



## MASTER COURSE OUTLINE

Prepared By: John Martin

Date: January 2016

### COURSE TITLE

Suspension, Steering, and Alignment

### GENERAL COURSE INFORMATION

Dept.: AUT

Course Num: 125

(Formerly: )

CIP Code: 47.0604

Intent Code: 21

Program Code: 712

Credits: 9

Total Contact Hrs Per Qtr.: 132

Lecture Hrs: 66

Lab Hrs: 66

Other Hrs:

Distribution Designation:

### COURSE DESCRIPTION (as it will appear in the catalog)

This course covers the theory, operation and repair of various automotive suspension and steering systems used in today's vehicles. Topics covered include steering types, suspension types, shock/strut service, tires/wheels and suspension and steering component replacement. Students will use modern computerized alignment equipment to perform two wheel, four wheel and thrust type vehicle alignments. This course is designed to prepare the student for the ASE/NATEF Suspension and Steering Certification test.

### PREREQUISITES

AUT 115 Automotive Shop Safety and Environmental Issues

### TEXTBOOK GUIDELINES

An automotive chassis text as chosen by Automotive Faculty (Example: *Automotive Chassis Systems - Halderman*)

### COURSE LEARNING OUTCOMES

*Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills:*

1. Safely perform suspension and steering service and repair.
2. Use and interpret automotive service manuals.
3. Diagnose, repair, replace and adjust automotive wheel bearings.
4. Inspect, mount and balance various types of tire and wheel systems.
5. Perform diagnosis, service and repair on both strut and shock absorber systems.
6. Perform diagnosis, service and repair on various types of front suspension systems.
7. Perform diagnosis, service and repair on various types of rear suspension systems.
8. Perform diagnosis, service and repair on various types of automotive steering systems.
9. Perform two wheel, four wheel and thrust alignments on various types of automobiles.
10. Pass the Automotive Service Excellence (ASE) Test for Suspension, Steering and Alignment Specialist.

### INSTITUTIONAL OUTCOMES

IO3 **Human Relations/Workplace Skills:** Students will be able to demonstrate teamwork, ethics, appropriate safety awareness and/or workplace specific skills

## **COURSE CONTENT OUTLINE**

### General System Introduction:

- Safety Practices
- Basic Theories
- Tools and Shop Practices

### Tire, Wheel and Wheel Bearing Servicing

- Wheel Bearings
- Tires and Wheels

### Suspension System Service and Repair

- Shock Absorbers and Struts
- Front Suspension Systems
- Rear Suspension systems
- Computer-Controlled Suspension Systems

### Steering System Service and Repair

- Steering Columns and Steering Linkage Mechanisms
- Power Steering Pumps
- Recirculating Ball Steering Gears
- Rack and Pinion Steering Gears
- Four Wheel Steering Systems

### Vehicle Alignment Service

- Frames and Frame Damage
- Four Wheel Alignment
  - Four Wheel Alignment Procedure
  - Four Wheel Alignment Adjustments

## **DEPARTMENTAL GUIDELINES** *(optional)*

### EVALUATION METHODS/GRADING PROCEDURES:

- Daily work assignments: 30% of the final grade.
- Test and quiz scores: 30% of the final grade.
- Laboratory performance: 40% of the final grade.

In the Laboratory, the student is required to complete daily time sheets explaining what was accomplished during each lab period. Points will be earned for each day's performance. While in the laboratory, the student is also required to maintain a Laboratory Task List. The task list must be signed off by the instructor as the student completes each task.

No points are earned if absent. All late work will have 10% deducted. Ten (10) or more absences will result in failure of the class.

### Points will be lost for:

- Tardiness
- Poor quality work
- Poor work habits
- Improper use of tools
- Unsafe work habits
- Improper care of tools

Grades will be calculated using the following numerical scale:

95-100 =	4.0	82	=	2.8	70	=	1.6
93-94 =	3.9	81	=	2.7	69	=	1.5

92	=	3.8	80	=	2.6	68	=	1.4
91	=	3.7	79	=	2.5	67	=	1.3
90	=	3.6	78	=	2.4	66	=	1.2
89	=	3.5	77	=	2.3	65	=	1.1
88	=	3.4	76	=	2.2	64	=	1.0
87	=	3.3	75	=	2.1	63	=	0.9
86	=	3.2	74	=	2.0	62	=	0.8
85	=	3.1	73	=	1.9	61	=	0.7
84	=	3.0	72	=	1.8	60	=	0.7
83	=	2.9	71	=	1.7	0-59	=	0.0

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**DIVISION CHAIR APPROVAL**

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**DATE**