



School District of Marshfield Course Syllabus

Course Name: Consumer Auto Maintenance
Length of Course: 1 Semester
Credit: .5

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:

Do you or will you drive a vehicle? Consumer Auto Maintenance is a consumer level laboratory-based course designed for males and females without any mechanical experience or who have never taken an automotive class before. Not only does the course help you become a better consumer, but you will also learn about various vehicle emergencies, buying and selling vehicles, and will be able to perform basic maintenance on your own vehicle which will save you money in the future.

Standards:

Wisconsin Technology & Engineering – Broad Based (BB)		
Standard	Learning Priority	Performance Indicators
BB1: Students will analyze the core concepts of technology	BB1.a Analyze and use technological systems	BB1.a.5.h Describe how systems can fail because of design flaws, defect parts, poorly matched parts

		<p>or they were used beyond their design capabilities</p> <p>BB1.a.6.h Describe how the outputs of one subsystem given a prominent energy, power and transportation system</p>
	BB1.e Analyze, explain, and use control systems.	<p>BB1.e.5.h Identify the multiple controls that sense information from a number of areas, evaluate the system and act accordingly given a flawed complex system.</p> <p>BB1.e.6.h Select and perform appropriate maintenance is the process in order for the product or system to continue functioning properly, to extend its life or to upgrade its capability given a flawed product or system.</p>
Wisconsin Technology & Engineering – Transportation (TR)		
Standard	Standard	Standard
TR1: Students will be able to select and use transportation technologies.	TR1.a Analyze and explain transportation systems.	<p>TR1.a.6.h Summarize how transportation plays a vital role in the operation of other technologies, such as manufacturing, construction, communication, health and safety and agriculture.</p> <p>TR1.a.7.h Identify how government regulations and technological trade-offs might influence the transportation modes used to move people and goods from one place to another.</p> <p>TR1.8.h Relate how the current and future design of advanced transportation systems depends on many innovative materials and processes.</p>
	TR1.b Analyze and explain how transportation vehicles and transportation vehicle systems work.	<p>TR1.b.7.h Interpret preventive maintenance schedules and recommended service intervals for vehicles.</p> <p>TR1.b.9.h Explain that all systems demand specific repair procedures in order to achieve the highest performance and efficiency.</p>
	TR1.c Develop the skill set necessary to diagnose, problem solve and repair transportation vehicles.	<p>TR1.c.10.h Students will perform tasks related directly to current national standards per transportation area (i.e., NATEF).</p> <p>TR1.c.11.h Demonstrate safe and proficient use of specialty tools and equipment related to servicing transportation vehicles.</p> <p>Tr1.c.12.h Explain career preparation, career pathways and</p>

		the importance of on-the-job training as well as further education with regard to the transportation field.
Wisconsin Technology & Engineering – Electronics (EL)		
Standard	Learning Priority	Performance Indicators
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.6.h Demonstrate the safe usage of appropriate tools, procedures, and operation of equipment. EL7.a.7.h Describe personal safety precautions for working with electric and electronic devices electrical shock.
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.

<p>Standard: 4C2: Students will formulate and defend judgments and decisions by employing critical thinking skills.</p>	<p>4C2.a: Develop effective resolutions for a given problem, decision or opportunity using available information.</p>	<p>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.</p>
	<p>4C2.b: Develop and implement a resolution for a new situation using personal knowledge and experience.</p>	<p>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.</p>
<p>Standard: 4C3: Students will communicate and collaborate with others to accomplish tasks and develop solutions to problems and opportunities.</p>	<p>4C3.a: Communicate thoughts and feelings with others using verbal and non-verbal language.</p>	<p>4C3.a.8.m: Implement effective listening skills in resolving a situation.</p>

		<p>4C3.a.9.h: Develop a mutually acceptable response to a question or problem.</p> <p>4C3.a.11.h: Communicate effectively in the presence of a language barrier.</p> <p>4C3.a.12.h: Utilize effective listening skills in creating consensus in a group.</p>
	4C3.b: Work collaboratively with others.	<p>4C3.b.4.m: Use idea generating practices as part of a group.</p> <p>4C3.b.5.m: Describe ways to facilitate group collaboration.</p> <p>4C3.b.6.m: Demonstrate the use of various tools to communicate effectively with an individual or a group.</p> <p>4C3.b.7.h: Participate in group processes to generate consensus.</p> <p>4C3.b.8.h: Lead group processes to generate consensus.</p>
	4C3.c: Use interpersonal skills to resolve conflicts with others in an ethical manner.	<p>4C3.c.5.m: Contribute to resolving conflicts that occur within a team or group.</p> <p>4C3.c.6.m: Explore the ethical considerations of a current or historical action or decision.</p> <p>4C3.c.7.h: Resolve conflicts productively with individuals as they arise.</p> <p>4C3.c.8.h: Lead a team or group through a conflict resolution process to reach a productive outcome.</p>
Wisconsin Common Career Technical Standards (WCCTS) – Career Development (CD)		
Standard	Learning Priority	Performance Indicators
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.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.	<p>CD1.b.3.m: Develop effective coping skills for dealing with problems.</p> <p>CD1.b.5.h: Use a decision-making and problem-solving model.</p> <p>CD1.b.6.h: Develop an action plan to set and achieve realistic goals.</p>
	CD1.c: Interact effectively with others in similar and diverse teams.	<p>CD1.c.5.m: Distinguish between appropriate and inappropriate behavior in a team setting.</p> <p>CD1.c.7.m: Display cooperative behavior and identify personal strengths and assets in groups.</p>

CD2: Students will identify the connection between educational achievement and work opportunities in order to reach personal and career goals.	CD2.b: Assess attitudes and skills that contribute to successful learning in school and across the life span.	CD2.b.6.m: Research local and regional labor market and job growth information to analyze career opportunities. CD2.b.8.h: Assess education and training opportunities to acquire new skills necessary for career advancement.
CD3: Students will create and manage a flexible and responsive individualized learning plan to meet their career goals.	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.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.6.h: Discuss how adaptability and flexibility, especially when initiating or responding to change, contributes to career success.
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.3.m: Demonstrate self-discipline, self-worth, positive attitude and integrity. CD4.a.4.m: Demonstrate flexibility and willingness to learn new knowledge and skills.
	CD4.b: Demonstrate skills related to seeking and applying for employment to find and obtain a desired job.	CD4.b.4.m: Compare and contrast personal attributes with employment needs and trends. CD4.b.6.h: Prepare a resume, cover letter, employment application.
	CD4.c: Identify and exhibit traits for retaining employment.	CD4.c.2.m: Demonstrate the behavior and etiquette appropriate to interactions with adults. 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.

Wisconsin Common Career Technical Standards – Environment, Health, and Safety (EHS)		
Standard	Learning Priority	Performance Indicators
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.8.h: Identify different workplace systems that protect and enhance personal and environmental health and safety.
National Automotive Technicians Education Foundation (NATEF)		
ASE Area	Category	Task
I. Engine Repair	A. General	1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins. 2. Verify operation of the instrument panel engine warning indicators. 3. Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action.
	C. Lubrication and Cooling Systems	2. Inspect, replace, and/or adjust drive belts, tensioners, and pulleys; check pulley and belt alignment. 5. Perform engine oil and filter change; use proper fluid type per manufacturer specification; reset maintenance reminder as required. 6. Identify components of the lubrication and cooling systems.
II. Automotive Transmission and Transaxle	A. General	1. Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins. 2. Check fluid level in a transmission or a transaxle equipped with a dip-stick. 5. Identify drive train components and configuration.
IV. Suspension and Steering Systems	A. General	3. Identify suspension and steering system components and configurations.
	B. Related Suspension and Steering Service	1. Inspect rack and pinion steering gear inner tie rod ends (sockets) and bellows boots. 2. Inspect power steering fluid level and condition. 4. Inspect for power steering fluid leakage.

