SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: ELECTRICAL, ELECTRONICS & FUELS

CODE NO.: MVM112 SEMESTER: 32 Week Program

PROGRAM: MOTOR VEHICLE MECHANIC PRE-APPRENTICE PROGRAM

AUTHOR: DAN TREGONNING

DATE: FEBRUARY 97 PREVIOUS OUTLINE DATED: N/A

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TOTAL CREDITS: 20

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: 288

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I. COURSE DESCRIPTION: This course is designed to follow the approved curriculum prepared by the Motive Power College Curriculum Advisory Committee. The student will be taught the necessary electrical, electronics and fuel systems to confidently repair automobiles using the proper procedures and equipment.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1) Describe the basics of electrical fundamentals.

Potential Elements of the Performance:

1) Use a meter in an automotive shop.
2) Remove and replace a headlamp and parklamp.
3) Test a ignition pickup coil using a digital multimeter.
4) Watch for the dangers of static electricity.
5) Install permanent magnet motors (heater, wiper)
6) Replace battery cable noting wire gauge size and length.
7) Repair corroded wiring using proper soldering methods.
8) Read and understand automotive schematics.

2) Demonstrate a working knowledge of the fundamental r> ' '. ''- - "•' batteriesand.51frterP>otirs.

Potential Elements of the Performance:

1) Test, service and charge a battery.
2) Remove and replace a battery.
3) Dismantle, inspect, perform starter component test and assemble starter motors.
4) Perform on vehicle tests of the starting circuits.
5) Test starter motors, relays, switches and solenoids.

3) The student will demonstrate a working knowledge of modern charging systems.

Potential Elements of the Performance:

1) Remove, disassemble and repair alternators.
2) Perform on vehicle tests of alternators including regulated output and full fielding.
3) Have a understanding to test all internal alternator components.

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II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE (Continued)

4) Explain the operating principles, fuel supply intake and exhaust systems.

Potential Elements of the Performance:

1) Test & replace fuel system components such as fuel pumps and carburetors.
2) Test intake and exhaust systems, using a vacuum gauge.

5) Demonstrate how to test and repair electronic ignition systems.

Potential Elements of the Performance:

1) Test and repair ignition components.
2) Use a spark tester to test ignition coils.
3) Check pickup coils and ignition coils for opens, shorts and grounds.
4) Locate electronic ignition components on live vehicles.
5) Remove and install distributors.
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6) Diesel and gasoline fuel systems.

Potential Elements of the Performance:

1) Show a procedure used in repairing fuel injection faults.
2) Perform on vehicle tests using modern scan tools.
3) Perform basic tuneup to automotive equipped diesel engines.
4) Do on vehicle self tests on fuel injected vehicles.
5) Identify and replace defective fuel injected components.
6) Perform fuel pressure testing - dead head & leak down tests.
7) Follow manufacturers test procedures for diagnosing computer failures.

III. TOPICS:

1) Basic Fundamentals

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III. TOPICS:
(Continued)

2) Batteries and Starters

3) Charging Systems

4) Fuel Supply, Intake & Exhaust Systems

5) Ignition Systems

6) Diesel & Gas Fuel Injection

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Test supplied by College
Workbook available at Bookstore
Coveralls
Safety glasses
Safety boots 6" high (min.)
Handouts supplied

V. EVALUATION PROCESS/GRADING SYSTEM

Random ^rests and quizzes
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W*?*rk)v tests

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 Learner

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VI. SPECIAL NOTES:
(Continued)

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: