.m: Learn how to cooperate with others in ways to exhibit respect for individual and cultural differences and for the attitudes and feelings of others. MNF1.c.4.m: Recognize characteristics and benefits of teamwork, leadership and citizenship in the school, community and manufacturing settings. MNF1.c.5.m: Participate in the student organization SkillsUSA competitive career development events to enrich academic skills, encourage career choices and contribute to employability.

Wisconsin Technology & Engineering- Power and Energy (PE)		
Standard	**Learning Priority**	**Performance Indicators**
Standard: PE1: Students will be able to select and use energy and power technologies.	PE1.a: Discuss, analyze and use energy systems.	PE1.a.6.m: Define how energy is the ability to do work. PE1.a.7.m: Discuss how energy can be used to do work, using various processes. PE1.a.8.m: Analyze how power is the rate at which energy is converted from one form to another or transferred from one place to another or the rate at which work is done. PE1.a.9.m: Examine how power systems are used to drive and provide propulsion to other technological products and systems. PE1.a.10.m: Discuss that much of the energy used in our environment is not used efficiently.
	PE1.b: Analyze, use and discuss machine and tool use relating to energy and power systems.	PE1.b.5.m: Explain the machines and systems used in energy systems to do work. PE1.b.7.m: Follow safe procedures when using tools and equipment related to power and energy systems. PE1.b.8.m: Define and use specific tools and technology related to power and energy systems. (Such as: multi-meter and computer software programs).
Wisconsin Technology & Engineering – Transportation (TR)		
Standard	**Learning Priority**	**Performance Indicators**
Standard: TR1: Students will be able to select and use transportation technologies.	TR1.b: Analyze and explain how transportation vehicles and transportation vehicle systems work.	TR1.b.5.m: Explain that transportation vehicles are made up of subsystems, such as structural, propulsion, suspension, guidance, control and support that must function together to make them work effectively. TR1.b.6.m: Identify that a transportation system may lose efficiency or fail if one part is missing or malfunctioning or if a subsystem is not properly working.
	TR1.c: Develop the skill set necessary to diagnose, problem solve and repair transportation vehicles.	TR1.c.5.m: Use STEM – Science, Technology, Engineering and Math to solve problems related to the transportation field. TR1.c.6.m: Use simple machines to construct transportation-related devices.
Wisconsin Technology & Engineering Inforamtion and Communication Technologies (ICT)		
Standard	**Learning Priority**	**Performance Indicators**
Standard: ICT1: Students will analyze, select and use information and communication technologies.	ICT1.a: Analyze how communication happens, the different forms of communication and how it affects society.	ICT1.a.10.m: Analyze how the use of symbols, measurements and drawings promotes clear communication by providing a common language to express ideas.
Wisconsin Common Career Technical Standards (WCCTS)-Creativity, Critical Thinking, Communication and Collaboration (C)		
Standard	**Learning Priority**	**Performance Indicators**
Standard: 4C1: Students will think and work creatively to develop innovative solutions to problems and opportunities.	4C1.a: Develop original solutions, products and services to meet a given need.	4C1.a.4.m: Analyze elements of a problem to develop creative solutions. 4C1.a.6.m: Describe how past experiences can inform current problem solving.

		4C1.a.7.h: Develop original ways to solve a given problem. 4C1.a.8.h: Design a product or service that could fulfill a human need or desire. 4C1.a.9.h: Apply past experiences to current problems in developing innovative solutions.
	4C1.b: Work creatively with others to develop solutions, products and services.	4C1.b.4.m: Explain how multiple people can develop better solutions than an individual. 4C1.b.5.m: Explain how multiple people and perspectives can develop better ideas than an individual. 4C1.b.6.m: Explain how multiple people and perspectives can improve an existing product or process better than an individual. 4C1.b.7.h: Incorporate the skills and experiences of others to develop a new solution to a problem. 4C1.b.8.h: Work as part of a team to design a product or service that could fulfill a human need or desire. 4C1.b.9.h: Work as part of a team to improve an existing product or process.
Standard: 4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.	4C2.a: Develop effective resolutions for a given problem, decision or opportunity using available information.	4C2.a.5.m: Analyze symptoms to identify the root cause of a problem. 4C2.a.6.m: Develop multiple resolutions for a given problem, decision or opportunity. 4C2.a.7.m: Identify problems that became worse due to poorly thought out or poorly informed solutions. 4C2.a.8.m: Explain how implementation of a solution or action may affect one or more corresponding systems. 4C2.a.9.m: Explain how different resolutions may be appropriate under different circumstances. 4C2.a.10.m: Explain the process for choosing an action or making a decision. 4C2.a.11.h: Determine the information needed to address an identified problem. 4C2.a.12.h: Contrast the benefits and drawbacks of various proposed resolutions to a given situation. 4C2.a.13.h: Predict how an action could result in unintended consequences, both positive and negative. 4C2.a.14.h: Analyze the impact of a decision using a systems thinking model. 4C2.a.15.h: Determine the best resolution for a problem, decision or opportunity based on given criteria. 4C2.a.16.h: Defend an action taken or a decision implemented.
	4C2.b: Develop and implement a resolution for a new situation using personal knowledge and experience.	4C2.b.3.m: Analyze problems to determine what past experiences might be related and relevant.

		4C2.b.4.m: Analyze a problem to determine how it relates to existing knowledge. 4C2.b.5.h: Apply past experience to develop a course of action for a new situation. 4C2.b.6.h: Use existing knowledge to develop a resolution for a new situation, problem or opportunity.
Standard: 4C3: Students will communicate and collaborate with others to accomplish tasks and develop solutions to problems and opportunities.	4C3.a: Communicate thoughts and feelings with others using verbal and non-verbal language.	4C3.a.8.m: Implement effective listening skills in resolving a situation. 4C3.a.9.h: Develop a mutually acceptable response to a question or problem. 4C3.a.11.h: Communicate effectively in the presence of a language barrier. 4C3.a.12.h: Utilize effective listening skills in creating consensus in a group.
	4C3.b: Work collaboratively with others.	4C3.b.4.m: Use idea generating practices as part of a group. 4C3.b.5.m: Describe ways to facilitate group collaboration. 4C3.b.6.m: Demonstrate the use of various tools to communicate effectively with an individual or a group. 4C3.b.7.h: Participate in group processes to generate consensus. 4C3.b.8.h: Lead group processes to generate consensus.
	4C3.c: Use interpersonal skills to resolve conflicts with others in an ethical manner.	4C3.c.5.m: Contribute to resolving conflicts that occur within a team or group. 4C3.c.6.m: Explore the ethical considerations of a current or historical action or decision. 4C3.c.7.h: Resolve conflicts productively with individuals as they arise. 4C3.c.8.h: Lead a team or group through a conflict resolution process to reach a productive outcome.
Wisconsin Common Career Technical Standards (WCCTS)-Career Development (CD)		
Standard	**Learning Priority**	**Performance Indicators**
Standard: CD1: Students will consider, analyze and apply an awareness of self, identity and culture to identify skills and talents.	CD1.a: Identify person strengths, aptitudes and passions.	CD1.a.2.m: Assess personal strengths, aptitudes and passions related to potential future careers CD1.a.3.h: Evaluate various occupations and career pathways to identify personal, academic and career goals based on personal strengths, aptitudes and passions.
	CD1.b: Demonstrate effective decision-making, problem solving and goal setting.	CD1.b.4.m: Identify long and short-term goals. CD1.b.5.h: Use a decision-making and problem-solving model.
	CD1.c: Interact effectively with others in similar and diverse teams.	CD1.c.7.m: Display cooperative behavior and identify personal strengths and assets in groups. CD1.c.11.h: Evaluate how the personal strengths and assets of others contribute to a cooperative group atmosphere. CD1.c.12.h: Assess how respect and appreciation for individual and cultural differences impacts group processes.

	CD1.d: Apply a range of relevant decision-making strategies.	CD1.d.4.m: Apply decision-making strategies to personal and team interactions. CD1.d.5.h: Predict the outcome of various decisions on personal, social and career success. CD1.d.6.h: Evaluate the impact of personal decision-making strategies on specific outcomes.
Standard: CD2: Students will identify the connection between educational achievement and work opportunities in order to reach personal and career goals.	CD2.a: Apply academic experiences to the world of work, inter-relationships and the community.	CD2.a.2.m: Describe a diverse range of opportunities available beyond high school. CD2.a.3.h: Evaluate how performance and connections within the learning community enhance future opportunities. CD2.a.4.h: Determine those opportunities that best support attainment of a specific career goal.
	CD2.b: Assess attitudes and skills that contribute to successful learning in school and across the life span.	CD2.b.5.m: Apply academic information from a variety of sources to enhance career preparedness and lifelong learning. CD2.b.6.m: Research local and regional labor market and job growth information to analyze career opportunities. CD2.b.7.h: Interpret and analyze the impact of current education, training and work trends on life, learning and career plans. CD2.b.8.h: Assess education and training opportunities to acquire new skills necessary for career advancement. CD2.b.9.h: Analyze local and regional labor market and job growth information to select a career pathway for potential advancement.
Standard: CD3: Students will create and manage a flexible and responsive individualized learning plan to meet their career goals.	CD3.a: Investigate the world of work in order to gain knowledge of self in order to make informed career decisions.	CD3.a.5.m: Demonstrate the ability to use technology to retrieve and manage career information that inspires educational achievement. CD3.a.6.m: Build an ongoing awareness of personal abilities, skills, interests and motivation and determine how these fit with chosen career pathway. CD3.a.7.m: Develop an individual learning plan to enhance educational achievement and attain career goals based on a career pathway. CD3.a.9.m: Use assessment results in educational planning including career awareness. CD3.a.10.h: Analyze how career plans may be affected by personal growth, external events and changes in motivations and aspirations. CD3.a.11.h: Apply academic and employment readiness skills in work-based learning situations such as internships, shadowing and/or mentoring experiences. CD3.a.12.h: Evaluate changes in local, national and global employment trends, societal needs and economic conditions related to career planning.

		CD3.a.14.h: Implement an individual learning plan to maximize academic ability and achievement.
	CD3.b: Examine and evaluate opportunities that could enhance life and career plans and articulate plan to guide decisions and actions.	CD3.b.2.m: Describe educational levels (e.g., work-based learning, certificate, two-year, four-year and professional degrees) and performance skills needed to attain personal and career goals. CD3.b.3.m: Demonstrate openness to exploring a wide range of occupations and career pathways. CD3.b.4.h: Implement strategies for responding to transition and change with flexibility and adaptability. CD3.b.5.h: Evaluate the relationship between educational achievement and career development.
	CD3.c: Employ career management strategies to achieve future career success and satisfaction.	CD3.c.3.m: Identify work values and needs. CD3.c.4.m: Define adaptability and flexibility in the world of work. CD3.c.5.h: Determine how principles of equal opportunity, equity, respect, inclusiveness and fairness, affect career planning and management. CD3.c.6.h: Discuss how adaptability and flexibility, especially when initiating or responding to change, contributes to career success.
Standard: CD4: Students will identify and apply employability skills.	CD4.a: Identify and demonstrate positive work behaviors and personal qualities needed to be employable.	CD4.a.4.m: Demonstrate flexibility and willingness to learn new knowledge and skills. CD4.a.5.m: Identify positive work-qualities typically desired in each of the career cluster's pathways. CD4.a.6.h: Evaluate how self-discipline, self-worth, positive attitude and integrity displayed in a work situation affect employment status. CD4.a.7.h: Assess how flexibility and willingness to learn new knowledge and skills affect employment status. CD4.a.8.h: Apply communication strategies when adapting to a culturally diverse environment. CD4.a.9.h: Use positive work-qualities typically desired in each of the career cluster's pathways. CD4.a.10.h: Manage work roles and responsibilities to balance them with other life roles and responsibilities.
	CD4.b: Demonstrate skills related to seeking and applying for employment to find and obtain a desired job.	CD4.b.3.m: Use technology to assist in career exploration and job-seeking activities. CD4.b.4.m: Compare and contrast personal attributes with employment needs and trends. CD4.b.5.h: Use multiple resources to locate job opportunities.

		CD4.b.6.h: Prepare a resume, cover letter, employment application. CD4.b.7.h: Employ critical thinking and decision-making skills to exhibit qualifications to a potential employer in an interview.
	CD4.c: Identify and exhibit traits for retaining employment.	CD4.c.3.m: Distinguish between appropriate behaviors in a social vs. professional setting. CD4.c.4.h: Model behaviors that demonstrate reliability and dependability. CD4.c.5.h: Maintain appropriate dress and behavior for the job to contribute to a safe and effective workplace/jobsite. CD4.c.6.h: Complete required employment forms and documentation. CD4.c.7.h: Summarize key activities necessary to retain a job in an industry.
	CD4.d: Develop positive relationships with others.	CD4.d.4.m: Use cooperative behavior in helping peers accomplish goals and tasks. CD4.d.5.h: Participate in co-curricular and community activities to enhance the school experience. CD4.d.6.h: Evaluate the best method to assist co-workers in accomplishing goals and tasks. CD4.d.7.h: Examine the skills required to enable students to successfully transition to post-secondary opportunities. CD4.d.8.h: Use a systematic approach to academic and career planning for students to achieve their learning, socio-cultural and work goals.
Wisconsin Common Career Technical Standards (WCCTS)-Environmental Health and Safety (EHS)		
Standard	**Learning Priority**	**Performance Indicators**
Standard: EHS1: Students will identify the importance and interrelationships of health, safety and environmental systems and evaluate the impacts of these systems on organizational performance for continuous improvement.	EHS1.d: Implement personal and jobsite safety rules and regulations to maintain and improve safe and healthful working conditions and environments.	EHS1.d.5.m: Recognize and use systems in school and in the community that protect and enhance personal, environmental health and safety. EHS1.d.6.m: Discuss employee rights and responsibilities and how to apply them in a workplace setting. EHS1.d.7.h: Assess workplace conditions with regard to personal and environmental health and safety. EHS1.d.8.h: Identify different workplace systems that protect and enhance personal and environmental health and safety. EHS1.d.9.h: Describe employee rights and responsibil-ities to maintain workplace health and safety, including compliance with rules and laws.

Key Vocabulary:			
3D Modeling	Critical Thinking	Orthographic Drawing	Isometric Drawing
Problem Solving	Constraint	Chassis	Transmission
Gear Ratio	Mechanical Advantage	Potential Energy	Kinetic Energy
Friction/ Friction loss	Energy	Work	Voltage
Current	Resistance	Ohm's Law	Watts Law
Electrical Load	Electricity	Electronics	Alternating Current
Direct Current	Insulator	Conductor	Simple Circuit
Wattage	Series Circuit	Parallel Circuit	Machine/tool Identification
Torque			

Topics/Content Outline- Units and Themes:

Rotation A:

- Computer Aided Design Unit
  - Measurement
  - 3D Modeling
  - Orthographic drawing creation and application
- Manufacturing/Mass Production Unit
  - Machine Identification and Safety
  - Project Construction

Rotation B:

- Transportation Unit
  - Vehicle Terminology
  - Mechanisms/Simple Machines
  - Gear Ratio
  - Six Step Design Process
- Electricity Unit
  - Generating Electricity
  - Components of/types of Circuits
  - Ohm's Law

Rotation C:

- Design and development project

Primary Resource(s):	
• Autodesk Inventor Software	• Project Lead the Way Curriculum