

# Exploration of Automotive Careers (MAT)

## Grades 11 -12

**Units of Credit:** One Year (Elective)

**Prerequisites:** Power Technology 2, or Ag- Ed 2 and enrolled in 3, or Consent of Instructor

### **Course Description:**

In this course students will explore and experience skills related to the automotive industry. The student will learn maintenance procedures, diagnose problems, and repair automotive components such as: engines, transmissions, trans axels, drive trains, suspensions, brakes, exhaust, electrical, components and heating and air conditioning components. Also included is minor body collision and rust repair. This course is a partnership with Montana Automotive Technologies (MAT). Montana Automotive Technologies provides the shop space, tools and projects. In addition MAT provides volunteer mentors to work with the students in various aspects of mechanical repair. This class is supported by the area automobile dealers and repair shops. Successful completion of this class will give a student entry level work skills and the knowledge to continue their education in a post secondary school or the military. This class is scheduled to enhance the students “hands on” learning experience with a 3.5 hour lab and a 2 hour class scheduled each week. Check with the Instructor for the time, location and day of week.

### **Topics:**

- Tire and wheel selection and service
- Brake service
- Steering and suspension service
- Lubrication and cooling systems
- Fuel systems
- Electrical systems
- Exhaust systems
- Starting systems
- Charging and starting systems
- Engine service
- Dent repair
- Panel replacement
- Power Train service
- Vehicle safety systems

*NOTE: Throughout this document, learning target types are identified as knowledge (“K”), reasoning (“R”), skill (“S”), or product (“P”).*

**STANDARD 1: Students experience various career opportunities and assess personal career pathways.**

### **Benchmark 1:**

Explore and identify personal interests, aptitudes, and abilities and develop strategies to achieve tentative career goals.

**Learning Targets (Type):**

1. I can use Montana Career Information Systems (MCIS) and/or other systems or web resources to investigate and evaluate my personal interests, aptitudes and abilities. (S)
2. I can formulate tentative career goals. (R)
3. I can evaluate approaches for meeting my goals. (R)
4. I can understand the need for career planning. (R)

**Benchmark 2:**

Utilize local resources to research career plans.

**Learning Targets (Type):**

1. I can identify local resources to develop career plans. (K)
2. I can contact my school career counselor or teacher to pursue career pathways. (S)

**Benchmark 3:**

Recognize the interrelationships of family, community, career, and leisure roles.

**Learning Targets (Type):**

1. I can compare and contrast the needs of career and leisure activities and how they relate to and/or affect family and community. (K)
2. I can describe the importance of balance between family and community in regards to career and leisure activities. (R)

**STANDARD 2: Students demonstrate an understanding and apply principles of Resource Management (i.e., financial, time, personal management).**

**Benchmark 1:**

Prepare a budget and keep financial records.

**Learning Targets (Type):**

1. I can research and report cost of materials and time. (R,S)
2. I can document financial inputs and outputs. (S)
3. I can identify the necessity to maintain accurate financial records. (K)
4. I can stay within a fixed budget. (S,P)

**Benchmark 2:**

Prioritize, allocate time, prepare and follow schedules to complete a project.

**Learning Targets (Type):**

1. I can estimate the required time to complete a project. (R)
2. I can prioritize resources, equipment and tasks. (R)
3. I can reflect upon completion. (K)

**Benchmark 3:**

Apply appropriate time to task.

**Learning Targets (Type):**

1. I can implement a time schedule for task completion. (S)

**Benchmark 4:**

Use physical resources wisely to accomplish a goal.

**Learning Targets (Type):**

1. I can identify the resources necessary to accomplish the task. (K)
2. I can maintain the tools of the trade. (S)
3. I can maximize the use of my resources. (S)

**STANDARD 3: Students acquire and utilize personal and leadership skills to become successful, productive citizens.**

**Benchmark 1:**

Demonstrate active leadership skills by participation in group activities and projects.

**Learning Targets (Type):**

1. I can investigate various leadership styles. (*R*)
2. I can apply leadership styles in group activities and projects. (*R*)
3. I can master a working knowledge of SkillsUSA (CTSO) (State the SkillsUSA motto, creed, and colors. Describe the official SkillsUSA dress and procedure for becoming a SkillsUSA officer). (*S*)

**Benchmark 2:**

Demonstrate positive personal and work ethics.

**Learning Targets (Type):**

1. I can arrive on time for class and work. (*S*)
2. I can develop personal and work related goals. (*K,P*)
3. I can describe ethical behavior in the workplace. (*K*)
4. I can and do understand the importance of employability and work habits. (*K,R*)
5. I can and do understand the need for career planning. (*K,R*)

**Benchmark 3:**

Demonstrate skills to be a productive citizen.

**Learning Targets (Type):**

1. I can develop professional relationships with community members. (*S*)
2. I can contribute to my community in a positive manner. (*S,P*)

**Benchmark 4:**

Apply self-esteem building practices.

**Learning Targets (Type):**

1. I can define and provide evidence of my strengths in my career interest areas. (*K,S*)
2. I can persevere through set backs and stay focused on my goals. (*S*)

**Benchmark 5:**

Demonstrate appreciation for diverse perspective needs and characteristics.

**Learning Targets (Type):**

1. I can develop a working relationship with diverse populations. (*K,S*)
2. I can demonstrate communication skills that contribute to positive relationships. (*S*)
3. I can work to understand diverse points of view. (*R*)

**Benchmark 6:**

Practice several methods of effective communication.

**Learning Targets (Type):**

1. I can demonstrate good listening skills. (*S*)
2. I can effectively communicate verbally through collaborative projects. (*S,P*)
3. I can develop quality written professional communications. (*P*)

**STANDARD 4: Students acquire and demonstrate current technical skills leading to an occupation.**

**Benchmark 1:**

Practice technical skills and procedures required for an occupation.

**Learning Targets (Type):**

1. I can use tools, machines, and equipment to manufacture or produce solutions to problems. *(R,S,P)*
2. I can practice appropriate automotive technician techniques based on knowledge of modern equipment and newly developed automotive technician processes. *(S)*
3. I can recognize the career opportunities for a person with automotive technician skills. *(K)*
4. I can assess skills and distribute work accordingly; evaluate performance and provide feedback toward the accomplishment of personal and team goals. *(R,S)*

**Benchmark 2:**

Practice safe and appropriate use of technology.

**Learning Targets (Type):**

1. I can demonstrate knowledge of new and emerging technologies that may affect the field of an automotive technician. *(K)*
2. I can utilize correct techniques for proper handling of hazardous materials. *(K)*
3. I can demonstrate knowledge of concepts and skills related to health and safety in the workplace. *(K,S)*
4. I can comply with safety rules for working with automotive chemicals. *(K)*
5. I can have chemical manufacturers provide a material safety data sheet (MSDS) for each chemical they produce. *(K)*
6. I can store chemicals in properly labeled containers. *(K)*
7. I can identify the gasses encountered in the automotive field and the hazards they present. *(K)*
8. I can identify the hazards and control of asbestos dust. *(K)*

**Benchmark 3:**

Select the appropriate tools, equipment, and procedures for the task.

**Learning Targets (Type):**

1. I can demonstrate skills and knowledge of current equipment, materials, and processes used in related careers. *(K,S)*
2. I can identify and measure metric and standard fasteners. *(K,S)*
3. I can correctly identify and use basic hand tools. *(K,S)*
4. I can identify and demonstrate use of basic measuring tools (accurate to 1/32 or 1mm). *(K,S)*
5. I can use reference manuals or information systems to find service procedures and specifications. *(K)*
6. I can properly raise and support vehicles using jack stands and a frame contact hoist. *(K,S)*
7. I can use and apply basic automotive repair processes in an industrial environment as applied by ASE Certification. *(K)*
8. I can allocate and evaluate time, materials, facilities and resources to set and achieve goals. *(R,S)*
9. I can assess skills and distribute work accordingly; evaluate performance and provide feedback toward the accomplishment of personal and team goals. *(R,S)*

**Benchmark 4:**

Manage and maintain technological tools and follow troubleshooting protocol.

**Learning Targets (Type):**

1. I can gather, compile and analyze data from a variety of sources, and evaluate relevance and accuracy in making informed decisions in the workplace. *(R,S)*
2. I can organize, process, analyze, and maintain written and computerized records and other forms of information using systematic methods. *(R,S)*

**Benchmark 5:**

Apply technical information to a variety of sources.

**Learning Targets (Type):**

1. I can use cross-curricular resources and knowledge to develop solutions to problems. *(K,S)*
2. I can develop knowledge to create innovative solutions and ideas. *(K)*
3. I can demonstrate and teach a learned skill including performance evaluation of self and others in this process. *(K,S)*
4. I can select, analyze, and present information using a variety of methods (e.g., oral, written, graphic, pictorial, multimedia). *(R,S)*

**STANDARD 5: Students know and demonstrate the requirements of the workplace through authentic application.**

**Benchmark 1:**

Practice and demonstrate academic and technical skills to a workplace setting.

**Learning Targets (Type):**

1. I can practice, and demonstrate my technical workplace skills in my school lab. *(S)*
2. I can research, write and present on the technical content utilizing academic skills found in workplace settings. *(R,S,P)*

**Benchmark 2:**

Apply the concepts of entrepreneurship.

**Learning Targets (Type):**

1. I can explain the concepts of entrepreneurship. *(K)*
2. I can demonstrate the concepts of entrepreneurship through a unique project. *(R,S)*
3. I can present my unique project to an authentic audience. *(S,P)*

**Benchmark 3:**

Identify possible outcomes and consequences of decisions.

**Learning Targets (Type):**

1. I can identify possible consequences of carelessness and horseplay. *(K)*
2. I can explain potential outcomes of not following directions, (i.e. safety, guidelines, rubrics). *(R)*

**Benchmark 4:**

Use acceptable industry standard equipment in a school setting.

**Learning Targets (Type):**

1. I can successfully use acceptable industry standard equipment to produce an authentic product within budget constraints. *(S,R,P)*