

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: SUSPENSION, STEERING & BRAKES

CODE NO.: MVM115

SEMESTER: 32 Week Program

» PROGRAM: MOTOR VEHICLE MECHANIC PRE-APPRENTICE PROGRAM

AUTHOR: STEVE KENT

DATE: MAY 1997

PREVIOUS OUTLINE DATED: FEBRUARY 1997

A P P R o v e d _____ /far/3/ff
DEAN DATE

TOTAL CREDITS: 6

PREREQUISITE(S): ONTARIO SECONDARY SCHOOL DIPLOMA WITH GRADE 12 ENGLISH AT GENERAL LEVEL AND 1 SENIOR LEVEL HIGH SCHOOL AUTOMOTIVE COURSE OR EQUIVALENT WORK EXPERIENCE.

LENGTH OF COURSE: 32 WEEKS TOTAL CREDIT HOURS: 120

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I. COURSE DESCRIPTION: This course will teach the student the knowledge required to inspect, test, service and diagnose the following chassis systems; wheel & tires, suspension, steering and brakes.

H. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:
(Generic Skills Learning Outcomes placement on the course outline will be determined and communicated at a later date.)

Upon successful completion of this course the student will demonstrate the ability to:

1) Suspension

Potential Elements of the Performance:

- 1) The student will be able to explain the fundamentals, function, composition and construction of vehicle front & rear suspension and frames.
- 2) Identify and measure common frame and body alignment.
- 3) Inspect and service a modern suspension system.
- 4) Demonstrate the removal and replacement of suspension system components and assemblies.

2) Steering

Potential Elements of the Performance:

- 1) Explain the principles of operation of modern rack & pinion and recirculating ball steering gears.
- 2) Disassemble, inspect and adjust manual recirculating ball steering gears using prescribed tools and specifications.
- 3) Explain the basic operating principles of a modern power steering system.
- 4) Demonstrate the disassembly, inspection, reassemble and adjustment of integral power steering gears.
- 5) Perform on vehicle tests of power steering systems using prescribed tools and equipment.

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**LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE
(Continued)**

3) Wheels & Tires

Potential Elements of the Performance:

- 1) Explain the composition, construction and fundamentals of tires and wheels including types, sizes and ratings.
- 2) Perform static and dynamic wheel balancing.

4) Alignment

Potential Elements of the Performance:

- 1) Define the alignment angles necessary to perform four wheel alignment, camber, caster, toe, SAL included angle, set back and thrust angle.
- 2) Measure four wheel alignment using modern alignment equipment.
- 3) Evaluate and adjust four wheel alignment to correct vehicle handling problems.

5) Brakes

Potential Elements of the Performance:

- 1) Demonstrate a working knowledge of the fundamentals principles of hydraulic brake systems.
- 2) Dismantle, inspect, service and assemble brake systems.
- 3) Explain the operating principles of power and anti-lock brakes.
- 4) Diagnose, service and repair modern power and anti-lock systems using proper tools equipment. (Scan tools, Break-out Box, Vacuum and Pressure Gauges)
- 5) Explain the fundamentals and operating principles of air brakes.
- 6) Identify safety related items in air brake systems. (Spring brakes)

**H. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE
(Continued)**

6) Electronic Chassis System

Potential Elements of the Performance:

- 1) Demonstrate a working knowledge of the removal, handling and replacement of electronic suspension, steering and brake monitoring and controlling devices.

TOPICS:

- 1) Alignment
- 2) Suspension
- 3) Steering
- 4) Brakes
- 5) Wheels & Tires
- 6) Electronic Chassis Systems

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Text books, work book
Tools & shop equipment
Specific handouts

V. EVALUATION PROCESS/GRADING SYSTEM

Theoretical testing and performance based evaluation.

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VI. SPECIAL NOTES:**- Special Needs**

If you are a student with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities), you are encouraged to discuss required accommodations with the instructor and/or contact the Special Needs Office, Room E1204, Ext. 493, 717, 491 so that support services can be arranged for you.

- Retention of Course Outlines

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other post-secondary institutions.

- Disclaimer for Meeting the Needs of the Learners**- Substitute Course Information is available at the Registrar's Office.****- Any Other Special Notes appropriate to your course.****VII. PRIOR LEARNING ASSESSMENT**

Students who wish to apply for advanced credit in the course should consult the instructor. Credit for prior learning will be given upon successful completion of the following: