

## **COURSE SYLLABUS**

### **Maintenance and Light Repair Section A**

**Program:** 2014-2015 Automotive Technology

**KY Tech Course Name:** Maintenance and Light Repair and Lab Section A

**Teacher:** Mr. Kyle Sward

**Contact Information:** kyle.sward@clark.kyschools.us

**Prerequisites:** None

**High School Credits:** .5 Lab/.5 Classroom

**KCTCS Course Numbers  
or Articulated Credit**

AUT 150-151
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#### **Course Description:**

This course will provide the student the opportunity to gain the technical skills and develop the workplace competencies necessary for an entry-level position as a Maintenance and Light Repair Technician. The course will cover safety, theory and principles related to the design, operation, and servicing of automotive systems. Topics include entry level Engine Repair, Automatic Transmissions, Manual Drivetrains and Axles and Suspension and Steering.

#### **Objectives:**

See Attached Task List.

#### **Materials Used:**

Textbook – Modern Automotive Technology

Research Software – All Data, Identifix

Training Software – Today's Class.

Magazines – Motor Magazine

#### **Grading Scale**

A 100-90

B 89-80

C 79-70

D 69-60

F 59-0

I Incomplete

#### **Grading Criteria**

20% Class work/ Quizzes

25% Shop Work

40% Participation

15% Tests

\*Courses with grades of less than a "C" will not count toward a certificate or be eligible for dual credit.

### **Procedures for Makeup Work/Tests:**

A student will be permitted to make up tests and work not completed provided the student has an excused absence for missing the assignments. Excused absences must be approved by the high school, and posted in Infinite Campus.

### **Attendance Policy/Withdrawal Policy:**

There is a lot of information to be presented. Students are expected to attend and be punctual. In the event the student misses all or part of a class he or she will be expected to make up that days assignment with in one week. Withdrawals from class will be handled by the High School. Unless I am notified by the High School, you are still enrolled, and responsible for your assignments.

### **Supplies**

1. Bring pencils/pens and paper to class. There will be written assignments and tests given. You need to be prepared.
2. One pair of safety glasses will be issued to the student the first week of school. If they are lost or missing, the student is responsible for providing another pair. Without the proper eye protection, you will not be able to work in the lab. This is an absolute. No exceptions will be allowed. If the student fails to have safety glasses, they will loose one percentage point of their grade for every day that they do not bring their glasses.

### **Class expectations/Rules**

1. Enter room quietly.
2. Do not bring drinks or snacks into classroom.
3. Wear proper clothing and safety equipment.
4. Obey all safety rules and regulations.
5. Obey all school rules and policies.
6. Do not cheat, plagiarize or assist another in cheating.
7. No horseplay
8. Make sure the shop/lab is cleaned and tools are put away before leaving. If we can't find the tools, we can't work in the shop. If the shop is cluttered, we cannot work there safely.
9. Watch your language! You cannot use foul and offensive language in the workplace; therefore, you cannot use it here!
10. Keep your safety glasses on while working in the **lab**! Keep them on and wear them properly!
11. Be courteous to the teacher and fellow students.
12. You must have a minimum of a 2.0 GPA and at least a 75% in my class to bring your car in to work on.

**Course Outline:**

Subject areas that will be covered are as follows:

- \* Engine Repair
- \* Automatic Transmissions
- \* Manual Drivetrains and Axles
- \* Suspension and Steering.

There will be a test and research questions over each section listed above, and a final exam covering all areas.

**Accommodations for Individuals with Disabilities and Equal Employment Opportunities (EEO)**

The Department of Education and the Office of Career and Technical Education do not discriminate on the basis of race, color, national origin, sex, religion, age, or disability in educational services and/or employment. The Education Cabinet provides, upon request, reasonable accommodations including auxiliary aids and services necessary to afford an individual with a disability an equal opportunity to participate in all services, programs and activities. To request materials in an alternative format, contact the Civil Rights Compliance Coordinator in OCTE. Persons with hearing- and speech- impairments can contact the agency by using the Kentucky Relay Service, a toll-free telecommunication device for the deaf (TDD). For voice to TDD, call 1-800—648-6057. For TDD to voice, call 1-800-648-6056.

The Office of Career and Technical Education does not discriminate on the basis of race, color, national origin, sex, disability, age, marital status, or religion in admission to education programs, activities, and employment practices in accordance with Title VI of the Civil Rights Act of 1964, Title VII of the Civil Rights Act of 1964, Title IX of the Educational Amendments of 1972, Section 504 of the Rehabilitation Act of 1973 (revised 1992), and the Americans with Disabilities Act of 1990 and shall provide, upon request by a qualified disabled individual, reasonable accommodations including auxiliary aids and services necessary to afford individuals with a disability an equal opportunity to participate.

# **Automotive Maintenance and Light Repair Section A:**

## **Required Supplemental Tasks**

Identify general shop safety rules and procedures.

Utilize safe procedures for handling of tools and equipment.

Identify and use proper placement of floor jacks and jack stands.

Identify and use proper procedures for safe lift operation.

Utilize proper ventilation procedures for working within the lab/shop area.

Identify marked safety areas.

Identify the location and the types of fire extinguishers and other fire safety equipment; demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment.

Identify the location and use of eye wash stations.

Identify the location of the posted evacuation routes.

Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities.

Identify and wear appropriate clothing for lab/shop activities.

Secure hair and jewelry for lab/shop activities.

Demonstrate awareness of the safety aspects of supplemental restraint systems (SRS), electronic brake control systems, and hybrid vehicle high voltage circuits.

Demonstrate awareness of the safety aspects of high voltage circuits (such as high intensity discharge (HID) lamps, ignition systems, injection systems, etc.).

Locate and demonstrate knowledge of material safety data sheets (MSDS).

Identify tools and their usage in automotive applications.

Identify standard and metric designation.

Demonstrate safe handling and use of appropriate tools.

Demonstrate proper cleaning, storage, and maintenance of tools and equipment.

Demonstrate proper use of precision measuring tools (i.e. micrometer, dial-indicator, dial-caliper).

Identify information needed and the service requested on a repair order.

Identify purpose and demonstrate proper use of fender covers, mats.

Demonstrate use of the three C's (concern, cause, and correction).

Review vehicle service history.

Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.

Ensure vehicle is prepared to return to customer per school/company policy (floor mats, steering wheel cover, etc.).

## **ENGINE REPAIR**

### **General**

Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins. P-1

Verify operation of the instrument panel engine warning indicators. P-1

Inspect engine assembly for fuel, oil, coolant, and other leaks; determine necessary action. P-1

Install engine covers using gaskets, seals, and sealers as required. P-1

Remove and replace timing belt; verify correct camshaft timing. P-1

Perform common fastener and thread repair, to include: remove broken bolt, restore internal and external threads, and repair internal threads with thread insert. P-1

Identify hybrid vehicle internal combustion engine service precautions. P-3

### **Cylinder Head and Valve Train**

Adjust valves (mechanical or hydraulic lifters). P-1

### **Lubrication and Cooling Systems**

Perform cooling system pressure and dye tests to identify leaks; check coolant condition and level; inspect and test radiator, pressure cap, coolant recovery tank, and heater core; determine necessary action. P-1

Inspect, replace, and adjust drive belts, tensioners, and pulleys; check pulley and belt alignment. P-1

Remove, inspect, and replace thermostat and gasket/seal. P-1

Inspect and test coolant; drain and recover coolant; flush and refill cooling system with recommended coolant; bleed air as required. P-1

Perform engine oil and filter change. P-1

## **AUTOMATIC TRANSMISSION AND TRANSAXLE**

### **General**

Research applicable vehicle and service information, fluid type, vehicle service history, service precautions, and technical service bulletins. P-1

Check fluid level in a transmission or a transaxle equipped with a dip-stick. P-1

Check fluid level in a transmission or a transaxle not equipped with a dip-stick. P-1

Check transmission fluid condition; check for leaks. P-2

### **In-Vehicle Transmission/Transaxle**

Inspect, adjust, and replace external manual valve shift linkage, transmission range sensor/switch, and park/neutral position switch. P-2

Inspect for leakage at external seals, gaskets, and bushings. P-2

Inspect power train mounts. P-2

Drain and replace fluid and filter(s). P-1

### **Off-Vehicle Transmission and Transaxle**

Describe the operational characteristics of a continuously variable transmission (CVT). P-3

Describe the operational characteristics of a hybrid vehicle drive train. P-3

## **MANUAL DRIVE TRAIN AND AXLES**

### **General**

Research applicable vehicle and service information, fluid type, vehicle service history, service precautions, and technical service bulletins. P-1

Drain and refill manual transmission/transaxle and final drive unit. P-1

Check fluid condition; check for leaks. P-2

### **Clutch**

Check and adjust clutch master cylinder fluid level. P-1

Check for system leaks. P-1

### **Transmission/Transaxle**

Describe the operational characteristics of an electronically-controlled manual transmission/transaxle. P-3

### **Drive Shaft, Half Shafts, Universal and Constant-Velocity (CV) Joints**

Inspect, remove, and replace front wheel drive (FWD) bearings, hubs, and seals. P-2

Inspect, service, and replace shafts, yokes, boots, and universal/CV joints. P-2

### **Differential Case Assembly**

Clean and inspect differential housing; check for leaks; inspect housing vent. P-2

Check and adjust differential housing fluid level. P-1

Drain and refill differential housing. P-1

### **Drive Axles**

Inspect and replace drive axle wheel studs. P-2

### **Four-wheel Drive/All-wheel Drive**

Inspect front-wheel bearings and locking hubs. P-3

Check for leaks at drive assembly seals; check vents; check lube level. P-2

### **SUSPENSION AND STEERING SYSTEMS**

#### **General**

Research applicable vehicle and service information, vehicle service history, service precautions, and technical service bulletins. P-1

Disable and enable supplemental restraint system (SRS). P-1



## STUDENT EXPECTATIONS

I realize the following expectations are required of me in order to grow and become prepared for tougher classes and build towards the college/career level. I realize if I choose not to carry out these expectations: I could possibly fail or be removed from this class.

1. **Cell Phones:** When I enter the room I will power my cell phone off and put it into my backpack. If I am caught with it out in class, the phone will be taken and a parent will have to pick the phone up after school.

2. **This classroom is for learning:** As I enter the classroom, I will sit down and begin to review material that is presented to me in the form of a bell ringer. I will not for any reason (unless called by GRC to sign out) leave or ask to leave my class at the Clark Co. Area Tech. Center.

3. **Follow Safety Guidelines:** I will not horseplay in the classroom or lab. I will not bring food or drinks into the classroom or lab.

4. **Have all Materials:** I will bring pencil/pen, paper, safety glasses, closed toe shoes and protective work clothes to class every day.

5. **Respect:** I will show respect to my instructor, peers, and myself at all times. I will not use any vulgar, foul, or obscene language at any time. I will respect the teacher.

6. **Protect the classroom:** I will take care of equipment that belongs to this classroom. I realize this classroom and lab are open for me to study and learn. It is my responsibility to see that it stays open.

7. **Open Mind:** I will not let fear of a new way to do something or information keep me from trying.

8. **No Bell:** My instructor will dismiss the class, not the bell. I will not put my materials away until my instructor tells me to do so and I will not line up at the door.

9. **Bathroom:** I will have only 10 bathroom passes for the semester and I will follow the 10/10 rule.

By signing below I verify that I have read the syllabus/student expectations for automotive technology and understand all that is included.

Please sign below and return to Mr. Sward

Student's signature \_\_\_\_\_ Date \_\_\_\_\_

Parent/Guardian signature \_\_\_\_\_ Date \_\_\_\_\_