Maintenance and Light Repair B
AUT 160/161 COURSE SYLLABUS 2016-2017 SCHOOL YEAR

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Office Hours: 7:45AM-3:45PM Monday-Friday
Program Name: Automotive Technology
KY Tech Course Name: Suspension and Steering
High School Course Number: 5068.01
High School Credit: 1
KCTCS Course Name: Suspension and Steering
KCTCS Course Number: AUT 160 & AUT 161

Description:

This course presents the automotive suspension system, the diagnosing of suspension problems, identifying components, recognizing tire wear problems, wheel balancing, and the use of alignment equipment.

Co-requisites: None
Materials Used: Modern Automotive Technology 9th Edition

Goals:

TASK LIST

1	Complete work order to include customer information, vehicle identifying information, customer concern, related service history, cause, and correction.
2	Identify and interpret suspension and steering concern; determine necessary action.
3	Research applicable vehicle and service information such as suspension and steering system operation, vehicle service history, service precautions, and technical service bulletins.
4	Locate and interpret vehicle and major component identification numbers (VIN, vehicle certification labels, calibration decals).
5	Disable and enable supplemental restraint system (SRS).
6	Remove and replace steering wheel; center/time supplemental restraint system (SRS) coil (clock spring).
7	Diagnose steering column noises, looseness, and binding concerns (including tilt mechanisms); determine necessary action.
8	Diagnose power steering gear (non-rack and pinion) binding, uneven turning effort, looseness, hard steering, noise and fluid leakage concerns; determine necessary action.
9	Diagnose power steering gear (rack and pinion) binding, uneven turning effort, looseness, hard steering, noise, and fluid leakage concerns; determine necessary action.
10	Inspect steering shaft universal-joint(s), flexible coupling(s), collapsible column, lock cylinder mechanism, and steering wheel; perform necessary action.

11 Adjust manual or power non-rack and pinion worm bearing preload and sector lash.

12 Remove and replace manual or power rack and pinion steering gear; inspect mounting bushings and brackets.

13 Inspect and replace manual or power rack and pinion steering gear inner tie rod ends (sockets) and bellows boots.

14 Determine proper power steering fluid type; inspect fluid level and condition.

15 Flush, fill, and bleed power steering system.

16 Diagnose power steering fluid leakage; determine necessary action.

17 Remove, inspect, replace, and adjust power steering pump belt.

18 Remove and reinstall power steering pump.

19 Remove and reinstall power steering pump pulley; check pulley and belt alignment.

20 Inspect and replace power steering hoses and fittings.

21 Inspect and replace pitman arm, relay (center link/intermediate) rod, idler arm and mountings, and steering linkage damper.

22 Inspect, replace, and adjust tie rod ends (sockets), tie rod sleeves, and clamps.

23 Test and diagnose components of electronically-controlled steering systems using a scan tool; determine necessary action.

24 Inspect and test non-hydraulic electric power assist steering.

25 Identify hybrid vehicle power steering system electrical circuits, service and safety precautions.

26 Diagnose short and long arm suspension system noises, body sway, and uneven riding height concerns; determine necessary action.

27 Diagnose strut suspension system noises, body sway, and uneven riding height concerns; determine necessary action.

28 Remove, inspect, and install upper and lower control arms, bushings, shafts, and rebound bumpers.

29 Remove, inspect and install strut rods(compression/tension) and bushings.

30 Remove, inspect, and install upper and/or lower ball joints.

31 Remove, inspect, and install steering knuckle assemblies

32 Remove, inspect, and install short and long arm suspension system coil springs and spring insulators.

33 Remove, inspect, install, and adjust suspension system torsion bars; inspect mounts.

34 Remove, inspect, and install stabilizer bar bushings, brackets, and links.

35 Remove, inspect, and install strut cartridge or assembly, strut coil spring, insulators (silencers), and upper strut bearing mount.

36 Lubricate suspension and steering systems.

37 Remove, inspect, and install coil springs and spring insulators.

38 Remove, inspect, and install transverse links, control arms, bushings, and mounts.

39 Remove, inspect, and install leaf springs, leaf springs insulators (silencers), shackles, brackets, bushings, and mounts.

40 Remove, inspect, and install strut cartridge or assembly, strut coil spring, and insulators (silencers).

41 Inspect, remove, and replace shock absorbers.

42 Remove, inspect, and service or replace front and rear wheel bearings.

43 Test and diagnose components of electrically-controlled suspension systems using a scan tool; determine necessary action.

44 Diagnose vehicle wander, drift, pull, hard steering, bump steer, memory steer, torque steer, and steering return bump concerns; determine necessary action.

45 Perform pre-alignment inspection; perform necessary action.

46 Measure vehicle riding height; determine necessary action.

47 Check and adjust front and rear wheel camber; perform necessary action.

48 Check and adjust caster; perform necessary action.

49 Check and adjust front wheel toe and center steering wheel.

50 Check toe-out-on-turns (turning radius); determine necessary action.

51 Check SAI (steering axis inclination) and included angle; determine necessary action.

52 Check and adjust rear wheel toe.

53 Check rear wheel thrust angle; determine necessary action.

54 Check for front wheel setback; determine necessary action.

55 Check front cradle (sub frame) alignment; determine necessary action.

56 Diagnose tire wear patterns; determine necessary action.

57 Inspect tires; check and adjust air pressure.

58 Diagnose wheel/tire vibration, shimmy, and noise; determine necessary action.

59 Rotate tires according to manufacturer's recommendations.

60 Measure wheel, tire, axle, and hub run out; determine necessary action.

61 Diagnose tire pull (lead) problem; determine necessary action.

62 Balance wheel and tire assembly (static and dynamic).

63 Dismount, inspect, and remount tire on wheel.

64 Dismount, inspect, and remount tire on wheel equipped with tire pressure sensor.

65 Reinstall wheel; torque lug nuts.

66 Inspect tire and wheel assembly for air loss; perform necessary action.

. **Make Up Work: Test, Quizzes, and In Class and Lab Assignments**

- Students can make up lost lab time from 3:00 pm to 3:45 pm with pre approval.
- Students will have three days to make up any excused absence and still received full credit.
- Students can be on homebound for no more than 2 weeks in any automotive class due to the majority of the class being focused on the lab.

Fees:

- Students will be furnished with one pair of safety glasses at the beginning of the year. If they become lost or broken students must purchase their own.
- Students will be provided Nitrile gloves to wear when deemed necessary.
- Students will be provided ear plugs to wear when using certain equipment or whenever deemed necessary by the instructor.
- Students must pay for any lost or damaged books at cost before graduation.
- Field trips may require a fee for registration and transportation

Course Requirements:

1	Successfully complete all written assignments/tests successfully.
2.	Complete all lab projects
3.	Abide by all Lab Safety Rules

Evaluation Procedures:

1.	Daily Grade
2.	Performance Tests
3.	Tests/Quizzes

Grade Assignment:

90 – 100	A	60 – 69 D
80 – 89	B	0 - 59 F
70 – 79	C	

Classroom and Shop Rules for Automotive

1. **NO TOBACCO use of any kind**
2. **Cell phones and other electronic devices must be kept out of sight while in classroom area.**
3. **NO FOOD OR DRINK allowed in classroom or shop area unless authorized by instructor.**
4. **No inappropriate language or jesters.**
5. **Safety glasses must be worn at ALL times while in shop area.**
6. **No hitting, pushing, running or any other type of horseplay will be tolerated.**
7. **Appropriate clothing must be worn. No shorts, tank tops, open toe shoes, jewelry or loose fitting clothing permitted. Long hair must be pulled back while in shop area.**
8. **NO USE of shop tools, machinery or lifts without instructor supervision or approval.**
9. **Be prepared and on time for class each day.**
10. **Cleaning is everyone's job.**

I will abide by these rules of the shop and classroom.

Student-_____
Parent or Guardian-_____ Teacher- Mr. Baldwin
Date-_____

I have read the syllabus and understand the requirements of this course.
Student/Date-_____
Parent or Guardian/Date-_____