

#453(C)

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: ELECTRICAL, ELECTRONICS AND FUELS

CODE NO.: MVM013 SEMESTER. 36 Weeks

PROGRAM: MOTOR VEHICLE TECHNICIAN

AUTHORS: Dan Tregonning/Steve Kent

DATE: August 1994 PREVIOUS OUTLINE DATED: August 1993

APPROVED. _____
Dean, School of Technical Trades Date

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PREREQUISITE(S):

I. PHILOSOPHY/GOALS:

This course will stress the basics of the automotive trade and give the student comparable knowledge of a basic level apprentice.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will have the basic knowledge of shop procedures and tools useful to electrical systems. They will also cover different electrical areas of the automobile and how they operate.

III. TOPICS TO BE COVERED:

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1. Electrical, Electronics, Fuel Fundamentals and Test Equipment

- a) Demonstrate a working knowledge of electrical and electronic principles.
- b) Demonstrate a working knowledge of electrical and electronic circuit characteristics.
- c) Demonstrate a working knowledge of static electricity.
- d) Demonstrate a working knowledge of permanent magnetism and electromagnetism.
- e) Demonstrate a working knowledge of conductors, insulators and semi-conductors.
- f) Demonstrate a working knowledge of the fundamental operating principles of on-board computer system.
- g) Demonstrate a working knowledge of computer self-diagnostic capabilities.
- h) Demonstrate a working knowledge of fundamentals pertaining to fuel system operation.
- i) Demonstrate a working knowledge of the control of abnormal combustion.
- j) Demonstrate a working knowledge of diesel fuel.
- k) Demonstrate a working knowledge of the use of prescribed electrical and electronic test equipment.
- l) Perform electrical, electronic and system component tests.

2. Batteries and Starting Systems

- a) Demonstrate a working knowledge of the fundamental operating principles of batteries.
- b) Test, service and charge a battery.
- c) Demonstrate a working knowledge of the fundamental operating principles of electrical starter systems and control circuits.
- d) Dismantle, inspect, perform starter component tests and assemble starter motors.
- e) Perform on-vehicle tests of the starting circuit.

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2. Batteries and Starting Systems Continued...

- f) Test starting motors, relays, switches and solenoids.
- g) Demonstrate a working knowledge of replacing cranking system components.

3. Charging Systems

- a) Demonstrate a working knowledge of the fundamental operating principles of charging systems.
- b) Perform charging circuit tests: - static and dynamic
- c) Dismantle, inspect and perform charging component tests and assemble components.
- d) Demonstrate a working knowledge of servicing, removing and replacing charging system components.

4. Fuel Supply, Intake and Exhaust Systems

- a) Demonstrate a working knowledge of automotive fuel system operation and principles.
- b) Demonstrate a working knowledge of the replacement of fuel system components.
- c) Test gasoline fuel systems.
- d) Demonstrate a working knowledge of the fundamental operating principles of intake and exhaust systems.
- e) Test intake and exhaust systems.
- f) Demonstrate a working knowledge of servicing intake and exhaust system components.

5. Engine Management Systems

- a) Demonstrate a working knowledge of the fundamental operating principles of up to date ignition systems.
- b) Demonstrate a working knowledge of ignition system tests.
- c) Demonstrate a working knowledge of removing, inspection, installing and timing ignition system assemblies.
- d) Identify and locate electronic ignition system components on live vehicles.

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- e) Demonstrate a working knowledge of automotive carburetion.
- f) Demonstrate a working knowledge of gasoline fuel injection systems.
- g) Test and service fuel injection system,
- h) Inspect, service and adjust carburetor.
- i) Perform on-vehicle carburetor external adjustments.
- j) Demonstrate a working knowledge of emission control systems.
- k) Test and service emission control systems.
- l) Demonstrate a working knowledge of removing and replacing emission control systems.
- m) Demonstrate a working knowledge of driveability performance problems.

6. Wiring, Lighting, Electronic Controls and Accessories Systems

- a) Demonstrate a working knowledge of the fundamental operating principles of wiring, lighting accessories and electronic control systems.

7. Diesel Fuel Injection Systems

- a) Demonstrate a working knowledge of the fundamental operating principles of diesel fuel injection systems:
 - in-line and distributing
- b) Demonstrate a working knowledge of the test and service of basic diesel fuel injection systems.
- c) Demonstrate a working knowledge of the replacement of major diesel injection system components.
- d) Demonstrate a working knowledge of basic injection.....

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V. EVALUATION METHODS:

- . random tests & quizzes
- . weekly tests
- . shop practices
- . attendance

VI. REQUIRED STUDENT RESOURCES:

- . Text (Supplied by College)
- . Coveralls
- . Safety Glasses (CSA Approved)
- . Regulation Safety Boots (CSA Approved) Min. 6"

VII: ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY BOOK SECTION:

VIM. SPECIAL NOTES: