COURSE INFORMATION FORM

DISCIPLINE: Automotive Technology
COURSE TITLE: Automotive Chassis Systems

CR.HR: 6  LECT HR: 3  LAB HR: 6  CLIN/INTERN HR: 0  CLOCK HR: 0

CATALOG DESCRIPTION

This course covers the history, theory of operation, diagnosis, service and repair of automotive chassis systems. Instruction on braking systems, on and off-car rotor resurfacing, drum resurfacing, ABS operation, four-wheel alignments, front and rear suspension and steering systems, tire and wheel balancing are covered in detail. Precision measuring related to brake drums and rotors will be practiced.

PREREQUISITES

Concurrent enrollment in or completion of AUTO 100.

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)

Upon completion of this course, the student will be able to:

1. Demonstrate the cognitive and manipulative skills necessary to complete assigned tasks.
2. Describe and employ safe work habits, observing both personal safety and a concern for the safety of others.
3. Analyze, diagnose and determine necessary action to solve chassis system and component concerns.
4. Apply procedures needed to successfully perform service operations.
5. Employ effective behaviors necessary to successfully work with others.

GENERAL EDUCATION OUTCOMES (ESO)

Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.

Outcomes: ESO

1.
PROGRAM-LEVEL OUTCOMES

CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

1. Students will demonstrate the knowledge necessary to obtain recognized certifications.
2. Students will demonstrate or apply knowledge of basic sciences to the practices of automotive technology.
3. Students will demonstrate the knowledge and application of safety rules and regulations.
4. Students will exhibit professional behavior.
5. Students will be able to use mathematics as it pertains to automotive technicians.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes may be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

1. Written evaluation (1-4)
2. Oral evaluation (1-5)
3. Performance exams (1-4)
4. Written laboratory assignments (1-5)
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Introduction
   A. Safety review
   B. Equipment
   C. Service Information
   D. Braking system principles
   E. Braking system components and performance standards

II. Hydraulic principles, function and service
   A. Hydraulic system principles
   B. Hydraulic components
      1. Master cylinder construction, operation and service
      2. Brake caliper construction, operation and service
      3. Wheel cylinder construction, operation and service
   C. Residual pressure
   D. Brake hydraulic system types and operation
   E. Brake bleeding procedures

III. Diagnostic procedures
   A. Brake system inspection
   B. Troubleshooting braking problems
   C. Electrical diagnosis and repair
   D. Hydraulic system diagnosis
   E. Warning lamp testing
   F. Brake-light switch testing and adjustment

IV. Wheel bearing inspection and service (front and rear wheel drive)
   A. Antifriction bearings
   B. Bearing greases
   C. Bearing diagnosis
   D. Seals
   E. Wheel bearing service
   F. Rear drive axle classifications, seal and bearing service
   G. Bearing failure analysis

V. Disc brake systems
A. Disc brake operation
B. Disc brake construction
C. Disc brake components
D. Disc brake designs
E. Disc brake inspection
F. Brake rotor removal procedures
G. Disc brake caliper service
H. Disc brake squeal correction

VI. Drum brake systems
A. Drum brake operation, advantages and disadvantages
B. Drum brake construction
C. Drum brake components
D. Drum brake service precautions
E. Brake drum removal
F. Drum brake disassembly, inspection and reassembly
G. Component service
H. Drum brake adjusting

VII. Drum and rotor machining
A. Brake drum and rotor specifications
B. Brake drum and rotor inspection
C. Brake drum and rotor measuring
D. Brake drum and rotor servicing

VIII. Parking brake systems
A. Parking brake standards
B. Parking brake components
C. Parking brake operation
D. Parking brake cable adjustment

IX. Power brake systems
A. Power brake rationale
B. Power brake operation
   1. Vacuum booster
   2. Hydraulic booster
C. Brake booster diagnosis
D. Brake booster service
E. Brake booster replacement

X. Regenerative braking systems

XI. Antilock braking systems (ABS)
A. ABS operation
B. ABS system configurations
C. ABS components
D. Indirect tire pressure monitoring systems using ABS
E. ABS service
F. *ABS diagnosis

XII. Electronic stability control systems
A. Stability control system rationale
B. Electronic Stability control system components
C. Electronic stability control system operation
D. Electronic stability control system types

XIII. Tires and wheels
A. Introduction to tires
B. Tire construction
C. Tire ratings
D. Tire valves
E. Lug nuts and wheel studs
F. Tire inspection
G. Tire service
   1. Tire dismounting and mounting
   2. Tire runout
   3. Tire balancing
   4. Tire repair

XIV. Tire pressure monitoring system (TPMS)
A. TPMS rationale, history, and the TREAD act
B. Indirect TPMS
C. Direct TPMS
D. TPMS operation
E. TPMS components
F. TPMS service
G. TPMS system diagnosis

XV. Suspension systems
A. Suspension system types and theory of operation
B. Suspension system components
C. Front suspension system service
D. Rear suspension system service
E. Electronic suspension system operation

XVI. Steering gears and columns
A. Steering components
B. Steering system operation
C. Steering gear service
D. Steering gear replacement
E. Steering linkage service

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F. Power assisted steering operation and service
G. Variable effort steering systems
H. Electric assist steering systems

XVII. Wheel alignment
A. Wheel alignment theories of operation
B. Alignment types
C. Wheel alignment angles
D. Measuring alignment angles
E. Alignment specifications
F. Diagnostic angles
G. Adjusting alignment angles
H. Diagnosing alignment related concerns