		<p>5. Remove, inspect, replace, and/or adjust power steering pump drive belt.</p> <p>7. Inspect pitman arm, relay (centerlink/intermediate) rod, idler arm, mountings, and steering linkage damper.</p> <p>8. Inspect tie rod ends (sockets), tie rod sleeves, and clamps.</p> <p>12. Inspect upper and lower ball joints (with or without wear indicators).</p> <p>15. Inspect and/or replace front/rear stabilizer bar (sway bar) bushings, brackets, and links.</p>
	C. Wheel Alignment	2. Describe alignment angles (camber, caster and toe)
	D. Wheel and Tires	<p>1. Inspect tire condition; identify tire wear patterns; check for correct tire size, application (load and speed ratings), and air pressure as listed on the tire information placard/label.</p> <p>2. Rotate tires according to manufacturer's recommendations including vehicles equipped with tire pressure monitoring systems (TPMS).</p> <p>3. Dismount, inspect, and remount tire on wheel; balance wheel and tire assembly.</p> <p>4. Dismount, inspect, and remount tire on wheel equipped with tire pressure monitoring system sensor.</p> <p>5. Inspect tire and wheel assembly for air loss; determine necessary action.</p> <p>6. Repair tire following vehicle manufacturer approved procedure.</p>
V. Brakes	A. General	<p>1. Research vehicle service information including fluid type, vehicle service history, service precautions, and technical service bulletins.</p> <p>2. Describe procedure for performing a road test to check brake system operation, including an anti-lock brake system (ABS).</p> <p>3. Install wheel and torque lug nuts.</p> <p>4. Identify brake system components and configuration.</p>
VI. Electrical/ Electronic Systems	B. Battery Service	<p>1. Perform battery state-of-charge test; determine necessary action.</p> <p>2. Confirm proper battery capacity for vehicle application; perform</p>

		battery capacity and load test; determine necessary action. 4. Inspect and clean battery; check battery cables, connectors, clamps, and hold-downs. 6. Jump-start vehicle using jumper cables and a booster battery or an auxiliary power supply.
	C. Starting System	1. Perform starter current draw test; determine necessary action. 2. Perform starter circuit voltage drop tests; determine necessary action.
	D. Charging System	1. Perform charging system output test; determine necessary action.
	E. Lighting, Instrument Cluster, Driver Information, and Body Electrical Systems	1. Inspect interior and exterior lamps and sockets including headlights and auxiliary lights (fog lights/driving lights); replace as needed. 2. Aim headlights. 7. Verify operation of instrument panel gauges and warning/indicator lights; reset maintenance indicators. 8. Verify windshield wiper and washer operation; replace wiper blades.
VIII. Engine Performance	A. General	1. Research vehicle service information, including fluid type, vehicle service history, service precautions, and technical service bulletins. 7. Remove and replace spark plugs; inspect secondary ignition components for wear and damage.
	C. Fuel, Air Induction, and exhaust Systems	1. Replace fuel filter(s) where applicable. 2. Inspect, service, or replace air filters, filter housings, and intake duct work. 3. Inspect integrity of the exhaust manifold, exhaust pipes, muffler(s), catalytic converter(s), resonator(s), tail pipe(s), and heat shields; determine necessary action. 4. Inspect condition of exhaust system hangers, brackets, clamps, and heat shields; determine necessary action.

Key Vocabulary:

Acronyms:	CV Axle	Misfire	Screwdriver
ABS	Deductible	Pliers	Sockets
EFI	Engine	Ratchet	Technical Service Bulletin

OBD	Filter	Radiator	Transaxle
Basecoat/Clearcoat	Fuel Injection	Repair Order	Warranty
Brake Pad	Liability	Serpentine Belt	Wrenches

Topics/Content Outline- Units and Themes:

Quarter 1: Owning and Maintaining A Vehicle

- Careers and Professionalism in the Industry
- Safety in the Lab and Around the Vehicle
- Repair Orders and Repair Manuals
- Vehicle Identification and Service Information
- Buying, Owning, and Selling a Vehicle
- Preventative Maintenance

Quarter 2: Basic Vehicle Systems

- Wheels and Tires
- Battery Service
- Starting and Charging Systems
- Electrical and Lighting Systems
- Lubrication and Cooling Systems
- Disc and Drum Brakes
- Steering and Suspension Systems

Primary Resource(s):

- **Auto Upkeep: Basic Car Care, Maintenance and Repair, 3rd Edition**
Rolling Hills Publishing
ISBN: 1-62702-001-2
© 2012